



INSTITUTE PLAID Traditional "Institute grey" has been disappearing from MIT corridors for the past several years, replaced by light painted walls punctuated by bright colored stairways. Not to be

outdone, the sun and the Maclaurin Lobby windows combine in the late afternoon to produce this interesting plaid pattern photographer Calvin Campbell discovered recently.

Innovations Could Aid Food Price Spiral

A "massive communications gap" between the food industry and the engineering community is depriving the industry of technological innovations needed to help hold the line on food prices, according to two marketing and management experts.

Writing in the December issue of *Technology Review*, the national journal of science and technology

Faculty Discusses Grading Report

The MIT Faculty at a special meeting Monday afternoon explored in detail various aspects of recommendations from its Ad Hoc Committee on Grading, but took no specific action pending continued discussion at the regular Wednesday, Dec. 18, meeting.

The Ad Hoc Committee, headed by Professor Roy Kaplow, has made 14 specific recommendations regarding registration and grading procedures and the methods of reporting student accomplishments in internal records and in the external transcript.

In Monday's discussion, led by Professor Elias P. Gyftopoulos, chairman of the Faculty, and Professor Kaplow, discussion centered on the late drop date, on the problem of grade inflation, and on the question of whether the "F" grade should remain on the external transcript.

Convocation Set

The traditional MIT holiday convocation will take place 11:45, Friday, Dec. 13 in the Building 7 lobby.

Department supervisors are encouraged to release employees to attend the convocation if employee work loads permit.

published at MIT, Drs. Gordon F. Bloom and Ronald C. Curhan say that accelerated development of new technology is a prerequisite for increased productivity in the food distribution industry.

Dr. Bloom is a senior lecturer in MIT's Alfred P. Sloan School of Management and former president of the Elm Farm supermarket chain in Massachusetts. Dr. Curhan is associate professor of marketing at the Boston University School of Management.

The year 1973, they write, "may well mark the disappearance of cheap food from American consumers' tables" and also be a springboard for a strong continuing upward trend in food prices "for the foreseeable future."

Thus, they say, the need is becoming critical "for accelerated improvement in productivity and the development of new cost-saving technology in the food industry."

"Unfortunately," they write, "technological progress in the distributive sector of the food industry has not had an encouraging history. One has only to take an objective look at a retail supermarket to realize that opera-

tions are essentially unchanged from what they were 25 years ago."

Furthermore, they claim, "while both the federal and state governments as well as various foundations expend millions of dollars annually furthering research into new strains of grains and cattle, research for improved food distribution has no such support."

According to Bloom and Curhan, (Continued on page 8)

Book Sale Begins Today

Books, books, books, books. Thirty thousand of them will go on sale today, Dec. 4, when the "Great MIT Press Book Sale" begins at 10am in the Sala de Puerto Rico at the Student Center.

Every book will be priced at least 50 percent below list cost and some discounts will be as high as 95 percent, the Press has announced.

Sale hours are from 10am to 10pm Dec. 4-6. Saturday, Dec. 7, the sale will run from 10am to 3pm and new stock will be brought in.

Wallace Automated Telescope in Operation

The most automated optical telescope yet developed for general use by astronomers has been put into routine operation at MIT's new George R. Wallace, Jr., Astrophysical Observatory at Westford, Mass.

The recently developed automated system consists of a 24-inch optical telescope, two linked computers (with associated peripheral devices) and observing instruments.

Development of the automated system fulfills one of the primary objectives behind the building of

the Wallace Observatory in the first place. Designers envisioned it as a facility where new ideas aimed at making large telescopes costing tens of millions of dollars more efficient might be tested out and verified on a smaller scale.

"We think we have demonstrated that the system—or systems like it—could profitably be applied to larger facilities," Professor Thomas B. McCord, observatory director, said. "The advantages over manual observing procedures are speed, comfort and accuracy. Equally important,

Neurosciences Program Lists Major Organization Changes

The Neurosciences Research Program (NRP), an international center and clearing house for brain research operating under auspices of MIT, has announced major personnel and organization changes.

Dr. Frederic G. Worden, MIT professor of psychiatry and NRP executive director since 1970, has been named chief executive with the title of director.

In addition, Dr. Mac V. Edds, Jr., presently dean of the Faculty of Natural Sciences and Mathematics at the University of Massachusetts, Amherst, has been appointed professor of neurobiology in the MIT Department of Nutrition and Food Science and executive director of NRP effective in January, 1975.

Dr. Worden as chief executive succeeds Dr. Francis O. Schmitt, pioneer neuroscientist who founded NRP 12 years ago and who has been chairman and chief executive officer since then.

Dr. Schmitt, Institute Professor Emeritus and professor emeritus of biology at MIT, having reached the age of 70, has been appointed to the new position of Foundation Scientist and will devote himself fully to bringing together and codifying new and powerful concepts in brain function which have begun to emerge in recent years and which are expected to bring about momentous and major advances in neurosciences over the next decade.

Dr. Worden said that in addition to the appointments, two significant organizational changes will be made in NRP.

First, the turnover system for NRP Associates has been revised

so the group will renew itself on a continuing basis. NRP includes as its Associates many of the world's top neuroscientists and leaders in such related fields as chemistry, biochemistry, biology, neurology and psychology, as well as mathematics and physics.

Second, Dr. Worden said, a new "Center Scholar" program will be launched to bring leading neuroscientists to the Center in Boston for periods of a month to a year. Their visits will be timed to coincide with visits by others with similar interests so that task forces can be formed to tackle specific research targets as the needs arise.

The Center Scholar Program will be in addition to regular work sessions, study programs and publishing activities for Associates which the NRP professional staff and staff scientists have been organizing and conducting since NRP's founding.

Dr. Worden said NRP is at a significant turning point.

"Rapid progress in neuroscience over the past decade has provided the springboard for developments during the coming decade as significant for brain science as 1955-65 discoveries in molecular genetics were for an understanding of heredity and molecular biology," he said.

"Conceptual breakthroughs as powerful as those of chemical coding of genetic information are now necessary if neuroscience is to achieve an equally substantive understanding of how the brain mediates the behavior and mind of man."

Dr. Worden said the personnel and organizational changes will strengthen NRP's capacity to contribute to and encourage these developments.

Dr. Worden joined NRP in 1969 as program director and became executive director a year later. A 1939 graduate of Dartmouth College, he received the doctor of (Continued on page 3)

Beals' Concerts Heralded in N.Y.

Dancer Margaret Beals' upcoming concerts at MIT this week have been preceded by an acclaimed series of solo concerts in New York last week.

In a recent *New York Times* review, critic Don McDonagh praised the strength of Ms. Beals performance as well as her choice of program, especially Valerie Bettis' "The Desperate Heart" affirming its reputation as "the greatest solo (dance work) of the 40's."

Ms. Beals' two MIT concerts, which will repeat much of her New York program, will take place at 8:30pm, Friday and Saturday, Dec. 6 and 7, in Kresge Little Theatre.

Tickets for the performances can be bought at the door. Ticket prices are \$3.50 and \$2.50 for students. For reserved seats call 965-3684.

Records Access Policy Due

A statement of MIT policy concerning access to student records under the Family Educational Rights and Privacy Act of 1974 together with detailed procedures to be used will be published in next week's Tech Talk (Dec. 11). The procedures will cover those to be used by students in obtaining access and those to be used by faculty and staff in responding to inquiries and requests.

astronomers can use it without special training."

In the automated system, built at a cost of \$150,000, telescope drive motors are controlled by computer. The telescope position is always known to the computer. Lists of objects to be observed are maintained in the computer and are presented to the astronomer on a television-like monitor.

The astronomer chooses the object he wishes to observe from a list on the TV screen by using an electronic pointer. The telescope (Continued on page 8)

THE MIT PRESS ANNUAL HOLIDAY BOOK SALE

50% to 95% off on all books

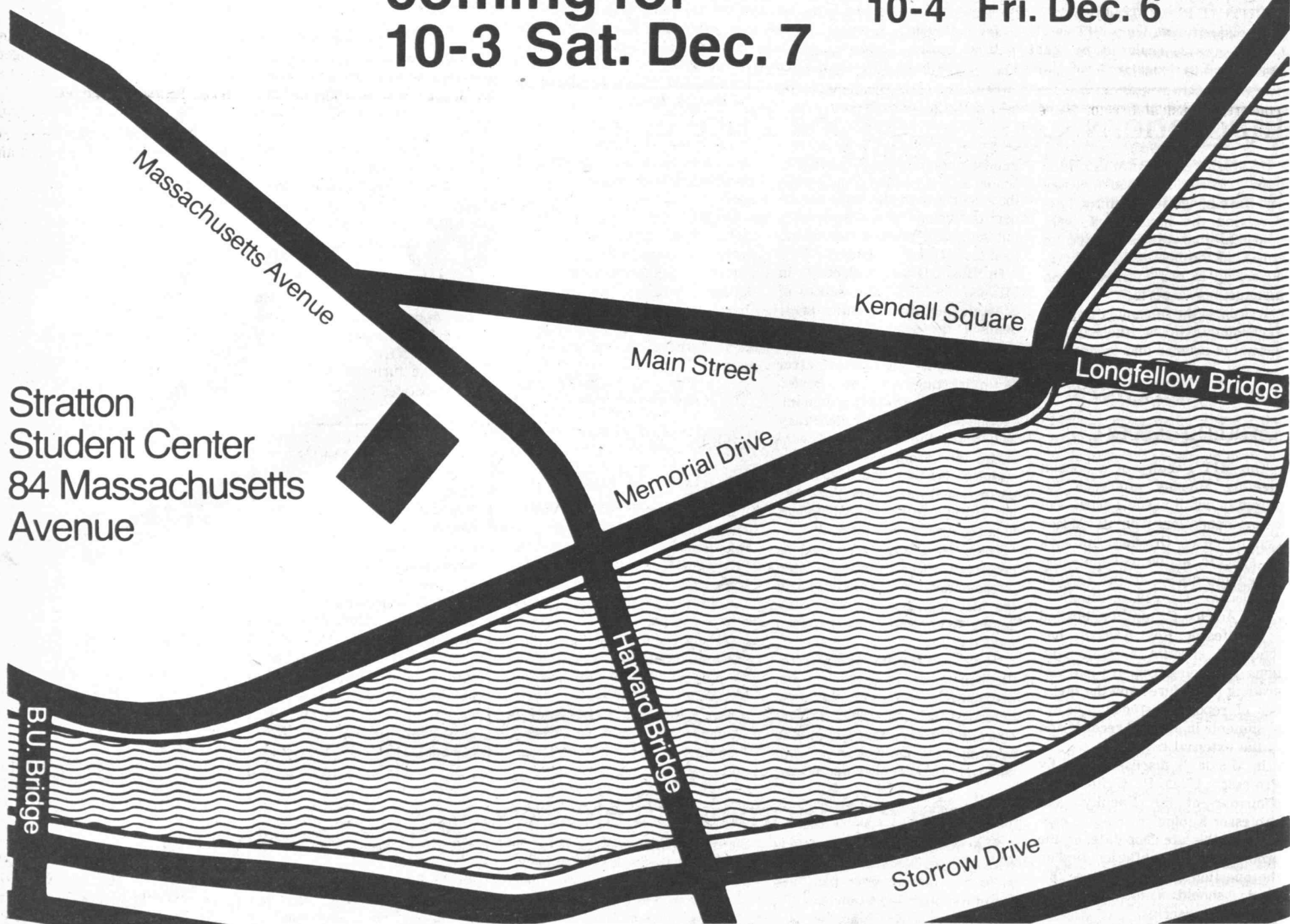
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Stratton Student Center
MIT
84 Massachusetts
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10-10 Wed. Dec. 4
10-10 Thurs. Dec. 5
10-4 Fri. Dec. 6



JOURNALS TOO!
This year, for the first time, The MIT Press journals will be available at the book sale. If you've never subscribed to LINGUISTIC

INQUIRY, THE JOURNAL OF INTER-DISCIPLINARY HISTORY, or VISIBLE LANGUAGE, you can now take advantage of a special price offer. Come take a look!



Professor Dalia Atlas in rehearsal with the MIT Symphony in preparation for Saturday's concert.

Music Notes

Israeli Conductor Atlas To Lead MIT Symphony

Israeli conductor Dalia Atlas will direct the 96-member MIT Symphony Orchestra in a special concert at 8:30pm Saturday, Dec. 7, in Kresge Auditorium.

The concert will be sponsored by the Honorable Shimshon Inbal, Israeli Consul General in Boston, and will feature Israeli-born cellist Daniel Domb as soloist and the American premiere of a work by the Israeli composer Zvi Avni.

The concert will be free to members of the MIT community who obtain tickets before the concert. Tickets will otherwise be \$1 at the door at concert time.

Professor Atlas, who has been in residence at McCormick Hall since Nov. 13 in preparation for the concert, is musical director of the

Technion Symphony Orchestra and Chorus at The Technion, MIT's counterpart institution in Haifa, Israel, and of the Israel Pro Musica Orchestra. She has won prizes in international conducting competitions in New York, Liverpool and Novara, Italy, and has conducted major orchestras in Europe and Israel.

