

Morison Appointed To '49 Chair

Dr. Robert Swain Morison has become Visiting Professor of the Class of 1949 at MIT. The appointment was announced by Provost Walter A. Rosenblith and Dean Harold J. Hanham of the School of Humanities and Social Science.

The Class of 1949 Professorship is a new one at MIT. It was established by the Class of 1949 as their 25th year gift to the Institute. It was set up without limitation as to field to attract outstanding people to MIT. Robert Morison is the first to hold the Professorship. In the words of Paul Weamer, class president, the class



Professor Morison

"is delighted with his background and his potential for the improvement of MIT's leadership. Dr. Morison fulfills all the objectives we could hope for, particularly in the new and expanding biological medical field.

(Continued on page 4)

As Class of '79 Settles The Class of '80 is Recruited

While the Class of 1979 is still getting settled at MIT, recruiting the Class of 1980 is going on apace.

In fact, recruiting for the Class of 1980 began last February, before the Class of 1979 was even admitted.

First step in the process was a mailing to 10,000 men and 10,000 women whose scores on the Preliminary Scholastic Aptitude Test (PSAT) showed potential for success at MIT. Included in the 20,000 total were 4,700 minorities.

Nearly 5,000 preliminary applications have been received as a result of the original mailing, and final applications have been sent to those prospective students as well as to others who have inquired independently.

Meanwhile, personal interviews—

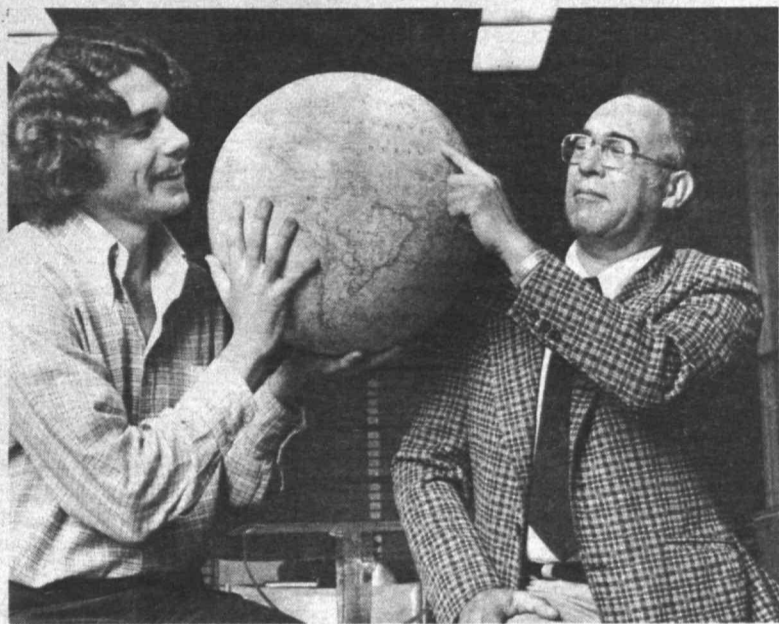
Schedule of Coming Holidays

In addition to the official Christmas and New Year holidays on Thursday, December 25th and Thursday, January 1st, special holiday closings have been announced by John M. Wynne, Vice President for Administration and Personnel, as follows:

Wednesday, Dec. 24, after 12 noon.
Friday, Dec. 26, all day.
Friday, Jan. 2, all day.

The usual pay practices applying to special holiday closings will be in effect for employees providing es-

THE WINNERS!



WORLD TRAVELERS—about to be are Larry Webster, left, and Frank Brooks, who won the drawing for "The Trip" on Monday, (Nov. 3). Mr. Webster, manager of East Campus, won first place and opted for the trip to Acapulco. Mr. Brooks, senior mechanical engineer at the Bates Linear Accelerator, will visit the Canary Islands. "The Trip," a lottery sponsored by the Quarter Century Club benefits the MIT Community Service Fund. The recent lottery raised nearly \$1,200 to be used to aid MIT volunteers in the community.

Energy Workshop at MIT For Educators, Nov. 29

A day-long energy information workshop and forum for science/engineering educators will be held at MIT Nov. 29.

The workshop-forum, intended to provide educators with the current status of energy research and the advantages and disadvantages of various energy options, was arranged by a 20-member committee representing 12 area colleges and universities. Dr. Elliot Berman, director of the Boston University Center for Energy Studies, is chairman of the committee.

Dr. David J. Rose, professor of

nuclear engineering at MIT, who will keynote the workshop, said there is an urgent need for the services of several students to act as aides.

"I'd especially like to have some
(Continued on page 8)

Nuclear Panel Finds Risk Level Low

The final report of a three-year study to estimate the risks to the public from potential accidents in today's large nuclear power plants has been completed.

The report is the culmination of the most comprehensive risk assessment of nuclear power plants made to date. The objective of the study was to make a realistic assessment of potential risks associated with present-day light water nuclear power plants and to provide perspective by comparing them with non-nuclear risks to which society is exposed.

The study was directed by professor Norman Rasmussen of MIT and involved a team of 60 persons formed by Mr. Saul Levine, Deputy Director of the Nuclear Regulatory Commission's Office of Nuclear Regulatory Research.



THERMOMETER IN MOUTH, MIT student donors (from left to right) Marianne Salomone, a freshman, Richard Winters, a senior in chemical engineering, Bob Montante, a senior in physics, Gail Rubin, a senior in mathematics and Christopher Perley, a junior in chemical engineering, wait patiently to donate blood at MIT's Fall Blood Drive in the Sala de Puerto Rico in the Student Center. The drive will be open through Friday (Nov. 7). Drive hours will be 9:45am to 3:30pm. Anyone with questions concerning the drive should call the blood drive line x3-7911.

Medical Applications Possible Diet Affects on Brain Findings Announced

MIT researchers reported this week evidence that brain activity is affected by the food we eat.

Speaking at the Fifth Annual Meeting of the Society for Neuroscience in New York City, Professor Richard J. Wurtman reported that one can change the levels of two neurotransmitters, serotonin and acetylcholine, in the brains of rats by altering their diets over periods of weeks or even days.

Moreover, decreases in brain levels of serotonin were found to make rats hyperactive and more sensitive to pain.

The MIT research has possible medical applications. There is evidence that one can treat the motor disorder *tardive dyskinesia* by using dietary choline supplements to increase brain levels of acetylcholine.

In remarks prepared for presentation Tuesday (Nov. 4) Ms. Edith Cohen, a graduate student working under Dr. Wurtman, said that MIT researchers plan to study the use of choline to treat other motor disorders.

Dr. Wurtman, who spoke Sunday, said that studies of diet and serotonin levels may contribute to understanding the action of certain tranquilizers, which are believed to work by affecting serotonin levels.

The correlation between behavior and serotonin is particularly striking, said Dr. Wurtman, professor of

endocrinology and metabolism at MIT, because the brain is generally such a redundant organ, with many back-up systems.

He emphasized that although there are only half a dozen known neurotransmitters—substances secreted by brain cells to carry impulses to other brain cells—there are possibly tens of others, yet to be identified. He said that it is unlikely that all such substances are sensitive to diet.

Studies of nutrition and the brain are generally directed at one of two goals: to examine the effects of deficiencies that occur very early in life on the number of brain cells or their connections, or to examine the effects of diet on brain chemistry in mature animals.

Dr. Wurtman and his associates in the MIT Department of Nutrition and Food Science are studying the effect of diet on the maturing or mature brain. Their work has been funded by the National Institutes of Health, the John A. Hartford Foundation and the W.T. Grant Foundation.

The first evidence of such an effect was reported in 1972 by Dr. Wurtman and Dr. John D. Fernstrom, now assistant professor of physiology at MIT. They found that each meal eaten by experimental animals rapidly changes the animals' brain

(Continued on page 4)

in the general vicinity of a nuclear power plant will be fatally injured in a reactor accident is one in five billion per year, as compared with one in 4000 for a motor vehicle accident and one in 10,000 for a fall. The chance that a person will be injured in a reactor accident is one chance in 75 million per year.

—As an example, in the event of an unlikely reactor accident with a probability of one in a million per reactor per year, latent health effects except for thyroid nodules would be such a small percentage of the normal incidence rates that they would be difficult to detect. Thyroid nodules would represent about 15% of the normal incidence rate, so that the increase would be detectable. These nodules can be readily diagnosed and successfully treated.

With respect to accident probabilities, the final report differs only in minor respects from the draft report issued for public comment in August 1974. The sections on consequences have been substantially revised as a result of advice from eminent scientists.

(Continued on page 4)

Pass Card System Set for Gym

The Athletic Department has announced the start of a new pass card system for weekend use of du Pont Gymnasium and locker rooms, effective Friday (Nov. 7).

Pass cards are intended to prevent access to gym facilities by non-MIT users and to improve floor use efficiency in the gym. It is also hoped that the pass card system will reduce thefts from lockers.

Pass cards may be obtained by athletic card holders at the du Pont equipment desk, and must be presented to the gym supervisor to gain entry to the floor.

INSTITUTE NOTICES

Announcements

New York Hospital-Cornell Medical Center Summer Program for Vacation Relief Work—Summer relief work in psychiatric hospital, openings usually in housekeeping, dietary, grounds & nursing departments. Applications in Preprofessional Advising & Education Office, Rm 10-186, x3-4158.

Tickets Available—Boston Ballet performances Nov 6-9. Tickets available TCA Office, Stu Ctr Rm 450. Discounts available with student ID. Order in person, 11am-3pm.

