



One little girl shares her secrets with Santa at the Research, Development and Technical Employees Union Christmas party. See other Christmas pictures on page 3. —Photo by Margo Foote

Faculty Discusses Budget, Proposals for Education

by Joanne Miller

The report of the Special Task Force on Education and Chancellor Paul E. Gray's preliminary remarks on budgetary prospects for fiscal 1973 were the major topics at the faculty meeting last Wednesday (December 15).

In introducing discussion of the Task Force Report, Professor Hartley Rogers, chairman of the faculty and of the task force, noted that "the recommendations are first steps; we hope to learn more

at each step."

Professor Rogers outlined the three main recommendations of the report: increased opportunities for undergraduates to participate in research; appointment of a Dean for the academic program; and a formal commitment to education research.

With respect to increasing research opportunities for undergraduates, Professor Rogers said that existing programs such as freshman seminars and the Under-

graduate Research Opportunities Program (UROP) are not in themselves broad enough to "generate the kind of ferment we would like to see."

The thrust of the proposal centers on building one-to-one relationships between faculty members and undergraduates. This would offer students an improved opportunity to understand what day-to-day working situations are like.

Discussion concerning the establishment of a Dean for the academic program was largely focused on ways to make such a position effective. The primary responsibility of this officer would be the first two undergraduate years; but he would also be heavily involved with educational innovation throughout the undergraduate program.

In calling for increased research in education, Professor Rogers said the Task Force hoped "that education programs would eventually come to equal MIT in people's minds the same way that computers do now."

Professor Rogers requested an additional meeting of the faculty on Wednesday, January 12, to continue discussion of the Task Force report and to begin consideration of the Report of the Ad Hoc Committee on the MIT Library System. (The Education report was published in *Tech Talk* December 8 and the Library Report on December 15.)

Chancellor Gray opened

(Continued on page 2)

New Cane for Blind Perfected at Institute

by Michael Seif

The long and rigid red-tipped cane blind people use to tap their way through a sighted world has come in for some improvement.

A new model, now in production, can be folded and tucked away in a pocket when not in use. Yet when extended, the folding cane retains the same rock-like rigidity that makes a conventional cane a cornucopia of tactile cues about the environment when in the hands of an experienced blind user.

The new cane weighs ten ounces and folds down into a compact bundle of tubes eight inches long. It was developed—and coaxed into commercial production—by engineering researchers and students at MIT's Sensory Aids Evaluation and Development Center (SAEDC).

Now that the cane is in com-

mercial production, engineers at the firm which makes it—Hycor Corporation, in Woburn—have found that the same foldable-but-rigid principle around which the cane was designed is equally applicable to other devices. A shorter supportive cane used by people with walking problems already is outselling the cane for the blind 10-to-1. In addition, the firm expects to use the principle in making long-handled tools such as brushes and scrapers for automobile windshields which would conveniently fold up for storage in glove compartments.

The engineers at SAEDC began work on something as seemingly simple as a cane almost from the time the center was formed in 1964. From the beginning, SAEDC has served as an organizer and host for technical meetings

(Continued on page 2)

Parking Area Security Offered

Campus Patrol has begun notifying members of the MIT community, particularly women members who work beyond normal hours, that they may have patrol protection at parking areas or other remote campus locations if they request it.

The notices followed an assault in a garage last week. Campus Patrol, in a notice being distributed to offices and to motorists, said anyone desiring patrol protection at a parking area or a remote campus location should call Ext. 2997 or 2998.

Mason to Be On Channel 7

Professor Edward A. Mason, head of the Department of Nuclear Engineering, will appear on the ABC network's educational program for children, "Make A Wish," which will be seen in the Boston area at 11:30 a.m. on Sunday, December 26, over WNAC-TV Channel 7.

The program attempts to explain how things work at a level children aged 8 to 14 can understand. A segment included in the program will deal with nuclear energy and Professor Mason's role is to explain the concept of a chain reaction.

APS Panel to Focus On Women in Physics

More than 800 scientists are expected to attend the 1971 Winter Meeting of the American Physical Society to be held at the Institute next Monday through Wednesday, December 27-29. Based in Kresge Auditorium, the meeting will feature a number of sessions on interdisciplinary subjects and science-related social questions. (See *Tech Talk*, December 15, for a schedule of sessions open to the public.)