With the MIT Symphony, she will conduct a program consisting of the Overture to Egmont, Op. 84, by Beethoven, the Cello Concerto in B Flat Major by Boccherini, the first performance in America of *Meditations on a Drama* by Avni, and *La Mer*, by Debussy. Mr. Domb, who has performed as soloist with leading American orchestras, is now principal cellist of the Toronto Symphony.

Chamber Players to Offer Concert for Insomniacs

The MIT Chamber Players next week will offer a special program for insomniacs, late swingers and incorrigible owls—or for just anyone who may welcome a novel interlude in the period between final classes and the finality of examinations.

The program—probably the first such concert at the Institute—will be at midnight on Friday, Dec. 13, in the Building 7 lobby, where the chamber ensemble will join to play music of J.S. Bach and Wagner.

The presentation will be formal, with the musicians in concert attire appearing in a "stage" of floodlights in the obscurity of the cavernous rotunda. It will also be informal, in that chairs will not be provided and the audience is asked to bring pillows or other comfort aids for seating.

The 90-minute-plus program will include Bach's Brandenburg Con-

certo No. 4, a large portion of Bach's *Musical Offering* and Wagner's *Siegfried Idyll* in an arrangement for 13 instruments.

Violist Marcus Thompson, assistant professor of music and director of the MIT Chamber Music Society, will conduct the Brandenburg Concerto and the Wagner.

3 MIT Groups To Play Jazz

A jazz concert featuring three MIT undergraduate groups—the Festival Jazz Ensemble, the Halbert White Quintet and the Concert Jazz Band—will be held at MIT's Kresge Auditorium at 8:30pm, Friday, Dec. 13.

The 21-member Festival Jazz Ensemble, directed by Herb Pomeroy, will play selections by Tony Klatka of Blood, Sweat and Tears, Hal Crook of the Berklee School of Music, Jaxon Stock, Greg Olson and Abraham Laboriel.

Mr. Pomeroy, of Brookline, is chairman of the Jazz Composition Department at the Berklee School of Music.

Soloists with the Ensemble include Hal White, trumpet; Frank Ruiz, saxophone; Lee Allen and Phil Comeau, piano.

The Ensemble, which participated in the Notre Dame Jazz Festival last spring, is anticipating an invitation to play in a large jazz festival at Montreux, Switzerland, this summer.

The Halbert White Quintet, which includes Halbert White, trumpet, Phil Comeau, piano, Elliot Goldstein, drums, Frank Ruiz, saxophone and Rick Stone, bass, will play original contemporary jazz pieces.

The rest of the program will feature swing blues arrangements played by the MIT Concert Jazz Band, a 22-member group under the direction of Everett D. Longstreth, an instructor in music arrangement at the Boston Conservatory of Music.

Soloists will be Bill St. Clair, trombone and Dave Karp, vibes.

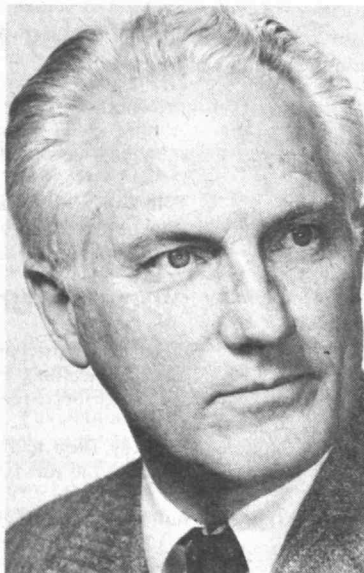
Tickets will be distributed, free of charge, in the lobby of Building 10 from Dec. 5 to Dec. 13. Remaining tickets will be sold at the door for \$1.00.

Farewell Party for Mimi Luft

Friends, associates and colleagues of Mimi Luft, supervisor of the MIT Student Art Association, are invited to a farewell party for Ms. Luft at her studio (W20-425) today from 4:30 to 6:00.

Ms. Luft, supervisor of the Student Art Association since its founding 9 years ago, will be leaving MIT to live and work in Scotland.

Neurosciences Program Lists Major Organization Changes



Dr. Worden

(Continued from page 1)
medicine degree from the University of Chicago in 1942 and received psychiatric training at Johns Hopkins Hospital and the Baltimore Psychoanalytical Institute. From 1953 until he joined NRP in 1969, he was professor of psychiatry at the University of California at Los Angeles School of Medicine where he was associated with the UCLA Neuropsychiatric Institute and was a founding



Dr. Edds

member of the UCLA Brain Research Institute.

Dr. Edds, a graduate of Amherst College, received his PhD degree from Yale University in 1943. Following teaching and research appointments in zoology and anatomy at the University of Chicago and the University of Pittsburgh, he joined the biology faculty at Brown University where he served until 1972 when he joined UMass. At Brown, he was assis-



Conservation Saves Energy — And Dollars

MIT's intensive energy conservation program, begun a year ago, has resulted in a saving of \$1,160,000 in a total energy bill of nearly \$5 million, according to Carl W. Hagge, environmental engineer for Physical Plant. "We started the program in response to the national oil shortage a year ago," Hagge said, "but it quickly became apparent that cost cutting was an additional important reason for conserving energy."

The conservation program has reduced steam consumption by 25 percent, electrical consumption by 17 percent and air-conditioning chilled water consumption by 48 percent.

Even though Physical Plant controls most of the energy usage at MIT, Hagge said, individuals control about 25 percent of usage, and thus can make a contribution to conservation. He attributed part of this year's saving to wide cooperation by the community in the conservation program.

Among energy saving measures to be taken during the winter months, at MIT as well as at home, Hagge listed the following:

—Set thermostats or other controls, where accessible, to maintain temperatures at 68 in occupied areas, and lower temperatures in unoccupied areas.

—Where practicable, reduce the temperature at night or when higher temperatures are not required.

—Avoid the unnecessary opening of doors or windows.

—Avoid the unnecessary use of electric heaters.

—Turn lights off when not in use.

—Avoid the operation of electrical appliances, such as coffee makers, etc., when not actually being used.

—Report equipment malfunctions, particularly those which affect energy consumption, to the Physical Plant Work Control Center. Dial the letters FIX-IT (3-4947).

—Take the initiative. Think of ways that you and your associates can save energy and implement them.

—Pass any ideas or suggestions on to the Environmental Engineer that you have regarding energy conservation. Dial the letters ENCON (3-6366) or 3-4755.

To encourage students to save energy, the Undergraduate Association has organized a monthly competition among the dormitories to see which one can save the most electricity. The winning house receives a \$100 prize contributed jointly by Physical Plant and the Housing Office.

Choral Society Concert Listed

The MIT Choral Society, under the direction of John Oliver, will present a winter concert of works by Brahms and Schubert at 8pm, Tuesday, Dec. 10, in MIT's Kresge Auditorium.

The 120 member Choral Society will perform Brahms' "Gesang der Parzen Nanie" and Schubert's Mass in A Flat, accompanied by an orchestra under the direction of Maynard Goodman, concertmaster.

Reserved seat tickets are \$3 and can be obtained by calling 253-2906. General admission tickets are \$2 and will be available at the door of Kresge as well as \$1 tickets for students with identification cards.

Chapel to Have Christmas Carols

A Christmas program featuring the Wellesley Chamber Singers will be held in the MIT Chapel at noon, Thursday, Dec. 12.

The 20-member group, directed by John Cook, will sing carols, old and new, and works by Byrd and Guerrero.

The Wellesley Chamber Singers, who specialize in renaissance music, have performed at the Museum of Fine Arts, the DeCordova Museum, Dunster House at Harvard, the MIT Chapel and Wellesley College. The group has also produced two records of renaissance music on the Lyricord label.

The concert is open to the public and admission is free.

TECH TALK

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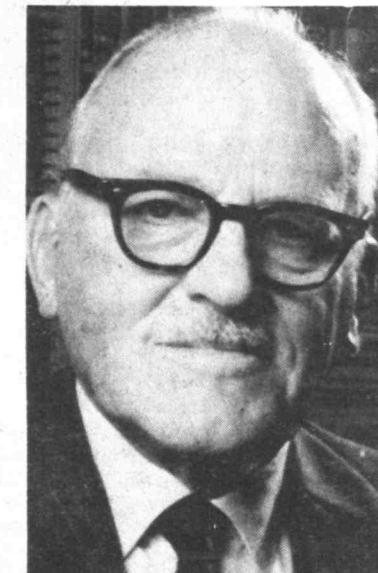
Mail subscriptions are \$6 per year. Checks should be made payable to MIT and mailed to the Business Manager, Room 5-111, MIT, Cambridge, MA 02139.

University of California at San Diego 1968-69.

Dr. Schmitt, a graduate of Washington University, St. Louis, and a faculty member there from 1929 to 1941, was the first US investigator to apply x-ray diffraction, polarization optics and electron microscopy to what is now called molecular biology. He became professor of biology at MIT in 1941 and headed the MIT Department of Biology from 1942 to 1955 when he became Institute Professor. He is internationally renowned for his studies at MIT on the fibrous proteins of the giant nerve axons of squid, as well as for his studies of muscle and of connective tissue.

Dr. Schmitt established NRP in 1962 out of what he recognized as the need to bridge gaps separating various scientific disciplines concerned with different aspects of the study of the nervous system and behavior.

NRP headquarters are located in the house of the American Academy of Arts and Sciences, 165 Allendale St., in the Jamaica Plain section of Boston.



Dr. Schmitt

tant professor 1947-51, associate professor 1951-56, and professor 1956-72. He was chairman of the Brown Department of biology from 1960 to 1963, chairman of the Division of Medical Science from 1963 to 1965 and director of medicine for the Division of Biological and Medical Sciences from 1965 to 1968. He was a visiting lecturer at Harvard University in 1955, a visiting professor at MIT in 1956 and a visiting professor at the

THE INSTITUTE CALENDAR

December 4
through
December 15

Events of Special Interest

The New Wave of Exploration in the Earth Sciences – Symposium marking the tenth anniversary of the Cecil and Ida Green Building. Wed, Dec 4, Green Bldg. More than a dozen eminent authorities on earth sciences will participate. Symposium chairman, **Robert R. Shrock**, professor of geology, emeritus. Chairman of Wed morning session will be **M. Nafi Toksoz**, geophysics; aft session, **Frank Press**, Robert R. Shrock Professor of Geophysics, head of Department of Earth & Planetary Sciences. Dedication of the Ida Green Room, Wed, at 4:30pm; reception to honor the Greens, 5-6pm.

TWO Craft Sale* – Sponsored by Technology Wives Organization. Many beautiful, handcrafted items, ideal for the holidays. Come to the Bldg 10 Lobby!

Holiday Convocation* – Come one, come all! Events include a Holiday Wrapping, the MIT Brass Ensemble, caroling, cider and cookies. Fri, Dec 13, 11:45am-12:30pm, Bldg 7 Lobby. Free.

Holiday Frolic – Children's Winter Party** – Sponsored by Technology Wives Organization. Featuring "The Suitcase Circus," an entertaining musical and mime theater; entertainment; holiday goodies and a visit from Santa Claus. Sat, Dec 14, 10am, Sala. Tickets: \$.50 children (under 1 yr, free), \$.75 adults. Info, Gloria Feves, 232-4892.

Seminars and Lectures

Wednesday, December 4

The Presidential Transition: Nixon to Ford* – Clay T. Whitehead, CIS. Political Science Seminar. 3pm, Rm E53-482.

Numerical Methods for Solving Multidimensional Kinetics* – Antonio C. M. Alvim, G. Nuclear Engineering Doctoral Seminar 3pm, Rm NW12-222.

Application of Finite Element Method to Reactor Kinetics Problems* – Mike Todosow, G. Nuclear Engineering Doctoral Seminar. 3pm, Rm NW12-222.

Transitive Systems of Imprimitivity* – Floyd Williams, mathematics. Faculty-Student Exchange Seminar. 3:30pm, Rm 4-149.

The Soviet Perspective on Arms Control* – Marshall Shulman, director, Russian Institute, Columbia University. MIT-Harvard Joint Arms Control Seminar. 4pm, Rm 9-450.

English Music Today* – Nicola LeFanu, English composer. Music Section Lecture. 4pm, Music library. Free.

Ion Simulated Irradiation-Induced Creep in Stainless Steel* – P. Hendrick, G. Nuclear Engineering Doctoral Seminar. 4pm, Rm NW12-222.

The Structure of the Nucleon* – Jerome Friedman, physics. Undergraduate Physics Colloquium. 4:15pm, Rm 6-120. Social hour after, Rm 6-209.

Marine Science and the Law of the Sea* – John Knauss, provost for marine affairs, University of Rhode Island. Lowell Institute, MIT Sea Grant Program and New England Aquarium Seminar. 8pm, Aquarium, Atlantic Ave, Bos.

Thursday, December 5

Government in Broadcasting: Broadcasting in Government – CIS Seminar has been cancelled.

The Weak Interaction Between Nucleons* – Hans Frauenfelder, University of Illinois. Physics Colloquium. 12:30pm, Rm 6-322.