Placement

The following companies will be interviewing during the time period covered by the current Institute Calendar. Those interested may sign up in the Career Planning and Placement Office, Mon-Fri, 9am-3pm, Rm 10-140, x3-4733.

Wednesday, November 5—Std Oil Co. of Calif & Chevron Res Co; Amoco Tuck Sch of Bus Admin/Dartmouth; Lincoln Lab; Microwave Research Corp; Modicon Corp; Shared Medical Sys Corp; Sperry Research Ctr. **Thursday, November 6**—Amoco Res Ctr, R&D depts, Amoco Chemicals Corp & Amoco Oil Co, subsidiaries of Std Oil (Indiana); BF Goodrich; General Dynamics; Convair Div & Electronics, Elec Boat Div, Fort Worth Div, Pomona Div; Penn Central Transp Co; Stanford Univ School Bus. **Friday, November 7**—Analytic Services Inc; Applied Physics Lab of the Johns Hopkins Univ; Bolt, Beranek & Newman Inc; JT Baker Chemical Co; Univ of Michigan Grad Sch of Bus Admin; Raytheon Co; Texas Instruments, Inc; Watkins-Johnson Co, Maryland & Calif. **Monday, November 10**—US Navy. **Wednesday, November 12**—CIA; Eastman Kodak Co; GE Co, PhD Postdocs; Motorola, Inc; NYU Sch of Education, dept of human relations; The Analytic Sciences Corp; United Technologies Corp, Sikorsky Aircraft Div. **Thursday, November 13**—GE Co, PhD Postdocs; Armco Steel Corp; Bell Systems; Bell Labs, Long Lines, Sandia Labs, Western Elec; Celanese Corp; Exxon Corp & USA Affiliates; GE Technical Ctr; Naval Surface Weapons Ctr, White Oak Lab; Scientific-Atlanta, Inc; Stanford Research Institute. **Friday, November 14**—Bell Systems; Bell Labs, Western Elec; GM Technical Ctr; Merck & Co, Inc; Uniroyal Inc, Chemical Div.

New UROP Listings

For more detailed information on UROP opportunities listed, MIT undergraduates should call or visit the Undergraduate Research Opportunities Program Office, Room 20B-141, Ext. 3-5049 or 3-4849 unless otherwise specified in the listing. Undergraduates are also urged to check with the UROP bulletin board in the main corridor of the Institute.

Center for Policy Alternatives

Undergraduates are encouraged to participate in a number of projects being conducted at the Center for Policy Alternatives: 1) **Environmental Regulation**—Involves an analysis of alternative regulations for controlling the use and disposal of chemicals in industrial, agricultural, manufacturing, pharmaceutical, and domestic applications. 2) **Occupational safety and health**—A study of the appropriate design of occupational safety regulations, and how employers and workers can be encouraged to comply with them, is being done. 3) **Government policy and technological innovation**—A study is being planned on how the government can stimulate appropriate technological responses to environmental problems. 4) **Occupational Licensure**—A study of the basis for and effects of occupational license regulations. 5) **Consumer durables**—A study of how warranties and consumer protection regulations affect the design of marketed products. Other potential project areas include studies of job satisfaction and manpower economics in other countries. Contact Ellen Smith, Rm 39-554, x3-1669.

Project MAC

A research project is available for an undergraduate with programming experience who also has some knowledge of Boolean algebra. The project involves writing an extremely efficient program for determining the optimal circuit design for various small Boolean functions. The programming language used will probably be LISP or PDP-10 although other systems could be used if the student can gain access to them. Contact Ronald Rivest, NE43-807, x3-2345 for more information.

Electronic Systems Laboratory

There are a number of research topics open to undergraduates in the Air Traffic Control Area. 1) Cost-benefit analysis of the ATSD-4D RNAV system. 2) Preliminary design of data link capable of supporting ATSD from ground data or air-to-air exchanges. 3) Analysis and simulation of 4D RNAV techniques with emphasis on errors caused by winds aloft and pilot workload. 4) Preliminary design of cockpit computer-display system which integrates RNAV, ATSD, collision avoidance, and flight

management functions and provides failure protection. 5) Preliminary design of low-cost ATSD-RNAV system suitable for general aviation aircraft. 6) Simulation studies of 3D RNAV used for approaches to airports not equipped with ILS—Evaluation of pilot human factors. Contact Mark Connelly, Rm 35-214, x3-3620.

IBM-Cambridge Scientific Center Burlington, Ma. Study of Routing Techniques for Mesh Networks

This project will utilize a simulator developed at the Cambridge Scientific Center to study various techniques for routing messages through a mesh type communication network. The study would involve augmentation of the simulator to handle various routing methods, as well as design and running of test cases under varying conditions of load and network topology. The study would include comparisons of fixed vs. adaptive routing schemes, centralized vs. distributed routing decisions, rerouting due to error conditions and rerouting due to load considerations. If time permits, methods of flow control could also be analyzed.

Analysis of Data Base Reference Strings in Light of PSI-Model of Program Behavior

This study would be aimed at evaluating the effects of various data base variables (e.g., block size, dynamic repackaging, etc.) on the paging characteristic (relation between average storage occupied and amount of Paging I/O performed). Data reference strings from an IMS system would be used as the basis for this study.

Analysis of VM/370 Overhead

This study would have two different thrusts aimed at improving understanding of system overhead cause and effect, as follows: 1) Application and study of a number of techniques for robust and biased estimation of regression coefficients. 2) Analysis of system trace data to associate specific paths through the system with various system events.

Massachusetts General Hospital

The Medical Clinics have openings for UROP student interested in: 1) Projects which model the dynamics and processes of ambulatory patient care. 2) Helping to manage organizational change in a medical environment. 3) Special projects relating to the care of specific illnesses. The scope of each project will be arranged on an individual basis.

Massachusetts General Hospital

A project is available in a laboratory concerned with the physiology and chemistry of the central nervous system. As a model tissue the mammalian retina is studied, isolated from the eye and maintained *in vitro* by superfusion. The primary concern is to identify and describe the functional role of the neurotransmitters which provide communication among the several retinal neurons. Biochemical and electrophysiological techniques are used concomitantly in this work. Students should have some laboratory experience.

Boston Biomedical Research Institute

The Department of Muscle Research at BBRI is carrying out an investigation to elucidate the mechanisms of muscle contraction and the cause of several diseases (hypertrophy, myotonia, and muscular dystrophy) in which muscle tissue is defective. Suggested projects include enzymatic studies on muscle proteins and membrane systems of the muscle cell, electron microscopy of protein aggregates and mechanical measurement of single muscle fibers.

Civil Engineering

The Water Quality Laboratory is interested in an undergraduate with a background in digital signal processing to interface the read out from laboratory equipment, i.e., pH meter, a Coulter counter and spectro photometer, with a teletype. No analogue to digital conversion will be needed for any of this equipment. Besides the obvious reduction in time and aggravation, this project will also allow more flexibility in experimental design. Please contact Prof. F.M. Morel, x3-3726 or any of the graduate students in the Water Quality Lab, x3-2094 or x3-3739. Pay is available.

Foreign Studies

Belgian American Educational Foundation

The Belgian American Educational Foundation, Inc., has invited MIT to nominate one candidate for a fellowship for advanced study at one of the Belgian universities in the 1976-77 academic year. Candidates must be US citizens, be under 30 years of age, must have a speaking and reading knowledge of French or Dutch, and must have a master's degree or be working towards a PhD. The grant provides a stipend of \$5,500 for 10 months of study in Belgium. For further information, please contact Yvonne Littlewood in the Graduate School Office, Rm 3-136.

Other Opportunities

National Institutes of Health

Individual postdoctoral awards under the National Research Service Award program are open to application with a January 2, 1976 receipt date. Application kits may be obtained by sending a self-addressed gummed mailing label to: Grants Inquiries Office, Division of Research Grants, National Institutes of Health, Bethesda, Maryland 20014.

Boston Energy Office

The Boston Energy Office, an entirely student-staffed operation, assists the city in addressing urban energy issues through interdisciplinary student projects. The office is looking for graduate and advanced undergraduate students to work on several projects for pay. The office is preparing to perform detailed energy conservation engineering analysis of three Boston Public Schools. Besides money saving recommendation an efficient energy analysis methodology will be developed and tested. The city is currently preparing to meet winter fuel shortages through an Emergency Home Heating Assistance Program aimed at assisting low income families whose fuel gets cut off. The office would like to

perform an in-depth study of this specific social problem, the city's existing mechanisms for handling it, and possible improved institutional arrangements. Many other project areas exist. If you are interested in learning more about the Boston Energy Office contact Mitch Tyson, 227-4890 or 494-8469.

University of Virginia Medical Center Department of Psychiatry

This program is designed to give the participant actual experience in the whole constellation of mental health services, including work under supervision of the psychiatric wards. The Fellowship provides a laboratory for students in a wide range of social studies. Fellows rotate through such divisions as patient services, child psychiatry, out-patient clinic, psychology, social work, and occupational and recreational therapy. Additional information is available in the Pre-professional Advising and Education Office, Rm 10-186, x3-4158.

MIT Club Notes

Backgammon Club*—Organizational meeting Fri, Nov 7, 4pm, Rm 2-090. Info or unable to attend, Jeannie or Emden, x3-7579.

MIT Baha'i Association*—Will gather Mon, 5pm, Rm 8-105, every other week (Nov 17, Dec 1 & 15).

MIT Ballroom Dancing Club**—The club will be very active this term with frequent workshops & dances. New members welcome at all functions. Info & times: Carl Sharon or Doug King, 536-1300.