An open discussion on "Special Problems to Be Faced by Women in Physics" will be held on Monday at 4:30 p.m. in Kresge Little Theatre. Moderator of the discussion will be Dr. Vera Kistiakowsky, senior research scientist in physics at MIT.

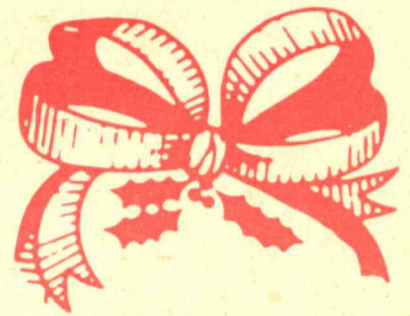
The other panelists will be: Dr. Albert G. Hill, professor of physics,

vice president for research and chairman of the board of Draper Laboratory at the Institute; Dr. Margaret A. Waggoner, professor and dean of physics at Smith College; and Dr. Esther Conwell, industrial physicist at General Telephone and Electronics Laboratories. The audience will be encouraged to ask questions and participate with the panelists.

Highlighting the three-day APS meeting will be a banquet in the Sala de Puerto Rico at 7:30 p.m. on Tuesday, December 28. President Jerome B. Wiesner will be the featured speaker. He will discuss the topic "What Is Science Policy?"

Any questions about the APS meeting should be directed to Professor William Bertozzi on Ext. 5167 or Daniel Gould on Ext. 4803.

Happy Holidays



Gray Outlines Budget Figures, Cites Goals

(Continued from page 1) discussion of the budget by outlining three objectives. "We must reverse the trend of growth in operating expenses," he said, "keep the total demand on unrestricted funds within a manageable range, and stop or moderate the growth of indirect charges."

Dr. Gray presented five tables illustrating the ongoing budgetary review. "We want to take a large enough reduction this year so that we can direct our attention to other things next year," he said.

TABLE 1
TOTAL DEMAND FOR UNRESTRICTED FUNDS IN OPERATIONS (in thousands)

Fiscal Year	Amount
1966	\$ 703
1967	806
1968	841
1969	2,203
1970	4,636
1971	4,907
1972 (projected)	5,890

Additional quasi-operational needs in FY 1972:

Student Aid Supplement	\$150
Capital-Related	728

In describing table Number 4, which shows reduction targets, Dr. Gray pointed out "it is premature to say how close we are to meeting the targets." But he said preliminary review of the academic budget looked as if it would come within \$50,000 of the

TABLE 2
SOURCES OF UNRESTRICTED FUNDS (in thousands)

Source	1972 (budget)
Patent resources fund	\$1,200
Use of facilities funds	700
Unrestricted gifts	1,300
Total current funds	\$3,200

target amount. The reviews of both the plant and general administrative budgets are still in progress. The total reduction should exceed \$3.5 million.

In discussing the estimated income and expenses for fiscal 1973, Dr. Gray emphasized that several of the figures are still "iffy." For example it is still too early to assess accurately the likelihood of a modest increase in sponsored research in 1973, and no decision has yet been made concerning continued slow growth in the size of the student body.

Because of the generally uncertain financial future, Dr. Gray said that projections beyond next year are very tentative. Dr. Gray said that he will continue to report to the faculty on future developments regarding the budget.

In other business, Professor Gene M. Brown was nominated to replace Professor Henry A. Millon on the executive board of the Libraries for the spring term.

TABLE 3
GROWTH IN INDIRECT COST RECOVERY RATES

	1966	1968	1969	1970	1971	1972
On-campus rate	44.3	49.2	48.0	51.0	53.0	54.0
Off-campus rate	19.4	24.6	24.5	26.5	27.0	28.0

