

Corporation approves link to Whitehead

By ROBERT M. BYERS
Staff Writer

The MIT Corporation gave approval Friday, Dec. 4, to an agreement by which the newly formed Whitehead Institute for Biomedical Research would become affiliated with MIT.

Under the affiliation, certain research scientists will hold joint appointments on the MIT faculty and the Whitehead research staff. In addition, MIT will receive a \$7.5 million gift from the Whitehead Charitable Foundation established by philanthropist and industrialist Edwin C. Whitehead of Greenwich, Conn. MIT will use the gift as an invested endowment fund and employ income from it to support teaching and research within academic departments where joint professors are affiliated—to begin with, primarily in the Department of Biology—and, if needed, to defray costs associated with the affiliation.

Up to 13 Whitehead scientists are expected to receive appointments as assistant, associate or full professors at MIT during the first eight years of affiliation. The appointments will be made according to usual MIT faculty selection processes, with the full costs associated with these appointments to be paid by the Whitehead Institute. These scientists will do their research at the Whitehead Institute, but will have full responsibilities for undergraduate and graduate teaching, as well as committee service, at MIT.

The addition of these professors to the MIT Biology faculty is expected to permit an increase in the number of graduate students enrolled in the Department of Biology over the next eight years.

The agreement provides that MIT will designate candidates for three of the 14 members of the Whitehead board of directors. The agreement also provides that the director of the Whitehead Institute will always be a tenured member of the MIT faculty and that this

appointment will be approved by MIT. The director will also be a member of the board of directors.

The affiliation was proposed by Dr. David Baltimore, director-designate of the Whitehead Institute and one of those who will hold joint appointments. Dr. Baltimore is American Cancer Society Professor of Microbiology at MIT and co-recipient of the 1975 Nobel Prize in Physiology or Medicine for his work in molecular genetics. Quality and effectiveness of research at the emerging Whitehead Institute, he said, would be improved if a way could be found to involve scientists there in teaching. Intermingling of teaching and research, in which each reinforces the other, he said, is a characteristic that has traditionally made American science strong.

Announcement of the action by the MIT Corporation at its regular quarterly meeting in Cambridge Friday was made by Howard W. Johnson, chairman of the Corporation. Mr. Johnson said the Corporation's executive committee had endorsed the affiliation earlier as had the Corporation's Department of Biology Visiting Committee chaired by Corporation member David R. Clare, president of Johnson & Johnson, Inc., New Brunswick, N.J., and a 1945 graduate of MIT.

The formal affiliation was recommended to the Corporation by President Paul E. Gray and Provost Francis E. Low.

The MIT faculty at its monthly meeting November 18 also endorsed the affiliation by a vote estimated at five-to-one or more. Some 350 of MIT's 1,000 faculty members attended that meeting which culminated several months of faculty discussion and debate.

In announcing their decision to recommend the affiliation, President Gray and Provost Low told the faculty that lengthy discussions of the proposal over the past several months

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Midnight concert

The MIT Chamber Players will give their eighth annual midnight concert Friday, Dec. 11, in the Rogers Lobby (Building 7).

Marcus Thompson, director of the Chamber Players will conduct the full chamber orchestra. Alumnus Stephen Umans will be clarinet soloist.

The concert will begin with the performance of Handel's Overture to the Royal Fireworks Music, followed by Mozart's Clarinet Concerto with Mr. Umans as soloist. It will close with Mozart's Symphony No. 41 ("The Jupiter").

The midnight concert is sponsored by the Music Section of the MIT Department of Humanities and is open to the public free of charge. Members of the audience should bring cushions or blankets for seating in the Lobby.

Tech Talk hiatus

Tech Talk will not be published December 23. A special issue on December 30 will contain only the timetable for the first week of January's Independent Activities Period.

The Institute Calendar in next week's paper (December 16) will cover the period from December 16 through January 10, exclusive of IAP listings.

Those organizations and activities that have standing listings in Institute Notices or the Institute Calendar and plan to meet during IAP must call Eileen Kenney, x3-3270, by noon Thursday, Dec. 31, for their listings to be included in Tech Talk of January 6, 1982. All standing listings will be removed until such a new insertion is received.

Writing report

A report from the Committee on Educational Policy recommending a writing proficiency requirement is included on pages 7 and 8 of today's paper.

Center 'crowns' athletic program

By KEN CERINO
Director of Sports Information

"This building is dedicated to the generations of MIT—past, present, and future—who meet intellectual and physical challenge with equal verve and who espouse the ancient ideal of a sound mind in a sound body."

—Athletics Center inscription

MIT officially dedicated its new \$9-million Athletics Center Friday "with a sense of accomplishment, a renewal of commitment, and a strong feeling of joy and celebration," according to MIT athletic director Royce N. Flippin, Jr.

Howard W. Johnson, Chairman of the MIT Corporation, presided over the ceremonies which took place on the ice hockey rink located on the first floor of the new facility.

Present were MIT President Paul E. Gray; Irene du Pont, Jr., Life Member Corporation

and chairman, Corporation Visiting Committee for Athletics; Clint W. Murchison, Jr. '44, chairman, MIT Athletics Center National Sponsoring Committee; Francis E. Low, MIT Provost, and Royce N. Flippin, Jr., MIT Director of Athletics.

Also, Jane Betts, MIT Assistant Director of Athletics; Thomas J. Allen, Jr., Professor of Organizational Psychology and Management, Sloan School of Management, and Chairman, Athletic Board; Ross H. (Jim) Smith, Former MIT Director of Athletics; graduate students Harvey G. Stenger (intramural and club sports) and Mary L. Bowden (women's athletics); Jeffrey C. Lukas '82, Track Co-Captain and Varsity Club President; Patrick A. Robertson '83, MIT Athletic Association President, and Gordon V. Kelly, Associate Professor of Physical Education and Head Coach of Indoor and Outdoor Track.

"The years of planning and working to make possible this facility have added to its

importance for the MIT community," said Mr. Johnson.

Mr. Johnson noted that a century earlier the special spirit which has been part of MIT from the start, was captured by F. Gelette Burgess, MIT Class of 1887, when he wrote his now famous verse, "Not the quarry, but the chase, Not the laurel, but the race..."

Those speaking at the dedication represented the various athletic constituencies of the MIT community and all noted the versatility of the new building.

"Athletics represent first and foremost an educational program of extraordinary variety and range," said Dr. Gray. "Beyond its role in the academic program, the Athletic Department is an almost unequalled community resource. We are, as individuals and as an organization, stronger and more resilient because of our athletic program which is

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Cutting the ribbon for the dedication of the Athletics Center are, from left, Jane Betts, Harvey Stenger, Mary Bowden, President Paul E. Gray, Chairman Howard W. Johnson, Ross H. (Jim) Smith, Royce N. Flippin, Jr., Patrick A. Robertson and Provost Francis E. Low. In the back are Thomas J. Allen, Jr., and Jeffrey C. Lukas.

—Photo by Calvin Campbell



When the most common form of frozen precipitation arranges its flakes of starlike crystals and matted ice needles over the familiar outlines of the MIT campus, snow acquires a quality not conveyed in its meteorological definition. Hailed or cursed with equal fervor, it is capable of gladdening the heart or burdening the soul. The Physical Plant people moved quite a bit of it in the last few days, reclaiming in the process this path along Building 3. Laurence W. Pickard, manager of grounds, had 50 people working on snow removal. MIT plowing crews helped out hard-pressed Cambridge workers by opening several city streets near the campus. "For the first storm of the season, I think our people came through with flying colors," Mr. Pickard said.

—Photo by Calvin Campbell

INSTITUTE NOTICES

Announcements

ATTENTION: INTERNATIONAL STUDENTS: If travelling during the holidays, please stop by the International Students' Office, Room 5-112, NOW, for visa documentation. (Two week notice is required.)

New Car Rental Rates: Latest rental agreements negotiated with Avis and Hertz car rental agencies have given Institute travellers flat rates with unlimited mileage for domestic rentals and flat rates for 100-km rate in Canada.

Domestic rates:

Car Class	A	B	C	D	E	F
Avis daily rate	\$29	\$30	\$31	\$32	\$32	-
Hertz daily rate	-	\$30	\$31	\$32	-	\$32

Canadian flat rates*

Avis	\$20	\$22	\$24
Hertz	\$23	\$25	\$27

*includes a 100-km free of charge; additional kms will be charged at the rate of 15 cents per km.

All other foreign rentals on a time and mileage (km) basis are to be accorded discount rates listed below:

Avis: Europe, Africa, and Middle East (20%); Asia and Pacific (20%); Latin America (20%).

Hertz: Western Europe and Israel (10%); Eastern Europe and Iceland (5%); Africa and Middle East (10%); Asia and Pacific (10%); Latin America and Caribbean (10%); Japan (20%).

Members of the community who do not hold MIT central billing cards can participate in these preferential rates by getting an Avis and/or Hertz sticker at MIT Travel office E19-515.

Photography Workshop in Mexico—Art Institute in San Miguel de Allende, Mexico, 2 (2-wk) sessions, Jan. 3-18; Jan. 20-Feb. 3. Instructor L. Wasko. Call 545-5576 to register.

Official Notice—Registration Material for second term due in Registrar's Office, E19-335, Friday, Dec. 18, 1981.

Root-Tilden Scholarship Program New York University Law School is designed to provide a unique educational opportunity for the student committed to the use of his/her professional talents in Public Service. Complementing the normal law curriculum, the Program offers the opportunity to observe and support the work of lawyers committed to practice in the interest of the public. Twenty scholarships are awarded each year to graduates of accredited colleges. Two are selected from each of the ten federal judicial circuits. Each scholarship covers two-thirds full tuition for one year and is renewable based upon satisfactory academic performance and participation in Program activities and internships. The scholarship is awarded without regard to financial need, but additional aid over and above the tuition award may be granted, either on a loan or part-loan, part-grant basis, upon a demonstration of need. Candidates from MIT will be nominated for the Root-Tilden Scholarships. The deadline for applications is Dec. 15. If you are interested in placing your name in nomination for the scholarship, contact the Preprofessional Advising and Education Office, 7-102, x3-4158.

Students should turn in completed freshman evaluation forms by **Fri, Dec 11.** Instructors should return forms to advisors by **Fri, Jan 1.** Blank forms are available in living groups and in the UASO, 7-103.

The I. Austin Kelly III Competition in humanistic scholarship is now open. The award is two prizes of \$250.00 each for the best scholarly or critical papers in any of these fields: Literary Studies, History, Musicology, Anthropology, Archaeology. All full-time MIT undergraduates are eligible, except previous winners. Papers must be at least 4000 words long (14 standard typed pages). Papers may be written expressly for the contest, or papers from classes may be submitted, either as they stand or in revised and expanded form. Students are encouraged to consult with faculty. The deadline is April 30, 1982. The competition is administered by the Course XXI Office of the Department of Humanities. Rules and guidelines are available from 14N-305, x-4446. The winning papers are determined by a panel of judges from the Department of Humanities, and the prizes are presented at a luncheon attended by the winners, the judges, and past winners of the competition.

Loire Valley Bicycle Tour—May, 1982. 10 days Loire, 4 days Paris, visit chateaus, vineyards. Write to: European Cycle Touring, 88 Beacon Street, Boston, Ma. 02108.

Club Notes

Al-Anon—**Meetings are held Fri, 12-1pm, Moore Room 6-321. The only requirement for membership is that there be a problem of alcoholism in a relative or friend. For more info call Ruth, x3-4911.

Appropriate Technology Group—For more information call Scott Miller, x3-1969.

Campus Match Service—**will serve as a link between any two students who would like to meet for friendship or for dating. Fee: \$3. Write W20-401 or call 494-5227.

Caribbean Club—**Open to MIT-Wellesley community. For more info call Laverne, x3-5961.

Chess Club—**Speed chess, bughouse, and analysis for players of all levels. Meets Sat, 1:30pm-6pm, Rm 491, Student Center. Info: Brad, x3-7554 or 494-0263.

Debate Society*—Anyone interested in joining the debate team contact Raj Sinha, x5-7287.

Friabee Club—**For info: John Schutkeker, x5-7231 Dorm.

GAMIT*—Gays at MIT. Everyone invited, gay, bisexual or straight. Drop by for some free refreshments or just to talk. Every Sun, 5pm, GAMIT Lounge, Rm 50-306 (Walker Memorial).

Hobby Shop—**Complete facilities for wood-working, metal working and darkroom, Mon-Fri, 10am-6pm, Wed, 10am-9pm, W31-031. Fee: \$12/term students; \$20/term community. For info call x3-4343.

MIT Amnesty International (AI)*—AI is a worldwide human rights movement which works for the release of any person imprisoned for his or her political or religious beliefs regardless of what those may be, provided violence has not been used or advocated. The AI MIT Group is now working on two country campaigns: People's Republic of China and South Korea and on Hanna Mykhaylenko, a Ukrainian school teacher. All are welcome. For membership info call x5-9623, Dorm or 494-8110.

MIT /DL Bridge Club—**ACBL Duplicate bridge, Tues, 6pm, W20-473. Info: Arthur, x8-1414, Draper.

MIT Entrepreneurs' Society—**For info regarding membership call Bob Anderson, x5-8952, Dorm or 494-5200. Undergraduates and graduates welcome.

MIT Juggling Club*—meeting every Sun, 2-5pm, lobby of Bldg 13, or outside in front of Student Center. Beginners and onlookers welcome. Free.

MIT Rocket Society Club Meeting—**First Tuesday of each month, 7pm, International Students' Lounge, Rm 50-220, Walker Memorial.

MIT SARD*—Students Against Registration and the Draft. All are welcome. Come for support and information. Meet other non-registrants, veterans and friends.

MIT Soaring Association—**For membership info contact Lee Marzke, x5-7380 or Steve Bossolari, x5-8352.

MIT Scuba Club—**For membership info and club activities call Mike Hamner, 491-1284.

MIT Wheelmen*—A bicycle racing team for the purpose of training and competition. Questions? Call Eric, 225-6674.

Outing Club—**Meetings, Mon and Thurs, 5-6pm, Rm 461, Student Center. Like the outdoors? Come share your interests, plan trips, and shoot the breeze. See our bulletin board by the Medical Dept. for current trips and shows.

Overeaters Anonymous—Meetings are held Mon and Thurs, 12-1pm, Conference Room 35-338. For info call x3-2153.

Students for the Exploration and Development of Space (SEDS)*—Meeting every second and fourth Wednesday of the month, 7:30pm, Rm 33-206. A film or lecture will be presented. Call Peter for more info at 494-8300.

Shotokan Karate Club*—Rigorous training for physical well-being and self-defense. Classes meet Tues, 6-8pm, T-Club Lounge; Thurs, 6-8pm, Dance Studio; Sat, 4-6pm, T-Club Lounge. Info: Frank, 267-5270.

Table Tennis Club—**Meets every Mon, 8-10pm, T-Club Lounge, DuPont.

Tae Kwon-Do Club—**Korean Martial art involving rigorous training to develop total-body and mind control meetings. Mon, 6-8pm, Dance Studio (DuPont); Wed, 6-8pm, Burton Dining Hall; Fri, 6-8pm, T-Club Lounge and Sun, 4-6pm, T-Club Lounge. Call Hal, x3-6055 or Antony, x5-9504, days.

Tiddlywinks Association*—Meetings every Wed, Rm 473, Student Center, 8pm. Interested? Just curious? Everyone is welcome.

Tech Wives Organization—**Exercise Class: Conducted by professional, Patricia Murray, Thurs, through Dec. 10, 7:30pm, Exercise Room at Dupont Gym. Single class rate \$2/class for TWO member; \$2.50/class for non-TWO member. For more information contact P. Murray, 494-8761 eve or x3-3351 days.

Cable Television Schedule

December 9-15

December 9 - December 15

Wednesday, December 9

Channel 8:
12-12:30pm MIT IN MOTION - A weekly program about people and life at MIT. We are a video production group at your service. If you or your organization would like to produce a segment call x7431 or x3625.

12:30-2:30pm CLASSIC FILM FEATURE - "The Gold Rush" - Charlie Chaplin seeks his fortune in the Yukon, and after much tribulation, wins the gold and a girl too.

2:30-2:50pm HIROSHIMA - NAGASAKI - An account of the devastation of these societies by atomic weapons.

2:50-3:30pm D and D ROLL and D-3S - Silent documents of the effects of nuclear weapons.

3:30-5pm HOW TO PREVENT A NUCLEAR WAR - Videotapes of the MIT session of the 150 campus convocation of November 11. Speakers include Victor Weisskopf, David Rose, Sandra Graham.

7:30-8pm NEWSFILE - A rebroadcast of the CBS 7pm News.