Beefaroni Chess Club—Alternative chess club. Interested in playing relaxed serious chess: Info: Gary Kaitz, 494-8234 or x5-6304 Dorm.

Bridge Club*—ACBL Duplicate Bridge. Open pairs Tues & Thurs, 7pm, Stu Ctr Rm 473.

MIT/DL Bridge Club**—ACBL Duplicate Bridge. Tues, 6 pm, Walker Memorial Blue Rm.

MIT Chess Club*—Meetings Sat, 12n-7pm, Stu Ctr 407.

MIT Exotic Fish Society*—Meeting Thurs, Nov 6, 7:30pm, Stu Ctr Bsmnt Rm 002. New members welcome.

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

Math Club*—Meeting Sun, 2pm, Rm 4-182.

Psi Club*—For all graduates of Silva Mind Control. Thurs, 5pm, Rm 1-132.

MIT Science Fiction Society*—Invites people to the world's largest science fiction library, Stu Ctr Rm 421, and to its zany weekly meeting, Fri, 5pm, Rm 1-236.

Shotokan Karate Club**—Rigorous training for intercollegiate competition & self-defense, given by 6th degree black belt. Mon & Wed, 8 pm, duPont wrestling rm; Sat, 1pm, duPont 2nd fl dance rm.

Space Habitat Study Group*—Interdisciplinary studies on space colonization. Wed, 7:30 7:30pm, Rm 4-270. Office, Rm-24-415.

Strategic Games Society—Sat, 1pm-1am, Walker Rm 309 & 318. Offers opponents and discounts on merchandise to members plus gaming & periodical library. Info: Paul Bean, 266-6108.

Student Homophile League*—Gay Lounge, Rm 50-306, open daily for lunch & random other hours, x5-6745 Dorm. Tom, Contact Line, x3-5440, provides info, referrals, counseling or just talking to gay persons. Meetings 1st & 3rd Sun every month, Gay Lge. Consult bulletin board, Bldg 3, for info.

Student Information Processing Board*—Meetings Mon, 7:30pm, Rm 39-200. Info: x3-7788.

MIT Tae Kwon Do**—For information call Barbara Illowsky, 492-4945.

Technique—MIT yearbook needs photographers, writers & workers. Sat, 11am, Stu Ctr Rm 451, x3-2980.

Tiddlywinks Association*—Wed, 8pm, Stu Ctr Rm 473.

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

Religious Activities

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

Bible Study*—Enjoy the good word of God. Fri, 12n, Int'l Students Lge, Walker 2nd fl, Mem Dr side.

Black Christian Fellowship*—Bible study Wed, 7pm, Masterton Lge, E Campus. Prayer group Mon-Fri, 12:15pm, Walcott 310, E Campus.

Campus Crusade for Christ*—Family Time Fri, 7:45pm, Rm 37-252.

Celebration of Holy Communion**—MIT Lutheran & Episcopal Ministry. Wed, 5:05pm, Chapel. Supper following, 312 Memorial Dr.

Christian Worship Service*—Sun, 10:45am, Chapel. Refreshments following service.

Hillel*—Traditional services Fri, 4:15 pm, Koshier Kitchen & Sat 9am, Chapel.

Islamic Society**—Prayers Fri, 1pm, Kresge rehearsal Rm B.

Meditation & Gita*—Led by Swami Saravagananda. Fri, 5:15pm, Chapel.

Prayer Time**—Lunch hour Bible classes led by Miriam R. Eccles. Fri, 1-2pm, Rm 20E-226. All are welcome.

Lincoln Book Sale

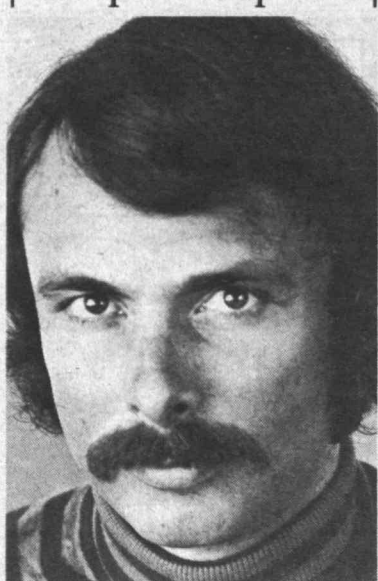
A recent book sale at the Lincoln Laboratory Library raised more than \$700 to be used by the library for the purchase of new books. Library books which were no longer used and extra copies of books were sold at the one-day sale.

Art Notes

Hayden Gallery to Exhibit Paintings of Otto Piene

An exhibition of two-dimensional work by Otto Piene, environmental artist and creator of "sky art" events, will open Nov. 7 at MIT. The exhibition, which will show Piene's concurrent work as an artist in the more traditional media, will explore

Kopit to Speak



American playwright Arthur Kopit whose plays—"Indians" and "Oh Dad, Poor Dad, Mamma's Hung You In the Closet and I'm Feelin' So Sad"—have been produced successfully on Broadway, will speak at MIT today (Wednesday, Nov. 5) at 4pm in Rm 14E-304. Mr. Kopit will discuss the problems of writing historical dramas and his latest work "Lewis and Clark," a play conceived for outdoor performance which will premiere in Hartford, Conn., next summer.

Berg Quartet To Perform

The internationally known Alban Berg Quartet of Vienna will give a concert at MIT at 8pm, Wednesday, Nov. 19, in Kresge Auditorium.

The group, which takes its name from the late Austrian composer, will perform Purcell's Three Fantasies, Berg's Lyric Suite and Mozart's Quartet in F Major, K.V. 590.

The concert, sponsored by the MIT Music Section, is open to the public free of charge.

Quartet members are: Guenter Pichler, violin; Klaus Maetzel, violin; Hatto Beyerle, viola and Valentin Erben, cello. The musicians are all former students of the Vienna Hochschule fuer Musik where they are now professors. Founded in 1971, the quartet resides in the Vienna Konzerthaus and has toured widely in Europe and in the US in 1974.

Several recordings by the group released in the US on the Telefunken label have won prizes in Europe. A record of Berg's works, including the piece they will perform at MIT, and another record of Haydn's quartets recently received the highest German record award. The Haydn record also won the Grand Prix Du Disques.

Fine Arts Chorale To Perform Here

A Christmas concert by the Fine Arts Chorale will take place at 8:30pm, Wednesday, Dec. 17, in Kresge Auditorium.

The program will feature contemporary Christmas music including the American premiere of Joseph Messner's Mass in B and the Boston premiere of "The Winter Journey" by Allan Bush. The group will also perform a recently completed work by Boston composer Nancy Plummer Faxon, "The Christmas Fantasy," which was commissioned to celebrate the Chorale's 10th year.

The Fine Arts Chorale is a 161-voice Boston area music society, directed by Peter L. Edwards. Mr. Edwards, who founded the chorale, is assistant professor of music at Wheelock College in Boston and director of music at Old South Union Church in South Weymouth, Mass.

Tickets are \$3 (\$2 for students). For reservations call 335-2134.

his innovations in oil and gouache. Entitled *Otto Piene: Paintings, Gouache, Drawings*, the exhibition has been organized by the Hayden Gallery Office and will be on view in Hayden Gallery, Hayden Corridor Gallery, and in the Center for Advanced Visual Studies (CAVS). A public viewing will be held from 8-10pm Nov. 7 in Hayden Gallery. The exhibition, sponsored by the MIT Committee on the Visual Arts, will continue through Dec. 7.

Piene, who has been associated with MIT since 1968, was named director of the MIT Center for Advanced Visual Studies in 1974.

The problem of visualizing rhythms and processes of nature on a two-dimensional plane was first solved by Piene when he combined stencils, smoke, and the traditional elements of painting during the period 1957-1961.

Subsequently, natural processes—particularly fire—continued as sources of imagery in Piene's work.

In contrast to the abstract imagery of the paintings and gouaches Piene's drawings—on exhibition at CAVS—are figure studies.

Institutions lending work to the Hayden Gallery exhibition include the Kunstmuseum Dusseldorf, the Stedelijk Museum, Amsterdam, and the Museum of Modern Art, New York. The catalogue for the exhibition, which will be on sale in Hayden Gallery, includes an essay by Lawrence Alloway, an extensive bibliography and chronology, and numerous illustrations. The catalogue was made possible by a grant from the Council for the Arts at MIT and a contribution from the Goethe Institute, Boston.

Echoes

50 Years Ago

Commander John Rodgers delivered a talk on his harrowing attempt to fly nonstop from San Francisco to Hawaii.

Professor Vannevar Bush addressed the Mathematics Club on the mechanical integrator developed through research work at the Institute.

40 Years Ago

Publication of volume II of *Communications Networks* by Professor of Electrical Engineering Ernst A. Guillemin brought up to a total of 38 the number of textbooks produced by that department.

In the annual Field Day, freshmen won the glove fight and tug-of-war, but lost the overall victory to the sophomores, who won in crew, football and relay. The only serious casualty was David Weir, sophomore class president, who was knocked unconscious during one of the events.

25 Years Ago

Pietro Belluschi, one of the country's foremost architects, was appointed Dean of the School of Architecture.

The westbound lane of the James L. Storrow Memorial Drive was opened, and final work was expected to be completed by the end of 1951.

Prepared by Ethel Newell, MIT Historical Collections, x3-4444.

TECH TALK

Volume 20, Number 14
November 5, 1975

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British Scholar To Visit DSRE

Sir Geoffrey Vickers, 81-year-old Oxford scholar and holder of Britain's distinguished Victoria Cross, has been appointed senior visiting lecturer at MIT from Nov. 10-24 in the Division for Study and Research in Education.