The Sydney Opera House Affair* – John Gero, Harkness Research Fellow, MIT & University of California, Berkeley; architectural science, University of Sydney, Australia. Civil Engineering, Division of Constructed Facilities Seminar. 3pm, Rm 3-133.

Experiences in Technical Assistance to Airlines of Developing Nations* – Robert Blake, staff vice president for special projects, Pan American World Airways. Aero/Astro Flight Transportation Seminar. 3:30pm, Rm 33-319.

Precambrian Paleomagnetism and Metamorphic Episodes – David J. Dunlop, Geophysics Lab; physics, Erindale College, University of Toronto. Earth & Planetary Sciences Colloquium. 4:30pm, Rm 54-425. Tea 3:30pm, Rm 54-923.

Electrocutaneous Stimulation: Psychophysical Studies of Nerve Function* – Gary B. Rollman, psychology, University of Western Ontario. Harvard-MIT Rehabilitation Engineering Center Seminar. 4pm, Rm 10-105. Coffee 3:30pm.

Justifications for Inequality: The Contributions of Economic Theory* – Kenneth E. Boulding, Institute of Behavioral Science, Harvard University. Technology & Culture Seminar: Merit & Equality in a Just Society. 4pm, Rm 10-250.

Present Status of Prostaglandins – James B. Lee, MD, medicine, State University of New York, Buffalo. Nutrition & Food Science Seminar. 4:15pm, Rm 54-100. Coffee 4pm.

Physics of Biomolecules* – Hans Frauenfelder, University of Illinois. Physics Colloquium. 4:15pm, Rm 26-100. Refreshments 3:45pm, Rm 26-110.

Prophetic Prayer in the Bible and Post-Biblical Judaism* – Rabbi Ben-Zion Gold, Harvard University. Humanities Crossroads Lecture. 4:30pm, Rm 14E-304.

Friday, December 6

Urban Transportation Benefits Revisited* – William Wheaton, economics, urban studies & planning. Center for Transportation Studies Seminar. 12:45pm, Stu Ctr Mezzanine Lge. Buffet 12n, price \$1.

Demonstration of Computer Retrieval of Social Science and Humanities Literature – On-line bibliographic search of Psych Abstracts and Social Science Citation Index data bases. 2pm, Kotch Library.

Recordings From First and Second Order Vestibular Afferents During Rotation and Caloric Stimulation* – David Andersen, electrical & computer engineering, University of Michigan. HST Biomedical Engineering Seminar. 2pm, Rm 4-231.

A Numerical Solution to the Mass Transfer Equation for Pulsatile Flow Over a Flat Plate* – D. Dietz, G. Chemical Engineering Doctoral Seminar. 2pm, Rm 10-105.

Professional Lifestyles – Dr. Bernard Levy, director, Human Resource Institute. Preprofessional Advising & Education Seminar. 3pm, Rm 7-133.

Reaction of Coal in a High Intensity Arc* – C.S. Kim, G. Chemical Engineering Doctoral Seminar. 3pm, Rm 10-105.

Development of the MGH Whole Body Transverse Section X-Ray Camera* – Gerald Polucci, physics research lab, Massachusetts General Hospital. Nuclear Engineering Biomedical Applications of Radiation Seminar. 3:45pm, Rm NW12-222. Coffee 3:30pm.

Bubblegum and Bailing Wire – Mike Dembowski's Denizen of the Deep* – An inventor presents an original backyard submersible. Ocean Engineering Tankard Seminar. 4pm, Rm 5-314. Refreshments.

The AEC's Vision of CTR for the Next Decade* – Anne Davies, division of controlled thermonuclear research, US Atomic Energy Commission. Plasma Dynamics Seminar. 4pm, Rm 36-261. Refreshments.

Formation and Elimination of Growth Striations in Dislocation-Free Silicon Crystals* – Dr. A.J.R. deKock, Philips Research Laboratories, Eindhoven, the Netherlands. Materials Science Colloquium. 4pm, Rm 9-150. Refreshments 3:30pm.

Monday, December 9

Basic Tactics in Construction Project Management* – Paul Nelson, manager of construction, Mills & Jones Construction Company. Civil Engineering Seminar. 2pm, Rm 3-133.

Some Applications of Commutative Algebra to Combinatorics – Richard Stanley, mathematics. Applied Mathematics Colloquium. 4pm, Rm 2-338. Coffee 3:30pm, Rm 2-349.

Assessment of US Energy Policy – David J. Rose, nuclear engineering. Nuclear Engineering ANS Seminar. 3:30pm, Rm NW12-222. Coffee 3pm.

Evaluation of Techniques for Storm Surge Calculations* – Bryan Pearce, civil engineering; James R. Pagenkopf, G. Civil Engineering Water Resources & Hydrodynamics Seminar. 4pm, Rm 48-316. Coffee 3:30pm, Rm 48-410.

Tuesday, December 10

The Influence of the Discrete Harmonic Structure of Synchrotron Radiation Upon the Convective Superbanana Driven Drift Cone Mode* – D. Komm, G. On Trapped-Electron Modes in Cylindrical Geometry (being a theoretical and experimental investigation of the trapped-electron scattering mode and consequences thereof)* – C. Primmerman, G. Nuclear Engineering Doctoral Seminar. 12n, Rm 38-166.

Trends in Business Applications of Non-Voice Telecommunications* – Glenn Pennisten, president, Data Transmission Co; Montgomery Phister, Harvard University. Communications Policy Seminar. 2pm, Rm 37-252.

Hacking to a High or Computer Bummery and Science** – Joseph Weizenbaum, electrical engineering. Lincoln Lecture Series. 3:30pm, Lincoln Laboratory Cafeteria.

Construction Company Organization* – William H. Mills, Jr. vice president, Mills & Jones Construction Company. Civil Engineering Seminar. 2pm, Rm 3-133.

Report on Military Spending* – T.C. Schelling, Lucius N. Littauer Professor of Political Economy, Harvard University. CIS Seminar. 4pm, Rm E53-482.

Statistical Thermodynamics of Spinodal Decomposition** – J.S. Langer, Carnegie-Mellon University, visiting professor at Harvard. Materials Colloquium. 4pm, Rm 6-120. Coffee 3:30pm.

Gene Application in Oocytes and in Primitive Eukaryotes – Joe Gall, Yale University. Biology Colloquium. 4:30pm, Rm 2-390. Coffee 4pm, Bldg 56, 5th fl vestibule.

Development of the Rural South* – Owen Brooks, director, Delta Ministry, Greenville, Mississippi. Community Fellows Program Seminar. 5pm, Rm E40-200.

Wednesday, December 11

Three Dimensional Finite Element Static Diffusion Code* – David A. Botelho, G; Resonance Self-Shielding in Blankets* – Osman K. Kadiroglu, G. Nuclear Engineering Doctoral Seminar. 3pm, Rm NW12-222.

Interaction Between SALT Negotiations and Strategic Force Planning* – Harold Brown, president, California Institute of Technology. Joint MIT-Harvard Arms Control Seminar. 4pm, Harvard Center for International Affairs, Rm 1, 6 Divinity Ave.

Mid-Range Optimization of Nuclear Power Use for Electric Utilities* – W. Zimmerman, G. Nuclear Engineering Doctoral Seminar. 4pm, Rm NW12-222.

Thursday, December 12

Experimental Observation of a Heavy Particle J – Ulrich Becker, physics. Physics Colloquium. 4:15pm, Rm 26-100. Refreshments 3:45pm. Rm 26-110.

Jesus Bar-Joseph: Virgin Births and Risen Bodies* – Murray Biggs, humanities. Humanities Crossroads Lecture. 4:30pm, Rm 14E-304.

Friday, December 13

RNA of Replication-Defective RNA Tumor Viruses – Peter Duesberg, Virus Laboratory, University of California, Berkeley. Center for Cancer Research & Biology Seminar. 4pm, Rm 6-120.

Moods and Performances* – Donald Davidson, philosophy, Rockefeller University. Philosophy Seminar. 4pm, Rm 14E-304.

Progress in Neutral Injection Heating – J.D. Callen, Oak Ridge National Laboratory. Plasma Dynamics Seminar. 4pm, Rm 36-261. Refreshments before.

Catalysts and Surface Science* – Dr. Traugott E. Fischer, Exxon Research & Engineering Co. Materials Science Colloquium. 4pm, Rm 9-150. Refreshments 3:30pm.

Methane Utilizing Bacteria and Production of Single-Cell Protein – Dr. John F. Wilkinson, University of Edinburgh, Scotland. Microbiology and Biochemical Engineering Seminar. 4pm, Rm 16-310.

Community Meetings

Women's Forum** – Meetings Mon, 12n-1pm, Rm 10-105. Will meet Tues following Mon holidays. **Mon, Dec 9: Sharon King**, consumer reporter for WBZ-TV, will talk about the different types of toys available and their relative safety.

Wives Discussion Group – Wed, 2:15pm, Stu Ctr 491. Discussion leaders: Myra Rodrigues, social worker, x3-1684; Charlotte Schwartz, sociologist, x3-2916. Babysitting services available.

Physics Department Social Hour** – For undergraduate physics students and faculty. Wed, 5pm, (following Undergraduate Physics Colloquium), Rm 6-209.

American Association of University Professors – Meeting to discuss the possibility of forming a chapter of the AAUP at MIT. Wed, Dec 4, 3pm, Rm 10-250. Teachers, researchers, professional librarians, & counselors with faculty status, as well as graduate students are eligible.

Student Committee on Educational Policy – Discussion of omnibus survey on degrees, grading, units and requirements. Wed, Dec 4, 7:30pm, Stu Ctr Rm 353.

Technology Wives Organization General Meeting** – Maria Termini, artist, instructor at Brookline Arts Center and Cambridge Center for Adult Education, will give a lecture and demonstration of silk-screening. Wed, Dec 4, 8pm, Rm 10-105. Free, refreshments. Prospective members and husbands invited. Info, Ruth Stumpp, 494-8365.

Today's Women (Women's Discussion Group)** – Jan Bumstead, Planned Parenthood League of Massachusetts, will lead a discussion of "Human Sexuality and Women's Health Care." Sponsored by TWO Thurs, Dec 5, 8pm, Stu Ctr West Lge. Free, refreshments. Women only. Info, Linda Napier, 494-8121.

Organizational Meeting of Faculty and Students for the MIT Committee for Alexandr and Nina Voronel* – Sponsored by MIT Hillel. Fri, Dec 6, 12n, Rm 10-105. Info, Rabbi M. Gottlieb, x3-2982 or Prof. H. Stanley, x3-1745.

Christmas Decorations Workshop** – Sponsored by Technology Wives Organization. Fri, Dec 6, 7:30pm Rm 10-105. All wives are welcome. Please bring pencil, ruler, scissors, and \$1 for materials which will be supplied (\$1.25/non-members). Refreshments.

RDTE Union Children's Christmas Party*** – Sun, Dec 8, 1:30-5pm, Sala. Presents from Santa for children to age 12, entertainment and refreshments for all. \$4/family.

MIT Club of Boston – Christmas party with special entertainment. Thurs, Dec 12, 12:15-1:30pm, Aquarium Restaurant, 100 Atlantic Ave, Boston. Cost: \$4, payable at door. Reservations: Ms. Kiirats, x3-3878.

Wellesley Events

The Game of Love and Chance* – Wellesley College Theatre presents Pierre de Marivaux's play. Fri, Dec 6-Sun, Dec 8, 8pm. Alumni Hall Auditorium, Wellesley. \$2 adults, \$.50 high school students, free w/Wellesley student ID or MIT cross registrants.

Tom Jones* – National Theatre Institute Bus Company production of a new musical based on Henry Fielding's novel. Thurs, Dec 12, 8pm, Wellesley College Jewett Arts Center auditorium. Free.

Noon Hour Events

Flute & Harpsichord Concert* – Jim Winn & Robert Moreen playing selections from Bach, Couperin and F. Brickle. Thurs, Dec 5, 12n, Chapel. Free.

Nor Any Drop to Drink* – Environmental Film Series. Fri, Dec 6, 12n, Eng Lib Rm 10-500. Free, coffee.

Waltz Day* – Sponsored by MIT Ballroom Dancing Club. Mon, Dec 9, 12n, Bldg 7 Lobby. Free.

MIT Chamber Players* – Wed, Dec 11, 12n, Bldg 7 Lobby. Free.

Wellesley Madrigal Singers* – Singing sacred and secular works. Thurs, Dec 12, 12n, Bldg 7 Lobby. Free.

A Christmas Program* – Wellesley Chamber Singers, directed by John Cook, music section. Thurs, Dec 12, 12n, Chapel. Free.

The Car in the City* – Environmental Film Series. Fri, Dec 13, 12n, Eng Lib Rm 10-500. Free, coffee.

Social Events

Christmas Party** – Sponsored by the MIT-Wellesley Ballroom Dancing Club. Fri, Dec 6, 8:30pm-1am, Wellesley College. Watch for signs for more detailed information. Admission 50 cents. Pete Travis, 536-1300.

Rat (Stratton Rathskeller) - Dance to WTBS music and light or dark beer, 16 oz for 25 cents. Sat, Dec 7, 8:30pm. Free, college ID required.