8:30-9pm PHYSICS 8.01 HELPPSESSION - Call x7212 and Dr. Edwin Taylor will answer your questions.

9:30-10pm MIT IN MOTION - See Wednesday, 12pm.

10-10:30pm CUTTING UP OLD TOUCHES - A film by Randell Conrad (co-producer of "The Dozens"), preceded by an interview of the filmmaker.

Thursday, December 10

Channel 8: 12-12:30pm MIT IN MOTION - See Wednesday, 12pm.

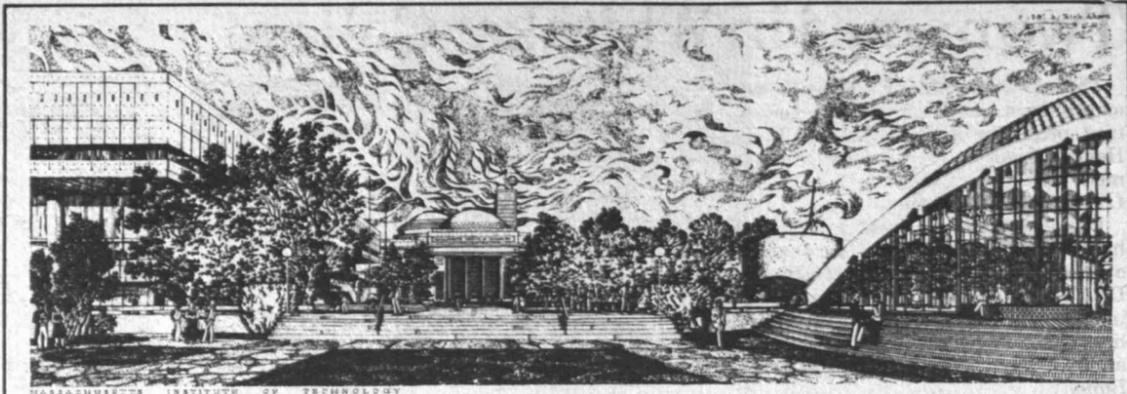
12:30-1pm BASIC DRIVES - Local musicians performing in their home; James Mahan, David Cunningham and Sam Kimball.

1-1:30pm CUTTING UP OLD TOUCHES - by Randell Conrad plus interview with filmmaker.

1:30-2:30pm ALIVE, at home: 42 Eustis Street by Manuel San Gabriel.

2:30-4:30pm CLASSIC FILM FEATURE - "Orpheus". Directed by Jean Cocteau. Famous cinematic poetry.

7:30-8pm NEWSFILE - A rebroadcast of the 7pm CBS News



MIT alumnus Rich Ahern has rendered a new drawing of MIT and will be signing copies at the Coop stationery department this afternoon (Wednesday, Dec. 9). The drawings are available in several sizes.

Women's Ice Hockey Club—**Beginners welcome. For more info call Mary Bowden, x3-2272.

Women's Rugby Club—**meets for practice Mon and Wed, 5:30-7pm, Briggs Field. All women are welcome, enthusiasm required. Contact Doremy, x5-6451, x5-6446 Dorm. for more information.

Women's Water Polo Club—**Fall practices: Sat, 2-4pm, Alumni Pool. A few games scheduled for the Fall with the main season starting in March. Any woman who is an undergraduate, graduate or staff member is welcome. No experience needed. For more information call: Karen Fortoul, x3-6799; Karen Klinecicz, 864-7240 or Lisa Freed, x3-6759.

Wu-Tang Chinese Martial Arts Club—**classical Chinese martial arts—Northern Praying Mantis, Tai-Chi Chuan and weapons. Beginners welcome. Practice: Varsity Lounge, Dupont, Wed, 6:30-9pm, Sat, 9-11am; Dance Studio, Dupont, Mon, 8-10pm. Info: Howard Ou, 262-3192; Howard Kolodny, 247-8691, Nick Vlannes, x3-4625.

Religious Activities

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

Campus Crusade for Christ*—Family Time—a weekly fellowship including music, message and refreshments. Fridays, 7:15pm, Rm 37-252, Marlborough Lounge. For more information: Phil Little, x3-2843.

Charismatic Prayer Group*—Mon evenings, 6:45, Ashdown Dining Room. Starts with potluck supper followed by prayer meeting with Bible sharing, music and praise. Contact Jim Mahoney, x3-3074.

Christian Science College Organization at MIT—**Thursdays, 5:15pm, 6th flr Lounge, Ashdown.

Islamic Society*—Every Friday prayers will be held at 1pm, Kresge Auditorium, Rehearsal Room B.

Jewish Religious Services*—Shabbat Services, Friday, 5:30pm, Reform/Conservative Services in Hill basement; Fri, 6pm, Orthodox services at Rm 005 Walker Hall. Sat, Orthodox services, 9am, Bush Room (10-105); Traditional Egalitarian Services, 9:30am, Chapel.

Lincoln Laboratory Noon Bible Studies*—Tuesdays and Thursdays, M Trailer. Contact Annie Lescard, X262. **Morning Bible Studies—**Fridays, 7:30-8:30am, L-217. For information contact Ed Bayliss x8289, Linc.

Lutheran Episcopal Ministries*—Interdenominational service of Holy Communion, Wednesdays, 5:10pm, MIT Chapel. Supper follows in the basement of 312 Memorial Drive.

Noon Bible Study*—Every Thursday, Rm 3-465, bring your lunch, all welcome. Ralph Burgess, x3-8121. (Since 1965)

Prayer Time*—Friday afternoons, 1-2pm, weekly Bible Class led by Rev. Miriam R. Eccles, founder and director of the Alpha and Omega Missionary Society. Guest speakers, music and refreshments. Rm 20E-207. Welcome!

Tech Catholic Community*—Sunday liturgies: 9am, 12 noon, 5pm, MIT Chapel. Eucharist

on weekdays: Tues, 5:05pm, Thurs, 5:05pm and Fri, 12:05 MIT Chapel. Weekly bible study: contact Bob Scheri, x3-2981.

The Church of Christ in Cambridge*—Christians from MIT/Harvard/BU...Worship and Discussion Group, 1st and 3rd Sunday evening of the month, 6pm, Rm 37-252, Marlborough Lounge. For information call Robert Randolph, X3-4861.

United Christian Fellowship*—Large group fellowship meeting: prayer, singing, sharing, bible teaching. All are welcome to join. Meets on Friday, 7:30pm, Rm 1-236. For information: Elaine Pope, x5-9566 Dorm Line or x3-6940.

Vedanta Society*—Meditation and discourses on the Gita by Swami Sarvagatananda of the Ramakrishna Vedanta Society of Boston. Fridays, 5:15pm, MIT Chapel.

Graduate Studies

The Ford Foundation and the National Research Council will award approximately 35 Postdoctoral Fellowships to minority scholars in the humanities, engineering, physical and life sciences. Applicants should be U.S. citizens who have earned a Ph.D. degree or its equivalent by February 1980. Fellowship recipients are expected to do their postdoctoral work at an institution other than that from which they apply. Stipends are \$18,500 a year for those who have held the Ph.D. degree for 2-5 years, and \$25,000 for those who have held the Ph.D. for more than five years. Applications are available in the Graduate School Office, 3-136, x3-4860. **Deadline: February 1, 1982.**

The Horace Smith Fund awards **Walter S. Barr Fellowships** for advanced study or research. Fellowships are limited to residents of Hampden County, Massachusetts who have been or are about to be graduated from college. Candidates should be preparing for careers of "definite social usefulness," such as careers in politics or scientific research. Minimum award is \$1,000. **Deadline: February 1, 1982.** Apply to: The Secretary, The Horace Smith Fund, Box 3034, Springfield, MA 01101.

Bell Laboratories Graduate Research Programs for Women
This program provides financial support for outstanding women students pursuing full-time doctoral studies in the following fields: Chemistry, Computer Science, Economics, Electrical Engineering, Experimental Human Psychology, Materials Science, Mathematics, Operations Research, Physics and Statistics. The Fellowship Program provides full tuition and fees plus a stipend of \$600 per month for the academic year (9 months) plus an allowance for books, fees, and related travel expenses. The Grant program provides an annual award of \$1,500 which the recipient may use during the academic year in any way that benefits her professional development. Fellowships and grants will be renewed on a yearly basis for the duration of the graduate program provided the student maintains satisfactory progress toward the doctoral degree. Applications must be received by **January 15** and all supporting material by **January 31, 1982.** Two fellowships and four grants are awarded annually - in late March - for graduate study beginning in September. Applications are usually submitted during the candidate's senior year in college. For further information please contact Dean Jeanne Richard, Graduate School Office, Rm 3-136.

Josephine de Karman Fellowships
The Josephine de Karman Fellowship Trust awards approximately 18 fellowships of \$2,500 each annually for graduate study in any discipline. Graduate students entering their third year or after or graduate study in the Fall of 1982 are eligible to apply. Applicants should have manifested exceptional ability and serious purpose. Special consideration will be given to applicants in the humanities. Contact the Graduate School Office, Rm 3-136, for further information. Application deadline: January 31, 1982.

H.H. Humphrey Doctoral Fellowship in Arms Control

The US Arms Control and Disarmament Agency is awarding up to 12 fellowships for 1982-83 to support doctoral dissertation research in the field of arms control and disarmament. Applicants must be US citizens at the time of application who will have completed all academic requirements for the doctoral degree, except the dissertation, by the beginning date of the grant. The fellowships provide a stipend of \$4,600 for 12 months in addition to tuition and fees up to a maximum of \$3,400. Contact the Graduate School Office, Rm 3-136, for further information. Application deadline: February 22, 1982.

The US Department of Energy (DOE) is offering fellowships for students who will be first-year graduate students in the Fall on 1982 in the field of magnetic fusion energy technology. Tuition and fees are paid in addition to an annual stipend of \$12,000. The award is renewable for up to four years. Applicants must have received a bachelor's degree in the appropriate discipline of engineering or the physical sciences by the time the fellowship begins and be a US citizen or resident alien. Required supporting material includes the GRE aptitude test score and GRE advanced test score in engineering, mathematics, or physics. Application deadline is January 18, 1982. For further information contact: Magnetic Fusion Energy Technology Fellowship Program, University Programs, Oak Ridge Associated Universities, P.O. Box 117, 246 Laboratory Rd, Oak Ridge, TN 37830.

UROP

For more information on UROP opportunities, MIT undergraduates should call or visit the

Undergraduate Research Opportunities Program Office, Rm 20B-141, X3-5049 unless otherwise specified in the listing. Undergraduates are also urged to check the UROP bulletin boards located in the main corridor of the Institute and in the UROP Office.

Attention: It's not too early to start looking for a spring UROP project! Check the UROP bulletin board and/or drop by the UROP Office to find out how to get started.

Applicator Design for Treatment of Eye Diseases—Ongoing collaborative research with the Retina Foundation shows that focused ultrasound can be effectively used in the treatment of some eye diseases. Miniaturization of the applicator and incorporation of Helium-Neon laser aiming beam(s) are essential for clinical use. The project will involve design and evaluation in animal studies. CREDIT ONLY. Contact Prof. Lele, x3-5235.

Study of Effects of Caffeine on Fetal Bone Development of Rats—Student wanted to assist in a study of the effects of caffeine on fetal bone development in rats. Will monitor caffeine intake of rats, maintain a breeding colony, and have a chance to learn a lot about fetal bone development. Prefer biology or biochem. major. CREDIT ONLY. Starts Jan. 4. Faculty supervisor: Dr. Michael Holick. Contact Ann Schunior, 16-227, x3-5155.

Improved Writing Guide for the Blind—Many legally blind persons can write if they have a suitable writing guide. Almost all blind persons sign their names using a signature guide. With existing guides it is difficult to write more than one line. A blind inventor has built a prototype of a compact flexible writing guide, the Rol-N-Rite. The guide needs to be redesigned for ease of manufacture, improved appearance and smoother operation, and new prototypes made. CREDIT ONLY. Contact George F. Dalrymple, 31-063, x3-5331.

New Subjects

21.247 Introduction to German Drama. Prereq: German IV or equivalent. Year: U (2) HUM-D. 3-0-6. A special feature of this subject is the use of recorded stage productions of about half the plays covered.

21.307 The Modern German Novel (In Translation). Year: U (2). 3-0-6. Stresses Goethe, Kafka, Thomas Mann, Grass.

Placement

The following companies will be recruiting in the Career Planning and Placement Office, Rm 12-170, on these dates: December 10.

December 10: Nabisco Research.

Student Jobs

More jobs are available. Contact Student Employment Office, Rm 5-119.

Document Retrieval Clerk needed. Duties include: retrieving and photocopying documents in libraries at Arthur D. Little, MIT, Harvard Business School, among others. Requires a familiarity with library organization, good organizational and record keeping skills needed, attention to detail and the ability to follow through and meet deadlines essential. Transportation needed. Hours are flexible. \$5/an hour. Call Anne Quinn at Arthur D. Little, 864-5770, x4461.

Innovative person wanted to program and help develop software on a TRS-80 II for a publishing firm near MIT. Flexible schedule can be arranged. Salary is negotiable. Contact Richard Salzberg, Charles River Publishing, 354-1113.

Part-time help needed in the UROP office. Job starts this spring but some help might be needed over IAP. Good typing skills (45 wpm) and good command of English language, pleasant phone manner needed. Previous office experience desirable. 5-10 hours a week, depending upon the work load. \$4.40 an hour. Contact Susan Mitchell-Hardt, x3-5049.

TECH TALK



December 9, 1981
Volume 26
Number 18

Tech Talk is published 39 times a year by the News Office, Massachusetts Institute of Technology. Director: Robert M. Byers; Assistant Directors: Charles H. Ball, Robert C. Di Iorio, Joanne Miller, Tech Talk editor, William T. Struble and Calvin D. Campbell, photojournalist; Reporters: Elizabeth C. Huntington and Eileen J. Kenney (Institute Calendar, Classified Ads, Institute Notices).

Address news and editorial comment to MIT News Office, Room 5-111, MIT, Cambridge, MA 02139. Telephone (617) 253-2701.

Mail subscriptions are \$15 per year by first class mail. Checks should be made payable to MIT and mailed to Business Manager, Room 5-113, MIT, Cambridge, MA 02139.

Two named in Whitaker College

The appointments of Dr. Robert Rosenberg as professor and Dr. Monty Krieger as assistant professor in the Whitaker College of Health Sciences, Technology and Management have been announced by Dr. Irving M. London, director of the College.

Dr. Rosenberg, a specialist in hematology, holds a concurrent appointment as professor of medicine at the Harvard Medical School. Dr. Krieger, whose main research interest is in molecular genetics, joined the faculty earlier this year. Both men also hold joint appointments in the MIT Department of Biology.

As head of the Thrombosis and Hemostasis Division of the Sidney Farber Cancer Institute, Dr. Rosenberg directed research on Hypercoagulability and the Heparin-Antithrombin Mechanism, a project which will be continued at MIT. Among the aims of this project are investigation of the anticoagulant action of heparin, its interaction with antithrombin and hemostatic system enzymes, and its role in protecting the vessel wall against thrombosis and atherosclerosis.

Dr. Rosenberg holds an MD degree from George Washington University Medical School, and a PhD in Biophysics from MIT. He was the recipient of the 1978 Dameshek Prize for Outstanding Contributions to Hematology from the American Society of Hematology. He is a member of the American Society for Clinical Investigation and the American Association of Physicians. Dr. Rosenberg has published extensively in the hematology field.

Dr. Krieger is presently pursuing several



Dr. Rosenberg

Dr. Krieger

research projects involving the genetics of receptor-mediated endocytosis, which focus on the mechanisms by which cells extract both information and nutrients from their environment. Findings in this area will provide insight into how cholesterol and peptide hormones are processed in the body, and will help in building a foundation for developing improved methods of diagnosis and treatment of heart disease.

Dr. Krieger holds a BS degree in chemistry from Tulane University, and a PhD in chemistry from the California Institute of Technology. Most recently, he has worked as a research fellow in Internal Medicine and Molecular Genetics at the University of Texas Southwestern Medical School. Among his numerous academic and professional honors are the Danforth Foundation and Woodrow Wilson Fellowships, and the 1977 Herbert Newby McCoy Award from Caltech for outstanding contributions to the science of chemistry.

Brass concert to span centuries

The MIT Brass Ensemble's Christmas Concert at 3 pm, Sunday, Dec. 13, in Kresge Auditorium, will span four centuries in music, beginning with 16th Century Christmas music and ending with original compositions by rock musician Mark Thor, which the Brass Ensemble will play with the Mark Thor Rock Band and Ingrid Gutberg, Institute Organist.

The concert is sponsored by the Music Section of the MIT Department of Humanities and will be open to the public free of charge. Gordon Hallberg, director of the Brass Ensemble, will conduct the program.