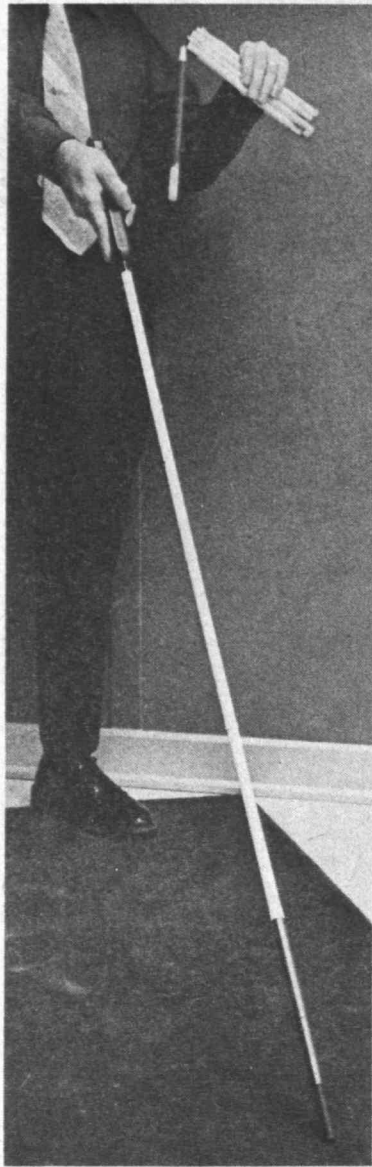
TABLE 4
BUDGET REDUCTION TARGETS FOR FY 1973 (in thousands)

Expense Category	Base	Reduction	%	General	Indirect
Academic	23,000	\$ 890	3.9	790	100
General & Administrative	22,000	2,200	10	1,100	1,100
Plant	15,000	1,000	8	330	670
TOTAL	58,000	\$4,090		2,220	1,870

TABLE 5
PROJECTED INCOME AND EXPENSE CHANGES FOR FY 1973 (in thousands)

Increases in Income:		
Announced \$250 Tuition Increase	\$1,850	
Enrollment Increase of 50	140	
Increased Investment Earnings	420	
Growth in Sponsored Research	250	
		\$2,660
Changes in Costs:		
Salary and Wage Increases (4%)	+\$1,140	
Uncontrollable Escalation	+ 800	
New Programs	+ 400	
Budget Reduction Target (General)	- 2,000	
Residual from Reduction in 1972	- 200	
Decreases in Curriculum Development, Cost Sharing, Tuition Loss	- 410	
		270 (net reduction)
Reduction in Student Aid and Capital Requirements	220	
New Unrestricted Gift Income	1,000	
Total Change from FY 1972 to FY 1973	\$4,150	(reduction)

Total Demand for Unrestricted Funds...1972 Budget	6,768	
1973 Present Est.	2,618	
Present Estimate of Unrestricted Income in FY 1973	3,200	



Newly developed Cable Cane for blind people is shown extended and folded.

-Photo by Bob Lyon

Folding Cane Offers Flexibility to Users

(Continued from page 1) that bring scientists, engineers and blind people, particularly blind professional people, together to discuss the problems blind people have and how technology can be used to help.

According to Vito Proscia, SAEDC director who is himself an engineer and blind, during these discussions, one subject that came up with predictable regularity was the problem that all the blind travelers seemed to have with their canes. A rigid cane, which is actually an extension of the blind person's finger, allows him to feel obstacles in his path, but is inconvenient because it does not fold compactly.

Folding canes, at the time, unfortunately had many drawbacks that made them less than satisfactory. Many models were difficult to open and fold, with mechanisms that could easily jam or break. The worst thing about the folding canes, however, was that it was just not stiff enough to

transmit the maximum amount of information to the hand of the user.

The outcome of those informal discussions is now known as the MIT Cable Cane. It is constructed of alternately tapered and flared aluminum tubing; the top part of each section is constricted and fits into the expanded bottom of the section above it. A 100-pound-test steel cable runs through the 1/2-inch tubing and can be pulled tight with a toggle arrangement in the cane's handle.

Critical in the creation of the Cable Cane was determining the exact angle at which the tubing should be tapered and flared. Too small an angle and the tubes became impossible to pull apart. If the angle were too great, then there was too much play in the cane.

The MIT Cable Cane originated as an undergraduate student project, was explored in a graduate thesis, underwent development and evaluation at the Center, and is now being manufactured by Hycor.

Much of the basic research had been done on the cane when Mr. Proscia became SAEDC director. Proscia enlisted Hycor to manufacture the cane, and obtained financing from the Northwest Foundation for the Blind for the machinery needed for the initial production run of 1,000 Cable Canes. Six months after Proscia became SAEDC director, a commercially available cane was on the market.

SAEDC's purpose is to take sensory devices and processes that have reached the feasibility stage and subject them to further engineering development and clinical evaluation, with the expectation that those concepts that prove both practical and useful will then be manufactured and distributed by other organizations.