Hour Coffeehouse* - Enjoy relaxing conversation, piano playing, games, inexpensive food, candy & drinks. Open 24 hours a day, 7 days per week, Stu Ctr 2nd fl lge.

Movies

World* - Humanities Film. Wed, Dec 4, 7pm, Rm 14N-0615.

Any Drop to Drink* - Environmental Film Series. Thurs, Dec 5pm, Eng Lib Rm 10-500. Free, coffee.

Sade* - Humanities Film. Thurs, Dec 5, 7pm, Rm 14N-0615.

Way We Were** - LSC. Fri, Dec 6, 7 & 9:30pm, Kresge. Admission 50 cents, ID required.

Atalante (Jean Vigo) - Film Society. Fri, Dec 6, 7:30 & 9:30pm, Rm 6-120. Admission \$1.

Midnight Movie Series. Fri, Dec 6, 12m, Sala. Free, ID required. Bring your own blanket.

Fair Lady** - LSC. Sat, Dec 7, 6:30 & 10pm, Rm 26-100. Admission 50 cents, ID required.

Temkin (Eisenstein)* - Young Socialist Film Series. Sat, Dec 7, 7pm, Stu Ctr Mezzanine Lge. Admission: \$1.

V - LSC. Sun, Dec 8, 3 & 7pm, Rm 10-250. Admission 50 cents.

Cabinet of Dr. Caligari* - Humanities Film. Sun, Dec 8, 7pm, Rm 10-0615. Free.

Circle of the Sun* - Humanities Film. Tues, Dec 10, 7:30pm Rm 4-370. Free.

Seal* - Film Section. Tues, Dec 10, 7pm, Rm E21-010.

Strangelove* - Humanities Film. Tues, Dec 10, 7pm, Rm 10-250. Free.

Seal* - Film Section. Wed, Dec 11, 7pm, Rm E21-010.

Car in the City* - Environmental Film Series. Thurs, Dec 12, 7pm, Eng Lib Rm 10-500. Free, coffee.

The Golem (Georges Sadoul); A Propos de Nice (Jean Vigo) - Film Society. Fri, Dec 13, 7:30 & 9:30pm, Rm 6-120. Admission \$1.

The Caine Mutiny - Midnite Movie Series. Fri, Dec 13, 12m, Sala. Free, ID required. Bring your own blanket.

Exterminating Angel* - Film Section. Wed, Dec 4, 7pm, Rm E21-010. Free.

Music

Symphony Orchestra* - Concert of Beethoven, Boccherini and Debussy, with guest conductor **Dalia Atlas**. Sat, Dec 7, 8:30pm, Kresge. Tickets: free to MIT community in Bldg 10 Lobby, or \$1 at door. The concert will also be broadcast by WTBSm 88.1fm, Thurs, Dec 12 at 9:30pm and Sun, Dec 15 at 4pm.

MIT Choral Society* - John Oliver, director. Program of Schubert and Brahms. Tues, Dec 10, 8pm, Kresge. Tickets in Bldg 10 Lobby or at door: \$3 reserved, \$2 unreserved, \$1 students with ID's. Reservations: x3-2906.

Chamber Music Society Concert* - Wed, Dec 11, 5:15pm, Music Library. Free.

Festival Jazz Ensemble* - Concert Jazz Band and Halbert White Sextet. Fri, Dec 13, 8:30pm, Kresge. Free tickets in Bldg 10 Lobby; \$1 at door.

MIT Chamber Players Midnight Concert* - Program of Bach & Wagner. Fri, Dec 13, 12m, Bldg 7 Lobby. Free.

Theatre

Beyond the Fringe* - Presented by the MIT Community Players. Thurs, Dec 12-Sat, Dec 14, 8pm, Kresge Little. Tickets: \$2.50, discount with MIT student ID, in Bldg 10 Lobby.

Dance

Lindjo Workshop* - A very difficult Dalmatian couple's dance will be taught by Dave & Cathy Skidmore. Sponsored by Folkdance Club. Sun, Dec 15, 2-5pm, Sala.

Margaret Beals in Concert* - Sponsored by MIT Dance Workshop and Dance Circle. With Gwendolyn Watson, cellist. Fri, Dec 6 & Sat, Dec 7, 8:30pm, Kresge Little. Tickets: \$3.50, Student rush \$2.50. Reservations, 965-3684, or at door.

Folkdancing - International: Sun, 7:30-11pm, Sala. **Balkan:** Tues, 7:30-11pm, Stu Ctr Rm 491. **Israeli:** Thurs, 7:30-11pm Sala. **Noon dancing:** Fri, 12n-1:30pm, Kresge Oval in good weather, otherwise Bldg 7 Lobby. Learn & practice more difficult dances Fri, 1:30-3 or 4pm, Stu Ctr 491.

Exhibitions

Photographs by Paul McDonough* - Black & white photographs of urban landscapes. Thru Thurs, Dec 19, 7-9pm, Creative Photography Gallery, 120 Mass Ave.

Katherine Porter Exhibit* - New paintings, drawings and prints by the young Boston artist. Thru Sat, Dec 21, Hayden Gallery. Hours: 10am-4pm daily, Tues Evg 6-9pm. Free.

Selections from "The Grand Tour"* - Photographs by **Amelia Bent Burnett**. Thru Sat, Dec 21, Hayden Corridor Gallery. Sponsored by the Committee on the Visual Arts.

Etchings* - Some based on folk mythology, done by Meg Dawson, Boston artist. Thru Tues, Dec 24, 6th fl Faculty Club. Open Mon-Fri, 9am-11pm.

Hart Nautical Museum* - Permanent exhibit of rigged merchant and naval ship models, half models of yachts and engine models. Open daily in Bldg 5, 1st floor.

Athletics

Home Schedule - Wednesday, December 4 - V Swimming. Tufts, 6:30pm, Alumni Pool. **F Squash.** Phillips Exeter, 3:15pm, duPont courts. **V Hockey.** Tufts, 7pm, duPont rink. **Rifle.** Boston State, 7pm, rifle range. **JV/F Basketball.** Wentworth, 7:30pm, Rockwell Cage. **Thursday, December 5 - W Swimming.** Brandeis, 5pm, Alumni Pool. **W Basketball.** SMU, 7:30pm, Rockwell Cage. **W Fencing.** Radcliffe, 7:30pm, fencing rm. **Saturday, December 7 - Track.** WPI, Brandeis, 1pm, duPont Oval. **F Hockey.** Brooks School, 2pm, rink. **V & F Squash.** Wesleyan, 2pm, duPont courts. **V Swimming.** Wesleyan, 2pm, Alumni Pool. **V Hockey.** Gordon College, 7pm, rink. **Sunday, December 8 - W & V Gymnastics.** Pennsylvania, 11:30am, 2pm. **Monday, December 9 - JV/F/V Basketball.** Bowdoin, 6:15 & 8:15pm, Rockwell Cage. **Tuesday, December 10 - F "B" Basketball.** New Prep, 5:30pm, Rockwell Cage. **V Hockey.** Trinity, 7pm, rink. **Wednesday December 11 - W Gymnastics.** SMU, 7:30pm. **Friday, December 13 - Track.** Alumni Meet, 6pm, Rockwell Cage. **V Squash.** Army, 7pm, squash courts.

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 December 11 through December 22 to the Calendar Editor, Room 5-111, Ext. 3-3279, before noon Friday, December 6.

INSTITUTE NOTICES

If your club or other activity is planning to meet during vacation or IAP, please contact the Calendar Editor by 12 noon, Fri, Dec 13. Otherwise your notice will be removed from the Institute Calendar/ Notices and will not be reinstated until a new listing is received.

Announcements

Institute-Wide Tutoring Program-Tau Beta Phi is organizing a tutoring program specifically in upperclass engineering courses. The program is designed to aid MIT students. If interested in tutoring leave name, phone number, and courses which you feel qualified to tutor with Lydia, x3-4645.

Registration Material for Second Term-Registration material for all regular students will be available in Bldg 10 Lobby on Mon, Dec 9 & Tues, Dec 10.

Preprofessional Meetings-Wed, Dec 4-Georgetown Law School: Maddy Kramer, assistant director of admissions, group meeting 12n, Rm 10-179, interviews 1-4pm. Make appointments in Preprofessional Advising & Education Office, Rm 10-186, x3-4158.

GSC Upcoming Meetings-All in Silver Rm, Walker Memorial, 6pm; pizza and beverage served; RSVP. **Thurs, Dec 5:** housing & community affairs meeting; open hearings for vacancies on the following committees: student director seats for Harvard Cooperative Society, student environment. **Mon, Dec 9:** academic projects and policy; hearings on vacancies on the following committees: Compton Lecture, Lincoln Laboratory. **Thurs, Dec 12:** Executive meeting; hearing on vacancy on discipline committee. GSC, x3-2195, if interested in openings.

MIT Press Book Sale-Annual book sale Wed, Dec 4-Fri, Dec 6, Sala. Discounts from 50% off to 95% off. Hours: Wed & Thurs, 10am-10pm; Fri, 10am-4pm. Come

early for the best selection; both paperback and hardcover available.

Meeting-General membership meeting of Research, Development & Technical Employees' Union Wed, Dec 4, 6:15pm, Knights of Columbus Hall, 15 Willow St, Arlington.

Unicef Cards for Sale-Available in the TCA office, Stu Ctr Rm 450, x3-4885, aft 11am.

BSO-Discount tickets for Wed, Dec 11 open rehearsal are now available in the TCA office, Stu Ctr Rm 450, 11am-3pm, x3-4885.

Tech Student Travel-Provides discount air fares & complete bus service. Mon-Thurs, 4-10pm; Sat, 1-4pm, Stu Ctr Rm 450, x3-5433.

Graduate Studies

The following brief descriptions of selected graduate fellowships have been received recently by the Graduate School Office. More complete descriptions are available in the office, Rm 3-136.

John W. Simpson Westinghouse Fellowships in Nuclear Engineering
The American Nuclear Society has announced the establishment of the Westinghouse Fellowships. Two fellowships, each worth \$7,000, will be awarded to begin in the fall of 1975. The recipients, selected by the Society, must be enrolled in an accredited Masters' program in nuclear engineering for one calendar year (3 terms) in pursuit of their Masters' degree. The Foundation will guarantee the students summer jobs at appropriate Westinghouse nuclear facilities during the summer prior to the commencement of their graduate studies.

International Development Research Centre Thesis Research Awards

The International Development Research Centre is offering seven awards to Canadian graduate students doing their doctoral dissertation research and working in fields related to international development (ie food and nutrition sciences, agriculture, population and health sciences, information sciences, and social sciences, etc.). The awards provide a stipend of \$5,500 plus \$500 for each dependent as well as travel and research allowances. The award can be renewed up to two additional years upon evidence of satisfactory progress. It is expected that research will be conducted in a developing country.
Deadline: January 31, 1975.

Placement

The following companies will be interviewing Thurs, Dec 5-Tues, Dec 10. Those interested may sign up in the Career Planning & Placement Office, Mon-Fri, 9am-3pm, Rm 10-140, x3-4733.

Thursday, December 5-Amex Inc; Commonwealth Edison Co; Intertel, Inc; Stanford Univ, School of Engineering; Wyeth Labs, Inc.

Friday, December 6-Commonwealth Edison Co.

Tuesday, December 10-Leviton Mfg Co; Operation Crossroads Africa; Dept of the Navy, Harry Diamonds Labs.

MIT Club Notes

AIAA**-Weekly meetings of the American Institute of Aeronautics & Astronautics. Wed, 3pm, Rm 33-222.

Bridge Club*-ACBL Duplicate Bridge. Open Matchpoint pairs Thurs, 7-10:30pm; non-masters (less than 20 master points) Fri, 10pm-12m; all Stu Ctr Rm 473. Jeff, 864-5571.

MIT/DL Bridge Club**-ACBL Duplicate Bridge. Tues, 6pm Stu Ctr Rm 473. Jeff, 864-5571.

Chess Club**-Meeting Sat, 12n-5pm, Stu Ctr Rm 407.

Chinese Choral Society**-Singing Sun, 3pm, Stu Ctr Rm 473.

Goju Karate Club*-Classes Mon, Wed, 7-9pm; Fri, 7-10pm; Stu Ctr Rm 491. Dues \$10/semester. Terry Gibbs, 524-1251; Shawn, x3-2018.

Hobby Shop**-Mon-Fri, 10am-6pm, Rm W31-031. Fees: \$10/term for students, \$15/term for community. Info. x3-4343.

Israeli Student Club-Lectures Tues, 8pm, Stu Ctr Mezzanine Lge.

MIT Karate Club**-Shotokan style. Classes Mon, Wed, 8-10pm, duPont Wrestling Rm. Beginners welcome.

MIT Kung Fu Club**-Instruction in the art of Chinese boxing, Northern Praying Mantis style. Tues, Thurs, 7pm, Stu Ctr Rm 407.

MITV News-Fri, Bldg 7 Lobby. If you would like to work on it or know of news that should receive attention, call Dave Neuberger, 247-8355, or John Krout, 494-9820. Don't forget to watch the show!

MIT Outing Club*-Mon & Thurs, 5-6pm, Stu Ctr Rm 461.