The first five selections, *Angelus Domini Descendit* by Hans Leo Hassler, *Hodie Christus Natus Est* by Giovanni Pierluigi de Palestrina, *Angelus ad Pastores Ait* by Hans Leo Hassler and *Beata es, Virgo Maria* and *Canzona A 12* both by Giovanni Gabrieli, might be considered a Venetian antiphonal Christmas festival from the latter 16th Century.

Next, four smaller independent groups within the MIT Brass Ensemble will perform five and six part brass music. The first, *Pastorale*, is from the Christmas Concerto Grosso, Op. 6, No. 8, by Arcangelo Corelli, edited by Robert King. The Corelli will be followed by modern and inventive settings of traditional

carols—*Jingle Bells* and *Deck the Halls* arranged by Fred Teuber, *Joy to the World* and *Good King Wenceslaus* arranged by David Baldwin, and *Good King Wenceslaus, It Came Upon a Midnight Clear* and *Jingle Bells* arranged by Tommy Pederson for five trombones.

Modern arrangements for full brass ensemble will complete the first half of the program—*Carols Three* by Luigi Zaninelli, composer in residence at the University of Mississippi; two Christmas hymns scored by Sammy Nestico, former chief arranger for the Marine Band; and *Festival of Carols Op. 78*, by David Uber, an arrangement of seven Christmas carols.

In the second half of the program, Boston composer-singer Mark Thor will perform six original songs which he has arranged for the MIT Brass Ensemble, four-piece rock band, and keyboards. This unusual combination is the first such program ever offered in New England. Song styles range from hard edged rock to that classically influenced. Other featured performers will be Bill Clarke, guitar; Brad Hallen, bass guitar, and Chuck Myra, drums.



Cutting the cake marking the official opening at 500 Memorial Drive last week were, from left, Professor Borivoje Mikic, faculty resident; Howard W. Johnson, chairman of the MIT Corporation; Daniel N. Perich '82, house president; President Paul E. Gray and Dean for Student Affairs Shirley M. McBay.

—Photo by Calvin Campbell

New residence hall is opened

MIT President Paul E. Gray told 220 guests at a luncheon marking the opening of a new \$10 million residence at 500 Memorial Drive last week that the project completes "for the moment" MIT's 30-year program to build high quality campus housing for undergraduates and that MIT must now turn to critical housing needs of graduate students.

The official opening formed the program for a luncheon held in the 500 Memorial Drive dining facility—and hosted by the MIT Corporation on the occasion of its regular quarterly meeting.

Howard W. Johnson, chairman of the MIT Corporation, presided at the luncheon.

President Gray described campus houses as part of "the sixth school at MIT"—programs and activities which augment the five schools that form MIT's academic structure.

"The residence extends the atmosphere of learning beyond the classroom and the library and the laboratory," he said. "It provides a sense of continuity and a wholeness to the experience that is MIT. The period of concentrated learning is a brief experience for most of us—and the residence system helps to give it the depth and the lasting value it must have to sustain us for a lifetime."

The new five-story concrete and red brick residence will provide housing for 350 students. This means MIT now has campus houses to accommodate 60 per cent of its undergraduates. Another 30 per cent live in

fraternity houses. For the first time, with the occupancy of 500 Memorial Drive at the start of this academic year, MIT was able to offer campus housing for all undergraduates who sought it.

President Gray said that next to financial aid, graduate student housing is MIT's most pressing problem in attracting high quality graduate students. Half of the Institute's graduate students want to live on campus, but MIT has space for only 30 per cent of them, he said.

"We can and must begin to flesh out the dream of becoming a residential university, now that we have become a residential college," he said.

Dean for Student Affairs Shirley M. McBay said that when former president James R. Killian, Jr., was inaugurated in 1949, he described campus living as an important learning environment. The newest house, she said, will likely be the last addition to MIT's undergraduate system for some time to come, provided demands and policies remain essentially unchanged.

Daniel N. Perich, a senior from Pittsburgh, Pa., and first student president of 500 Memorial Drive, said residents of the house, including 90 upperclass students who volunteered to be among the first to live there, are enthusiastic about the facilities and are making swift progress toward making their "house a home."

New houses named for Fisk, Thorn

Two of the six houses that make up MIT's New West Campus Houses were officially named last week for two long-time members of the MIT Corporation—Dr. George W. Thorn and the late Dr. James B. Fisk.

The MIT Corporation formally bestowed the names at its regular quarterly meeting last Friday. Howard W. Johnson, chairman of the Corporation, announced the new names at the Corporation luncheon marking the opening of 500 Memorial Drive, later that day.

The Corporation designated the residence at 471 Memorial Drive to be Fisk House. Dr. Fisk, former president of Bell Telephone Laboratories and a member of the Class of 1931, joined the MIT Corporation in 1959 and

served for 25 years, 19 years as a member of the executive committee. He died earlier this year.

The residence at 476 Memorial Drive was designated Thorn House in honor of Dr. Thorn, emeritus physician-in-chief at Peter Bent Brigham Hospital and emeritus Hersey Professor of Theory and Practice of Physic at the Harvard Medical School. He joined the MIT Corporation in 1965, served as a member of the executive committee for 12 years, and presently is Life Member Emeritus.

The other four houses—Ballard House at 472 Memorial Drive, Lawrence House at 473 Memorial Drive, Coolidge House at 474 Memorial Drive and Desmond House at 475 Memorial Drive—were named earlier.

Photography historian coming

Dr. Estelle Jussim, professor of film and visual communications at the Simmons College Graduate School of Library and Information Science, and a noted theorist and historian of photography, will be a visiting lecturer at MIT's Creative Photography Laboratory for the spring term.

Dr. Jussim is the author of several award winning books including *Visual Communication and the Graphic Arts*, an investigation of 19th century photographic technologies and their impact on perceptions of truth and reality, and *Slave to Beauty*, a biography of the pictorialist master, F. Holland Day. A new book, *Frederic Remington, the Camera and the Old West*, is forthcoming.

She is also author of many articles published in both the popular and scholarly press, and has lectured at art centers, museums and universities in the United States and abroad.

At MIT, Dr. Jussim will teach a course called "The Context of Photography: Major Issues in Communication, Technology, Aesthetics."

"Major genres of photography will be explored in their historical perspectives," said Dr. Jussim. "My basic objectives will be to encourage the development of the intellectual skills required for independent research and the acquisition of the vocabulary of critical discourse." The lectures from the course will

also be published in book form.

For information or registration, call Starr Ockenga, director of the Creative Photography Laboratory, x3-4424.

Zamir group to sing

MIT Hillel will sponsor a performance of Handel's oratorio *Saul*, by the Zamir Chorale of Boston at 7:30pm, Sunday, Dec. 13, in Kresge Auditorium.

Tickets, at \$5.50 and 8.50 will be on sale at the door, or may be ordered by calling 566-3812.

Soloists will be J. Scott Brumit in the title role of *Saul*, Janice del Sesto as his daughter Michal, Scott Leland as David, the shepherd, and William Walton as *Saul's* son Jonathan.

Saul is based on the Books of Samuel. Integrating chorus, orchestra and soloists, *Saul* chronicles the rising conflict between King *Saul* and the shepherd boy David.

The concert will be the first major performance of the Zamir Chorale's 13th season. A relative newcomer among Boston's musical groups, the Chorale has received much praise from the community including an award from Boston's Association for the Performing Arts.



The broad themes that define the scope of the MIT Program in Science, Technology and Society were the topics of a symposium in Kresge's Little Theatre Dec. 3 and 4 that marked the move of the STS program to its permanent home in Building E51 (70 Memorial Drive). At top, Provost Francis E. Low, left, welcomes the symposium participants as a panel prepares to discuss one of the major themes, "Science, Technology and Everyman's Life." Standing is James R. Killian, Jr., former MIT president and chairman of the Corporation, who chaired the session. The panelists, from the left, are John M. Ziman, FRS, professor of physics at the University of Bristol, England; Robert A. Charpie, president of the Cabot Corporation; Don K. Price, Dean and Weatherhead Professor at Harvard University's Kennedy School of Government; and Lewis H. Spence, receiver-administrator for the Boston Housing Authority. Below, Thomas S. Kuhn, MIT professor of philosophy and the history of science, is the

speaker. Seated, from the left, are Carl Kayser, David W. Skinner Professor of Political Economy and director of the STS program; Nathan Rosenberg, Farleigh S. Dickinson, Jr., Professor of Public Policy at Stanford University; Victor F. Weisskopf, Institute Professor Emeritus and professor emeritus of physics at MIT; and Charles F. Sable, Ford International Assistant Professor of Social Science at MIT. The symposium was concluded by another panel that addressed the topic, "Science, Technology and the Larger Culture." The participants were Leo Marx, William F. Kenan Professor of American Cultural History at MIT, chairman; P. Reyner Banham, professor of history of art at the University of California at Santa Cruz; Sherry R. Turkle, associate professor of sociology at MIT; Elting E. Morison, Elizabeth and James Killian Class of 1926 Professor Emeritus at MIT; and Michael Crozier, Director of the Center for Research in the Sociology of Organizations in Paris.



THE INSTITUTE CALENDAR X3-3270

December 9 through December 20

MISS THE TECH TALK DEADLINE?

Put your announcement on the MIT Cable System. "Today at the Institute" runs from 9 to 5 daily on Channel 10 and can be viewed in Lobby 7, Lobby 10, and anywhere the cable is connected.

Simply phone X3-7414 and leave your announcement. We prefer a day's warning, but faster action may be possible.

Useful also for correcting errors, notifying about cancellations, and dealing with emergencies.

Note: If you have met the Tech Talk deadline, your announcement is automatically put on the cable (except for exhibits and some multimeetings programs).

Events of Special Interest

Annual Soul Food Dinner Sale*—Sponsored by the Minority Interest Group. Thurs, Dec. 10, noon-2pm, Bush Rm, Bldg. 10-105. The menu will include fried or barbecue chicken, collard greens or string beans, black eyed peas and rice, green salad or macaroni salad with peas, corn bread, dessert and punch. All dinners will be \$2.50, which will include the punch, and all desserts will be \$.50 each.

Seminars and Lectures

Wednesday, December 9

The Edge-Function Method for Three-Dimensional Stress Analysis; Application to Ellipsoidal Cracks in a Prismatic Body*—Prof. P.M. Quinlan, Dept. of Mathematical Physics, University College, Cork, Ireland. Department of Mechanical Engineering Seminar, 10-11am, Miller Room, Rm 1-114. Please contact Prof. M.P. Cleary, 3-352, x3-2308 if you're interested in meeting with the speaker but have conflicts: we'll be in Miller, 10am-noon.

Long Wavelength Optical Communications*—G.H. Olsen, RCA Laboratories. Optics and Quantum Electronics Seminar Series, 11am-12 noon, RLE Conference Room 36-428.

College/University Collaboration with the Boston Public Schools*—Robert C. Hayden, director, Secondary Technical Education Project, MIT. The Division for Study and Research in Education Seminar, noon-2pm, Rm 20C-117. A sandwich lunch will be available for \$1.75 per person.

Improving Nuclear Deterrence—Toward a New Strategy with Appeal to Both Hawks and Doves*—Alan F. Kay, sustaining Fellow and guest of the Institute, Arms Control and Defense Policy Studies Seminar, 3-5pm, CIS Seminar Rm I, E38-615. Everyone welcome.

Nodal Theory in Hexagonal Geometry*—Faruq Yarman. Seminar in Nuclear Engineering - Section 3, Reactor Physics, 3pm, Rm NW12-222.

International Transfer of Technical Knowledge*—Francis E. Low, MIT. Center for Policy Alternatives and the Joint Program in the Management of Technology, part of the Perspectives on Technology Policy in the '80s series, 3-5pm, Rm E40-298.

Photogeneration of Organometallic Intermediates: Beta-Hydrogen Transfer*—Romas J. Kazlauskas, graduate student, MIT. Inorganic Chemistry Seminar Series, 4pm, Rm 4-370. Coffee and donuts at 3:30pm, Moore Room 6-321.

Characterization of Deformation Phenomena in Polymers by FTIR Spectroscopy*—Prof. Shaw L. Hsu, University of Massachusetts, Amherst. Polymer Seminar Series, 4pm, Rm 66-110. Coffee served at 3:30pm.

Compartmental Organization of Opiate Peptide Immunoreactivity and Fiber Connections of the Caudate-Putamen*—Dr. A. Graybiel, psychology, MIT. Program in Neural and Endocrine Regulation Seminar, 4pm, Rm 16-310.

Synthetic Fuels Processes and their Thermal Efficiencies*—Prof. Ronald Probst, mechanical engineering, MIT. Thermodynamics Seminar, 4pm, Miller Room 1-114. Coffee served at 3:45pm.

Copper Chemistry in Binucleating Macrocycles and Protein Active Sites*—Prof. Stephen J. Lippard, Dept. of Chemistry, Columbia University. Arthur D. Little Lectures, 4pm, Rm 4-370.

Model Adaptation in Nuclear Power Plants*—R. Vilim, graduate student; Filtered Venting Containment Systems*—R. Schectman, graduate student. Nuclear Engineering Seminars, 4pm, Rm NW12-222.

Boron Neutron Capture Therapy in the Treatment of Glioblastoma*—Manzar Ashtari, Nuclear Engineering Doctoral Seminar, 4pm, Rm 24-115. Coffee and donuts served at 3:30pm.

Magnetic Levitation for Wind Tunnel Models*—Dr. Charles Haldeman, associate director, Aerophysics Laboratory. Society of Physics Students Colloquium, 4:15pm, Undergraduate Physics Common Room 4-339. Social hour follows.

Thursday, December 10

Nilpotent Groups and Hypo-Elliptic Operators*—Prof. C. Rockland, Duke University, Durham, N.C. Methods of Geometric Analysis in System Theory, Laboratory for Information and Decision Systems Seminars, 3-4pm, Rm 35-338, Richard Osborne Room.

The Japanese Robotics and Machine Tool Industry: Differing Approaches to the Productivity Problem in the United States*—Prof. Julian Gresser, MIT-Japan Science and Technology Program and the Center for International Studies, series on High Technology and Japanese Industrial Policy, 3-5pm, CIS Seminar Rm II (E38-762). Everyone is welcome.

Hubble, bubble...the Physics of the Interstellar Gas*—Prof. Lennox Cowie, physics, MIT. Physics Colloquium, 4pm, Rm 26-100. Refreshments will be served at 3:30pm, Rm 26-110.

Frequency - A Capsule Tour Through Communications Technologies*—Edwin F. Taylor, MIT; Robert Hilliard, Emerson College. Educational Video Resources Seminar, 4pm, Rm 9-150.

Flow Cytometry - Rapid Single Cell Analysis and Separation*—Joan L. McDowell, Research Specialist, MIT. Cell Culture Center Seminar, 4-5:30pm, Rm 16-134.

Early Transition Metal Isocyanide Complexes: Stereochemistry and Reductive Coupling Reactions*—Prof. Stephen J. Lippard, Dept. of Chemistry, Columbia University. Arthur D. Little lectures, 5pm, Rm 4-370.

Friday, December 11

Interaction Between Constraints and Decision Making in Scheduling Problems*—Francois Roubellat, LAAS Toulouse, France. LIDS Special Seminar, 11am, Rm 35-338.

Single Cell Lesion Studies*—Prof. W. Waespe, University Hospital, University of Zurich. Man Vehicle Laboratory Seminar, 2pm, Rm 37-232.

Aspects of Modelling Moving Bed Coal Gasifiers*—Ramond Cwiklinski, graduate student. Chemical Engineering Seminar, 2pm, Rm 66-110.

Effect of Fatigue and Environment on Nylon Fiber Ropes*—M.C. Kenney, assistant. Polymeric Material's Seminar, 2-4pm, Chipman Rm 8-314.

Nonlinear Dynamics of Drops and Bubbles*—John Tsamopoulos. Chemical Engineering Seminar, 3pm, Rm 66-110.

Active TOKAMAK Limiters*—Robert Motley. Plasma Fusion Center Seminar, 3pm, Rm NW14-2209.

Energy Symposium II*—Prof. David J. Rose, Professor of Nuclear Engineering, the second of three symposiums. Graduate Seminar in Energy Assessment, 3:30-5pm, Rm 24-110.

Interpretations of Intuitionistic Logic*—Prof. Scott Weinstein, University of Pennsylvania. Philosophy Colloquium, 4pm, Rm 37-212.

Smoothing of Diffusions Conditioned on the Final Time*—Prof. Etienne Pardoux, UER de Mathematiques, Universite de Provence, Marseille Cedex, France. Laboratory for Information and Decision Systems Seminars, 4pm, Rm 37-232.