Last TT in '71

Tech Talk will not be published next Wednesday, December 29, because of the Christmas holidays. The regular publishing schedule will resume on January 5.

E-an Zen Appointed As Crosby Geologist

Dr. E-an Zen, a research geologist with the US Geological Survey in Washington, D. C., has been appointed Crosby Visiting Professor of Geology in the Department of Earth and Planetary Sciences at the Institute for the spring term beginning in February.

Dr. Zen, a native of Peking,

China, received the B.A. degree from Cornell University in 1951, and the A.M. and Ph.D. degrees in geology from Harvard University in 1952 and 1955 respectively.

After research at the Woods Hole Oceanographic Institution from 1955 to 1958, Dr. Zen taught at the University of North Carolina for a year before joining the US Geological Survey in 1959.

A specialist in petrology, Dr. Zen is a Fellow of the American Academy of Arts and Sciences, the Geological Society, the Mineralogical Society, the Geochemical Society, and the New York Academy of Sciences.

Rifle Class Begins Soon

The MIT Pistol and Rifle Club will offer a six-week course in basic rifle marksmanship beginning Thursday, January 6. Enrollment is limited to the first 20 applicants who are adult members of the community.

The first session will meet at 5:30 p.m. in the duPont Gym rifle range on January 6. A \$10 registration fee covers the cost of ammunition, targets, and the use of rifles.

Graduates of the course who are interested in high power rifle shooting may be invited to join the Club's rifle team. They would then be eligible to compete in 200 and 300 yard matches during the summer.

To sign up for the rifle course, call Herald Sulahian on Ext. 3989.

Information Available

The following items are available in the Information Center, Room 7-111: the November issue of *Reports on Research*; copies of the new *MIT Observer*; the Compendium of Courses and Seminars Relating to Public Policy or Science and Technology in Society for the second term of this academic year; the Report of the Ad Hoc Committee on the MIT Library System; and the Report of the Special Task Force on Education.

TECH TALK

Volume 16, Number 25
December 22, 1971

Editor

Joanne Miller

Staff

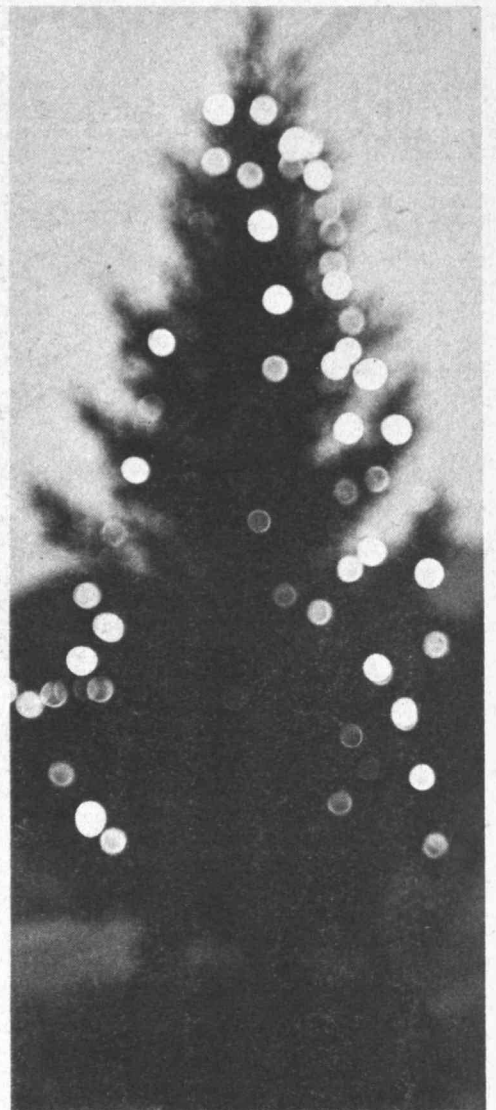
Robert M. Byers
Peter M. Close
Linda Omohundro
Ty Rabe

Business Manager
Paul E. Johnson

Tech Talk is published 50 times a year by the Institute Information Services, 77 Massachusetts Avenue, Cambridge, Mass. 02139, and distributed free to all members of the MIT community. Additional copies are available in the Information Center (Room 7-111) or in the News Office (Room 5-105). Large numbers of additional copies should be requested within two weeks of the issue date.