Recorder Players Unite!*-Anyone interested in playing ensemble music is welcome & we have plenty of music. Mon, 7pm, ESG, 6th fl Bldg 14. David Dreyfus, x3-7787.

MIT Schola Cantorum**-Rehearsals Tues, 7:30pm, Kresge.

Science Fiction Society*-World's largest SF lending library, now located in Stu Ctr Rm 421 & 423. Open evgs, irregular hours, call ahead to x9144 Dorm. Society meets Fri, 5pm, Rm 1-236.

MIT Scuba Club-Compressor hours Mon & Fri, 4-6pm, Alumni Pool.

Soaring Association-Ground school for private license: part 5, Wed, Nov 27; 7pm, Rm 18-491. John Cross, x3-1836.

Strategic Games Society*-Offers opponents and discounts on merchandise to members plus gaming and periodical library. Sat, 1pm-1am, Walker Rm 318. Info, Kevin Slimak, 491-8568. Robert Sacks, 494-8889.

Student Homophile League*-Meeting Sun, Dec 8, 4pm, Rm1-132. For Info, talk, help in coming out call Jim at the Hotline, x3-5440. Come out, come out, wherever you are!

Student Information Processing Board*-Freshmen especially welcome. Mon, 7:30pm, Rm 39-200.

MIT Tae Kwon Do Club** -Beginner and advanced classes. Tues, Thurs, 5:30-7pm, duPont T-Club lge.

Tech Engineering News*-Office hours for MIT's undergraduate professional journal: 12n-1pm, Stu Ctr Rm 453, x3-2989.

Tech Model Aircrafters*-Flying in duPont Gym Sat, Dec 14, 6-10pm.

Tech Model Railroad Club**-Business meeting. Sat, 4pm, Rm 20E-210.

Technique**-MIT's yearbook welcomes writers, photographers and hackers. Sat, Stu Ctr Rm 451. Info, x3-2980.

Tiddlywinks Association**-Meetings Wed, 8-11:30pm, Stu Ctr Rm 473.

Unicycle Club*-Sun, 1pm, in front of Stu Ctr. Learn to ride a unicycle!

MIT Wheelmen*-Meetings Tues, 7:30pm, Rm 1-203.

White Water Club**-Pool sessions. Tues, Dec 3, 8-10pm, Alumni Pool.

MIT Women's Chorale**-Thurs, 8pm, Rm 10-342. Open to non-student women.

Zero Population Growth*-Meeting 2nd Wed each month, 7:30pm, bsmt Stu Ctr. Info, x3-7922, x0433 Dorm.

Religious Activities

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

Baha'i Discussion Group*-Discussion about the Baha'i faith. Thurs, 7pm, Rm 8-105. Refreshments.

Campus Crusade for Christ/College Life* -Family time, singing, prayer, teaching from God's word. Fri, 7:30pm, Rm 37-252.

Christian Science Organization*-Weekly meetings, including testimonies of healing. Tues, 7:15pm, Rm 8-314.

Eastgate Bible Study*-Discussing Book of John. Thurs, 8pm Eastgate Apt 24C. Info, Ed Fielding, x3-3638.

Hillel Services*-Fri: Traditional 7pm, Rm 16-134; non-Traditional 8:30pm, Chapel. Sat: Traditional 9am, Chapel. Mon-Fri, Minyan 7:30am, Rm 7-102. Note: no services during Thanksgiving recess.

MIT Islamic Society*-Congregational prayers Fri, 12:15pm, Kresge rehearsal rm B; discussion session Sat, 3:30pm, International Stu Lge (2nd fl Walker), refreshments.

Roman Catholic Mass*-Sun, 9:15am, 12:15pm & 5:15pm; Tues & Thurs, 5:05pm; Fri, 12:05pm; Chapel.

United Christian Fellowship*-Meet for teaching, singing, sharing and prayer with the Lord. Tues, 6pm, Rm 8-105. Preceded by dinner at Walker, 5pm.

United Christian Worship Service*-Sun, 10:45am, Chapel.

United Christian Fellowship*-Sunday school and nursery for infants and children during United Christian Workshop Service. Sun, 10:45-12n, Stu Ctr Mezzanine Lge.

Vedanta Society*-Services Fri, 5:15pm, Chapel. Swami Sarvagatananda will give a discourse on Bhagavat Gita.

Westgate Bible Study*-Wed, 8pm, Westgate Apt 1210. Info, 494-8778.

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 Institute extension. Only Institute extensions may be listed. Members of the community who have no extensions may submit ads by coming in person to the Tech Talk office, Room 5-111, and presenting Institute identification. Ads may be telephoned to Ext. 3-3270 or mailed to room 5-105. **Please submit all ads before noon, Friday, December 6.**

For Sale, Etc.

Realistic wireless intercom terminals, 2, nvr used, gd for home use, \$30. x3-2772.

Sgl drwr file cabs, letter sz, hvy cardboard, \$5/ea. Call, 235-0962.

Full sz baby crib w/matt; playpen; carriage. Call, 625-1064, aft 5pm.

Spac wardrobe, old fashioned, \$25. x3-6326, M, W, F.

Frstne belted snows, E78x14, dbl-stripe ww, used 3 mos, \$40/pr. Sandy, x3-4342.

Turkish coffee grinder, \$8; full swivel spray aerator, \$2.50; turq toilet top, b nw, \$3; 3 pr interior stained shutters, b nw, 14x 17, \$5.50/pr. Susan, x3-2285.

Pr G78x15 snows, ask \$45. Bruce, x3-2904.

Snow: F78x14 (7.75x14), \$10 or best; heavy chain & lock, \$12. Herb, x3-2592.

Electro-Voice 4 chnl amfm rcvr, 10 W rms/ch, integral decoder, nw w/wrnty, box, \$90. Aldrich, x3-5360.

VW beetle tires: 2 snows, 2 seas left; 1 unused Continental spare; \$35 or best. Dave, x3-3708.

Sell or trade: Scientific Amer mag, perf cond, June '69-Feb '71 incl, also Sept '67-Oct '67, make offer. Stefi, x8815 Dorm.

Nikkor 300 mm f4.5 lens, perf, \$220; microscope adapter for Nikon & Nikkormat w/10X flatfield objective, \$40. Call, 738-8960, evgs.

Radial stud snows, 175SR14, orig \$50 ea, used 1 seas, \$25/ea; pr 165x14 Perelli radials, \$20/ea; Kneissel Red Star 205 cm skis w/Salomon bndgs, \$65; Reiker bckl 9 1/2 boots, \$20. Call 864-5272.

Pr Ohm D spkrs, \$150; Marantz 1060 amp, \$125; Miracord trntbl, \$125. John, x3-1827.

Hexanon lens for Konica: 100 mm f2.8 & 28 mm f3.5, \$100/ea; pckt Inst 40 camera, b nw, \$30. C. Therrian, x367 Linc.

Pr 8-8 1/2 Caber ski boots, worn 2x, lk nw, \$20. Ivan, x8-1379 Draper.

What'll ya gimme for : Vox Jaguar organ, perf cond w/all acces; random Corvair parts, some nw, some used. Gerald, 536-4955, aft 5.

Coats: leath w/fur trim; navy P-coat; suede jckt w/zip out lining; brn wool midi w/hood; all sz 12-14; Teac cassette deck w/dolby; bdsprcd, drapes. Pat, 536-8920 evgs, lve msg.

HO gauge train sets, 2, elec or man switches, smoke, booklet for layouts (for 10x6 tbl), \$60 roadbed & tracks, bldgs incl rndhse, ask \$100. Mr. Wilkinson, x7051 Linc, lve msg.

Teac 4010SU tape deck, auto rev, solenoid controls, 2 spd (7 1/2 & 3 3/4), 4 heads, can be used for SOS; Advent 101 dolby unit, reduces sn/ns 10dB. Eric, 247-0732, evgs.

Japanese graphics, singed & numbered pencil, 3 dif, 2 Tagaki, Kimura, multiclr, ltd ed, only 10/ea, \$15/ea or \$40/3. Bernie, x3-6372, aft 6pm.

Bruins tkts to games in Dec: Det, Pitts, Wash, Atl, 2 seats in 2nd balc center. Call, 661-9466, evgs.

Rims for Mustang or Frlnr, 2, 14", 5 bolt, \$10. Mike, 646-7510, lve msg.

Sears elec air clnr removes dust, dirt, pollen, b nw \$150, used 3x, \$75 or best. Call, 899-7135.

Delta Suretrac snows for VW, 2, sz E78x14, little used, bargain at \$15. x3-3722.

Sony TC131 cassette deck, dolby, Ferrite head, 5 mos, nw \$240, \$170 or best. Al, x3-3752.

VW tires, 2, b nw, nvr used, \$30. Tony, x3-4600.

Wl swap Mamiya Sekor 35 mm camera w/fltrs & Hexacon SLR for gd amfm stereo amp w/or w/out cassette. Phil, x3-4267.

Girl ice skates, nw, sz 3, \$5; girl wtrpruf fleece lined boots, sz 3, \$3. x3-7138.

Rosewd 20' conference tbl w/chrome base, prac nw, perf cond, \$1,700. Poppy, x3-1669.

Teac AN-60 Dolby unit, unused, \$65; Pioneer 35 W spkrs, \$100; girl 24" sgl spd bike, nw, \$30. Call, 494-8185.

Pr soft leath Fr shoes, blu, nw, sz 8 1/2 M, \$40 or best. Irene, 494-8539.

Moving, must sell: Hotpt port dw; radio/rcrd player w/mahog cab; dbl Fr Prov bed w/mtch dresser; exec swivel desk chr w/arms; lg Eng slvr samovar, many others. Call, 566-0366.

For gift of lasting value: hand-made Amer Ind jewelry, Navajo, Zuni & Hopi. Arlene, x3-7722.

Pr 15" '73 Ply rims, \$10. Mac, x3-7273.

Reg tires, 2, A60x13, Douglas (Gdyr), mtd on 5 lug Chevy rims, used 6 mos, exc cond, best. Joan, x7002 Linc.

B nw skis w/wrnty, Spaulding Numero Uno 195 cm, \$90, list \$180. Dan, 232-0205, evgs.

Emerson amfm rcvr w/2 spkrs, great for dorm, \$50; Akai X150-D r to r tape deck, best. Janis, x0453 Dorm.

Snows, 2 BFG t-less nylon 4 ply, 7.35x14 mtd on hubs, \$40. Call, 641-0578.

Sony HP-510A compact sys, 1 1/2 yrs, amfm, fm-stereo, Dual 1211 trntbl w/nw Shure M-75 crtrd, 4 mos old KLH-31 spkrs, exc cond, instr, access, was \$475, \$350, sell as sys only. x9439 Dorm, aft 7pm.

Tckts to Yes concert, 8pm, Dec 11, 21 & 24 rows from front of stage, \$8.50 ea. Neil, x8431 Dorm.

Sherwood S7500 w/cards, 40 + 40W, fm, 1.8 mV, \$220 or best. Call, 782-1328, lve msg.

Swap pr E78x14 belted snows w/low mileage for pr F78x13 radial snows, sim cond. x3-6116.

Pr Frstne stud snows, 7.50x13, used 1 seas, lk nw, sacrifice \$30. Wang, x3-4711.

Kneissel 1200 skis, 200 cm, w/Solomon 404 bndgs & poles, used 1 seas, \$95. Jean Ward, 876-6860, aft 6pm.

Pr nw C78x15 tires, \$45; wedding gown, sz 12; lg tie rack, \$5; Samsonite wardrobe suitcase, \$20; baby stroller, \$20; inf carbed, \$5. Mary, x8-1471 Draper.

Stained glass items, from sm gifts (incl Bicentennial) to personally designed works for home or office. Call, 492-7642, aft 5:30pm.

Yamaha FG-200 folk guitar w/case, \$120 or best. Bob, 876-0063, aft 7.

Tires: 2 stud snows, 2 reg, 8.25x14, gd cond, \$20/all. x3-7281.

Electronic relays: lots of 1-10, \$1/ea; lots of 10-25, \$.50/ea; lots of 25-50, \$.25/ea; 50 or more, free. Stanford, x3-7787.

Fbrglas Hart Camaro 210 cm skis, b nw, \$40 or best. x8454 Dorm.

Pr m hcky skates, sz 11. John Sofia, x3-6050, lve msg.

Girl wht figure skates, sz 9, best. Pat, x8-4101 Draper.

Gdyr snows, 6.00x12 mts, xtra rims same sz, cheap. Dennis, x3-6466.

Guild elec guitar w/case, gd cond, \$90 or best. Mike Kilkelly, x183-0 Middleton.

Hotpoint 30" elec stove; B&D elec screwdriver, \$35; Wright saw. Al, x8-4597 Draper.

Xmas trees, cut your own, \$6-\$9, take Rt 119 to NH line, then 2nd road on rt (Wood Ave), Nottingham, Rindge. Call, 603-899-6646.

Compl hockey outfit, almost nw: Hyde m figure skates, sz 10, gd cond, \$81; Toyota 6.00x12 snows, mtd, 2, \$30; Smith Corona port man typwrtr, nw, \$30. Call, 494-8303.