Image Groups in Phase Transitions*—Dr. Denis Gratias, visiting scientist at the University of California at Berkeley, Department of Materials Science and Engineering Colloquium, 4pm, Rm 9-150. Coffee at 3:30pm.

Island Universes: From Herschel to Hubble*—Dr. Michael Hoskin, Cambridge University, Center for Space Research. Special Astrophysics Colloquium, 4:15pm, Marlur Lounge 37-252. Coffee at 3:45pm.

Grip Force Control and Cutaneous Receptors*—Prof. Roland Johansson, Dept. of Physiology, University of Umea, Sweden. Dept. of Psychology and Artificial Intelligence Laboratory Seminar, 4:30pm, Rm E10-013. Coffee at 4:15pm.

Monday, December 14

Germany and the Nuclear Weapons Debate*—Prof. Karl Kaiser, director, Forschungsinstitut de Deutschen Gesellschaft fur Auswartige Politik. Center for International Studies Seminar, 12:15-2pm, CIS Seminar Rm I, E38-615, 292 Main St, Kendall Sq. Everyone welcome, bring your own lunch.

OPEC, Oil Prices and the International Tanker Industry*—Prof. Morris Adelman, Professor of Economics, Sloan School of Management, MIT. International Shipping Seminar, 4pm, W20-400. Refreshments.

Bifurcation and Chaos*—Prof. E. A. Spiegel, Dept. of Astronomy, Columbia University. Applied Mathematics Colloquium, 4pm, Rm 2-338. Refreshments at 3:30pm, Rm 2-349.

A Unified Method for Modelling Ground Water Systems Under Uncertainty*—John Wilson, MIT. Water Resources and Environmental Engineering Seminar, 4pm, R.M. Parsons Laboratory, Rm 48-316.

Rotation and Magnetic Activity in the Sun and Stars*—Prof. Robert Noyes, Harvard University-Smithsonian Astrophysical Observatory. Francis Bitter National Magnet Laboratory Colloquium, 4pm, Rm NW14-2209. Refreshments at 3:30pm.

Oil Prices and Oil Transportation Today*—Prof. Morris Adelman, Dept. of Economics. MIT International Shipping Club, 4pm, Rm W20-400.

Tuesday, December 15

The Structure of Polyurethane Elastomers*—Dr. J. Blackwell, Case Western Reserve University. Polymeric Materials Seminar, 2:30-3:30pm, Chipman Room, Rm 8-314.

Pulmonary Responses to Combination of Sulphur Dioxide and Zinc Oxide*—Physiology: Mary Amdur and Hua Fuan Lam. Pathology: Adrienne Rogers and Michael Conner. Environmental Health Sciences Center Seminar, 3:30pm, Lewis Rm 66-320.

X-Ray Pulsars*—Dr. Satio Hayakawa, Nagoya University, Center for Space Research. Astrophysics Colloquium, 4:15pm, Marlur Lounge 37-252. Coffee at 3:45pm.

Wednesday, December 16

White Light Optical Signal Processing*—F.T.S. Yu, Pennsylvania State University. EECS/RLE Optics and Quantum Electronics Seminar, 11-noon, RLE Conference Rm 36-428.

Labor and Multinational Corporations in Brazil*—Maria Elena Moreira Alves, graduate student, MIT. Political Science Graduate Students Seminar, noon-2pm, Millikan Room, E53-482.

Evolution of Finite Pulse Shapes in Viscoelastic Media*—Prof. Uno Nigul, Institute of Cybernetics, Estonian Academy of Sciences, Tallinn, Estonia. Applied Mechanics Seminar, 3pm, Rm 1-203. Coffee served at 4pm, Spofford Rm 1-236.

Formation of Stars: From Giant Molecular Clouds to Stars of Solar Masses*—Prof. Frank H. Shu, University of California, Berkeley, Center for Space Research. Special Astrophysics Colloquium, 4pm, Rm 2-338. Coffee at 3:30pm, Rm 2-349.

Thursday, December 17

Body Composition and Energy Expenditures of Children with Cerebral Palsy*—William H. Dietz, MD, PhD, assistant director of the CRC. Clinical Research Center Seminar, 12:30pm, Rm E17-415.

Friday, December 18

Disruptions in the TFR TOKAMAK*—L. Laurent, Fontenay Aux Roses. Euratom, Grenoble France. Plasma Fusion Center Seminar, 3pm, NW14-2209. Refreshments at 2:45pm.

Computer Models of Speech Perception*—Prof. Dennis Klatt, Dept. of Electrical Engineering & Computer Science, MIT. Department of Psychology Colloquium, 4:30pm, Rm E10-013. Coffee at 4:15pm.

Community Meetings

MIT Faculty Club**—The Club is open Monday through Friday. Luncheon hours: Noon-2pm; Dinner hours: 5:30-8pm.

Alcohol Support Group**—Personal Assistance Program, Medical Dept. A self-help support group for persons concerned about the effects of excessive alcohol use on their lives. For place, time and day of the week, contact Ron Fleming, x3-4911.

Overeaters Anonymous**—Meetings are held Mondays and Thursdays, 12-1pm, Conference Room 35-338. For information call x3-2153.

Prenatal and Parent Education Group Meeting**—Wed, Dec 9, 12 noon-1pm, 3rd floor, copference room, Infirmary, Bldg. W5. Two films on breastfeeding available through the La Leche League, a nation-wide breastfeeding research and education organization. "Breastfeeding: A Special Closeness" and "The Bond of Breastfeeding." Jenka Guevarra, a La Leche League leader and an MIT graduate student wife, will answer questions after the film showing; Wed, Dec. 16, noon-1pm, "Creative and inexpensive things to do with and for your child age one to three". Malka Kutnick, who is a parent, an art teacher and Director of the MIT Student Art Association, will share her ideas informally with the group. The suggestions of other parents will be welcomed. Babies are welcome. Bring your lunch. Coffee, tea, and juice are provided.

Wives Group**—Wed, Dec. 9, "Gifts From Your Kitchen: Sweets for the Holidays," Debra Samyals, cooking teacher, 3-5pm, McCormick Dormitory Country Kitchen. Wed, Dec. 16, Wreathmaking Program, 3-5pm, West Lounge, Student Center. Small charge for materials. Call Julie Roberts, 253-1614 if you plan to attend. Babysitting provided in Rm 473 of the Student Center. All women in the MIT community welcome.

WOMEN*—The MIT WOMEN's Forum will hold a Christmas Party, Mon, Dec. 21, noon-1:30pm, Bush Rm 10-105. Refreshments and entertainment.

Movies

Cactus Flower**—SCC Midnite Movie. Sat, Dec 12, Sala de Puerto Rico. Bring a blanket and sit on the floor. Free. MIT/Wellesley ID required.

Orphee**—Dept. of Humanities Film, Wed, Dec. 9, 7pm, Rm 6-120. French with English subtitles.

King Lear**—Dept. of Humanities Film, Thurs, Dec. 10, 7pm, Rm 1-190.

Music

Tempo—A Cross-cultural Study*—Prof. David M. Epstein, Music Section, Dept. of Humanities, MIT. Wed, Dec. 9, 4:15pm, Rm 4-163. Call Deborah Kurimay for more information, x3-3210.

Noon-Hour Chapel Concert*—Thurs, Dec 10. Ensemble Chanterelle: Sally Sanford, soprano; Catherine Liddell Strizich, lute, theorbo; Robert Strizich, lute, baroque guitar. Early Italian baroque vocal and instrumental music; Thurs, Dec. 17. Jonathan Brahm, flute, Music of Bach for tenor, flute and harpsichord. MIT Chapel. Free.

MIT Chamber Players Midnight Concert*—Fri, Dec 11, Bldg. 7 Lobby (77 Massachusetts Ave.) Free. Marcus Thompson, conductor. Handel: Overture to the Royal Fireworks Music; Mozart: Clarinet Concerto, Steve Umans, clarinet; Mozart: Symphony #41, *the Jupiter*.

MIT Gospel Choir*—Sat, Dec 12, 7pm, MIT Chapel. Free.

MIT Symphony Orchestra*—Sat, Dec 12, 8:30pm, Kresge Auditorium. Free to MIT/Wellesley communities. \$1 to public at door. David Epstein, conductor. Ives: *The Unanswered Question*; Mozart: Piano Concerto in D minor, K. 466; Mario Steiner, pianist; Dvorak: Symphony No. 7 in D minor, op. 70.

Christmas Concert*—MIT Women's Choirale. Works by Mendelssohn, Berlioz, Brahms, Cope. Sun, Dec. 13, 3pm, Hilles Library Penthouse, Harvard University, Garden and Shepard Sts, Cambridge.

Beethoven's Birthday Concert*—John Buttrick, pianist, Wed, Dec. 16, 8pm, Kresge. Admission: free.

Theater

Student Works in Progress*—The MIT Drama Program. Performances by students of MIT Dance Workshop, directed by Beth Soll, and the Acting I class, directed by Ron Jenkins. Thurs. and Fri., Dec. 10 and 11, 8pm, Kresge Little Theatre. Admission: free. For information call 253-2877.

Dance

MIT Dance Workshop**—Regular meetings, improvisation/Composition class. Thurs. 1-3pm, Dance Studio, Dupont Athletic Center; Technique class, Mon and Wed, 3-5pm, T-Club Lounge, Dupont Athletic Center. All levels welcome. Instructor: Beth Soll. For more info call x3-2877.

Yoga**—Classes: Intermediate, 5:45pm, Beginners, 7:15pm, all levels, 12:05pm. Classes in Rm 10-340. For info call Ei Turchinetz, 862-2613.

Self-designed Fitness Class (for women)**—taught by Suzanne Brown (one of Maggie Lettvin's instructors), Mon, Wed, Fri, 1-2pm, Rm 8-219. Leotards or loose clothing and athletic card required.

Exhibits

Hart Nautical Museum*—Collection of ship models, half-models and drawings, Bldg 5, first floor. For information call MIT Museum, X3-4444.

The MIT Museum and Historical Collections*—unique collection of scientific instruments, architectural drawings, portraits, photographs and memorabilia that illustrates M.I.T.'s history and developments in 19th & 20th Century American technology.

At the Museum, on view Mon-Fri, 9am-5pm, 265 Mass. Ave., 2nd flr, Cambridge. Admission: Free. For information call x3-4444.

Ongoing Exhibitions
Photographs...by Steven Tavan '72. Photographs of the natural scene: works emphasizing light, patterns and textures.

M.I.T. Alumnae in Science and Technology are the subjects of an exhibition of drawings and photographs celebrating the success of women in science and technology. Although the emphasis is on alumnae in industry and academia, material on present undergraduate women is included.

A New Look at Traditional Painting. Portraits and landscapes by David H. Lowrey using the established language of the western European tradition of painting as a means of expressing the artist's observations of the world around us.

Selections of Posters of the First World War: From the permanent M.I.T. collection. These posters were designed for the U.S. Shipping Board by a group of well-known artists who donated their services. In the absence of mass media as we know it, these posters were a valuable communication device and conveyed a message of patriotism and shared responsibility for the successful completion of the war effort.

Mechanical Computing: slide rules, slide rules, and more slide rules.

Opening:
Scientific Instruments in 18th Century Culture: Microscopes, telescopes, navigational instruments and graphics explain the function of science in the lives of 18th-century people. Objects assembled from the collections of the MIT Museum, Harvard University and the Smithsonian Institution.

Margaret Hutchinson Compton Gallery: The Tech: One Hundred Years of Student Activities*—a centennial celebration of student activities and organizations as viewed by the student newspaper. On view through January 27, 1982. 77 Massachusetts Ave., Bldg 10-150. Gallery hours: Mon-Fri, 9-5. Free.

Hayden Corridor Gallery*—Local Visions: The Urban Environs - Works on Paper by Area Artists. Public preview, Nov 20, 5-7pm. On view through January 3, 1982. Hayden Memorial Library Bldg, MIT, 160 Memorial Drive. Free admission.

Corridor exhibits: Building 4: Samuel Cate Prescott, Rogers Building, Norbert Wiener, Karl Taylor Compton. Community Service Fund, Ellen Swallow Richards. Building 6: Laboratory for Physical Chemistry. Building 8: Solar Energy, Society of the Sigma XI. For information call MIT Museum, X3-4444.

Institute Archives and Special Collections*—Hetch Hetchy Dam Controversy: Public Land versus City Water. Photographs, maps and records from the John Ripley Freeman (1855-1932) Papers.

MIT Creative Photography Gallery*—Visage - Large Format Portraiture. On view through December 16. Gallery hours: Mon-Fri: 9am-10pm, Sat: 10am-6pm, Sun: 12 noon-8pm. 120 Massachusetts Ave., Cambridge. Free admission.

Silverpoint Drawings by Susan Avishai. MIT Faculty Club. On view through Dec 23. Hrs: 9am-10pm, Mon- Fri. Free.

Art Exhibition and Sale*—Pottery, Silk Flowers, etc. Created by members of the MIT Student Art Association. Wednesday, Dec. 9, 10am-4pm, Lobby 10.

Drawings from the MIT Museum and Historical Collections*—Rotch Visual Collection, exhibit in library and in hall cases. On view through December, 8:30am-6pm, Rotch Visual Collection.

Stroboscopic Light Laboratory Corridor*—Permanent exhibit of high speed photographs. Main corridor, near Rm 4-405.

Sports

HOME EVENTS: Dec 9: Men's "B" Basketball vs Harvard, 7:15pm; Women's Basketball vs Colby-Sawyer, 7pm, Indoor Track vs Holy Cross, 6pm. Dec 11: Men's "B" Basketball vs Suffolk, 7:15pm. Dec 12: Men's Gymnastics vs Harvard, 2pm, Pistol vs Coast Guard, WPI, 9am, Rifle vs Dartmouth, Maine URI, UConn, Wentworth, 8am; Indoor Track vs Alumnii, 2pm. Dec 13: Men's Basketball vs Yeshiva, 2pm, Wrestling vs Yeshiva, 2pm.

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.

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

Send notices for Wednesday, December 16 through Sunday, December 27, to Calendar Editor Rm 5-113, before noon, Friday, December 11.

CLASSIFIED ADS X3-3270

Ads are limited to one per person per issue and may not be repeated in successive issues. All ads must be accompanied by full name and extension. Persons who have no extensions or who wish to list only home telephones may submit ads by coming in person to the Tech Talk Office, Rm 5-113, and presenting Institute identification. Ads may be telephoned to x3-3270 or mailed to Rm 5-113. Deadline is noon Friday before publication.

For Sale

Complete dbl bed, cherry wood finish, vry gd cond. Evelyn, X8-4486 Draper.

Girl's 20" hi-rise, pink bicycle w/kick stand, brand new/seldom used, asking \$55. Al, x8-4567 Draper.

Must sell immed. queen sz sofa, \$289; 10" b&w TV, \$50; Kenwood stereo w/2 Advent spkrs, \$150; wooden tbl w/marble top, \$170; end tbl w/drawer, \$130. Call x3-2053 or 277-2535.

Two Charles Eames Bentwood side chrs, '61 classic edition, perf cond, \$150/ea, negotiable. Call x3-6681.

Comforter & mtching sheets, queen sz w/3 pr of mtching drapes, 48"x84" ea, green bamboo & flower print, only 6 mo. old, \$60. Terry, x3-8437

Mountaineering skis; Rossignol Staannees, 190 cm, 64, 54, 58 mm cut, offset steel edges; w/Ramer mountaineering bindings, fits any sz boot, everything in great cond, \$125. Tom, 864-7087 eves.

Technics Tuner STS-7, asking \$250, 3 mo. old. Call 491-7331.

Refrig., 16 cu. ft., vertical freezer dr, \$100; ancient running refrig, \$25; wash mach, \$60; upright freezer, \$75; ironing mach for sheets, etc. \$30. Call 1-386-2488 or X3-3228.

Mamaflex c-2 twin lens reflex, 2 1/4 format, hand-grip, 80 mm lens, gd cond, \$100 or best offer. Call 926-5784.

Pr of women's denim hiking bts, sz 7, price negot. Call x3-6438.

TI 59 programmable calculator, best offer. Tom, x8-2059 Draper.

BSO tickets (2) for Dec. 10, evening. Call 225-9882, 9-midnight.

TEAC A-1200-U tape recorder, 2 spd, 4 track stereo, \$200. Call 862-9462 or x3-6962.

FP screens, 1 free standing, folding style, 1 curtain style to be mounted on fp front, w/hardware, exc cond, \$15/ea; Hyde girl's figure skates, sz 12, exc cond, \$15. Call 484-0802 bet 1-8pm.

Hockey skates, man's, sz 7-7 1/2, \$20 negot. Call dorm x5-7141.