Mail subscriptions are \$7.50 per year. Checks should be made payable to Bursar, MIT mailed to the Editor, Room 5-111, MIT, Cambridge, Mass. 02139.

Please address all news and comment to the Editor, Room 5-111, Ext. 3277.



The Coop sprouted a psychedelic Christmas greeting to browsers in the book and record department (left). Above, Santa hugs a delighted customer as two others eagerly await their interviews at the RDTEU party. At right, the Institute's Christmas tree on the Student Center plaza.

-Photos by Margo Foote

December 22
through
January 7

THE INSTITUTE CALENDAR

Seminars and Lectures

Wednesday, December 22

Chirality in Dual Resonance Models
Dr. C. B. Thorn, University of California. Joint Theoretical Seminar. 4pm, Rm 6-120. Tea, 3:30pm, Rm 26-110.

Wednesday, January 5

Development of the Biomedical/Biochemical Program in the Chemical Engineering Department
Prof. E. W. Merrill and Prof. C. K. Colton, chemical engineering. IAP Seminar. 11am-12n. Rm 12-142.

The Effect of Modern Society on Technology*
Prof. Gordon S. Brown, electrical engineering. Humanities Seminar. 3pm, Rm 14E-304.

Friday, January 7

Development of a Synthetic Articular Cartilage Material for Joint Surgery
Jim Bray, graduate student, chemical engineering. IAP Seminar. 11am-12n. Rm 12-142.

Exhibitions

Heaney Exhibit*
Exhibition of paintings and drawings by Tom Heaney through mid-January at the Hayden Gallery.

Exhibition of Paintings by Susan E. Schur
On display at the Faculty Club through mid-January.

Photographs by Josh Collins*
On display in the Rotch Library through February 4.

Art LaZar Exhibition*
Creative Photography Gallery (3rd floor duPont Gym), 12n-7pm, through February 1.

The Art of Rigging and Buoy System for Air-Sea Studies*
Hart Nautical Museum, Bldg 5, 1st floor.

Main Corridor Exhibitions*
Presented by students and departments. Bldgs 7, 3, 4, 8.

Athletics

Wrestling
Open Invitational. Wednesday, December 29, 11:30am, duPont Gym.

Religious Services and Activities

The Chapel is open for private meditation from 7am to 11pm every day.

Christian Worship Service*
Every Sunday, 11am, Chapel.

Roman Catholic Christmas Masses*

Christmas Eve Midnight Mass, Friday, December 24, 12m, Chapel. **Christmas Day**, Saturday, December 25, 12:15pm, Chapel. **Sunday Mass**, December 26, 12:15pm only, Chapel. **Octave Day of Christmas**, Saturday, January 1, 9:15am and 12:15pm, Chapel. **Sunday Mass**, January 2, 9:15am and 12:15pm, Chapel.

Hillel Religious Services*

Monday-Friday, 8am, Rm 7-102; Fridays, 7:30pm, Chapel; Saturdays, 9am, Chapel.

Islamic Society Prayers*

Every Friday, 1pm, Kresge Rehearsal Rm B.

Vedanta Services*

Every Friday, 5:15pm, Chapel; discussion hour, 6pm, Ashdown Dining Hall.

Announcements

Ground School*

IAP course in preparation for written private pilot examination. First session, Wednesday, January 5, 8:45-11:30am, Rm 20E-017. Call Prof. James Moran, X7485 or X7488.

*Open to the Public

**Open to the MIT Community Only

***Open to Members Only

†Freshmen encouraged to attend.

Send notices for January 5 through January 14 to the Calendar Editor, Room 5-111, Ext. 3279, by noon Thursday, December 30.

CLASSIFIED ADS

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 or room number. Ads may be telephoned to Ext. 3270 or mailed to Room 5-105. The deadline is 5pm Friday.

For Sale, Etc.

Christmas trees, cut your own, Wood Ave, Rindge, NH, orange sign off Rt 119 after crossing Mass/NH line, 50 min from Boston. Nottingham, 603 899-6646.

Conv sofa, exc cond, \$120; 23" TV; chr; lamps; misc household items. Imada, X3109 or 926-3579.

Head skis, 7', lift heel, Marker toe bindings, \$35, w/poles, \$40; lace boots, 10, \$10; Scott 340B stereo receiver, \$60; Dual 1009 turntbl w/cartridge, \$10. X4868 or 924-1859.

Swivel chr, 2 bar; animal travel cage. Klaus, 876-7927.