He will hold a public seminar, "Towards A More Human Order," Wednesday, Nov. 19, from 12-2pm in Room 20C-117. In addition, he will lecture in various academic departments during his stay at MIT.

The author of six books, including *The Art of Judgement* and *Freedom In A Rocking Boat*, Sir Geoffrey was knighted in 1945 for service as Director of Economic Intelligence at the Ministry of Economic Warfare and a member of the Joint Intelligence Committee of the Chiefs of Staff.

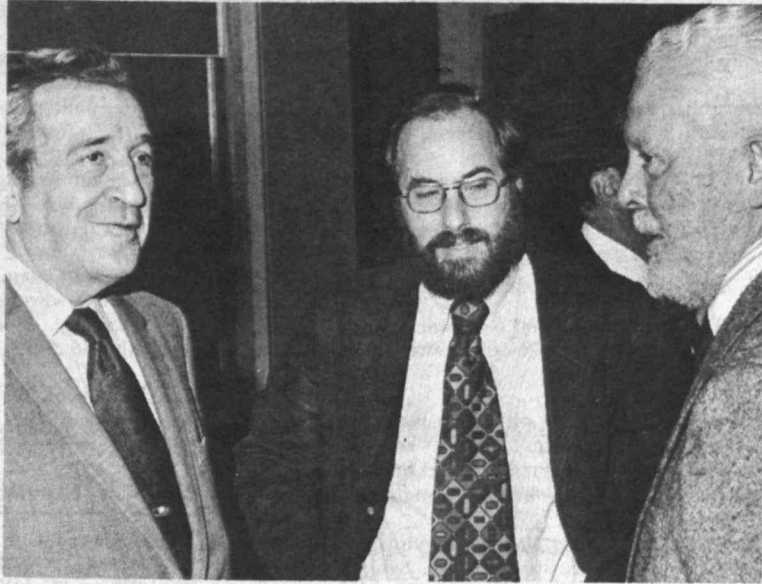
From 1945-55 he worked as a member of Britain's National Coal Board, first as legal adviser and later as administrator for manpower, training, education, health and welfare. A spokesman for controlled technology, Sir Geoffrey has devoted the past 20 years to writing and lecturing on the social aspects of management, education, and mental health while serving as director of several professional and public bodies.

He is a former chairman of the Research Committee of the Mental Health Research Fund, and past member of the Medical Research Council, the London Passenger Transport Board, the Councils of the Law Society, and the Royal Institute of International Affairs.

Bicentennial Show Includes Luria

Biologist Salvador E. Luria, Institute Professor and director of the MIT Center for Cancer Research, is shown in a special slide presentation "Reflections on Cambridge" created by the Cambridge Historical Commission to celebrate the bicentennial. Dr. Luria is featured in a section on illustrious scientists who have immigrated to the US and live in the Cambridge area. The slide presentation was shown at Harvard University during the summer and is available on loan to groups by calling the Cambridge Public Library.

Symposium Marks Lab Dedication



A symposium on Biology and Cancer Research marked the dedication on Oct. 30 of the Grover Higdon Laboratories in the MIT Center for Cancer Research. Shown here at the symposium are Dr. Jerome B. Wiesner, Dr. David Baltimore, American Cancer Society Professor of Biology, and Mr. Higdon. Speakers at the symposium, which featured talks on the relation of im-

munology, virology and developmental biology to cancer research, were Professors Herman Eisen, Richard Hynes, and Phillip Sharp. Operation of the Laboratories, which will emphasize developmental biology, will be made possible by gifts donated in honor of Mr. Higdon through the Fund for Higher Education (in Israel).

Bloomfield Calls for 'Cap on Nuclear Volcano'

Establishing a status midway between "total nuclear virginity and total nuclear pregnancy" for those nations who desire an atomic capability solely for peaceful purposes would help "put the cap back on the nuclear volcano," an MIT political Science professor has declared.

Lincoln P. Bloomfield says a country that wants world acceptance as a peaceful nuclear power "should be willing to pay a price of international inspection to make sure it is not stockpiling bombs.

"If this were done," Dr. Bloomfield said in a recent commentary delivered on the WGBH-TV program, *The Evening Compass*, "more countries would undoubtedly ratify the non-proliferation treaty and additional nuclear weapons-free zones

could be established around the world . . ."

Professor Bloomfield said non-nuclear states must share more "with the five nuclear powers in decisions about peaceful nuclear technology. Otherwise, in a nationalistically inclined world some will inevitably reject their second-class citizenship."

Countries such as India and Brazil which "claim to want only peaceful nuclear explosions for digging canals and the like . . . are now forced either to forego these possible benefits, or to be branded as nuclear weapons states," Professor Bloomfield said.

"Realistically, there should be a third accepted status between total nuclear virginity and total nuclear pregnancy."

Kleitman and Strang Named To Head Math Committees

The appointments of Dr. Daniel J. Kleitman as chairman of the Applied Mathematics Committee and Dr. Gilbert Strang as chairman of the Pure Mathematics Committee have been announced by Robert A. Albery, Dean of the School of Science, and Kenneth M. Hoffman, head of the MIT Department of Mathematics.

Dr. Kleitman, professor of applied mathematics, and Dr. Strang, professor of mathematics, will, as chairmen, play important roles in the administration of the department.

Professor Kleitman is a specialist in discrete mathematics and its applications. He has received wide recognition for his solution of difficult combinatorial problems such as the celebrated Littlewood-Offord conjecture and has done basic research on network analysis, graph theory and statistics.

Professor Strang is known for his research in numerical analysis and partial differential equations, and for his monograph on *An Analysis of the Finite Element Method*. His undergraduate teaching has concentrated on the linear algebra course 18.700, and has also led to a textbook, *Linear Algebra and its Applications* which will be published in February.

Professor Kleitman succeeds Professor Harvey P. Greenspan, who for the past nine years has led the development within the mathematics department of the current strong group in applied mathematics. Professor Strang succeeds Professor Franklin P. Peterson, who has been chairman of the Pure Mathematics Committee for the past three years and who plans to return to teaching and his research in algebraic topology.

Professor Kleitman, a member of the department since 1966 and a full professor since 1969, obtained his PhD in physics from Harvard in 1958 and spent two years as a National Science Foundation Postdoctoral Fellow in Denmark and at Harvard before his appointment as assistant professor of physics at Brandeis University. He has frequently served as a consultant to the federal government, most recently as a member of a team that studied the need for more stringent safeguards in the

handling of special nuclear materials. In 1968 Professor Kleitman, with others, worked out a computer program that made possible vast economies in the construction of pipelines.

Professor Strang obtained his SB from MIT in 1955, was a Rhodes Scholar at Oxford University from 1955-57, obtaining his BA in 1957. He completed his PhD at UCLA in 1959. From 1959-61 he was a C.L.E. Moore Instructor at MIT. He returned to Oxford as a NATO Postdoctoral Fellow for one year before coming to MIT as an assistant professor in 1962. He was promoted to associate professor in 1964 and to full professor in 1970.



Kleitman Strang

Shapiro Receives Michelson Medal

Dr. Irwin I. Shapiro, professor of geophysics and physics, received the Albert A. Michelson Medal of The Franklin Institute Wednesday (Oct. 29).

Professor Shapiro, who holds joint appointments in the Department of Earth and Planetary Sciences and the Department of Physics, was cited for "his pioneering role in the development of radar astronomy; and for outstanding contributions resulting from his application of radio and radar techniques to the investigation of fundamental problems in planetology, cosmology, and general relativity."

The Albert A. Michelson Medal, which was presented to Professor Shapiro at The Franklin Institute in Philadelphia, Pa., was established in 1967. It is awarded for outstanding achievement in the field of optics, including lenses, and lens-like actions in electromagnetic radiation.

The MIT Press Might Baffle Even Sherlock Holmes

[MIT Press, one of the largest university presses in the nation, underwent a major turnaround last year that has led to a steadily improving financial picture. The Press, and its new director Frank Urbanowski, who was appointed in June, were featured in a recent issue of *Directions*, a journal for academic librarians. The article, written by Frank King, follows.]

If Sherlock Holmes were still active and agreeable to a parlor game, he would not, from the title alone, be able to identify the publisher of *The Economic Effects of Regulation*. No, not even with a healthy dose of his favorite drug and his beloved fiddle beside him. He would probably be able to identify *The Bird Life of Texas* to the extent that . . . "it is obviously published by a university press within Texas." But, he could go no further.

However, given the detective's intuitive genius and proven ability to isolate patterns; he would instantly know that the following titles: *God and Golem, Inc.: A Comment on Certain Points Where Cybernetics Impinges on Religion* . . . *The Tao of Science: An Essay on Eastern Wisdom and Western Knowledge* . . . *Behind Appearance: The Study of the Relations Between Painting and the Natural Science in This Century*—were published by MIT Press.