Hockey skates, sz 8, CCM Mustang tuik carbon blades, \$50, like new. Tony, x7657 Lincoln.

26 Hummels; Krakauer Bros., N.Y. parlor grand piano, mahog, 45 yrs old. Call 233-2890 eves.

B&W port 12" TV, \$45 or best offer; old fashioned, great cond w/ht refrig, (handle in the middle of door), \$75. Sherry, x3-4971 or 498-2677.

Pr new Advent spkrs, 1 1/4x2 1/4x1 1/2 deep, asking \$250. Len, x3-3317.

Bicycle Raleigh Chopper (boy's sz), exc cond, \$40. Call 868-8980 mornings.

Two 1 1/4x23x77" flush doors; three 1 1/4x31x79 1/2, \$2/ea; Rollaway cot, 30x74", \$5; 15x8" Chevy rim, \$5. Call x3-4215.

Girl's Columbia 10-spd racing bike, \$100 firm; Rollaway bed, best offer; GE CB car radio & antenna, best offer. Call x3-4916.

Two studded radial snow tires mntd on Pontiac Le Mans rims, Kelly Springfield, P215-75R15, \$50/pr. Armand, x5550 Lincoln.

Drum set, fibres (original), clear bodies, remo-heads, old hi-hats, exc cond, \$400 or best offer. Jack, x7053 Lincoln or 429-2231 eves.

Two BMI audio air-sealed bkshef spkrs w/2" tweeter & 6" woofer. Fred, x3-6548 or 494-1116.

Dunham hiking bts, woman's sz 9, worn once, exc cond, best offer. Jean, x3-1612.

1/2-size cello in gd playing cond, incl bow & canvas case, \$300. Call x3-2916.

Everett baby grand piano, \$1,700. Judy, x3-1669 or 648-4083.

New carpet (10'x12'), moving must sell, \$50. Call 494-8976, anytime.

Nordica lthr ski boots, sz 11 woman's or 10 man's, worn vry little, \$25. Junco, x3-1676.

Kitchen set, 36"x48" oval kitchen tbl w/board, formica top, 2 chrs, \$50. Call 926-3265 after 6pm.

Two tires, P155/80-D-13, gd cond, bias ply, \$20/pair or best offer. Call x3-8635.

Tire, G60-15, fair tread, \$35. Ralph, x3-8121.

Two single Scott ski poles w/pistol grip for left hand, 50" and 54", \$5/ea; one 48" pole w/strap, \$3. Alice, x3-4897.

Shoes, new for men & women, lthr. Lloyd, x3-2215.

Christmas ornaments & lights, big box of used decorations & lights, \$20 for everything. LaVern, 666-0106 late eves, early morn.

Ski equip, Kastle 160 gd cond w/marker binding, Heel new & unused, boots are Humanics 7 1/2M, flow, form to feet, exc cond, all for \$95. Chris x3-7411 or 354-6298 eves.

Upholstered chair, fair cond, \$10; 2 snow tires, not studded, 735-15 General, used about 10K mi, \$30. Tony, x3-5717.

Four Subaru mag wheels & worn tires, \$125 or best offer. Juliette, x3-5877.

30" gas stove, gd cond, \$100. John, x8-4352 Draper.

Stereo system, Dynarox turntbl, electrophonic receiver w/8-track tape recorder & player, 2 air suspension spkrs, system works fine but I need cash & must sell for \$75 or best offer. Beth, 354-8740 eves.

Round trip ticket NYC-Albuquerque, \$272, Dec. 20-Dec. 27 or later. Call x5-7193 or x5-7262, Dorm.

Zorki Russian built, range finder camera w/case & light meter, gd cond, \$75. Call x3-4130 or 926-6929.

Tires, mntd on Chrysler rims, sz 8.25x14, vry gd tread on one, \$20; Pr snows, fair treads, \$20; two 6.0x12 mntd on Toyota rims, poor tread, \$6/ea; pr snows, fair tread w/rims, \$20; GE wash mach, old but working, \$25. Call x3-6814 or 484-8847.

VW studded snow tires (4-hole) on rims, one good, one fair, \$20/pr. John, x8-2001 Draper.

Pump & water tank for well. Ruth, 326-5151, 9-4-30.

GE toaster oven, yr old, gd cond, \$30. Chris, x3-6862 or 734-7676.

Canoe, 12' fiberglass, \$175. Call x676, Lincoln.

Four radial snow tires w/hubs for Saab, only \$25/ea. Don, 547-8066 eves.

AMF-Woolworth 5-spd female's bike, new rear tire, new chain, new cable, \$40; qn sz sofa bed, vinyl, black, new cushions, \$40; twn bed, \$20; metallic cabinet for bks or clothes, \$10. Francois, x3-1824 or 782-8208.

Double bed w/pine hdboard, \$40; 2 mtching dressers, both for \$60; wash mach, \$40; chair, \$10. Sheila, x3-8117.

Used golf balls, name brands for \$3/ \$5/doz. Ernie, x8-1278 Draper.

Eight 7-piece place settings, Arabia dinnerware, all w/ht. Call 547-5265.

Pr studded snows, 878x15, gd cond, \$15/ea. Tony, x8-4018 Draper.

Wooden desk, \$10. Chuck, x3-3074 or 494-8942 eves.

Lady's bl dressy nubby wool coat w/brw mink collar, sz 18, worn 4 times, orig, \$150, now \$45. Call 965-3895 before 8pm or x8-3549 Draper.

Women's Frye boots, 1 yr old, 8 1/2 B, \$50; yogurt maker, \$10; women's shaver, \$10; toaster, \$5; 2 tennis rackets w/presses, \$10/ea; elec hair curl iron, \$15; 6 Berlitz French tapes & workbk, \$25. Shirley, x3-4545.

Peugeot 10 spd, men's bike, \$160; 17" diag, MGA color TV, \$200; Fan, \$10. All in vry gd cond. Call 494-8896.

Pair of man's roller skates, sz 9, exc cond, \$35; 1 pr men's ice skates, sz 8, gd cond, \$15. Call Othello, x3-4971.

Platform bed & mtrrs, single, exc cond, \$70; 3 chrs, 2 sturdy wood & 1 upholstered, \$5/ea. Rich, x3-6593, 494-1303.

Walnut exec desk w/padded arm chr, \$250; 3 rm air conds, \$15, \$100 & \$125; elec stove, \$10; queen sofa bed, no mtrrs, \$10. Evelyn, 449-1352.

Two children's (age 6-10) bikes, Raleigh girl's, \$30; Sears boy's, \$20., gd cond. Call x3-5121 or 876-6326.

Antique rugs, all exc cond, from Turkey, 4x6, Ghirdes prayer, ca. 1850, \$3,500; China, 9x12 floral, ca. 1920, \$1,800; 9/4x9 1/2 cut burgundy-indigo Candle rug, \$1,800; Iran, 3x11 Karajeh-style runner, ca. 1900, \$1,900. other rugs. Call 489-2298, lv msg.

SR-52 programmable calculator, w/card reader, math & finance application packs, additional cards, \$100. Call x5-7188, Dorm.

Two G78-14 snow tread, mntd, gd cond, \$25. Paul, x3-4608.

Olin Mark III skis, 185 cm, GEZE bindings, will fit any boot sz, used once, \$150. Guy, x3-4209.

Bkshelves, beds, lamps, chrs, curtains & much more furniture for sale, living country. Helena, 547-2577.

Wheels from '69 Opel 2/\$10; Digital tape drive write only 1600BPI 0-200IPS 1/2" 9 track, Kennedy 1600/360FC, \$75; UHF comm rcvr 220-400 MHz xtal tune military R-361C/GR \$15; AC VTVM HP 400D \$20. Richard, x3-4416.

Round trip tickets Boston-San Francisco, living Dec. 13, returning Jan. 4 or later, \$350. Call 492-2391.

Double loft, L-shaped, fits two twin sz mattresses, perf for double rm, \$50. Call x5-6370 Dorm.

BMW steel rims (4) for Bavaria '75; 5 mahog DR chrs; 2 handpainted lamps w/silk shades; fr lamp; antique coffee tbl, all gd cond, reasonably priced. Call 237-0306.

Ultra down vest kits, 1 extra sml, 1 med blue, \$25/ea; Lanz, Swiss style jumper, navy w/sml flowers, sz 6, \$25. Call x3-6491.

Vehicles

'70 Toyota Land Cruiser, nds body work, \$600. Call x7379, Lincoln or 527-2092.

'72 Toyota Land Cruiser, soft top, 64K, never plowed, no rust, \$1,800. Call 964-4258 eves.

'72 Dodge Dart, 2 dr, autom, exc eng, 4 new radials, \$750. Call x3-7832, 1:30-4:30 or 641-1386 eves.

'73 Chevy Vega, snow tires, gd running cond, \$350 or best offer. Shraga, x3-7416 or 236-1889 eves.

'73 Beautiful VW bus, no rust, great body, 15K, new engine, (not rebtl), new heater boxes, new starter, new tires, new shocks, powerful

VW/Porsche, type 4 engine, 25 mpg, living country must sell, \$2,300 or best. Mark, 489-3358 before 10pm.

'73 Chevy Impala, a/c, great cond, asking for \$750 or best offer. Maria, x3-6152.

'74 VW Dasher, exc body & inter, lks like new, 2 dr sedan, new batt, well maintained, 90K, \$1,200. Call x8-1295 Draper or 862-3639.

74 Chevy Vega, running cond, \$200. Sandra, x3-8254.

'74 VW Bug, exc running cond, orig owner, AM/FM radio, roof rack, ski rack, muffler warranty, \$2,200. Call 776-6285.

'74 Toyota Celica, silver, orig owner, 4-spd, 71K, AM/FM, 27 mpg, new tires, new batt, new shocks, \$2,100 or best offer. Dave, 263-1788.

'74 Pinto wagon, auto, AM/FM, new brakes, 2 new tires, new battery, exc. cond, runs great, \$1,100. Bernard, x3-3736 or 625-1933 after 6pm.

'75 Vega wgn, p/s, 4-spd, rf rack, stl radials, gd cond, 80K, sacrif, must sell, \$1,100. Bob, x8-1418 Draper or 862-5955 eves.

'75 Mercury Monarch, 2nd owner, 42K, V8-302 auto, a/c, p/s, p/b, rear defog, AM/FM stereo, new battery, new w/pump, recently tuned up, exc body & interior, \$1,800. Moon, 494-1401, x3-2223.

'76 Honda CVCC 5-spd hatchback, 93K well maintained, exc cond, \$2,400. Betsy, x3-2701.

'77 Chevy wagon, 78K, gd cond, \$2,500. Dan, x3-2232 or 739-0847.

'77 Honda Accord, 5 spd A/C reg, exc cond, \$3,500; qn sz bed, new \$200; full crib & mattress, \$60. Call 324-6206 eves.

'78 Honda Civic, 4-spd hatchback, exc cond, 57K, \$3,200 or best offer. Call 891-9174 eves or wkend.

'79 Olds Starfire, std, p/s, p/b, a/c, 4 cyl, 44K, vry gd cond, \$3,500. Tom, 648-5396.

'80 Saab 900 Turbo 3 dr., superb condition, vry low mi, 7 + mo. of factory warranty remain. Call x5358, Lincoln.

'80 VW German made, 4-dr diesel Rabbit, AM/FM radio, low mi, exc cond, like new. Call 262-2341.

'81 Camaro, drk blue, w/prof pinstriping, 5K, 6 cyl, a/c, AM/FM stereo cassette w/4 spkrs, rear defrost, sport mirrors, stl bltd radial tires, w/sport rims, gd gas mi, \$8,250. Demetri, x3-5027, Tues or Thurs, 10-5.

Housing

Allston, Brookline line, 1 BR, 2nd flr, elev, dispal, mod K & B, laundry, near T & stores, \$350/mo incl ht & h.w., avail Jan. 1. Gregory, x3-3222 or 782-9049 eves.

Amesbury, hse for rent, \$375 + util, avail Jan 1. Call x8-1438.

Ashdown House, avail to any female grad student. Zella, x5-9662 eves.

Back Bay, nr MIT, sublet furn, Jan-Aug, or lease unfurn, quiet, fp, sunny, parquet flrs, 1 BR, LR/studio, \$595/mo incl heat. Call x3-4452.

Beacon Hill, apt avail for IAP (Dec. 20-Jan 31); 1 BR, fully furn, warm, conven to T and downtown, \$275 for the period. Hans, 367-9439.

Belmont, 2 BR, LR w/fp, DR, K & B, wood flrs, quiet neighborhd w/park, close to Waverly Sq bus, (20 min to Harvard Sq) cats welcome, \$425, ht extra, avail Jan 1. Sandy, x3-5845.

Cambridge, nr Orson Welles Cinema, 2 BR, 2 B, w/w, dsh/wshr, a/c, balcony, \$700/mo. inc. ht. Babis, x3-4333.

Cambridge, ENGLAND, hse avail, April-Sept. '82, lge 36' LR, clr TV, K (freezer, wash mach, etc.), 2 BR, study, lux. B, grge, garden overlooking college play flds, 1 mi city & University centers, 235 lbs/mo. or exchange accom. Cambridge, Mass. similar period. Dr. J.A. Williams, Univ. Engineering Dept., Trumpington St., Camb, C.B.2 1PZ United Kingdom.

Cambridge, 1 1/2 BR, fp in lg condo bldg avail Jan 1, until summer, \$391/mo rent controlled. Call x3-5544.

North Conway, N.H. area, weekly ski chalet rental, minutes to four ski areas, 3 BR, 1 1/2 B, w/w, fp, slps 8. Dick, x7124 Lincoln.

Scituate, seasonal rental, 9 Rm hse nr ocean, beaut atmospheric furn, 3 BR, fp, wd stoves, cross country ski in back yard, walk to ocean, nr shops/harbor, 1/2 block to Boston bus, avail Jan only, \$550/mo. \$150/wk. Call 1-545-5576.

Somerville, 2 BR, vry quiet neighborhd, newly built, \$580/mo incl ht & h.w., free pking, get an excellent view of Boston from the room, avail end-Jan. Call x3-7116 or 623-3824 eves.

Tortola, BVI, hse for rent, 3 acre waterfront properties, LR, DR, 3 BR, 2 B. Mrs. Marill, 864-1512.

Wellesley Sq, 3 rms & sml K, 1st flr apt, pking, quiet at, priv entr, \$400/mo incl ht & h.w., avail 12/15. Call x3-7653 or 237-9341 eves or 861-6780.

W. Somerville, 3 rm apt furn, avail Jan 1, heat & util incl, \$350/mo + security. Call 776-2717.

White Mts, hse avail for IAP, Rumney, N.H., 4 BR, 2B, 25 acres in ski 93 country, peaceful setting w/cross-country in our meadows. Call Prof. Young x3-7759.

Animals

Golden Retriever puppies for sale, father champion from Sutter Creek Kennels, beaut mother, wndrful disposition, home-raised w/children, avail, Dec. 15 w/1st shots, sefn in Lexington, eves. Frank, x3-1623.

Free kittens, 8 wks old, perf Christmas gift. Call, x3-6343 or 354-2164 eves.

Animals kittens, purebred sealpoints, 7 wks old, \$50, ready now or Xmas. Greg, 492-7446 or x3-5661 eves.

Registered Brittany spaniel puppies, Dual field champ blood line, both parents exc hunters, also gd home pet, born 10/24/81. M-\$125; F-\$150. Lorraine, X7060 Lincoln.

Cute, loveable, baby Angora hamsters, make great living gifts, \$30. Alice, 5-6211 or x5-6370.

Pet mice, great as pets, free. Willie, x697 Lincoln, keep trying.

Lost and Found

Found: Sat, eve, Nov. 28, wrist watch in Rm 26-100. Call & describe, x3-3718.

Wanted

Used IBM Correcting Selectric Typewriter, will repair. Call 731-8017 after 5:30pm.

Need a furn rm or apt for visiting scientist from Japan, from Dec. 8-Dec. 31. Mary, x3-6867 or 646-7508 after 5pm.

Used piano. Bill, x3-3857 or 329-7081.

Used aquarium to be used as terrarium, w/metal bottom, glass may be cracked. Call x3-2916.

Win! Get me stamp #661 of McDonald's contest & win your share of the prize. Yusuf, 5-9753 or lv message x3-2961.

Racketball racket used for beginner female, used mens ice skates, sz 8 or 8 1/2. Karen, x3-4481 or 475-8965.

Used Miranda or Soligor zoom lens to fit 35 mm Miranda camera. Bob, x3-3966, 7-4 or 489-3240 after 5pm.

Repairs to stained glass Tiffany lamp. Vic, x7250 Lincoln.

Ride to NYC area on Dec. 15, 16 or 17. Will share driving & gas. Craig, 547-8554 eves.