VW snows; reg tires, \$10 ea; studded tires, \$12 ea; new 4 speaker tbl r, \$35. Call 965-0451, 9-10am.

Northland wood skis, 200 cm, w/Marker bindings, \$25. Call 566-0041.

Head 720 skis, 203 cm, w/Nevada toe and heel. Frailey, X4974.

Ohm 8 wide range speaker, hangs on wall, w/walnut finish, \$10. Dr. Buyrn, X4244.

Nikon system. Call 876-7036.

Tubeless snows, 8.5x14, gd cond, \$20 pr. X7316 or 443-3242.

RCA 21" console TV, exc cond, \$60. X4872 or 876-9037 evgs.

Motorola 19" b&w console, works well, \$25. Ron, X7273.

Webcor hi fi w/stand, exc cond, \$20; 17" Philco tbl TV, needs work, \$3. Ray, X7235.

Dynaco speakers, \$90. Call 547-9672.

GE port dishwasher, \$125. Call 868-6288 evgs.

Skis, 185 cm w/bindings, \$15; 10M Arlberg boots, \$5; child size 12 figure skates, \$3. X4274.

Mod Dan couch, \$45; matching chr, \$15. Wh fiberglass 22' drapes, \$20; 6 yd cotton print Indian saris and jewelry, best offer. Call 492-2141.

Elan metal skis, 205 cm, 190 cm, Marker bindings, \$80 ea. Lady's boots, 7, \$25; man's 11, \$15; poles, \$5. Janis, X7113.

VW stud snows, \$12 ea; 4 speaker R, orig \$80, now \$30. Call 965-0451 9-10am.

Man's Lange ski boots, 8 1/2, \$50. Ensley, X5719.

New Bancroft tennis racket, \$10. Bharat, X6231 or 354-8164 evgs.

Swedish stainless steel tblware, 4 piece place setting, 8 settings, \$30 complete. Call 524-0118.

Hamlin integrated hi fi stereo amp and preamp, \$50; Argus super 8 movie projector, \$60. Malchow, X588 Draper.

Frye style 2225 man's boots, 11D, slightly used, \$25. McKinney, X2461.

Smith Corona port typewriter, \$75; Rolliflex Tessar, gd cond, best offer; KLH and Garrard changer, \$200. X5642 or 536-8548.

Studio 45 records, \$1 for 10, no choice. Bart, X5019.

Bed 3/4 size, 48"x75" firm mat & spring, exc cond, \$30. Paul, X6389.

Sears man's figure skates, 8, \$10; Sears hair dryer, tbl top, \$10. Wen-Li, X5353 or 354-0534.

Snows w/studs, 8.75x15, gd recaps, \$15 pr. Scott, X6631.

Christmas cookies, hand decorated, for Christmas tree, 25¢ ea. Michele, 731-2168.

Rieker lady's ski boots, 7 1/2N, exc cond, \$10. X1555.

Fake fireplace, \$10. David, X7652.

Apt size gas range w/4 burners, \$35. Call 625-6158.

Dunlop tires 6.00x13, almost new, \$15 ea. Joanne, X7640 Linc or 259-0417.

Sgl bed w/box spring mat, \$38; snows, 6.50x7.00 ring 13, \$10; storage/travel trunks, 31"x17"x12", 40"x19"x14", \$6 ea. Call 232-0965.

Lafayette stereo tapedeck, rk 880, 3 heads, exc cond; Raleigh Sprite 27" 10 sp bicycle w/saddle bag and tools. Call 731-8858 evgs.

TWA ticket to London, any date, \$100. Toby, X5526 or 547-0144 evgs.

Roberts tape recorder, \$150 negotiable; tapedeck, \$40; bathrm cabinet w/mirror and towel rack, \$15. Sandy, X3533 or 354-4005 evgs.

Sears Silvertone stereo elec organ, 12 voice, Leslie speaker, rhythm master separate system, orig \$895, now \$595. X470 Linc.

Kitzbuhel ski boots, laced, 10M, 8N, \$15 ea. Paul, X4192.

Transceiver, 6 meter, beam, etc. Larry, X5528 or X5558 or 322-1086 evgs.

AR stereo amp; Heath AJ 15 tuner; AR turntbl w/Shure cartridge; AR 5 and 4 AX speakers; best offer. Lyle, X387 Draper.