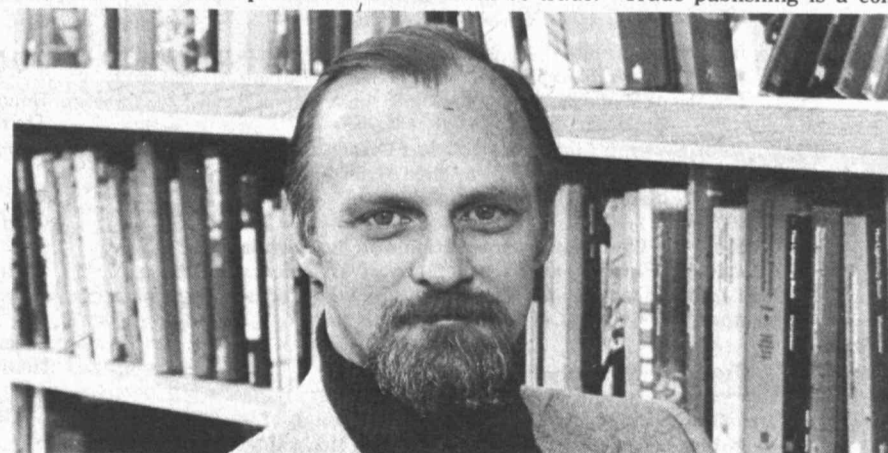
The point of the fable being that over the years MIT Press has been able to publish a great many unique books in that peculiar area between science and religion, science and art, science and just about everything else. In addition, of course, to their traditional science and other kinds of titles.

By doing so, they have created an image of something that is almost too good to be true—a press that acts as a midwife to a community of scholars in order to break down the traditional barriers between disciplines. Of course, this is an exaggeration. MIT Press is just a good publishing house with a special relationship to a good university. But it is good to keep book myths alive.

Located on one of those oddly integrated Cambridge streets, the Press is next to the

Rinaldi Tire Company, which is beside the lingering remnants of the once prestigious Lincoln Laboratory. Across the street are assorted garages, warehouses, and one deserted dwelling. Around the corner is a working class bar.

Inside, however, the style is "Cambridge modern." Functional furniture and gleaming white walls are softened by a great many plants, a small Lautrec production and a



New MIT Press Director Frank Urbanowski

Japanese flamingo print. Amusing newspaper clippings are tacked haphazardly on doors and walls.

In charge is the newly appointed Frank Urbanowski, a refreshing sort of Press director. Perhaps it's his current strong interest in Buddhist philosophy—a discipline which forces the reader to always search for the heart of the matter. Or perhaps it's because he is an avid four-wall handball player—a very difficult and strenuous game, and one of the few in which an out-of-shape athlete can soundly whip a finely conditioned one if the latter has no feeling for "position." Whatever the reason, Urbanowski speaks to the point, isn't afraid to commit himself, and isn't afraid to admit it when he knows nothing about a particular subject.

He quickly dissented from one major trend in thinking about university presses. He did

not agree that the present organization of university presses entails their doom.

"The publishing business has always been cyclical. University presses feel the downturns more strongly because they are less diversified, and their traditional flaw of printing too many copies of too many books catches up with them." He also dissented from the opinion that the brave new world will be trade. "Trade publishing is a com-

pletely different business. We and other university presses should publish books that span both markets—trade and academic."

Urbanowski pointed to a new fall title as an example—*The Tin Kazoo: Television, Politics and the News*. It deals with a topic very much in the public consciousness: whether or not TV is powerful enough to control the political process. Exciting to read, the book is, at the same time, intellectually respectable and based on sound research. It will command attention in all types of review media.

Another example is *Abortion and the Sanctity of Human Life*—a philosophical but rigorously non-theological attack on abortion.

"But, while we do span both markets, and have been doing for years, we simply can't become trade houses," he emphasized.

A Bucks County (Pennsylvania) native, Urbanowski was trained as an engineer. He didn't like the work although he did appreciate (and still does) the analytical skills engineering demands.

His first job in publishing was as a college traveler for Ronald Press. From there, he became an editor at Macmillan's College Division. He was sent to the West Coast to help get Glencoe Press, a new community college division, off the ground and eventually became the publisher. A few years with Educational Testing Service in Princeton followed, and then MIT.

Urbanowski considers his mandate and responsibilities at the Press to be quite clear: To establish sound business practices at every level; to institute planning; and to establish accountability.

He considers as ludicrous the notion that an automatic reduction in titles will automatically be economical (the Press has hovered around 90 titles a year). Good planning, he indicated, removes the need for publishing by fiat.

The current staff at the Press is "as good or better than any I ever worked with," he stated, but he noted that "editorial decisions will be made if the conditions warrant them, as will any other type of decision that is needed." Not interested in usurping the individual department's authority, Urbanowski noted that he was interested in coordinating efforts within all departments and creating a climate in which each individual of the press knows that the intellectual and financial health of the organization depends upon the ability to plan well.

As Urbanowski talked, he frequently walked to the book shelves which line one wall of the rather spartan office, and selected a title to illustrate a point. It was good to watch him pluck the book, lay it on the desk, and open it. There was a certain sense of delicacy, perhaps in the way he leafed through it. The new director is a bookman.

THE INSTITUTE CALENDAR

November 5
through
November 16

Events of Special Interest

An Evening with Art Buchwald** - Sponsored by Lecture Series Committee. Mon, Nov 10, 8pm, Kresge. Admission \$1, tickets available at all LSC movies.

Blood Drive* - Fall blood drive will be held Wed, Oct 29-Fri, Nov 7, Sala. Hours: Wed-Fri, Nov 5-7, 9:45am-3:30pm. Appointments preferred, cards available in Bldg 10 Lobby, living groups, TCA office, Stu Ctr Rm 450. Info: x3-4885 or x3-7911.

Compton Lecture Series* - Hans A. Bethe, Compton Lecturer, Nobel Prize-winning physicist from Cornell University's Laboratory for Nuclear Science. 4:30pm, Kresge. Wed, Nov 5: Energy Problem II: Is Nuclear Power Acceptable? Thurs, Nov 13: Energy Production in Stars from the Sun to Neutron Stars.

Symposium on Recent Developments in Polymer Processing* - Sponsored by MIT-Industry Polymer Processing Program, NSF, Instrumentation Laboratory, Inc. IT&T Corporation, The Kendall Company, and Rogers Corporation. Speakers include: Dr. Thomas F. Jones, Vice President for Research, introductory remarks; Nam P. Suh, mechanical engineering, director of MIT-Industry Polymer Processing Program; graduate students Christopher A. Rotz, Sal C. Malguarnera, Charles L. Tucker III & Lewis Erwin; Terence J. Jones, Instrumentation Laboratory, Inc.; Nak-ho Sung, mechanical engineering; Richard C. Berry, vice president for research & development, Rogers Corporation; and Robert M. Colton, program manager, NSF. Thurs, Nov 6, 9am, Kresge Little Theatre. Laboratory tour & demonstration 4:15pm. Registration fee \$50. Info: x3-2234.

Seminars and Lectures

Wednesday, November 5

Total Joint Implants and Simulator Testing* - Robert Chernack & Steven Manzi, G. Mechanical Engineering Systems & Design Division Seminar. 12:05pm, Rm 3-465. Bring lunch, coffee & tea provided.

Services Available for Women in the MIT Medical Department* - Helena McDonough, nurse & midwife, Medical Department. MIT Committee for the Right to Choose. 12:15pm, Rm 10-105.

Geographical Variation of the Internal Wave Field* - Carl Wunsch, earth & planetary sciences. Oceanography Sack Lunch Seminar. 1pm, Rm 54-611. Bring lunch, coffee available.

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

Thermal and Hydraulic Behavior of a Bare Rod Bundle* - J. Bartzis, G. Nuclear Engineering Doctoral Seminar. 4pm, Rm NW12-222.

The Problems of Writing Historical Dramas** - Arthur Kopit, playwright, author of "Oh Dad, Poor Dad" and "Lewis and Clark." Humanities Lecture, in conjunction with Calvin Coolidge Follies (see theatre section.) 4pm, Rm 14E-304.

Is There a Right to Good Health* - Robert Morison, Class of '49 Visiting Professor. Technology Studies Seminar. 4pm, Rm 20D-205. Coffee 3:30pm.

Aspects of a Practicing Lawyer's Life** - Arthur Z. Gray, president, Union Pacific Foundation, Wall Street Lawyer. MIT Forum on the Law Profession. 4pm, Rm 1-236.

An Early Step in Recombinational Repair: Cutting in Trans* - Dr. Paul Howard-Flanders, radiobiology, Yale University. Nutrition & Food Science Seminar. 4pm, Rm 10-205.

Whither Geotechnical Engineering* - Thomas W. Lambe, Edmund K. Turner Professor of Civil Engineering. Civil Engineering Seminar. 4pm, Rm 3-370.

Three-Dimensional Structures of a Chlorophyll Containing Protein from Green Photosynthetic Bacteria and T4 Phage Lysozyme - Brian W. Matthews, University of Oregon. Chemistry and Biology Special Seminar. 4:30pm, Rm 2-390.

Images of Technology in American Culture* - Elting Morison, Elizabeth & James Killian Class of 1926 Professor, Emeritus. Aesthetics in Science & Technology Seminar. 7-10pm, Rm 3-133.

Thursday, November 6

Solitons in Plasmas* - Flora Chu, electrical engineering. Plasma Theory Seminar. 11am, Rm 36-261.

Physics and Applications of Acoustic Wave Devices* - Richard Williamson, Lincoln Lab. EE&CS Optics Seminar. 2pm, Rm 36-428.

The Demand for Teleconferencing, Recent Research in Europe* - Michael Tyler, head of economic studies unit, Post Office Telecommunications, London. Communication Policy Seminar. 4pm, Rm E53-482.

Automotive Applications of a High Efficiency Thermodynamic Cycle - The Reheat System* - Francisco Pompei, program development manager, Scientific Energy Systems Corp. Thermal-Fluids Seminar. 4pm, Rm 3-343.

Carbon Dioxide in the Control of Cell Metabolism* - Dr. M. A. Mitz, NASA. Nutrition & Food Science Seminar. 4pm, Rm 16-134.