Roommates

Apt to shr, Arlington, vry lge rm w/sunny porch/study, 2 level spacious apt, shrd by 2 M grad students, fp, lake access, priv locked garage, nr bus. \$250/mo + util. Call 646-6057 or x3-8500.

Two bedrms avail in 3 BR apt, Back Bay, ideal location for MIT students, \$200/mo per person, incl ht, util. Call 266-6882 eves.

Female rmmte to shr 3 BR apt in Allston, \$200/mo. incl ht & h.w. Call 254-3349 after 5:30pm.

Two M, 1 F, seek additional F to shr Central Sq apt, \$168 incl heat, MIT student required. Call 492-3492 eves or x3-6802.

Rmte to shr 3 BR apt w/2 others, avail Dec. 3, \$90/mo incl ht & h.w., shr meals & chores, located on Harvard St, 5 min walk to MIT. Call x3-5839 or 661-72 eves.

F rmmte to shr rent & (pref) meals w/ F MIT senior in 2BR apt, Cambridgeport nr MIT, about \$200/mo. incl ht & h.w. Diane, 492-7933.

Rmte needed to shr 3 BR apt in Watertown, conven to MBTA, \$200/mo, non-smoker, no pets. Bill, x3-1947 or 926-5214.

F rmmte to shr lg 2 BR Cambridge apt, \$150 + utila, nonsmoker pref. Christine, x3-5110 or 491-2154 eves.

Rmte to shr furn 2 BR apt nr Inman Sq, 5 min to MIT, avail Jan. 3, \$205/mo w/ht & h.w. Al, x3-2927 or 492-2391.

Carpools

New employee wants to join or start carpool, Winchester to MIT, 9-5, Mon-Fri. Call 729-2143.

Ride wanted to Coolidge Corner area after 5pm. Bonnie, x3-8222.

Miscellaneous

French, Russian, German lessons, translations for professional. Lisa, 593-1705 after 6pm.

Typing, all kinds, incl technical. Lynne, x3-5726 or 497-0196.

Will do any kinds of typing, incl theses. Marion, x3-5205.

Alarm systems, burglar alarms installed, repaired, estimates, careful, reliable. Andrew, x3-4824 or 489-2107.

Whitehead Institute

(continued from page 1)

had strengthened the affiliation because of the questions raised.

"As the relationship between the Whitehead Institute and MIT develops, we will continue to be attentive to the concerns which have been raised over these last several months," they said.

The Corporation also expressed appreciation to the faculty for their contributions to the discussion and decision on the affiliation question. A resolution passed by the full meeting read:

"The MIT Corporation deeply appreciates the comments and debate provided by the faculty of MIT on the question of the affiliation between MIT and the Whitehead Institute for Biomedical Research, which were of great assistance in its deliberations, and acknowledges the concerns voiced by members of this faculty."

Speaking of the Corporation decision, Mr. Johnson said that it represents an innovative step in the support of basic science in this country. Mr. Johnson, a former MIT president, said he was confident the affiliation of the Whitehead Institute with MIT will be carried out in a manner which will benefit greatly the rapidly evolving field of developmental biology.

MIT has already designated the three who will represent the university on the Whitehead board. They are former President Jerome B. Wiesner, Dean Abraham J. Siegel of the MIT Sloan School of Management, and Dr. W. Gerald Austen, chief of surgical services at Massachusetts General Hospital. Dr. Austen, a 1951 graduate of MIT, and Dr. Wiesner, are members of the M.I.T. Corporation.

Mr. Whitehead, founder of the Technicon Corp., now a part of Revlon, Inc., is not himself a member of the Whitehead board of directors. The present eight members include the chairman, Dr. John Sawhill, former president of New York University; Mr. Whitehead's two sons, John Whitehead, an executive with Technicon, and Peter, an architect, and Mr. Whitehead's daughter, Susan Whitehead, a law student; Dr. Herman Sokol, presi-

dent of Bristol-Myers Co., Inc., and a former Technicon director; Dr. Leonard Skeggs, professor of biochemistry at Case Western Reserve University and the inventor of the Technicon Auto Analyzer; Dr. Lewis Thomas, chancellor of the Memorial Sloan-Kettering Cancer Center; and Dr. Baltimore.

There will be three additional positions on the Whitehead board to be chosen with the concurrence of both MIT and the Whitehead Institute. Dr. Donald S. Frederickson, former director of the National Institutes of Health, and Bernard J. O'Keefe, chairman of EG&G, Inc., Wellesley, Mass., have accepted invitations to be appointed to two of these positions.

Mr. Whitehead formed the nonprofit Whitehead Institute for Biomedical Research to pursue independent basic research in developmental biology. His financial resources, he said, had been derived through the development of medical technology and he felt an obligation to use his resources to contribute to basic scientific knowledge.

Mr. Whitehead has agreed to provide the Whitehead Institute with a \$20 million research facility located near MIT and additional funds to equip the building, which will have 130,000 square feet of laboratory and office space.

Mr. Whitehead also has established a \$60 million trust fund which will provide \$5 million annually to the Whitehead Institute for operating expenses and for an endowment fund.

Finally, Mr. Whitehead has provided that upon his death he will bequeath to the Whitehead Institute an endowment of \$100 million, less payments yet to be made from the trust fund.

Dr. Baltimore has begun to assemble an administrative staff for the Whitehead Institute. In addition, two present members of the MIT biology faculty—Dr. Robert Weinberg and Dr. Harvey Lodish—have agreed to join the Whitehead Institute research staff. Under terms of the affiliation with MIT, they will retain their MIT faculty appointments.

manner. Willingness to become sufficiently familiar with various facets of the department is vital, as this individual will be called upon to answer the questions of callers and visitors. B1510

Secretary-Receptionist, Nutrition & Food Science, to provide office support for the Administrative Assistant in Headquarters office. Will also perform general secretarial duties for two lecturers, while serving as receptionist and back-up secretary for Department Head. Responsibilities include covering departmental phone and handling publication of weekly departmental newsletter. Candidates should have excellent typing skills. Well developed communication skills are crucial, as this individual will be interacting with a variety of persons on a daily basis. The capacity to work in a hectic setting, with frequent interruptions important. Basic bookkeeping skills preferred. B1508

Administrative Secretary, Chemistry, to provide secretarial support for one faculty member. Will take and transcribe shorthand dictation; type grant proposals and technical manuscripts; arrange appointments, meetings and travel; as well as monitor research accounts. Four to five years of direct or related experience as well as excellent typing skills are needed. Work will involve some technical typing. College background and word processing experience desirable. B1505

Sr. Keypunch Operator, Comptroller's Accounting Office, to take responsibility for data entry of all accounting systems input, including payroll. Will maintain batch balances and verify all data. This individual will be trained to create and make use of magnetic tapes for computer processing. One to three years experience on Data-Entry systems essential. Experience on Infocore helpful. B1503

Sr. Secretary, Food Service, to perform general secretarial work. Will screen telephone calls and visitors; type correspondence, menus, catering reservations, budgets, meeting notes; obtain prices from purveyors; prepare forms for unit use; schedule appointments; arrange travel; distribute mail; respond to standard inquiries by mail; compose nonroutine letters from dictation; maintain files. Requires excellent general office skills and 3 years direct or related experience. This position involves much student contact. B1283

Library Support Staff

Library Assistant III, (20 hrs/wk), Libraries, to process reserve book lists. Will record receipt of lists; check library's holdings; annotate lists with book order information; request reprints or pull volumes from shelves of divisional libraries for photocopying by the Microreproduction Laboratory; file shelf list cards; assist at the bookchecking desk; and perform various other clerical duties as assigned. Requires high school graduation or the equivalent, along with a year's directly related experience. Good interpersonal skills are important, as this individual will be dealing regularly with library users. Typing skills desirable. B1485

Technical Support Staff

Sr. Secretary, Nutrition & Food Science, to type and proofread reports, manuscripts, examinations, and laboratory manuals from rough drafts. Will answer telephones and provide reception; read and distribute mail; answer routine correspondence; set up filing system; schedule meetings; arrange travel; photocopy; monitor research accounts; operate word processor, and provide liaison between research labs at Children's Hospital and MIT. Applicants must have completed high school and have 2 to 3 years office experience, or an equivalent combination of education and experience. Excellent typing skills necessary. B1507

Sr. Secretary, Haystack Observatory, to provide secretarial and administrative support

for Observatory group. Will type technical reports, grant proposals, journal articles, material from rough draft and dictaphone, as well as general correspondence. In addition will arrange travel; organize and maintain files; schedule meetings; screen phone calls; and perform other related tasks as assigned. Two to three years related experience necessary, or an equivalent combination of education and experience. Excellent typing skills are needed also, for work on both word processor and electric typewriter. Good proofreading skills and a command of English grammar are essential. This individual will be expected to organize effectively under minimal supervision, while maintaining attention to accuracy of detail. Experience in word processing helpful. B1490

Sr. Secretary, Sea Grant College Program, to compose and respond to routine correspondence. Will also answer or redirect inquiries regarding activities and operation of Marine Industry Advisory Services; assist in organizing agenda for meetings; handle mailings, attendance records and luncheon arrangements for those meetings; maintain files on interaction with Collegium members; maintain invoice and payment records of Collegium members; provide reception; as well as assist with other areas of program as needed. Applicants should have high school graduation or the equivalent, along with 2 to 3 years office experience. Typing skills are vital, as well as the ability to set priorities and carry on activities with some independence. Interest in ocean and marine related subjects desirable. Experience with word-processing plus knowledge of MIT preferred. B1488

Sr. Secretary, Resource Development, to provide secretarial support for the Associate and Assistant Directors. Will type letters, memos, backup material for solicitation visits, schedules and visit reports on the word processor and typewriter. Will also handle telephone calls for the Assistant Director; maintain files for the Associate Director; process incoming and outgoing mail; arrange travel; handle appointment calendars; and assist with other miscellaneous tasks, such as photocopying, as required. Excellent typing is needed, along with a strong sense of organization and a pleasant telephone manner. The capacity to work in a busy setting, handling more than one project simultaneously, and meeting occasional deadlines, is essential. It is also important for this individual to be able to work with minimal supervision. Word processing experience preferred. NON-SMOKING OFFICE. B1409.

Office Assistant

Sr. Office Assistant, to support accounting and billing functions in the Business Office of the Medical Dept. Will prepare bills and journal vouchers; investigate billing questions; monitor charges; process error lists on computer terminal; compile monthly revenue statements; process data and statistics from Off-Hours Clinic; assist in preparation of expense analyses; order supplies; and perform other related tasks as required. This individual will be called upon to interact with support staff members in other areas of department. Requires high school graduation or the equivalent, along with 2 to 3 years related experience. Proficiency in working with numbers; bookkeeping and accounting background vital, as well as skill in using calculator and computer terminal. Knowledge of medical terminology and third party billing helpful. NON-SMOKING OFFICE. B1506

Sr. Office Assistant, Comptroller's Accounting Office, to resolve stop-payment problems; record stopped payments, then follow-up with banks to have checks re-issued; research invoices which cannot be matched to purchase orders; post invoices; as well as work on vendor related problems. Candidates must have 2.5 years related experience, or an equivalent combination of education and experience. The capacity to work independently

in dealing with banks as well as MIT Audit Office vital. B1501

Office Assistant, Credit Union, to type withdrawal checks and general correspondence; explain credit union regulations to current and prospective members; issue receipts for cash or checks; take withdrawal requests; issue share and loan checks; as well as handle telephone requests. Applicants should have good typing skills plus a facility for working with figures. Since this individual will be called upon to answer inquiries and interact with a variety of persons on a daily basis, good interpersonal skills and a pleasant telephone manner are essential. Familiarity with adding machines helpful. B1504

Office Assistant, Comptroller's Accounting Office, to type vouchers; charge and credit various projects for work done; file; perform research; and handle miscellaneous other clerical duties as assigned. Applicants should have good typing skills and a knowledge of bookkeeping. B1502

Service Staff

Laboratory Assistant, (25 hrs/wk), Clinical Research Center, to perform routine jobs of skilled and semi-skilled nature, such as keeping apparatus in good condition and performing laboratory tests and analyses. This individual will receive, prepare, process and monitor urine and fecal collections for Center's Specimens Lab (specimen data is subsequently recorded into computer bank). Candidate will also prepare reagents needed by the Specimens Lab. Position involves some weekend work. Requires high school graduation, as well as the capacity to work with minimal supervision. Attention to detail is vital. A year's experience in a laboratory setting preferred. H574

Cook's Helper, Food Service, to prepare foods, under supervision, for all meal periods. Will provide general assistance to the kitchen staff; maintain a clean and sanitary work area; and perform other related duties as assigned. Applicants must have command of the English language. A solid understanding of the fundamentals of grill, saute, roast and steam food preparation is needed, as well as experience in preparing large quantities of food. H573

Painter, Physical Plant, with a minimum of 5 years experience in all phases of painting trade, needed to perform same, including interior and exterior work, mixing and preparation of paint materials, and matching colors. Requires a thorough knowledge of the various materials, tools, equipment and rigging used in the trade. Applicants should have Painter Rigger's and rigging used in the trade, as well as a Painter Rigger's license. The ability to work effectively on staging and ladders is vital. H577

Machinist B, Nuclear Reactor Laboratory, to work from blueprints, specifications, verbal instructions, or sketches, setting up and operating commonly used machine tools. Will work in reactor machine shop in experimental machine and reactor components fabrications with supervision. This work involves handling of and exposure to radioactive materials, and, therefore, strict adherence to appropriate radiation protection procedures must be observed. Applicants must demonstrate high familiarity and skill with all commonly used machine tools, and have a minimum of 3 years applicable experience. This opening is for the second shift, 4 to 12 p.m. H503

The following positions were still available at Tech Talk deadline. Complete descriptions of all available positions are posted in the Personnel Office (E19-239), and at locations listed at the beginning of Positions Available section.

ADMINISTRATIVE AND ACADEMIC STAFF:
A172, Computer Systems Manager, Whitaker College of Health Sciences
A171, Production Manager, Design Services
A170, Sr. Applications Programmer, Administrative Information Services

Seminar on speech

"How do we Speak?" That's what Institute Professor Morris Halle of the Department of Linguistics and Philosophy will explore in a seminar—the second in the series of Getting to Know the Institute—Wednesday, Dec. 16, noon-1:30pm in Rm 9-150.

Questions to be addressed include, What are the gymnastics we go through to create acoustical signals called speech? Which gymnastics produce what sounds? and, Why do we think the sounds we produce are words?

Professor Halle is a world-renowned scholar whose research is focused on the search for invariant elements and rules underlying the sound patterns of human languages and the principles of their organization.

All seminars are open to everyone in the community without advance registration.

Getting to know the Institute is sponsored jointly by the Provost's Office and the Personnel Office as a means of acquainting the community with work being conducted in departments, laboratories and centers. Information is presented in nonscientific language on the research and educational pursuits of MIT.

Security storage

For students worried about leaving valuable items such as stereos, cameras, and TV sets in their rooms over Christmas vacation and IAP, the Campus Police are once again offering secure storage.

Anyone wishing to store such items may take them to Campus Police headquarters on the second floor of du Pont Gymnasium, 9am-5pm Monday-Friday. Property should be contained in sealed boxes or cases and clearly marked with the owner's name, term address and expected date of return.

Those who store items must pick them up by Monday, February 1.

Center

(continued from page 1)

crowned by this magnificent Center." Lukas noted the success of both the hockey and track teams in their first season of competition in the new facility. "The hockey team skated to a 13-4 record while the track team ran to an 8-2 mark, losing only once at home. "I'm very thankful that during my career I have seen that MIT has a sincere concern for the quality of its sports programs. This new facility is an example of this active interest," Lukas added.

"The varsity athlete is just one benefactor of the new facility," said Coach Kelly. "The largest group to enjoy this building will be the casual or recreational user—skaters, joggers, tennis and basketball players. This building is in motion daily from opening to closing as MIT continues to meet the needs of its entire community."

Flippin spoke of tradition, inspiration to excel, vision and courage, and perseverance during his remarks. "Our challenge is to build upon this tradition, to provide a richer life for students on the MIT campus, for those in the MIT community," he said.

Flippin also noted the accomplishments of the late Ben Martin, long-time hockey coach, "who endured the icy cold and biting winds of the outdoor ice rink to keep hockey alive and well for future generations."

According to Flippin, future objectives for the Department of Athletics include programs for the aging, infirm, handicapped, and MIT employees with limited time for exercise; the addition of squash and racquetball courts, and a research center for health fitness technology.

Near the end of the dedication, Mr. Johnson presented former MIT athletic director Ross H. (Jim) Smith with a silver bowl on behalf of the MIT Corporation for his efforts in making the new facility a reality.