Triumph '67 tires, 5, wire wheels, 5.10x13, \$35 ea or best. X2758 or 648-4678.

Vehicles

'61 VW sedan, low K, best offer. Karla, 868-1410.

'63 Renault R8, 50K, 4 Michelin tires, new br and clutch, \$200. Michael, X6035 or 354-9601.

'65 Falcon, w/'68 eng, conv, \$400. Call 491-2168.

'66 VW, body fair, eng gd, \$500. X4549.

'66 VW conv, rebuilt eng, gd h, \$600. X6252 or 369-6012.

'67 Ford Cortina 1500 wgn, auto, custom roof rack, tow bar, stud snows, \$650. Call 868-8038.

'70 Mustang Mark I, 351, pwr st and br, auto, exc cond, \$2,300. X7102.

'70 VW bug, 20K, AM-FM R, roof rack, snows, \$1350. X6605 or 661-8395 evgs.

'70 VW bug, 40K, AM-FM, ski rack, console, etc, best offer. X7884.

'71 Renault 16, front wheel drive, w/warranty, \$2,300. Call 729-3829.

'71 VW beetle conv, AM-FM R, 10K, w/warranty, \$2300. Jeff, 861-1579.

Duxbury duck racing sloop, 18', 16'4" beam, fiberglass over wood hull, \$850. Call 245-9032.

Housing

Brookl, furn 7-rm house, 2 fireplaces, 2 B, new K, w/yard, families preferred, Jan-Aug. Call 566-3716 or 353-3121.

Cent Sq, 1 BR apt, LV, den, elec K, avail 1/1, \$185. Call 547-1606 evgs.

Concord, furn 3 BR house, study, play rm, lrg wooded lot, avail 1/31-6/30. Domar, X3369 or 369-4427.

Jay Peak, Vt, lakeside ski lodge on 200 acres, full privacy, reas rent. Denny, X2430 or 665-6220 evgs.

Needh Heights, lrg furn rms B in residential home, K priv, parking, 25 min to MIT, \$95, w/sitting rm, \$110. Call 444-3076 before 8am or evgs.

NH ski chalet w/sauna, indoor pool, etc., wkly or season. Call 353-2809.

Newt Cor, 6 rm apt, \$60 w/utilities, to share w/rmte. X7192 Linc.

Watertown, 1 BR, sublet Feb 1 or March 1 thru May 31, mod w/all extras, 15 min from MIT, \$210. Chris, X2431 or 924-7896.

Westgate, 1 BR apt, sublet for Jan. Doan, 492-3459 before 12/24.

Animals

Sealpoint Siamese kittens, M & F, registered mother, litter trained. Dick, X5430 Linc. or 653-8189 Natick.

Siberian huskies, perfect Christmas gift, bl & wh w/blue eyes, \$75. X455 Linc. or 275-6589.

Miniature Schnauzer M, 3, \$135 ea. Call 729-4715.

Kittens, 6, take 1 or all. Call 547-9580.

Wanted

Fem rmmte to share Brighton apt, own BR, \$72, avail 1/1. Caroline, X2406 or 787-3622 evgs.

Any free sheet music. Chuck, 547-5145.

Elec 12 string guitar w/amp. Call 665-6466.

Boy's/man's buckle boots, 8; girl's skates, 4. X2479.

Independ responsible rmmte, 24-30, for 2 BR furn apt in Harv Sq, \$137.50 w/h and parking. Mary, X5672.

Fem rmmte, prefer Chinese, for Park Dr apt, \$50. Call 536-2896.

Grad student for rm in Ashdown House, avail mid Jan or Feb 1. Ws. Kim, X2961, leave message.

Very cheap ham C.W. transmitter. Gila, X5528 or 322-1086 evgs.

Quiet fem rmmte 25+ for, apt on Mass Ave between Harv/MIT. Call 868-1877.

American partner by Iranian civil engineer in Teheran. Call 899-3667.

Miscellaneous

Wl do gen/tech typing. Marsha, X2342 or 734-8647 evgs.

Mature boy wl babysit children over 3 yrs old. Call 868-9722.

Mother wl babysit in Medford. X6257.

Local/long distance moving, day or night. Ron, 252-2203.

Positions Available

Part-time teletype operators, flexible hours; wl train gd typist. Call 868-9592 or 643-2422.