Wht combo alum wndws, 31x66, \$10; boy hcky skates sz 7, \$8; sm girl figure skates, sz 11, 12, \$2.50. Heckscher, x5806 Linc.

Hyde girl fig skates sz 13, boy hock skates sz 5, \$8. Barbara, x3-5259.

Vehicles

'62 Jeep 4x4, ton pick-up, plow, dump, hoist, step, 6 gd tires, directionals, emerg sgns, spot, gd run shape, \$1,095. Tony, x3-5717, lve name & no.

MIT Surplus Property for transfer or sale: '65 International van/truck, 12.5K, can be seen by contacting W. Derry, property officer, E19-717, x3-2777.

'66 Dodge Dart, gd run cond, free for 1 mo, U store it, use it, repair it if it breaks. x3-7580.

'67 Ford Cstm, std, 6 cyl, nw clutch, batt, muff, gd cond, snows, \$400 or best. Serge, 547-6461.

'68 Ford Torino GT, auto, gd cond, no rust. Call, 354-0344.

'68 Pontiac Cat, 4 dr, gd cond, \$400. Noud, x3-5547.

'68 VW bug, radio, nw shocks & muff, gd tires, \$650 or best. Call, 868-3034.

'69 Pontiac Cat, p st & br, gd cond, nw trans, batt & snows, \$650. Dan, x3-6404.

'70 Toyota Corona Mk II, auto, v gd cond, nw batt, 35 K, 5 gd tires & 2 stud snows, \$1,250. Dom, x3-6907.

'70 AMC Hornet, 6 cyl, 4 dr, 68K, v gd cond, \$1,100. Bert, x3-5547.

'71 VW sqbk, 33K, sunfr, luggage carrier, exc cond; also baby carriage, stroller & hichr. Call, 494-8259.

'71 VW sqbk, blu, blk int, auto, am radio, v gd cond, \$1,900 or best. John, x181-56-203 Firepond.

'71 Maverick, 2 dr, vinyl top, p st, auto, am radio, stereo tape deck, 5 nw tires, ask \$1,900. x8-4075 Draper.

'71 Maverick, 2 dr, vinyl top, p st, auto, 250 cu in, 30 K, showrm cond, nw brake job, rntly tunes, 5 nw tires, snows, am radio, stereo tape deck, ask \$1,900. Bob, x8-1211 Draper.

'71 VW super beetle, org, 42K, exc cond, radio, snows, 3 mtd tires, must sell, lvg cntry, \$1,500. Moura, x3-5934.

'72 Fiat 124 sport cpe, exc cond, 19K, amfm, \$3,000. Alex, 354-6598, evgs.

'73 Olds Cutlass S, cstm ordered, still nw, \$3,700. Sgt Desimone, x3-4473.

'74 Pinto Squire wgn, 6 K, under wrnty, ECP rustprufed, 4 spd, 4 cyl 2,300 cc eng, mtd snows, \$3,150. Rosemary, x653 Linc.

Corvair Monza 110, radials, nw seals, lifters, starter, alternator, exh sys, exc cond. Dave, x3-5550.

Mtrcycl, Honda CB450, 12 K, exc cond, Koni shocks & many access. Gary, 267-7416, kp try.

Housing

Back Bay, Beac St stu, mod Kette, B, avail now, \$160. Call, 494-8212, aft 5pm.

Bos, BR lux apt, Harv Med Sch & Hosp area, avail 1/1, ac, dw, balc, tile B, security, lndry rm, pool & pkg avail, \$207 incl ht, gas. Eric, x3-6673.

Bos, Beac Hill stu, wnter sub beg 1/1, attractive, comf & conv, reas. Ann Hanks, x3-4896.

Bos, Beac St nr MIT, prof lving area, 2 BR, river view, frpl, avail 1/1, \$270. Call, 261-1479.

Bri, sub mid-Jan to mid-Mar, furn BR, free pkg, Comm Ave T, \$175. Lorraine, x3-1601.

Bkline condo, ac, overlk park, lg LR, DR, 3 BR, 2 B, mod K w/d&d, nr T, \$42,000. x3-3012.

Bkline, nr Beac St, 4BR & 3BR apts, avail 12/1, frpl, LR, K, B, porch, nr T. Call, 232-8542.

Camb, Cent Sq, qt st, 2nd fl BR, B, K, LR, no lse, bkyrd, pkg \$10/mo, furn, ctn, avail 1/13, \$175. Phil, x3-6019.

Camb, 2 BR, LR, dining area, K, B, ac, mod bldg, pkg, avail 1/1, \$290 incl all util. Call, 491-2220.

Camb, sub 12/15-2/15, Harv Sq, 3 BR, LR, K, no pets, \$200/mo + util. Call, 661-8387.

Chelmsford, rent hse Jan-June '75, 3 BR tri-lvl, frpl LR w/cathedral ceil, DR, lg fam rm, beaut wded lot, qt street, nice nrhd, \$300. x5421 Linc.

Lex, 8 rm 2 BR hse to rent 1/1-8/15, nwly reded, compl furn, ac, frpl, dw,

choice loc, nr T, no chldrn or pets, \$325 + util. Wayne, x3-3127.

Nwtn Ctr, qt & charming st, 3 BR apt, avail now, ref required. Celia, x3-3640.

MIT fully furn apts avail for 1-5 wks for MIT visiting fac or equiv. Evelyn Wheeler, x3-1493.

Gunstock, 3 BR chalet, frpl, pool, saunas, mile to ski, \$200/wk. x8-4415 Draper.

'72 Chateau mobile home, 12x55', 2 BR, LR, K, B, fully furn, ac, 8x10' alum shed, skirting & stairs incl, in Merrimack, NH, must sell bef 1/5, \$7,000 or best. Call, 603-424-5221, aft 5pm.

Lost and Found

Lost: reward for rtn of wire-rim glasses, lost Bldg 39, 11/25. x3-2092.

Found: '75 MIT ring, initials DEL or DEI; King High, Tampa, Fla ring; Eng Lib, ask at circulation desk.

Found: umbrella, rm 2-151, 1pm on 11/20. Nina, x3-3575, lve msg.

Found: pr cut-off jeans, nr Walker. Lois, x3-1782.

Wanted

Hse/cat sitter, oceanside (Nahant) home, beaut setting, 30 min MIT, 12/20-12/28. x3-1659, Tues or Thurs.

Nd someone to supervise 2 chldrn 2 or 3 X wk, afts. Kamrany, x3-5410.

Old piano (upright?) for stu relearning to play real music, cheap (free?), w/ move. Jim, 628-0445 evgs, call bef snow!

Nd ride to Los Angeles, Cal, or thereabouts, want to lve approx 12/18 or soon aft, w/ share driving, gas, etc. x0572 Dorm, evgs.

Manager for Graduate Newspaper, w/ obtain ads & articles, coordinate entire production, helped by GSC & pub committee; 20 hrs/wk, \$40/wk; U or G stu, exp pref but not necessary; necessities provided. Pegg Hunter, x3-2195.

Silent 60 mm home movie proj, gd operating cond. Al, x5889 Linc.

Would you like to see who is gl & over 30 at MIT? Meet at Muddy Charles Rm in Walker, Thurs, Dec 5, 1:15pm. Suzanne Frank, x3-3131.

Used classical guitar, approx \$20. x3-1341.

Working or repairable chldrns toys & games for use in elem school. Haj, x3-3228.

Mattel vac-u-form plastic molding machine. Chris, x3-2375.

Baby stroller, carriage, walker for Child Care Office, Fam Day Care Prog. x3-3953.

Used mtrcycl sidecar. Nick, x3-6625.

Roommates

Rmmate, 3rd m for lg Bel apt, own BR, \$105 + shared ht & util. Martin, x8-1159 Draper.

Camb, mod apt, 10 min to MIT, K, B, own rm, \$75 compl. Call, 876-8520.

F, 23+, share 6 rm No Camb apt 2/2f, avail 12/1, own rm, \$98 + util. Margie or Sara, 492-0813, aft 7pm.

Rmmate, Tang Hall, avail 12/1, incl own rm, share mod K & B, \$120 nego. x3-5069.

Carpools

Ride from Back Bay-MIT morn & evgs, w/ share exp. Alison, x3-1712.

Ride desired to MIT from Cldg Crnr area, Bkline, w/ share exp, 9-5. Catherine, Planning Office, x3-5831.

Miscellaneous

Last 2 wks Jan: MIT-Wellesley ski trips, 5 1/2 days: lift & lodging, \$79; learn to ski, rental, lessons, lifts & lodging, \$115. Lydia, 661-2990, morn & evgs.

Fast, neat typist w/ type papers, manu, have IBM dual pitch correct Selec, \$.75/pg pica, \$1/pg elite. Call, 492-0780, aft 6.

Champagne for the price of beer! Exquisite typing at down to earth prices: theses (specialty), disc, reports, etc. x3-5656.

POSITIONS AVAILABLE

This list includes all non-academic jobs currently available on the MIT campus. Duplicate lists are posted each Tuesday preceding Tech Talk publication date on the women's kiosk in Building 7, outside the Office of Minority Affairs, 10-211, and in the Personnel office E19-239, on the day of Tech Talk publication. Personnel interviewers will refer any qualified applicants on all biweekly jobs Grades I-IV as soon as possible after their receipt in Personnel.

Persons who are not MIT employees should call the Personnel Office on extension 3-4251.

Employees at the Institute should continue to contact their Personnel Officers to apply for positions for which they feel they qualify.

Virginia Bishop 3-1591
Mike Parr 3-4266
Philip Knight 3-4267
(secretary - Joy Dukowitz)

Sally Hansen 3-4275
Jack Newcomb 3-4269
Evelyn Perez 3-2928
(secretary - Mary Ann Foti)

Dick Higham 3-4278
Pat Williams 3-1594
Claudia Liebesny 3-1595
(secretary - Dixie Chin)

DSR Staff, Resident Operations Manager, for major Dial-A-Ride system Demonstration Project conducted through Civil Engineering. Person will oversee daily operation of system, and have responsibility for driver and control room staff training, vehicle and control room operations, development and implementation of project strategies and policies. Two and one-half year commitment and residence in NY State demonstration area required. Experience in operation of demand-responsive transit systems and advanced degree in transportation engineering or planning are necessary. 74-1416-A (12/4).

DSR Staff in Civil Engineering will perform research on interrelation of air quality standards and transportation decisions. MS in transportation systems analysis, familiarity with transit options, demonstration project design, cost appraisal and paratransit options, as well as institutional aspects of air quality and transportation issues required. Superior writing and communication skills are also necessary. 74-1415-A (12/4).

DSR Staff Computer Programmer/Data Analyst in Joint Center for Urban Studies will assist in data collection related to study of economic success and social consumption; will have full responsibility for programming of data and assist in its analysis. Masters degree in Sociology, or equivalent, programming experience required. Temporary through June, 1974. 74-1421-R (12/4).

Subcontract Administrator, Assistant Director, in Office of Sponsored Programs will work with project personnel in negotiating complex subcontracts; prepare Requests for Bids; review quotations; arrange for pre-audit of proposed costs and negotiation of terms and conditions; will also monitor active awards. Bachelors degree in Business Administration or equivalent combination of education and experience, subcontracting experience in government agency or university environment, knowledge of procurement regulations of government agencies required. 74-1403-R (11/27).

Administrative Staff-Director of the MIT Press. Full responsibility for publishing program and operations of large university press. Direction of Acquisitions, editorial, design, production, marketing and business activities. Program includes over a hundred books and several journals. Annual sales, about \$2.5 million. Substantial and varied experience in the overall management of a publishing house required, preference for experience in scientific and technological publications. 74-1397-R (11/20).

Administrative Staff Manager, Financial Information and Planning, Sloan School, will work on fiscal planning and budgeting, analyze existing information systems for improvement and coordination with overall Institute systems; assist in development of long-range fiscal, space and program plans. Knowledge of management accounting techniques, EDP systems required. Masters degree in management preferred. Please submit resume. 74-1398-A (11/20).

Assistant Director-Administrative Staff Program Administrator in the Office of Sponsored Programs will be responsible for proposal reviews, grant and contract negotiations, post award administration. Will represent OSP with respect to sponsored programs in a number of academic departments and laboratories. Bachelor's degree in Business Administration or a related field, or equivalent education and experience required. Considerable experience in sponsored program administration and university accounting and budgeting procedures is necessary. 74-1391-A (11/20).

DSR Staff, Technical Assistant, in Nutrition and Food Science will do biochemical assays on the brain. Experience in measuring mono amine neurotransmitter compounds in a variety of tissues using ion exchange chromatography and spectrophotometric techniques necessary. BS degree in Chemistry is required. 74-1396-A (11/20).

Administrative Staff, EDP Internal Auditor, will perform EDP auditing, reviews of system, post audit of computer system; develop audit programs, questionnaires; write and present reports. Bachelor's degree in business administration, accounting major, or equivalent combination of education and experience, graduate work in computer science and experience in computer systems analysis and programming required. 74-1366-R (11/6).