Beethoven's b'day

Pianist John Buttrick, associate professor of music, will present a program of four Beethoven sonatas at 8pm on the composer's birthday (Wednesday, Dec. 16) in Kresge Auditorium.

Mr. Buttrick will play the Sonata #4 in E flat Major, Sonata #22 in F Major, Op. 54; Sonata #23 in F minor, Op. 57, and Sonata #28 in A Major, Op. 101.

C060, Head Librarian of Serials Cataloging
C048, Archival/Manuscript Specialist, Libraries
A165, Data Base Manager, Alumni Association
A164, Purchasing Agent, Purchasing and Stores
A163, Program Manager for Management Information System, Physical Plant
A158, Systems Programmer, Information Processing Services
A135, Applications Programmer, Information Processing Services Operation
A134, Systems Analyst II, Administrative Computing Services
C041, Postdoctoral Associate, Plasma Fusion Center
A087, Systems Analyst II, Administrative Computing Services
A084, Administrative Staff, Area Coordinator/Systems Analyst, Administrative Computing Services
A082, Administrative Staff, Systems Analyst, Information Processing Services
A004, Administrative Staff, Sr. Systems Programmer, Information Processing Services Operation

RESEARCH STAFF:

R650, Research Associate, Center for Computational Research
R520, Electrical Engineer, Plasma Fusion Center
R643, Technical Assistant, Center for Cancer Research
R642, Research Scientist, Research Lab. of Electronics
R639, Sponsored Research Staff—Engineer, Health Sciences & Technology
R628, Programming Manager, Mechanical Engineering
R520, Electrical Engineer, Plasma Fusion Center
R618, Magnet Design Engineer, National Magnet Laboratory
R605, Programmer/Analyst, Plasma Fusion Center
R593, Research Associate, Earth & Planetary Sciences
R588, Research Associate, Earth & Planetary Sciences
R579, Economist/Policy Analyst, Energy Laboratory
R581, Engineer, Ocean Engineering
R575, Sr. Magnet Design Engineer, National Magnet Laboratory
R566, Research Scientist, Experimental, Plasma Fusion Center
R563, Research Scientist, Center for Space Research
R558, Research Scientist, Artificial Intelligence Laboratory
R557, Research Specialist, Artificial Intelligence Laboratory
R556, Research Specialist, Artificial Intelligence Laboratory
R555, Research Specialist, Artificial Intelligence Laboratory
R541, Electronics Engineer, Haystack Observatory
R539, Research Associate, Earth & Planetary Sciences
R520, Electrical Engineer, Plasma Fusion Center
R518, Research Staff, Mechanical Engineering
R512, Control Systems/Diagnostics Engineer, Plasma Fusion Center
R511, Power Electronics Engineer, Plasma Fusion Center
R504, Sponsored Research Staff, Laboratory for Nuclear Science
R500, Research Scientist-Computational/Theoretical, Plasma Fusion Center
R485, Research Engineer, Plasma Fusion Center
R475, Assistant Director, Aeronautics & Engineering
R455, Theoretical/Computational Research Scientist, Plasma Fusion Center
R442, Principal Research Scientist, Mechanical
R434, Systems Programmer, Lab. for Computer Science
R429, Systems Programmer/Analyst, Plasma Fusion Center
R422, Research Scientist-Experimental, Plasma Fusion Center
R409, Theorist/Designer, Plasma Fusion Center
R401, Staff Scientist, National Magnet Lab.
R397, Biomedical Engineer, Dept. of Mechanical Engineering
R396, Research Associate, Aeronautics &

Astronautics
R387, Sponsored Research Staff, Group Leader, Plasma Fusion Center
R384, Plasma Physics Experimentalist, Plasma Fusion Center
R284, Research Associate, Materials Processing Center
R241, Technical Associate, Biology
R222, Programmer/Analyst, Mechanical Engineering
R137, Research Associate, Materials Science & Engineering
R093, Research Associate, Sloan School of Management
R069, Design Engineer—Superconducting Magnets, Plasma Fusion Center
R039, Sponsored Research Staff, Mechanical Engineering
R006, Research Scientist—Experimental, Plasma Fusion Center

EXEMPT

E088, Registered Nurse, Clinical Research Center

SECRETARY/STAFF ASSISTANT

B1482, Administrative Secretary, Division of Comparative Medicine
B1480, Sr. Secretary, Aeronautics & Astronautics
B1474, Sr. Secretary, Center for Cancer Research
B1277, Sr. Secretary, Political Science
B1464, Administrative Secretary, Treasurer's Office
B1471, Sr. Secretary, Admissions Office
B1468, Sr. Secretary, Sloan School of Management
B1453, Sr. Staff Assistant, Libraries
B1452, Sr. Secretary, Nuclear Engineering
B1372, Sr. Secretary, Provost's Office
B1409, Sr. Secretary, Resource Development
B1312, Sr. Secretary, Sloan School of Management
B1431, Sr. Secretary, Office of Secretary of the Institute
B1367, Sr. Secretary, Center for Theoretical Physics
B1409, Sr. Secretary, Resource Development
B1372, Sr. Secretary, Provost's Office
B1367, Sr. Secretary, Center for Theoretical Physics
B1317, Sr. Secretary, Provost's Office
B1313, Sr. Secretary, Humanities
B1306, Sr. Secretary, Industrial Liaison Program
B1303, Sr. Staff Assistant, Center for Policy Alternatives
B1292, Sr. Secretary—Technical, Mathematics

TECHNICAL SUPPORT STAFF

B1440, Computer Operator, Haystack Observatory
B1248, Account Representative, Information Processing Services Operation

OFFICE ASSISTANT

B1484, Sr. Office Assistant, Architecture Machine Group
B1469, Administrative Assistant, Mechanical Engineering
B1467, Office Assistant, Graphic Arts Service
B1461, Office Assistant, Bursar's Office
B1137, Editorial Assistant/Production Assistant, Center for Advanced Engineering Study

SERVICE STAFF

H566, Technician B, Nutrition & Food Science
H548, Machinist A, Chemistry
H549, Technician B (Electro-Mechanical), Electrical Engineering & Computer Science
H554, Electronic Technician A, Energy Laboratory
H550, Technician B (Electro-Mechanical), Research Laboratory of Electronics
H559, H560, Patrolman/Patrolwoman, Campus Patrol
H498, Metal Worker, Physical Plant
H480, Technician A (Mechanical), Laboratory for Nuclear Science
H466, Carpenter, Physical Plant
H465, Heat & Vent Mechanic, Physical Plant
H423, HVAC Designer/Draftperson, Physical Plant
H411, Technician A (Radiation Protection), Environmental Medical Services
H278, Technician A (Electronic), Aeronautics & Astronautics

CEP Recommends Undergraduate Writing Requirement

The following report from the Committee on Educational Policy recommends a writing proficiency requirement for MIT undergraduates, and outlines the Committee's current thinking on the substance and implementation of such a requirement. The report is the result of extensive deliberation within the CEP on a proposal submitted by its Subcommittee on Writing Proficiency. Subcommittee members were Professors Michael J. Driscoll and Kenneth R. Manning (chairman). It is part of the CEP's review of the undergraduate program at MIT that was initiated last year—see Tech Talk, March 4, 1981.

In releasing the report, Professor Felix Villars, Chairman of the Faculty and Chairman of the CEP, expresses gratitude for the Subcommittee's efforts, which included many hours of discussion with students and members of the faculty and administration. A major reason for publishing the report at this time is to invite further comment from members of the MIT community. Professor Villars hopes that the report presented below will be broadly discussed in the near future, and urges students and faculty to communicate their views to him or other CEP members, before the end of IAP if possible. In this regard, he reports that a committee of faculty members from the Department of Humanities has recently been appointed by Professor Peter H. Smith to discuss the proposals. Professor Villars hopes to get responses from other departments as well.

In supporting the general principles underlying the proposed Writing Requirement, the CEP recognizes that, once the general structure of the requirement has been agreed upon, many of the implementation details must be developed by the Provost's Office working with the academic departments and a faculty committee.

Professor Villars will give a brief overview at the December Faculty Meeting. A detailed proposal for a Writing Requirement will be presented at the February Faculty Meeting for deliberation. Action on specific motions is expected at the March or April Meeting.

Summary

Over the past two years, the Committee on Educational Policy has been examining the undergraduate curriculum at the Institute. As part of this review, a working group was set up in the fall of 1980 to look into the issue of undergraduate writing competence. The group began its task early in 1981. It conducted interviews with well over 100 members of the faculty and administration; disseminated a questionnaire to the faculty; met with students in a variety of settings; put up a wall poster to gather views from the student body at large; and throughout the spring discussed the issue with the CEP.

It was found that a substantial number of MIT students do not achieve a level of writing proficiency adequate for either their course work at MIT or their professional careers later on; that the curriculum as a whole does not reflect the importance of this skill; and that the Institute would benefit all around from proper attention to the problem.

The CEP therefore recommends an Institute Writing Requirement—one drawn in the light of student needs, faculty concerns, and Institute resources. A variety of support activities and services, some of which already exist or are in advanced stages of planning, is also suggested. The CEP further recommends that a specific office reporting to the Provost, headed by a member of the faculty and guided by a Standing Faculty Committee on the Writing Requirement, be set up with Institute-wide responsibilities to implement, facilitate, and monitor the requirement, as well as to coordinate the support activities and services.

Writing Requirement for Undergraduates at MIT

There is widespread agreement among faculty and students that there should be an Institute Writing Requirement. The primary objectives are: first, to ensure minimum standards of writing proficiency for all our undergraduates, with special emphasis on writing in students' professional fields; and second, to see that clear, effective writing is valued and fostered throughout the curriculum as an important part of an MIT education.

The requirement is intended to have undergraduates demonstrate achievement at specified levels of competence in expository writing. The requirement should identify students who need help and point them in appropriate directions for assistance. Students have many ways at MIT to acquire the writing skills they need. They are to pursue these options either as a result of appropriate counseling or through their own initiative. Beyond that, the success of the requirement depends heavily on the acceptance of a broadly shared, curriculum-wide responsibility to emphasize the importance of writing in all subject areas and to provide opportunities for students to write. It is essential that faculty members feel comfortable asking students to write more as well as commenting on the quality of expression, particularly in the context of students' professional studies. The requirement would also communicate clearly to high schools that writing ability is important for success at MIT and that prospective students should prepare themselves well in this area. Over the longer term, this message may help to reduce the problem.

The basic features of the requirement are **early evaluation, a variety of modes of completing the requirement, and curriculum-wide involvement.** It is to be satisfied in two stages, broadly characterized as follows:

First Stage:

Students complete this part of the requirement by the end of their first year at MIT. Its purpose is the early evaluation of each student's writing ability, both to assure a level of writing proficiency adequate for an entering MIT student, and to provide information for guiding students, particularly those whose writing is not satisfactory, toward appropriate supportive resources.

Second Stage:

This part of the requirement is designed to engage upperclass students in writing in a professional context, at a later stage in their undergraduate careers, and over an extended period. It is

intended to extend beyond the writing experiences provided by the Humanities, Arts, and Social Sciences Requirement. Students satisfy this part of the requirement any time after one year at MIT, but generally not later than the end of the junior year.

The following options for satisfying the two stages of the requirement are proposed as a starting point compatible with the current situation at MIT, including resource availability:

Options for Satisfying the First Stage:

- achieving, prior to entry, a specified score on the College Board Advanced Placement Examination in English or the College Board English Achievement Examination (with essay);
- achieving a specified score in an essay examination offered a few times from R/O week through IAP;
- receiving a specified grade, or the equivalent performance if ungraded, in an expository writing subject (for eligible students, expository writing subjects treating English as a second language would fall into this category);
- submitting a five-page paper of expository prose written for any MIT subject and judged satisfactory by the professor of the subject and by faculty evaluators for the requirement.

Students are expected to attempt at least one of these options early in the freshman year; if the student's attempt is not successful, he or she will be counseled to appropriate follow-up assistance. A student who does not successfully satisfy one of the above options by the end of the freshman year must complete a mutually agreed upon plan worked out with the director of the office administering the requirement (for example, taking a specific expository writing subject).

Options for Satisfying the Second Stage:

- receiving a specified grade for the quality of writing in a subject (or subjects) within the general area of the student's professional studies and having a significant expository writing component;
- submitting a ten-page paper of expository prose from any MIT subject, or UROP activity, within the general area of the student's professional studies and judged satisfactory by the professor or supervisor and by faculty evaluators for the requirement.

The details of design and implementation in the writing proficiency requirement proposed above are fluid and expected to evolve with time. We do not know, for example, how students will use the various options provided, nor can we precisely predict the degree to which each of the options will be effective in meeting the objectives. It is, however, not necessary, or even desirable, to fix the details of the requirement at this point; rather, we need to establish a reasonable starting point. The knowledge gained by implementing this requirement—given its flexibility to test and monitor various approaches—will give a better picture of writing needs and feasible solutions than currently exists. Subsequent review and evaluation will afford ample opportunities to adjust the requirement. These ongoing questions of implementation will be handled by the Provost's Office and the administrative office for the requirement, working with the academic departments and programs, in conjunction with the faculty committee overseeing the requirement.

Support Activities and Services

To encourage students to develop skills in expository and other kinds of writing, the Institute, with the advice and support of the Committee on the Writing Requirement, should consider a variety of resources and activities, some of which already exist or are in the advanced stages of planning. These would continue to evolve as needs are identified and might include:

- a resource center, along the lines of a current proposal of the Writing Program, to provide consultation with writing advisors, self-paced and graded material, reference material (including manuals and style guides), computer-aided instruction, and editing services;
- cooperative arrangements between instructors in technical subjects (especially laboratory and design) and those in writing—as currently set up between the School of Engineering and the Writing Program—and additional ventures based on this model, as a means to satisfy the second stage of the requirement;
- additional mini-courses, seminars, and IAP workshops to stimulate awareness of language and its uses, and incentives for students to participate in a variety of extracurricular writing activities;
- forums and other means of feedback from MIT alumni and outside professionals to convey to students the importance of writing in the various disciplines;
- efforts to encourage departments to have students start senior theses at the beginning of the year, in order to permit sufficient time for revision;
- a brochure describing the resources available to students and advisors;
- consideration of parallel efforts to develop skills in oral communication.

Administration and Faculty Oversight of the Requirement

An administrative office reporting to the Provost would have day-to-day operational responsibility for implementing and monitoring the requirement. The director of the office would be a faculty member, from any of the academic departments, appointed by the Provost, and would be assisted by appropriate staff. In addition to administering certain aspects of the

requirement and supporting the Committee on the Writing Requirement in fulfilling its various responsibilities (defined below), the office would have administrative responsibilities for:

- coordinating various activities and services through which students and faculty can obtain assistance.
- keeping records on how and when each student satisfies the two stages of the requirement, and notifying the students and the Registrar accordingly.
- notifying the advisors of students who have not satisfied a stage of the requirement by the prescribed time, so that students can receive appropriate counseling to complete the requirement in a timely and beneficial manner.

The Writing Requirement would be overseen by a Standing Faculty Committee on the Writing Requirement. The Committee would review all issues of educational policy concerning the requirement, oversee its implementation, and promote new services and programs (for example, cooperative subjects, writing seminars and workshops within departmental programs, etc.). The Committee would assess the various support activities and services currently at MIT (for their possible involvement within the requirement), and decide how to pursue implementation of the services recommended in the proposal.

The Committee would include six members elected from the faculty at large, a faculty member appointed from the Committee on Educational Policy, two undergraduate members, and, ex officio, the director. The membership would include at least one, and no more than two, faculty members from each School. Faculty members would serve three-year, staggered terms. Each year the Chairman of the Faculty would appoint the chairman from among the members of the Committee. Participation on the Committee would be recognized as a major service contribution to the Institute community.

The major, continuing responsibilities of the Committee, as a policy and oversight group, would be to:

- act with power on implementing the Writing Requirement, on making minor changes in the design of the requirement, and on responding to student petitions with respect to the requirement.
- establish a plan for periodic evaluation of the requirement and its various options, and recommend to the CEP any major changes in the requirement deemed appropriate.
- specify standards and criteria for the various ways of satisfying the two stages of the requirement (for example, develop the general criteria for judging the five- and ten-page papers; develop the criteria for designating MIT subjects that will fulfill the first and second stages, designate the lists of particular subjects, and specify the minimum performance levels required to satisfy the requirement through these subjects).
- maintain close contact with all academic departments, the Office of the Dean for Student Affairs, the Admissions Office, and UROP about ongoing implementation and evaluation of the requirement.
- report periodically to the CEP and to the faculty, as appropriate.