Properties of Bayesian Tests* - Michael Woodroffe, statistics, University of Michigan. Mathematics Department Seminar. 4pm, Rm 2-338. Refreshments 3:30pm, Rm 2-349.

Dynamics of Flexible Chains II: Dynamic Scaling for Entangled Systems* - P.G. de Gennes, Universite de Paris-SUD, Arthur D. Little Visiting Professor. Chemistry Lecture. 4pm, Rm 6-120.

The Reformation** - Richard M. Douglas, history. Humanitas, an Evolving Perspective Seminar on Technology & Culture. 4pm, Rm 9-150.

The Demand for Teleconferencing: Recent Research in Europe* - Michael Tyler, head of economic studies unit, Post of Telecommunications in Canada. Communications Policy Seminar. 4pm, Rm E53-482. Coffee.

Scattering with Laser-Excited Atoms* - David Pritchard, physics. Physics Colloquium. 4:15pm, Rm 26-100. Refreshments 3:45pm, Rm 26-110.

US Needs and Problems Associated with Deep Water Ports* - J.L. Goodier, Arthur D. Little, Inc. Energy and Environment Seminar sponsored by MIT Sea Grant Program, Lowell Institute and New England Aquarium. 7pm, New England Aquarium Auditorium.

Poetry in Translation* - Michael Hamburger, visiting professor at BU. Foreign Literature & Linguistics Lecture. 8pm, Rm 16-310. Reception follows.

Friday, November 7

Thermal and Diagenetic Evolution of Convergent Margin Sediments* - Glenn R. Buckley, Exxon Production Research Co. Earth & Planetary Sciences Sack Lunch Seminar. 12n, Rm 54-915.

What Kind of Future for the Airline Industry?* - Mort Erlich, vice president for planning, Eastern Airlines. Center for Transportation Studies Seminar. Buffet 12n; (\$1), Stu Ctr Twenty Chimneys; lecture (free) 12:45pm.

The Depolymerization of Waste Polymers Using High Energy Radiation* - H.H. Ficke, G. Chemical Engineering Seminar. 2pm, Rm 10-105.

Reflexes Controlling Posture* - L. Nashner, Neurological Sciences Institute, Portland, Oregon. Man-Vehicle Laboratory Seminar. 2pm, Rm 37-187.

Industrial Relations in Capitalist Societies* - Ezio Tarantelli, visiting professor, Sloan School. MIT-DSOC (Democratic Socialist Organizing Committee) Lecture. 2:30pm, Rm E52-156.

A Study of the Mechanism of Vortex Inhibition* - S. Ishikawa, G. Chemical Engineering Seminar. 3pm, Rm 10-105.

Geothermometry from Intracrystalline Equilibria* - Larry Finger, State University of New York, Stony Brook; Geophysical Laboratory, Carnegie Institute of Washington. Earth & Planetary Sciences Colloquium. 4pm, Rm 54-425, Tea 3:30pm, Rm 54-923.

Property Rights* - Lawrence Becker, philosophy, Hollins College; visiting professor, Harvard University. Philosophy Seminar. 4pm, Rm 14E-304.

Monday, November 10

Laser Isotope Separation* - R.W. Davis, Lawrence Livermore Laboratories. Nuclear Engineering Seminar. 3:30pm, Rm NW12-222. Coffee 3pm.

On Realization of Bilinear Input Output Maps* - R.E. Kalman, University of Florida. Control & Communications Seminar. 4pm, Rm 3-370.

Coupled Magneto Plasma-Phonon-Photon Modes in Solids* - Hajime Kawamura, Osaka University, Japan. Francis Bitter National Magnet Lab Seminar. 4pm, 2nd fl conference rm, Magnet Lab. Refreshments 3:45pm.

Aromatic Polyimides, Their Chemical Structure and Physical Properties* - Dr. M. I. Bessonov, Institute of High Molecular Compounds, Leningrad, USSR. Mechanical Engineering Seminar on Mechanics of Materials. 4pm, Rm 3-133. Coffee 3:30pm, Rm 1-114.

Law Careers Today: A Law School Dean's Perspective ** - Molly T. Geraghty, assistant dean, Northeastern Law School. Forum on the Law Profession. 4pm, Stu Ctr West Lge.

The Arrangement of Sequences in Cloned Segments of Drosophila DNA* - Gerry Rubin, MD, biochemistry, Stanford University School, of Medicine. Special Biology Seminar. 4pm, Rm 6-120.

Root Systems, Line Graphs, Signed Graphs and Gramians* - Alan Hoffman, IBM, New York. Applied Mathematics Colloquium. 4pm, Rm 2-338. Coffee 3:30pm, Rm 2-349.

Solar Sea Power Plants: Interaction with the Environment* - Steve Piacsek, Naval Research Laboratory, Washington, DC. Ralph M. Parsons Laboratory for Water Resources & Hydrodynamics Seminar. 4pm, Rm 48-316. Coffee 3:45pm, Rm 48-410.

Tuesday, November 11

Finite Element Analysis of Dynamic Response* - Klaus-Jorgen Bathe, mechanical engineering. Applied Mechanics Seminar. 3pm, Rm 3-133. Coffee 4pm, Rm 1-114.

Advances in the Powder Processing of Superalloys* - Joseph Moore, Pratt & Whitney Aircraft Co. Materials Science & Engineering Seminar. 4pm, Rm 4-270. Coffee 3:30pm, Rm 8-314.

Jewish Humor* - Moshe Waldoks, Hillel director, Tufts. Hillel Lecture. 8pm, Stu Ctr Mezzanine Lge. Free.

Writing for the Theatre... Writing for the Screen... Writing for Oneself** - Lillian Hellman, visiting professor, humanities. Humanities Seminar. 8:30pm, Rm 9-150. (Following showing of The Little Foxes, listed in movies.)

Wednesday, November 12

Limit Cycle Behavior of a Typical Railcar Wheelset* - David Hannebrink, G. Mechanical Engineering Systems & Design Division Seminar. 12:05pm, Rm 3-465. Bring lunch, coffee & tea provided.

Harvard-MIT Joint Africa Luncheon Seminar* - Gavin Maasdorp, senior research fellow, University of Natal, South Africa. 12:30pm, Rm E53-482.

Gamma Heating in Fast Reactors* - Manjeet Kalra, G. Nuclear Engineering Doctoral Seminar. 3pm, Rm NW12-222.

Evaluation of Advanced Fast Reactor Blanket Designs* - J. Shi G. Nuclear Engineering Doctoral Seminar. 4pm, Rm NW12-222.

Science, Scripture and the Politics of Equal Time: A Study of Recent Textbook Controversies* - Dorothy Nelkin, research associate, political science. Technology Studies Seminar. 4pm, Rm 20D-205. Coffee 3:30pm.

Specification Writing: Some Thoughts on Conveying Thoughts* - Bill Swiger, vice president & senior consulting engineer, Stone Webster. Constructed Facilities Seminar. 4pm, Rm 3-370.

Genetic and Anatomical Analysis of Sensory Behaviors in the Nematode C. Elegans* - Dr. Richard L. Russell, California Institute of Technology. Biology Colloquium. 4:30pm, Rm 4-270. Coffee 4pm, Bldg 56, 5th fl vestibule.

Ideas of Progress in Art and Science* - Suzi Gablik, London painter & writer. Aesthetics in Science & Technology Seminar. 7-10pm, Rm 3-133.

Thursday, November 13

MIT Department of Civil Engineering: Its Underlying Philosophy. A National Perspective* - Frank E. Perkins, acting department head; William A. Little, constructed facilities division head; Donald R.F. Harlemann, Ford Professor of Engineering, water resources environmental engineering division head; Joseph M. Sussman, transportation systems division head. MIT Student ASCE & C Epsilon Seminar. 3pm, Rm 1-190. Refreshments.

Modeling and Analysis of Injection Molding** - Musa Kama, chemical engineering, McGill University. Mechanical Engineering Polymer Processing Seminar. 4pm, Rm 37-187. Coffee 3:45pm.

Experimental and Theoretical Study of NO_x Formation in Gas Turbine* - Tom Mikus, G. Thermal-Fluids Seminar. 4pm, Rm 3-343.

The Seventeenth Century: Galileo, Descartes, Leibniz, Spinoza and Newton** - I. Bernard Cohen, history of science, Harvard University. Humanitas, and Evolving Perspective on Technology Culture Seminar. 4pm, Rm 9-150.

Friday, November 14

Three-Dimensional Natural Convection in Glass Furnaces* - Curtlet, G. Chemical Engineering Seminar. 2pm, Rm 10-105.

Fate of Fuel Nitrogen* - J. H. Pohl, G. Chemical Engineering Seminar. 3pm, Rm 10-105.

Talks on IAESTE* - An organization which provides on the job training abroad for students of engineering, architecture, agriculture and the sciences during the summer. Foreign Study Office Seminar. 4pm, Rm 37-252.

Community Meetings

TWO Tupperware Party - Thurs, Oct 6, 7:30pm, Westgate Lge (on Eastgate Lge, as listed in TWO Calendar.)

Womens' Ordination in Church and Synagogue* - Susan Abrams Brandeis; Marianne Forehand, Tacoma Park, Maryland; Rose Constance Parvey, Chaplaincy; Sr. Helen Wright, Harvard Divinity School. Sponsored by MIT Chaplaincy. Sun, Nov 9, 5pm, Stu Ctr Mezzanine Lge. Dinner 6:15pm, Rm 10-105.