Admins. Staff Assistant Director for MIT Associates program which provides member industrial firms direct and convenient access to Institute's educational and research programs, and the Institute with unrestricted financial assistance and professional relationships. Liaison function between MIT faculty and research staff and company representatives. MIT degree (relevant MIT work experience considered), approximately 2 years of technical experience (preferably engineering), management perspective, and ability to deal with executives of small to medium sized corporations required. MBA preferred. 74-1316-A (10/23).

DSR Staff in Artificial Intelligence Lab will be responsible for maintenance and repair of PDP 11/45 computer and its peripheral equipment, debug software problems, recognize and correct hardware faults. Programming experience on PDP 11/45 computer and time sharing systems required. Some circuit design experience desirable. 74-1306-A (10/23).

DSR, Optical Physicist, will conceive, design and execute experiments in nonlinear optics. Candidates should have several years' experience in innovative, experimental research including work in high-power, solid-state lasers from near ultraviolet to near infrared, and knowledge of nonlinear, optical materials. Ph.D. required. 74-1318-R (10/23).

DSR Staff Inorganic Chemist in Nuclear Engineering will assist in development of short-lived radio-nuclide generator for medical applications, conduct methods study for rapid separation of Ir (III) from Os (IV) using resin and inorganic ion exchangers and biological distribution studies of the generator eluant in animals. Graduate degree in inorganic chemistry, ability to conduct innovative, independent research, two years postdoctoral experience and experience with column chromatographic methods essential 74-1302-A (10/23).

DSR Staff Experimental Optical Physicist, in Research Laboratory of Electronics will identify, formulate and implement key experiments on communications in low visibility atmospheres, develop general experimental capability in and formulate new directions for optical communications research. Ph.D. in Engineering or physics required. 74-1301-A (10/23).

DSR Staff in Center for Cancer Research will conduct experiments in lab studying genetics of animal cells in tissue culture, including maintenance and diverse manipulation of cells, use of radioisotopes for physiological and biochemical characterization. Will assume increasing responsibility for standard lab operation and independent work. BA or MS in biological science and some lab experience required. Tissue culture and/or radioisotope experience desirable. 74-1289-A (10/16).

Admin. Staff, Journals Manager at the MIT Press will be responsible for overall direction of Journals operation: budget, fiscal control, departmental workflow, staff supervision, production and subscription aspects, editor contact, assessment, acquisition and development of new journals. (Division currently publishes 4 quarterly and one monthly journal). Experience with business/financial aspects of publishing and/or scholarly journals publishing. 74-1273-R (10/9).

DSR Staff Programmer at Project MAC will perform system analysis and system programming on a research version of the Multics operating system. SM or EE degree required; 2-3 years programming experience as the

supervisor of some advanced operating system required. Ability to contribute to research and work with students important. 73-1234-A (10/2).

DSR Staff Engineer in Earth and Planetary Science will be responsible for development and construction of astronomical instrumentation for use of telescopes. Experience in analog and digital circuit design and construction. EE degree and/or training required. Please submit resume. 74-1207-A (9/25).

DSR Staff, Programmer in the Laboratory for Nuclear Science will maintain and develop computer-based acquisition system comprised of large mini-computer (PDP-11/45). Comac instrumentation and in-house electronics. EE or Physics degree, or equivalent required. Experience in systems development on mini computer preferred. Work sites include MIT, BNL, Fermi Nat'l Lab. 74-1183-R (9/25).

DSR Staff at the Haystack Observatory in Westford, MA, will guide and participate in development, design and implementation of electronic instrumentation and computer software for interferometer (UBLI) experiments, which will measure tectonic plate motion; assist in analysis of data. Physics & EE background with Ph.D. research experience in radio astronomy. Computer programming, ability to work with radiometers and other radio astronomy instrumentation required as well as previous experience with very long baseline interferometry. 74-1161-R (9/18).

Administrative Staff Industrial Liaison Officer will provide interface among MIT faculty, staff and representatives of member companies of the Program, major industrial firms in USA. Masters degree, preferably MBA or SM, Ind. Management, with BS in science or engineering required. Ability to communicate effectively with corporate executives as well as technical staff of companies is needed. 74-1168-R (9/18).

DSR Staff-Temporary for the Joint Center for Urban Studies will supervise the work of graduate research assistants working on topics related to public sector labor relations in Boston: Ph.D. or work toward advanced degrees required. Experience with research on municipal employee labor relations, and as a supervisor important. Job duration, approximately 6 months. 74-1126-A (9/11).

DSR Staff at the National Magnet Laboratory will work on the Alcator thermonuclear experiment. Conceive, design, and carry out plasma diagnostic experiments using neutron, X-ray, optical, electrical, magnetic and micro-analysis and assessment of data. Ph.D. in plasma physics or related area required; familiarity with tokamak devices desirable. 74-1136-A (9/11).

DSR Staff-Physical Chemist in the Research Laboratory of Electronics must be experienced in molecular beam techniques and surface science to conduct experiments on semiconductors and related materials. Ph.D. in Physical Chemistry required. 74-1110-A (9/4).

DSR Staff-Scientific Programmer in Earth and Planetary Sciences will work on analysis of celestial mechanics data from Mariner 9, MVM, Viking, Pioneer Venus Probes and other space related projects. Design, write, modify and run FORTRAN data-analysis program. Advanced knowledge of FORTRAN and minimum of 1 year professional programming experience required. Background in math, physics, engineering; knowledge of IBM/360/JCL and assembler useful. Submit resume. 74-1267-A (10/9).

Technical Assistant-Academic Staff in Nutrition and Food Science will perform specialized and routine chemical analyses on body fluids; responsible for operation and maintenance of mass spectrometer. A college degree in Chemistry or Biology required. Laboratory experience preferred. 74-1047-R (8/28).

DSR Staff in Energy Laboratory will design, build, and operate large scale heat transfer apparatus. Graduate degree in heat transfer; extensive experience in designing, instrumenting, and conducting laboratory tests in heat transfer experiments with a minimum of supervision required. 74-858-A (7/31).

Biomedical Engineer-DSR Staff in the Mechanical Engineering Department will join MIT researchers and Children's Hospital medical staff to work on the conception of diagnostic and therapeutic devices and processes for human rehabilitation. Supervise technicians, participate in the supervision of theses and student projects. Education in biomedical engineering required. Mechanical and/or electrical engineer, experience in engineering-physician collaboration very desirable. Innovation; creativity, ability to coresearch essential. Possibility of lecturer appointment in Mechanical Engineering. 74-869-R (7/31).

DSR Staff Economic Advisor at the Joint Center for Urban Studies will

advise the President of MIT and Harvard on the state of the economy and labor force of Cambridge, and prospects for future economic development; evaluate proposals in fields of health, education, housing, transportation, and community development in view of their impact on the advisory committee of faculty and administration members from both institutions. Doctoral degree or equivalent experience in urban economics, manpower, community development required. Ability to work effectively with local government and university officials. Ability to plan and conduct research. 74-753-A (7/17).

DSR Staff in the Energy Lab must have minimum of 5 yrs experience in defining, securing, organizing and supervising research in heat transfer related to energy production and utilization. Familiarity with MIT; experience in supervising student theses research and staff; Ph.D. in Mechanical Engineering required. 74-359-A (5/1).

Engineering Assistant, Exempt in Earth and Planetary Science will work under supervision in the design, construction, debugging, testing and evaluating experimental CCD camera project; evaluate instruments on optical telescope and experience with electronic imaging devices desirable. 74-1346-A (11/6).

Engineering Assistant-Exempt in the National Magnet Laboratory will set up experiments and take measurements of magnetic fields produced by humans and animals. Will work with hospital medical groups. Experience in biomedical research; strong experience in low-frequency electronics; knowledge of magnetism and cryogenics required. Flexible schedule necessary for occasional evening or weekend work. 74-1033-R (8/28).

Infirmiry Staff Nurse-Exempt, Bedside nurse in MIT Infirmiry. Must be capable of administering first-aid and emergency treatment. Mass. Registered nurse with 1 1/2-2 yrs experience preferably in medical/surgical unit. Emergency Room or ICU experience desirable. 11pm-7am, weekend rotation. 74-1278 (10/9).

Area Food Supervisor-Exempt in Food Service will be responsible for the unit serving areas: flow of food and utensils during meal periods; portion controls, sanitation. Will train and supervise pantry employees. Technical knowledge of food production; ability to work under pressure, irregular hours and weekends required. 74-835-A, 74-836-A (7/24).

Accounting Assistant IV to the Administrative Officer in the Center for International Studies will maintain control records on activity of OSP and other accounts; post financial transactions; check statements; prepare financial reports; perform other accounting related duties. Thorough knowledge of accounting procedures, ability to work with minimum supervision required. Institute experience preferable. 74-1400-R (11/27).

Secretary IV in Chemical Engineering will type quizzes, reports, technical manuscripts, proposals for three faculty members. Will arrange appointments, maintain student records, act as receptionist for the office. Dictation from tapes; technical typing experience preferred. Prompt, dependable individual with ability to follow through on details desired. 74-1105-R (9/4).

Secretary IV in Sloan School Systems Dynamics group will assist senior secretary in non-smoking office: type various material from dictation equipment or written drafts, make travel arrangements, answer telephones; do occasional library research, serve coffee at staff meetings. Excellent typing skill, command of English grammar and liking for detailed work required. 74-1417-A (12/4).

Secretary IV, temporary, in Psychology, will maintain records and accounts on grants; type reports and forms; prepare payroll reports; act as information source for office. Ability to work without supervision, familiarity with or willingness to learn MIT accounting system, and typing skill required. Position is temporary for 3 mos. 74-1425-R (12/4).

Secretary IV in Center for International Studies will perform general secretarial duties for three people involved in International Nutrition Program; provide assistance with special projects relating to seminar, foreign visitors and graduate student programs. Spanish fluency and technical typing skill required. 74-1404-A (11/27).

Secretary IV to headquarters staff of Housing and Food Services will type from written drafts, machine dictation or shorthand; assist in compiling and organizing data for reports and in maintenance of computer data base, file. Excellent typing skill, ability to establish priorities and work independently required. 74-1412-R (11/27).

Secretary IV in Energy Lab to research staff members and administrative assistant. Will type reports and manu-

scripts, including technical material, check and verify monthly statements, occasionally assist other secretary. Technical typing ability, ease with figures and ability to establish priorities required. Familiarity with MIT procedures preferred. 74-1384-A (11/20).

Secretary IV in Economics will provide general secretarial assistance to two professors: type manuscripts and class material (some mathematical), file, make appointments; will also act as editorial secretary for economics journal, including record-keeping, correspondence, preparation of monthly status reports. Excellent typing required. 74-1393-R (11/20).

Secretary IV to the head of Barker Engineering Library and professional staff. Will handle a variety of clerical duties; type correspondence, purchase supplies and equipment, maintain records of book orders, prepare financial statements, act as receptionist, maintain files, administer payrolls. Secretarial and bookkeeping experience required. College or secretarial school training desirable. 74-1382-R (11/20).

Secretary IV to administrator and several researchers in Energy Lab involved in assessment of international energy options; will be involved in extensive telephone and telegraph meetings; arrange travel and appointments; handle financial transactions, coordinate publication and distribution of reports. Excellent typing, shorthand/speedwriting and dictation equipment skill, organizational ability, poise in dealing with prominent persons, and willingness to work overtime required. MIT experience desirable. 74-1378-A (11/13).

Secretary IV will handle standard secretarial duties for a group of Mechanical Engineering professors. Schedule travel, appointments, seminars; type correspondence, monitor accounts; secretarial training or experience, shorthand/dictaphone, technical typing skills required. Ability to communicate and to deal with students and staff important. These positions are available for "job-sharing." 74-950-R (8/14).

Secretary IV to the Institute Secretary for Foundations will be responsible for budget accounting, file maintenance; research in reference materials, maintain communications and smooth relations with top level offices of the Institute. Excellent secretarial skills, ability to organize and use discretion required. Knowledge of MIT desirable. 74-332-R (4/24).

Secretary III-IV in Civil Engineering will type correspondence, proposals, reports, class notes from handwritten, typed drafts, dictaphone. Schedule travel, meetings, appointments. Excellent typing, willingness to work under pressure of deadlines required. 74-1085-R (11/20).

Secretary III-IV in Mechanical Engineering will work with staff members and students in research concerned with development and evaluation of techniques and devices responsive to the needs of the handicapped. Primary duties are secretarial, including transcribing machine dictation, making travel arrangements, handling petty cash. The ability to edit and proofread is desirable. Typing skills and maturity are required. 74-1368-R (11/13).

Secretary III-IV will work for one professor in Metallurgy and Materials Science. Type from machine or direct dictation, including some technical; maintain files, monitor OSP accounts, schedule travel; conduct moderate library research. Excellent typing, good command of English required. MIT experience, shorthand or speedwriting desirable. 74-1181-R (9/25).

Secretary III, part-time, in Physics Optical Maser group will assist senior secretary with varied secretarial duties: type manuscripts and reports; record and file articles and reprints, answer phones. Good typing skill and willingness to learn technical typing required. 20-25 hr/wk. 74-1414-R (12/4).