A board of evaluators would be needed to read the five- and ten-page papers submitted to satisfy the requirement. The board would be composed of the Committee, though not the student members, and additional members appointed by the Provost, to be adjusted to meet the work load. The members of the Committee on the Writing Requirement would participate to a limited extent in these evaluations to obtain first-hand knowledge of the issues and process. Participation on the board would be recognized as a major service contribution to the Institute community. The board of evaluators would determine minimally acceptable standards of proficiency (in accordance with guidelines set by the Committee) and discuss some of the papers as a group to assure reasonably uniform application of the criteria.

The Committee on the Writing Requirement would be established in the spring term of 1982. The initial task of the Committee, working with the Provost's Office, would be to set up the administrative office. The director and the Committee would work out the detailed procedures and criteria necessary for implementing the requirement.

The Discussion in the following section is taken from the Working Group's report.

Discussion

Over the last decade, many educators throughout the country have expressed concern over the decline in the writing ability of undergraduates. This concern has increased in the last two years. Students have joined teachers and administrators in urging recognition, evaluation, and solution of the problem. In the spring and summer of 1981, several major articles appeared in the *New York Times*, the *Boston Globe*, and the *New Yorker*, highlighting the concerns and describing the corrective steps devised by certain universities. MIT has also explored the issue.

The Review Process

In the fall of 1980, the Committee on Educational Policy (CEP) took on the task of curriculum review in response to a charge by President Gray in his inaugural address. The question of writing proficiency for MIT undergraduates emerged in this context. A working group was appointed by the CEP to explore the issue and report its findings and recommendations. We set about the task by holding small group discussions with faculty members and administrators and students. Out of these discussions, we devised a questionnaire to be distributed to the faculty and some administrators (see Appendix A); we also put up a wall poster in Lobby 7 to gather student response (see Appendix B). [The appendices are not included here; they can be obtained from the CEP office, Room 4-237, extension 3-1701.] Our group continued to hold discussions with groups throughout the Institute, visited several classes, and attended faculty and student committee meetings. The questionnaire produced significant

(continued on next page)

and widespread response. Well over 40% of the faculty returned the forms; also, 25% of those who completed the questionnaire offered comments and suggestions, many of them lengthy, detailed, provocative, and sometimes amusing. We wish to thank those who so willingly shared their thoughts in group discussions, questionnaires, and other forums. A special word of thanks goes to Daniel McDonough for helping us sift through the questionnaires.

Concerns about Writing at MIT

At MIT there is a very real concern about the writing competence of undergraduates. Faculty, administrators, and students all express dissatisfaction with the quality of undergraduate writing. Perhaps the word dissatisfaction is not strong enough. Many feel that students are severely handicapped by their limited writing experiences and skills. It is a tense, emotional issue—one on which people express opinions an octave higher than on most other issues of educational policy. Our working group sought to get behind the dissatisfaction, examine the causes, and explore ways to meet the demand for change.

Over and over again our group heard faculty and administrators and students assert the need for "effective training in expository prose . . . the purposeful language of description, analysis, and argument." Some MIT students, it is generally recognized, are competent writers, but "many students need . . . basics, sentence construction, meaning of words, etc." Faculty members lament "poor spelling and the total disregard for the basic elements in writing . . . capitalization, punctuation, structure of a sentence, etc.," almost all feel that there should be a requirement placing "emphasis on writing, criticism, and re-writing." The faculty responses to our questionnaire suggest that over 50% of the students lack writing competence and cannot work efficiently in their subjects at MIT. Even more disturbing, the responses suggest that about 50% of the students lack competence on leaving MIT and therefore are not maximally equipped to meet the larger demands of employment and career. The Student Committee on Educational Policy surveyed the undergraduate population in the spring of 1981 and found that over 50% of the respondents wanted an Institute requirement for writing competence—one that focused on the basic elements of exposition (a similar survey was conducted by them in 1978 with similar results).

Current Efforts to Strengthen Students' Writing Proficiency

As we examined the problem, our understanding was refined and deepened. Very early the group decided to look more closely at the question of a writing proficiency requirement, that is, setting a minimum level of competence for all students at the Institute. We pursued the issue further and found that no formal requirement at the Institute has basic writing proficiency as a primary goal. A number of ways have, however, been provided for some students to strengthen their writing skills. The Humanities, Arts, and Social Sciences (HASS) distribution requirement and the Writing Program have served well in this respect.

The HASS requirement, instituted in 1974, is divided into three parts: distribution, concentration, and elective subjects. The distribution component has focused on writing with the aim of developing in undergraduates "skill in communication, both oral and written." The faculty and student response to the requirement has been mixed. Modifications have emerged in response to specific criticisms of previous criteria governing these subjects, and more generally, to growing dissatisfaction with the level of writing competence among undergraduates. These include 25 or more pages of writing (15 in a foreign language), several exercises spread over the term, as well as opportunities to rewrite papers. The HASS requirement, we must stress, was never set up to insure writing proficiency in MIT undergraduates. Few of the subjects teach expository writing per se; the main purpose has always been to strengthen the skills of students who have already attained a level of competence in writing. Our hope is that this requirement will be strengthened, continue to exist as a separate one, and further its goal of enhancing the writing skills of undergraduates. We are certain that the requirement can contribute to a more comprehensive Institute-wide writing proficiency requirement without compromising any of its present goals. We believe that a proficiency requirement will in fact bolster the distribution requirement.

The Writing Program represents another attempt to improve the general quality of writing at the Institute. The Program was set up in July 1974 "to demonstrate a range of approaches . . . for integrating written communications more effectively into the undergraduate education offered at MIT"; it underwent a review in 1975-76 (see *Report of the Committee to Evaluate the Pilot Writing Program*, 17 June 1976, Professor Nathan Sivin, chairman). The charge of the Program has never been one of developing or carrying out a proficiency requirement for the Institute. The curriculum offers instead a rich range of subjects in expository, technical, and science writing and in various literary genres—poetry, fiction, and essay. There is a substantial enrollment of approximately 400 students in a total of about 25 subjects each semester.

Writing in the Context of Students' Professional Programs

The issue of a proficiency requirement remained before our group. Probing further, we saw that writing problems are most acute in the professional context of students. There is a widespread feeling on the part of the faculty and students alike that there needs to be more emphasis on writing in the context of the professional disciplines. One professor of engineering goes so far as to say that "the best way to teach writing is as an integral part of regular subject work." This approach would help students with theses and laboratory reports; and by extension, it would prepare them for the demands of employment in particular fields. The Institute, it seems to us, has a unique opportunity to tie writing more closely to the professional disciplines. This is especially appropriate, since MIT has always prepared its students to meet the most stringent professional demands and sends a large portion of them into competitive fields. In that sense the Institute is different from many universities, and MIT students are different from students elsewhere. The MIT student, on graduation, immediately takes on important jobs, interacts on many levels in the world of industry, and engages in meaningful projects in science, engineering, and management. Education involves higher stakes for students at MIT than at most liberal arts colleges.

In the last few years, demands on engineers and other professionals for broader public communication have increased. High on the list of new demands is writing competence. Staffs in industry and government are being constantly

called on to provide environmental impact statements, affirmative action reports, and occupational health and safety guidelines. Students have become aware of this through job interviews, recent alumni, and professors. At all levels within educational institutions, attention has begun to focus on the writing of students. This, in part at least, is a response to intense pressure from industry and the professional world in general for competence in this area. As money gets tighter, for instance, more rigid standards are placed on funding research proposals—that is, how they are conceived and articulated. The successful professional in almost any field needs to know how to put together a persuasive and well-written document.

There could be no better time than now for MIT to address the issue and no better context in which to address it than that of professional preparation of students. In the past the Institute has offered writing instruction from the standpoint of the professional. There has been a subject, with several sections, on technical writing. Also, for at least four years, cooperative arrangements have been developing between the Writing Program and the departments in the School of Engineering. Members of the Writing Program join the classes of engineering subjects to help students with the writing of papers and project reports. Typically, subjects in the engineering fields are designed so that a faculty member from the Writing Program gives one to three presentations and evaluates the literary quality of one or two sets of papers. At present the Writing Program contributes in varying degrees to every undergraduate department within the School of Engineering. The thrust is for writing instruction to become a fundamental feature of technical education. Our group would like to see this model grow at a natural rate to include departments in other Schools as well. Such a cooperative program, with a broad base, would contribute in a meaningful way to the proposed proficiency requirement, especially the second stage.

Our aim is for every department to stress the importance of writing. The extent to which a particular department can do this depends, we realize, on the nature of the subject and on the available facilities. But we need to make every possible effort to create a community in which students value good writing, feel comfortable about spending time and exerting effort to produce it. On the whole, the faculty asserts that writing is closely connected with thinking; yet many faculty members do not evaluate the quality of expression of their students' work. Faculty members in all fields need to be assured that comments on and evaluation of students' writing are appropriate, indeed desirable.

Many faculty members feel the "need to continue to make a big effort with writing in subject matter courses . . . as part of some curriculum." The call is for "more writing in current courses." Essays and other written assignments in the various subjects could afford students the opportunity they need to practice and improve their skills. Certain difficult writing problems, namely conceptualization and organization, can be most effectively treated by a professor within the context of a subject. Only if the various departments encourage such opportunities will students receive constructive criticism, begin to write more, rewrite, and thereby improve. "Departmental emphasis is important," in the words of one professor, "both for continuing experiences and to demonstrate the seriousness of MIT's interest."

The Diversity of Approach in a Writing Requirement

The issue of writing competence at MIT is a complex one. Some students lack the basic mechanics, including spelling and proper sentence structure; others have mastered the advanced problems of organization, rhetoric, and style. In other words, put the other way around, some students come to MIT with relatively high competence in writing; others come with hardly any at all. Students and faculty alike point to this diversity as a possible major problem in devising a requirement. Also, with their quick and highly motivated minds, MIT students are diverse in their preferred modes of learning. A separate writing class might be good for some; writing instruction in the context of a technical subject good for others; hard, independent work through a particular resource—a UROP project perhaps—might be the choice of still others. Given the diversity of the student body in writing ability and in learning preference, and given the scattered resources that now exist, a proficiency requirement would work most effectively if it were based on a range of options. The faculty favors a requirement that has a variety of means to upgrade the level of writing among students at the Institute.

The point about diversity is particularly relevant as regards students for whom English is a second language. Often these students experience severe problems with their writing. An Institute-wide requirement would have to provide facilities to help meet their needs which, in substance though not necessarily in degree, are different from those of the native speaker. The Foreign Languages and Literatures Section of the Humanities Department has devised and offered subjects on English as a second language. At present there are approximately six subjects offered throughout the year with enrollments of 10 to 15 students in each. Registration is not, however, carefully monitored. Few advisors know the subjects exist; fewer know them critically and in detail. As a result, students who would benefit are not systematically recommended into them. The faculty teaching the subjects believes that a mandatory evaluation should be conducted in the first year; students who need special attention could then be identified and registered for appropriate subjects. The subjects treating English as a second language have the potential to enhance the writing proficiency of a significant portion of the student body. They would be a valuable resource in a writing proficiency requirement.

Importance of Early Evaluation

Whatever is to be done to improve writing ability should be done early. Students could then perform at a higher level in their course work and benefit over a longer period of time from the resources of the Institute. A proficiency requirement therefore should carry provisions for early evaluation. One way is by means of the pre-admission tests of the College Board, specifically the Advanced Placement Test in English and the English Achievement Test (with essay). At present about 15% of the entering class take the Advanced Placement Test in English and receive 4 or 5; about 30% of the first-year class sit for the English Achievement Test (with essay). Using these tests as early evaluators would serve three ends. First, prospective students would realize that MIT places a high priority on the quality of writing of its undergraduates. The Admissions Office believes that this is a good message to send to high schools across the country, that it would reinforce the conditions which attract the best qualified students to the Institute and encourage those who are admitted to arrive better prepared. Secondly, students who show competence in writing through the pre-admission test would be relieved of concern about the first phase of the requirement. And thirdly, a smaller portion of the cost of the requirement would fall on the Institute.

It is to be expected, of course, that there will be students who either do not take the prescribed pre-admission tests or do not receive a high enough score to satisfy the first phase of the

requirement. An in-house examination would provide a mechanism to evaluate their writing abilities. Those who achieve a satisfactory level would move on to the second phase. Those who do not would be provided with an assessment of their problem and advised on how best to go about satisfying the first phase. For some, an expository writing subject might be the solution; for others, departmental subjects with special attention to writing; for still others, a seminar during IAP. There are students who, rather than take an examination, may prefer to satisfy the first phase through early submission of a paper or by taking an expository writing subject. Whatever the case, students must have attempted one of the options by the end of freshman year, so that they may proceed with the second phase or receive special attention if they experience difficulty with the first.

Continuing Development of Writing Ability

A proficiency requirement, to have lasting effect, must not be a one-shot ordeal and should never be perceived as such. Writing improves through practice and experience, over a period of time. The Institute should make "continuous demand" on writing skills. Good writing and clear thinking, after all, grow side by side. In the words of one faculty member, "[writing] is a slow process connected much more . . . with the whole of education than with 'writing courses.'" A writing proficiency requirement must bring with it the notion of process whereby students are inspired to try and improve their skills throughout their years at MIT, throughout their careers, throughout their lives. The second phase of the requirement, with its relation to professional aims and its demand for a more sustained period of application or a longer paper with higher evaluation criteria, gives a sense of this process.

Support Activities and Services

The writing proficiency requirement stands alone. Still, there are other activities, not necessarily related, that would promote the success of the proposal. There is no better time than now for the Institute to assess its current resources and determine future directions. In the course of our talks with faculty and students throughout the Institute, the group has gathered valuable insights and suggestions. From these, we recommend that a number of support services be put in place.

Many faculty members and students have expressed the need for a writing resource center. Such a center should be equipped with reference books, self-paced materials and computers for text editing, and should provide opportunity for independent study and tutorials. Students should have ready access to professional instruction that would help them make up deficiencies at their own pace and provide the kind of in-depth assistance not available in an ordinary classroom setting. A resource center could help faculty in the various disciplines deal more effectively with the writing problems of their students. Other employees could also use the facility; a survey of more than 500 MIT staff members found that assistance in writing skills was the top priority for them, followed by instruction in computer methods and word processing. The Writing Program has been developing a proposal for a resource center somewhat along these lines. We recommend that the Institute support and extend this proposal.

Our group urges support on the departmental level. Departments must stress the importance of effective expository writing. Whenever appropriate, term papers should be assigned and essay questions used on examinations. Attention should be given to style and expression in the grading of these assignments. Manuals of style should become part of every department's bookshelf, and students should be encouraged to consult them. Efforts should be made to use the bachelor's thesis as an opportunity to strengthen expository skills. Workshops focused on thesis writing—encouraging students to start earlier, plan, outline, write, rewrite, and so on—would be an invaluable resource. The IAP should be used to offer workshops in writing, perhaps with special emphasis on the particular concerns of individual departments. Faculty from the departments might team up with faculty from the Writing Program to arrange such workshops. This would allow students to strengthen their writing in a more relaxed, informal atmosphere, without the need to worry about grades.

Administering the Writing Requirement

The success of the requirement depends on how it is carried out, and effective implementation requires a staff committed to its goals. The requirement affects all students and calls on resources from all parts of MIT. It is a big job, one that will need the full support of the Institute. We recommend an administrative design that can maintain and build on the Institute-wide character of the requirement. A separate office responsible to the Provost should be created to promote and monitor the program. An oversight committee composed of faculty throughout the Institute should be appointed to set up the office. This committee and the Provost's office would appoint a tenured member of the faculty as director. The director and the committee would work out the details concerning procedure and criteria, and devise a plan to institute the requirement.

The financial cost of the proposed requirement is expected to be relatively low because we are attempting to mobilize and utilize current resources without putting undue strain on any one area of the Institute community, on any one resource. No mass of new subjects will be created; nor will additional staff members be hired to teach traditional subjects on composition. If special subjects are needed for students with severe problems, sections in existing subjects on expository writing will be set up for the purpose. We believe that Institute-wide attention to the writing problem of undergraduates will enhance the quality of their education. MIT has before it a way to proceed that is both inexpensive and appropriate to the community's particular needs. Just because the writing problem is a general one, its solution need not be uniform.

Our group recommends that the proposed proficiency requirement be instituted. It leads, in part, in a direction pointed to by the *Sivin Report*, though the group that compiled the report, having no charge to do so, did not pursue the issue of a requirement and felt unprepared to make any such recommendation. This proposal, as outlined, would harness Institute resources; it would monitor student achievement without increasing subject load or pace; it would strengthen the ongoing efforts in writing at the Institute. The requirement allows for mutual aid and cooperation between various programs and departments, and in so doing could provide a beneficial solution to the writing problems of many students.

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December, 1981