Sophomores: Class '78 Meeting - Sun, Nov 16, 8pm, Stu Ctr Rm 400. Discussions of class ring (company, design, etc). What do YOU want? Send ideas &/or attend meeting. Refreshments. Sophomores only. Next meeting Sun, Nov 23.

Women's Forum - Meeting Mon, Nov 10, 12n-1:30pm, Rm 37-252. open to members only. Self Help Slide Show presented by Women's Community Health Center. Visual introduction to the basic issues of women's health care including demonstrations of self-exams. Refreshments.

The Wives Discussion Group** - Led by Myra Rodrigues, social worker; Charlotte Schwartz, sociologist and Carol Hulsizer. Coffee. Babysitting in Stu Ctr Rm 473.

MIT Diet Workshop** - Thurs, 12n-1pm, Stu Ctr Rm 491.

Social Events

Honorary Matrons Luncheon - MIT Logarithms will entertain Thurs, Nov 6, 12n, 111 Memorial Dr., Mrs. Jerome Wiesner, hostess. By advance reservation.

Beer Blast - Sponsored by UA & IFC. Sat, Nov 8, 8pm, duPont Gym. Bands: Malcolm Rose, Back Alley Band, Salvo & McLaughlin. Beer \$.25/cup. Admission \$.50, \$1 at door. Tickets available at UA x3-2696. IFC representatives; or Bldg 10 Lobby. College ID required.

Israel Party - Sponsored by Hillel. Mon, Nov 10, 8pm, Sala. Hummus and other treats, movies, music.

Come Ice Skating* - Sponsored by Over 30's Singles Club. Tue, Nov 11, 8pm, meet at Boston Skating Club, 1240 Soldiers Field Rd (near Harvard Stadium). Rental skates available, \$.75. Admission \$2.

Inter-Collegiate Disco Night* - Sponsored by MSA. Dancing, refreshments. Sat, Nov 15, 8:30pm, Burton Hse. Admission \$1 in advance, \$1.50 at door. Info: x5-6129 Dorm.

Strat's Rat - Sat, Nov 15, 8:30pm, Sala. Light & dark beer, 16oz/\$.25. Wine available. Live announcer & records by WTBS. Free, college ID required.

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

Over 30's Singles Club - Luncheon meeting in Stu Ctr East Lge (small dining room off Lobdell) Fri, 12:30-1:30pm. New members always invited. Alice, x3-3400 or Marty, x8-1206 Draper.

Movies

Surface Tension: Low Reynolds Number Flow* - Fluid Mechanics Films. Wed, Nov 5, 4pm, Rm 39-400. Free.

Cyrano* - Humanities Film Series. Thurs, Nov 6, 7pm, Rm 10-250. Free.

Lenny** - LSC. Fri, Nov 7, 7 & 9:30pm, Rm 26-100. Admission \$5.50, ID required.

Sancho the Bailiff (Mizoguchi) - Film Society. Fri, Nov 7, 7:30 & 9:45pm, Rm 6-120. Admission \$1.

W.C. Fields & Charlie Chaplin Film Festival** - MidNite Movie. Fri, Nov 7, 12m, Sala. Free, ID required. Bring blanket.

The Groove Tube** - LSC. Sat, Nov 8, 7 & 9:30pm, Rm 26-100. Admission \$5.50, ID required.

Hanste Zakham* - Sangam. Indian movie with English subtitles. Sun, Nov 9, 2:30pm, Rm 26-100. Admission \$5.50.

The President's Analyst** - LSC. Sun, Nov 9, 6:30 & 9pm, Rm 26-100. Admission \$5.50, ID required.

Market at La Paz; Ancient Art of Peru; Legend of the Paramo* - Humanities Films. Mon, Nov 10, 4:30pm, Rm 4-270. Free.

The Little Foxes** - Humanities film in conjunction with Lillian Hellman lecture (see seminars.) Tues, Nov 11, 6pm, Rm 10-250. Free.

Paracelsus (Pabst)* - Film Section. Tues, Nov 11, 7pm, Rm E21-013. Free.

Miracle in Milan (de Sica)* - Cities of Film Series (Milan & Rome) sponsored by Undergraduate Urban Studies Program. Tues, Nov 11, 7pm, Rm 7-431. Free.

Rheological Behavior of Fluids* - Fluid Mechanics Film. Wed, Nov 12, 4pm, Rm 39-400. Free.

The Conversation** - LSC. Fri, Nov 14, 7 & 9:30pm, Rm 26-100. Admission \$5.50, ID required.

Minnie and Moskowitz (Cassavetes)* - Film Series sponsored by Sojourner and Muse, Inc. Fri, Nov 14, 7:30pm, Rm 54-100. Tickets: \$7.50 for series (Nov 14 & 21, Dec 5 & 12); left-over tickets sold at door, \$2. Info: 232-9339 or 891-5369.

The Fly** - MidNite Movie. Fri, Nov 14, 12m, Sala. Free, ID

required. Bring blanket.

Lawrence of Arabia** - LSC. Sat, Nov 15, 6 & 10pm, Rm 26-100. Admission \$5.50, ID required.

Kanoon* - Sangam. Indian Movie with English subtitles. Sun, Nov 16, 2:30pm, Kresge. Admission free with ID.

The Ipress File** - LSC. Sun, Nov 16, 6:30 & 9pm, Rm 26-100. Admission \$5.50, ID required.

Lobby 7 Events

Alexander's Feast* - Wed, Nov 5, 12n. Free.

All Old New England Concert* - Jack Perron, flute and fiddle. Wed, Nov 12, 12n. Free.

Music

Noon Hour Concert Series* - Janet & Michael Packer, sonatas for violin & harpsichord. Thurs, Nov 6, 12n, Chapel. Free.

Noon Hour Concert Series* - Mark Kroll, harpsichord. Thurs, Nov 13, 12n, Chapel. Free.

Chamber Music Society Concerts* - Wed, 5:15pm, music library, Bldg 14E.

Theatre and Shows

The Calvin Coolidge Follies** - By Boston playwright Geoffrey Bush, performed by Newbury Street Players. Sponsored by Humanities Department. Wed, Nov 5, 8:30pm, Kresge Little. Free.

Celebration* - MIT Musical Theater Guild production. Fri & Sat, Nov 7 & 8, and Thurs-Sat, Nov 13-15, 8pm, Kresge. Tickets \$3.50, \$2.50 with ID. Reservations, x3-6294, or Bldg 10 Lobby.

Dance

MIT Folk Dance Club Workshop - Cesto will be taught by Dave Skidmore. Sun, Nov 16, 1-5pm, Sala. Free.

MIT Folk Dance Club* - International: beg-intermed Sun, 7:30-11pm, Sala. Balkan: advanced Tues, 7:30-1pm, Stu Ctr Rm 491. Israeli: all levels Thurs, 7:30-11pm, Sala. Easy International:

Fri, 12n, Kresge Oval of Bldg 7 Lobby, depending on weather.

Exhibitions

Student Art Association Exhibit* - Works by the staff of SAA. Mon, Nov 3-Fri, Nov 8, Stu Ctr West Lge. Hours: Nov 3, opening, 7-9pm, Nov 4-7, 11am-12n & 5-7pm; Nov 8, 10am-5pm.

Creative Photography Exhibit* - Works by Abe Frajndlich & Mark Orlove. Exhibit thru Tues, Nov 18. Hours: 10am-10pm.

Faculty Club Exhibit* - Lithographs and photographs by Deborah Dyer, daughter of Professor Ira Dyer, head of Ocean Engineering. Nov, Mon-Fri, 9am-11pm, 6th fl Faculty Club.

Otto Piene: Paintings, Gouache, Drawings* - Works by the director of MIT's Center for Advanced Visual Studies. Exhibit divided into 3 locations: paintings, Hayden Gallery; gouache, Hayden Corridor Gallery; drawings, CAVS. Fri, Nov 7-Sun, Dec 7. Hours: Hayden, 10am-4pm, daily, Tues evg 6-9pm, CAVS, Bldg W11, Mon-Fri, 9am-5pm, Free.

MIT Historical Collections* - Permanent exhibition Mon-Fri, 9am-5pm, Bldg N52, 2nd floor. Bientennial Exhibit: Katharine Dexter McCormick, '04, exhibit in Bldg 4 corridors.

Schumann at Work on a Song* - Music Library exhibit of manuscript facsimiles & pictures. Daily, Bldg 14E.

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.

Freshmen are encouraged to attend departmental lectures and seminar. 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 November 12 through November 23 to the Calendar Editor, Room 5-111, Ext. 3-3279, before noon Friday, November 7.

Nuclear Panel Finds Risk Level Low

(Continued from page 1)
tists in all relevant disciplines. Calculational improvements resulted, in most cases, in increasing the consequences over the levels indicated in the draft report; however, the level of risk still remains very low relative to existing non-nuclear risks.

NRC Chairman William A. Anders said of the final report:

"The commission believes that the Reactor Safety Study report provides an objective and meaningful estimate of the public risks associated with the operation of present-day light water power reactors in the United States. The final report is a soundly based and impressive work. Its overall conclusion is that the risk attached to the operation of nuclear power plants is very low compared with other natural and man-made risks. The report reinforces the Commission's belief that a nuclear power plant designed, constructed and operated in accordance with NRC's comprehensive regulatory requirements provides adequate protection to public health and safety and the environment. Of course, such regulatory requirements must be continually reviewed in the light of new knowledge, including that derived from a vigorous regulatory research program."