Secretary III in Architecture headquarters will act as receptionist, maintain admissions files, answer phone, order supplies, assist with phone inquiries and visitors. Typing and organizational skill required. 74-1420-R (12/4).

Secretary III, part-time, in Alumni Association will arrange format and type correspondence and reports, file and answer phones. Familiarity with machine dictation and use of IBM Executive typewriter required. 74-1409-R (11/27).

Secretary III in Center for Cancer Research will type grant applications, publications and letters from handwritten drafts, and perform other clerical duties as required. Good typing and grammar skills are required. Shorthand and familiarity with molecular biology terminology helpful. 74-1411 (11/27).

Secretary III in Energy Lab to research staff members involved in energy and environmental problems will type reports and correspondence, including some technical material, from written drafts and dictation equipment; ar-

range travel, do simple accounting procedures. Typing skill, ability to determine priorities required. 74-1385-A (11/20).

Secretary III, part-time, in Metallurgy and Materials Science will type correspondence, technical reports and manuscripts, file, answer phones, monitor accounts, technical typing skill and some secretarial experience required. Shorthand or speedwriting helpful. Hours: 9am-1pm, M-F. Temporary position through June, 1975. 74-1376-A (11/13).

Secretary III in Physical Plant, Superintendent's Office will provide secretarial services for Support Services Group; type correspondence and reports, answer phones, handle general inquiries. Ability to work with minimum supervision and excellent typing required. Shorthand or speedwriting desirable. 74-1362-R, 74-1363-R (11/6).

Secretary III, part-time, in Law-Related Studies Office. Will type, maintain several accounts, answer phone in busy office. Good typing, ability with figures required. Much internal liaison with staff and students. 17 1/2 hrs/wk. 74-1236-R (10/2).

Secretary III to several staff members of the Center for Theoretical Physics. Excellent typing needed for technical reports, manuscripts and correspondence (technical typing skills helpful); ability to work effectively with students, guests, and faculty important. 74-883-R (8/7).

Secretary III to faculty and research group in Research Lab of Electronics will type manuscripts including technical material, make appointments, independently reply to correspondence and compose replies from oral instruction. Shorthand skill and excellent typing ability required. 74-1174-R (9/25).

Keypunch Operator III in Medical, will provide support in all phases of Information Processing System of patient contracts; may coordinate work of other keypunchers. Previous experience on IBM 129 Keypunch and Verifier and ability to work with minimum supervision required. 74-1423-R (12/4).

Senior Keypunch Operator III in Alumni Association to operate IBM 129 Keypunch and 059 Verifier units in conversion of manual alumni records to data processing system. Experience on above equipment preferred. 74-1410-R (11/27).

Senior Library Assistant IV, part-time, temporary, in Library Serials Department will record and process current serials and invoice information; circulate sample issues to divisional libraries, prepare processing forms for monographic series. College graduate with library experience required. Business office experience and knowledge of foreign languages are desirable. Position is for 7 weeks. 9am-1pm. 74-1418-R (12/4).

Clerk-Typist II-III in Comptrollers Accounting Office, Sponsored Accounting section, will type billing, grant and contract reports and other internal fiscal reports. Excellent typing skill required. 74-1419-R (12/4).

Senior Clerk IV in Medical Department, Insurance and Billing section, will process insurance claims from Infirmiry and Surgical reports to Student Health Insurance, Blue Cross/Blue Shield and other health insurance vendors; maintain claim records. Position requires much interaction with students regarding claims and coverage. Ability to understand and apply complex regulations, typing and general office skills required. Insurance background preferred. 74-1406-R (11/27).

Senior Clerk IV in Civil Engineering will assist Administrative Assistant in Student Information and Records Office; act as information resource to students and faculty; compile statistical data; type from hand-written material; maintain files. Good judgment, ability to work with minimum supervision, high school training, or equivalent, office experience and typing skill required. Knowledge of MIT administrative structure helpful. 74-1402-R (11/27).

Senior Clerk III in Physical Plant Superintendent's Office, Work Control Center will receive maintenance and repair requests and forward to appropriate shops for action; assist in work scheduling. Will perform other clerical functions; monitor requisitions and purchase orders. Good office skills including accurate typing, organization ability, telephone presence required. Familiarity with maintenance and construction terminology desirable. 74-1395-R (11/20).

Clerk Typist III in planning office will operate IBM Mag Card equipment, or equivalent, type reports, other correspondence, some charts and tables from hand-written and dictated copy.

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FRESH PAINT BRIGHTENS the walls at Tutoring Plus, 183 Harvard St., Cambridge, thanks to MIT students from Phi Delta Theta Fraternity who spent a recent Saturday painting rooms upstairs and down. Jointly responsible for the face lift were Mrs. Virginia Williams, left, administrative assistant for the program, and Paul E. Fallon, a sophomore in architecture from Bricktown, N.J., who organized the fraternity effort. Engrossed in a

spelling lesson are three of some 150 tutees in the program, Christine Moreira, 9, Stephen Lucey, 10, and Myra Espada, 11. Tutoring Plus is an 11-year-old program run by neighborhood parents which provides supervised after-school activities and tutoring. Major support for the program is provided by the MIT Community Service Fund, and many of the more than 100 tutors are MIT undergraduates.

Photo by Calvin Campbell

Automated Telescope in Use At Wallace Observatory

(Continued from page 1) automatically moves to the object and tracks it.

Also under computer control are several instruments used to measure the light from celestial objects. The astronomer tells the computer, again by electronic pointer, how he wishes to use the instrument and what sort of measurements he wishes to make. The computer system then makes the measurements without aid from the astronomer.

The incoming data are analyzed and stored by the computer and are displayed to the astronomer on the TV screen. Either the computer or the astronomer can make decisions to continue or terminate observations or move to another object.

Throughout the observing sequence the controlling astronomer works at a console located in an observatory room with a controlled environment and not in the open air manually operating a telescope from an opened observatory dome.

The computer system can move the telescope from star to star about twice as fast as a trained manual operator. Moreover, the same speed advantage accrues in operating instruments, since the astronomer normally needs to think of what it is he wants to do, then push appropriate buttons.

Astronomers ordinarily work at night, sometimes in cold telescope domes; fatigue and discomfort result in error in telescope position or in instrument operations.

The computer system, on the other hand, is very accurate in performing repetitive and complicated functions and frees the astronomer to plan his observing program in real-time according to the results he is getting at the moment of observation.

"The overall gain in efficiency can be very large for complicated or fast moving observing programs," Professor McCord said. "Even a factor of two improvement in the efficiency of using a ten million dollar telescope is in many ways equivalent to building a new telescope."

There are other computer controlled systems under development, he said, but the MIT system is unique in the integrating of the

control of all the observing functions under one computer umbrella.

The control system was designed and built by a team of three under the direction of Professor McCord. Grant Snellen and Steven Paavola combined expertise in electrical engineering and computer programming with Dr. McCord's experience in observational astronomy to develop the system.

No Paper

Tech Talk will not be published Dec. 25, 1974 and Jan. 1, 1975 because of the holidays. Deadline for listings in the Institute Calendar and Institute Notices for the period December 18 through January 8, 1975 is noon, Friday, Dec. 13.

Swedish Academy Elects Hollomon

Dr. J. Herbert Hollomon, director of the MIT Center for Policy Alternatives and professor of engineering in the MIT School of Engineering, was honored at a luncheon at the Swedish embassy in Washington Tuesday on the occasion of his election as a foreign member of the prestigious Royal Swedish Academy of Engineering Sciences.

The Academy, founded in 1919, includes a maximum of 230 elected members below the age of 65, all holding distinguished positions at universities, in industry and in government. It is dedicated to support and stimulation of applied research, particularly as it applies to problems of modern society.

Rathjens on Panel

Professor George Rathjens of political science will participate in a panel discussion on "Nuclear War by 1999?" at the Cambridge Forum, Wednesday, Dec. 4, at 8pm at the First Parish, 3 Church St., Cambridge.

The topic is the first in a series entitled "Questions for America's Third Century" to be held during the bicentennial years.

Innovations Could Aid Food Price Spiral

(Continued from page 1)

technological progress in the industry has been held back by several factors:

The industry by and large is service and market oriented, rather than operations or technology oriented; there has been a lack of attention to technological research and a lack of staff personnel with engineering capabilities; the mounting variety of products which must be handled in limited facilities causes warehouse operators to concentrate on moving the goods instead of increasing operational efficiency; the introduction of new technology is slowed by a shortage of capital within the industry caused by in-

adequate profit margins, depressed stock prices and the difficulty in obtaining new capital.

Despite such problems, the authors write, the industry has on occasion demonstrated an ability—"albeit slow"—to respond to technological advances offering increased productivity as well as greater consumer service.

As an example, they offer a lengthy case study of how the industry is reacting to the development of procedures and equipment for automated checkout counters. A relatively rapid conversion to this system is possible, they write, if field tests now under way show marked advantages in costs and efficiency.

What will determine, finally, the rate of technological development in the industry? What can be done to reduce the time from gestation of an idea to its actual introduction? Can the industry develop better communications with the engineering community and stimulate a flow of technological improvements? To what extent can the pace of technological innovation be controlled?

In an attempt to answer questions such as these, the authors note, an experimental program has begun at MIT called TAFI, for Technology Applied to the Food Industry.

The program's objective is to bring together engineers who have little knowledge of the food industry but an interest in possibly developing technology for it with industry executives.

Some of the ideas for technological innovation being explored, they say, include computerized shelf price marking, customer pilferage control and automatic shelf-stocking.

Lobby 7 Events

Waltz anyone? The MIT Ballroom Dance Club invites members of the community to waltz for a gala hour beginning at noon, Monday, Dec. 9 in the Building 7 lobby.

Another recently organized MIT club, the MIT Horn Club, an ensemble of musicians from the horn section of the MIT Symphony Orchestra, will perform works by Shaw and Reicha at noon tomorrow (Thursday, Dec. 5) in Lobby 7.

The Wellesley Collegium Musicum will present a midnight choral concert in the lobby. Tuesday, Dec. 10.

Carol Sing

All members of the Institute community—including their families—are invited to the Second Annual Tech Christmas Carol Sing at 7:30pm, Saturday, Dec. 7, in the MIT chapel. The Carol Sing is being sponsored by the MIT Christian Science College Organization.

Positions Available

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Superior typing skills, knowledge and/or experience with word-processing equipment, or willingness to learn through self-administered instruction program, required. Position is temporary through June, 1975. 74-1303-R (10/23).

Technical Typist III will assist in the production of the Neurosciences Research Program Bulletin through use of IBM/MTST composer system. Type manuscripts; adapt format, scientific symbols, tabulations, etc. to style of the Bulletin; proofread copy; check bibliographic format. Good typing skills essential; knowledge of publications procedures. Applicant can be trained on MTST. Off-campus location (Brookline); own transportation desirable. 74-985-R (8/28).

Clerk-Typist III, temporary, 6 months, in the Alumni Ass'n will type corrections to Alumni records from handwritten questionnaires. Extremely accurate typing and ability to learn quickly required. 74-1211-A 74-1214-A (9/15).

Clerk II, part-time, in Science Library will perform varied clerical duties; check books; verify MIT affiliation of users. Answer questions for visitors. 5 hrs/wk, Sat. 9:00am-2:00pm. 74-1405-A (11/27).

Emergency Medical Service Assistant, hourly, in Campus Patrol, will be responsible for operation of ambulance, its equipment and supplies, and in instruction of other personnel for Emergency Medical Training certification. Applicants should have Emergency Medical Training and Instructor's Certificate, Mass. Driver's license, and 3 years experience. Ability to work

flexible hours is necessary. 74-1422-A (12/4).

2nd Class Engineer must have a Mass. second class Engineer's license or higher. Individual must be willing to work on any shift. 74-182-R (11/24).

3rd Class Engineer at the Power Plant may work any and all shifts and do all kinds of work, consistent with self sufficiency of the Plant. Mass. Third Class Stationary Engineer's license or a license of a higher grade required. Experience on high pressure boilers, oil and gas fired with automatic combustion controls, turbine driven auxiliaries: AC and DC generation, switchboard, and fed water control required. Some experience on turbine-driven equipment is desirable. 74-422-A (5/29).

Waitress/Waiter, part-time, at the Faculty Club will set up silver and china on dining room tables. Take member orders; serve food and beverages. Clear, clean and reset tables. Experience helpful, but not necessary. Shifts: M-F 11am-3pm. All positions may require weekend work. 74-1059-R (8/28).

The following positions have been FILLED since the last issue of Tech Talk:

74-1371-R	Secretary III
74-1381-A	Lib. Gen. Asst. III
74-1255-A	Tech. Asst. IV
74-256-R	Secretary IV
74-1386-R	Secretary III
74-1389-R	Sr. Clerk III
74-1377-A	Secretary IV
74-1315-R	Secretary IV
74-1344-R	Secretary IV
74-1361-R	Secretary IV
74-951-R	Secretary IV

The following positions are on HOLD pending final decision:

74-1387-R	Secretary IV
74-1358-R	Acad. Adm. Staff
74-1177	DSR Staff
74-1343-R	Messenger I
74-959-A	Secretary III-IV