Senior sec for Nobel scientist. Duties inc coordinating all phases of active ofc & lab: appts, schedules, dictation, production & cataloging tech pubs w/pt time typist, arr mtgs, mng accts, purchasing & travel; mng reading rm & ofc matters for 20 internat postdocs. Min 5 yrs exp w/emphasis in tech area & acct procedures. Call Priscilla Mead, X4251.

Institute Plans Ahead For CENTREX in '72

Next summer the Institute's telephone network will be converted to a CENTREX system. Plans are being made now to ensure a smooth transition to the new system, and at the same time, the Institute is seeking to make significant reductions in telephone expenditures.

During the next few months, Morton Berlan, telecommunications officer, will meet with the Institute's administrative and executive officers to review individual departmental needs as well as overall telephone service.

The purpose of the review is twofold. First, the Institute hopes to minimize the number of lines and extra telephone features, such as call directors and button phones. Based on present telephone rates, this would result in savings of \$50,000 or more per year.

The second purpose is to determine the most economical yet effective departmental telephone arrangements under the CENTREX system. Because the new system offers many different features and types of service, a number of guidelines have been established to determine their distribution. The guidelines are intended (1) to control the telephones with no toll call restriction, thus limiting MIT's responsibility to pay for toll calls of unknown origin, and (2) to issue telephones with capabilities to originate Boston area calls only after a review of need, thus reducing the present \$200,000 per year expenditure for message units.

The Institute's telephone network has grown considerably since the days of Francis Amasa Walker, president of the university from 1882 to 1888. In his book *When MIT Was Boston Tech*, Samuel Prescott wrote: "... one young lady, Miss Julia Comstock, was appointed as an assistant to the office staff of the Institute, and spent part of her time in the president's office as a personal assistant. One of her duties was using the telephone--there was only one in the Institute--which the president absolutely refused to touch." Today, there are more than 10,000 telephones on campus, plus 2,200 in the dorm system--the largest in-house phone system in the New England area.

Converting this massive telephone network to the CENTREX system is quite an undertaking. As a matter of fact, Mr. Berlan recently learned that installing the Institute's CENTREX system will be the largest single cut-over ever made in the nationwide Bell Telephone network. He says, "There are, of course, larger CENTREX systems, but they were cut-over in stages. Our entire network will be converted at one time."

In a recent memorandum to department heads and laboratory directors, Vice President of Operations Philip A. Stoddard said, "We hope that the change-over will be orderly and without a great deal of inconvenience to your department or laboratory. We hope also that significant economies in telephone expense to the Institute will be realized in the process."

Hayden Gallery Exhibits Work by Artist Heaney

An exhibition of paintings and drawings by Tom Heaney has opened in Hayden Gallery under the sponsorship of the Exhibitions Office. The exhibit will continue through mid January.

Heaney, 23 years old, died last

IAP Offers Keller Plan

During the Independent Activities Period (IAP) a two-day workshop on how to organize and run a course by the Keller Plan, or self-paced study, will be held for faculty members. The Keller Plan teaching format has been used for three years in a variety of subjects at the Institute and offers certain advantages over the usual format of frequent lectures and recitations.

Held on Tuesday and Wednesday, January 4-5, the workshop will be given by Dr. Edwin F. Taylor and Ben A. Green, Jr., under the sponsorship of the Education Research Center (ERC).

More information about the Keller Plan and the workshop is available by calling Connie Carpenter at ERC, Ext. 1491.

month in an automobile accident. He was a member of the Boston Studio School, a group of artists who work together at 36 Bromfield Street in Boston.

Last month, some of his paintings were included in "Romantic Abstraction," an exhibit of works held first in the Bromfield Street studio and later at the Rose Art Museum, Brandeis University.

Heaney's work has "an almost oriental aliveness of stroke," according to Kasha Linville, director of exhibitions at the Institute and art critic for *Boston After Dark*, in her review of "Romantic Abstraction." She also likened Heaney's painting to Helen Frankenthaler's early work, "in its delicate drawing and nature-evoking color."

His drawings were exhibited at the Institute of Contemporary Art last year.

Hayden Gallery is open from 10 a.m. - 5 p.m. Mondays through Thursdays, 10 a.m. - 9 p.m. on Fridays, and from 1 p.m. - 5 p.m. on Saturdays, Sundays and holidays. The gallery will be closed on Christmas and New Year's Day.