The nuclear risks could only be estimated in the study since there have been no nuclear power accidents to date which have resulted in significant releases of radioactivity to the environment. Many of the

methods used in the study, including "event trees" and "fault trees," were developed by the Department of Defense and the National Aeronautics and Space Administration in the last 10 years. The application of these methods in the Reactor Safety Study represents a significant step forward in risk assessment capability.

The only way that potentially large amounts of radioactivity can be released from a nuclear power plant is by melting the fuel in the reactor core. The safety design of reactors includes a series of systems to prevent the overheating of fuel and to control potential releases of radioactivity. Thus, for an accidental release of radioactivity to the environment to occur, there would have to be a series of sequential failures that would cause the fuel to overheat and release its radioactivity. There also would have to be failures in the systems designed to remove and contain radioactivity. The study shows that fuel melting has a low probability of resulting in an accident having large public consequences.

More than 1800 pages of comments on the 1974 draft report were received from 87 individuals and organizations. These comments came from a broad spectrum of society, representing many diverse viewpoints and fields of expertise, and including the Commission's staff. All were carefully considered by the study group in preparing the final

report. The study was originally sponsored by the Atomic Energy Commission and was completed under the sponsorship of the new Nuclear Regulatory Commission with renewed emphasis on the independent nature of the work.

Copies of the Reactor Safety Study are available for inspection in the NRC's Public Document Room at 1717 H Street, NW, Washington, D.C., and will be available at the Commission's offices in King of Prussia, Pennsylvania; Atlanta, Georgia; Glen Ellyn, Illinois; Arlington, Texas; and Walnut Creek, California. Single copies of the Executive Summary of the Report may be obtained by writing to Mr. Saul Levine, Staff Director, Reactor Safety Study, Nuclear Regulatory Commission, Washington, D.C. 20555. Copies will be available for purchase about December 1 from the National Technical Information Service, Springfield, Virginia 22161.

Piene on Panel

Artist Otto Piene, director of the MIT Center for Advanced Visual Studies, will be among distinguished panelists who will discuss "Arts and the Campus: A National International Perspective" at a joint meeting of the American Association of State Colleges and Universities and the International Association of University Presidents at 2:30pm, Tuesday, Nov. 11 in Boston's Faneuil Hall. The discussion will be broadcast on WGBH-FM (89.4).

DenHartog Honored

Dr. Jacob P. Den Hartog, professor emeritus of mechanical engineering, recently received an honorary ScD degree from the University of Newcastle-on-Tyne, England. Professor Den Hartog also holds honorary ScD degrees from the University of Ghent, Belgium; the Technical University of Delft, the Netherlands; and the University of Salford, England; and an honorary DEng degree from the Mellon Institute in Pittsburgh.

Morrison on Panel

MIT physicist Philip Morrison, Institute Professor, will participate as co-chairman and panel member at the forthcoming National Academy of Sciences' forum on "Scientific Theories and Social Values," Tuesday, Nov. 11, at the National Academy of Science in Washington, D.C.

Researchers Report Findings On Diet Affects on Brain

(Continued from page 1)
levels of serotonin.

In studies reported by Dr. Wurtman on Sunday, Dr. Wurtman, Dr. Fernstrom and Dr. Loy D. Lytle, assistant professor of psychopharmacology, examined the effects on the brain of naturally-occurring but inadequate diets consumed for several weeks.

Rats were fed nothing but corn, which contains all of the essential amino acids (building blocks for proteins), but extremely low levels of the amino acid tryptophan, which is necessary for the synthesis of serotonin. They found a decrease in brain levels of serotonin, as well as changes in behavior.

In the acetylcholine studies to be reported Tuesday, Ms. Cohen fed rats diets containing varying amounts of choline, a substance found in abundance in eggs and meat. She found that this affected the brain levels of acetylcholine.

Although figures for humans aren't available, nutritionists at MIT have estimated that the amount of choline eaten from day to day might vary as much as eight-fold. In rats such variations result in a 25 percent

change in acetylcholine levels.

Just what this should mean to the average person isn't clear. "I couldn't say whether you should or shouldn't eat more choline," Ms. Cohen said. (Perhaps future studies will indicate whether the brain functions better or worse when it contains more acetylcholine.)

But earlier studies, in which she found that injecting choline into rats increased their brain levels of acetylcholine, prompted researchers at Stanford Medical School to use choline to successfully treat a patient with *tardive dyskinesia*.

The disease—thought to result from an inadequacy in acetylcholine release within the brain—is an occasional side effect of treatment with anti-psychotic drugs. Its victims exhibit rapid, involuntary movements of the mouth, such as sticking out one's tongue as often as 32 times a minute.

The MIT researchers plan, Ms. Cohen said, to begin a study of the effects of large doses of choline on patients with *tardive dyskinesia* and other motor disorders, such as *dystonia*—a class of motor disorders, both inherited and acquired—and *Huntington's chorea*.

Dr. R. S. Morison Appointed Class of 1949 Professor

(Continued from page 1)

Dr. Morison has been for many years one of the most respected figures in the biological sciences and has more recently devoted himself to the study of problems of science and society. At MIT he will be specially concerned to develop the study of ethical problems in medical and life sciences and with the future of the health professions.

Dr. Morison is a graduate of Harvard College and Harvard Medical School and was for eight years on the staff of Harvard Medical School. From there he went to The Rockefeller Foundation in New York, where his last position was as Director, Medical and Natural Sciences. For 20 years he participated in the foundation's programs in biology, medicine and public health, including the development of research and teaching related to mental illness, the study of insect born virus disease, and the promotion of modern medical education in the developing countries.

In 1964 he joined the Cornell University faculty, where he was director of the Division of Biological Sciences from 1964 to 1970 and Richard

J. Schwartz Professor of Science and Society from 1970 to 1975. Under his leadership the Cornell biology program became notable for bringing together all the modern parts of biology, including molecular biology, the neural sciences and ethology. As one of the founders of the Cornell Program on Science, Technology and Society, he participated in the launching of one of the pioneer programs in the area which MIT's Technology Studies Program has also been exploring.

Dr. Morison has been active as a statesman of science, as a member of the National Science Board, 1963-72, as Vice President of the American Academy of Arts and Sciences, 1969-72, and on many boards and committees. He is currently a member of the corporation of the Woods Hole Oceanographic Institution.

Professor Morison recently gave the Cooley lectures at the University of Michigan on biology, ethics and the law.

UMOC Meeting Tonight To Set Campaign Strategy

Campaign strategy for MIT's annual Ugliest Man On Campus Contest will be discussed at a meeting for official and potential candidates tonight (Wednesday, Nov 5) at 7:30pm in the offices of Alpha Phi Omega, sponsor of the contest.

Candidates enrolled so far are: Rick Jamison, of Johnstown, Pa., and Baker House; Richard Goldstein, of Central Valley, N.Y., and Sigma Phi Epsilon; and Jack Galuardi, of Potomac, Md., and Theta Xi. David Anick, APO contest chairman, said candidates would be accepted through Friday, Nov. 14.

Proceeds from this year's contest will go to the American Heart Association, Anick said. In addition, the contestant who collects the most cash for his defects will receive a dinner-for-two at one of Boston's more elegant eating places and 50 free beers.

Members of the MIT community who miss the personal solicitations

of UMOC visitors in their offices can contribute at the APO booth in Lobby 10, from 9-5pm, Monday-Friday (Nov. 7-14).

Other recent projects of the MIT chapter of the national service fraternity have included painting and repair work at the Massachusetts Mental Health Center, landscaping outside the Cambridge YWCA and refurbishing at Camp Sayre in the Blue Hills. Last Friday MIT's 30-member APO chapter raised \$361 for UNICEF in campus trick-or-treating activities. According to Anick, the group will take time from the UMOC Contest Saturday, Nov. 8, to paint the Charlestown Head-Start daycare center.

Participation in APO community projects is open to all MIT students. "In fact we encourage people to volunteer at least one weekend a year without any commitment to membership status," Anick said.

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, November 7. They will be printed on a first come, first served basis as space permits.

For Sale, Etc.

2 BSO tkts, Nov 22, orch st, Debussy-Schumann program, \$8. x3-6901.

Gas 12" chn saw, nw, used v little, Al cond, \$55 firm. A Jones, 427-2840, 9am-3pm.

Minolta 7S 35 mm camera, range finder, auto or manual metering, case, \$50. Jack, 266-4363, lve msg.

Zenith 17" b&w TV w/std, \$60; Chilton's auto repair manual, all Amer cars '66-'73, \$8. x3-3769.

Pr Head STD 200 cm skis, gd cond, w/bndgs, \$35 or best. Call, 354-0617, evgs.

Rubber plant, 6', w/pot, \$20. Lloyd, x3-7220.

HP 80 calculator, \$200 or best. x3-2675.

Pr VW stud snows, ww, gd cond, mtd, \$35. Bill, x7393 Linc.

M Wegner rocking chr, exc cond, cost \$169, ask \$70; Volvo snow w/rim, \$12. x3-2247.

Sm chest, 5 drwr, 45" h, 32" w, ideal child rm or storage, well made, solid wd, cherry finish, v gd cond, \$55. Gerry, x8-1288 Draper.

Girl fig skates sz 2, \$8; girl tap dance shoes, asst szes, \$3.50/ea; asst toys; asst art prints on canvas brd, \$2/ea. x8-4095 Draper.

Tiger amps, 4, 90 W/chnl, circuit brds assembled, all nw parts, pwr nvr applied, pwr supply cpbl of driving all 4 chnls, nds chassis & interbrd wiring, \$100. x5-9416 Dorm.

Acco Press printout binders; shelving for printout, cards; magnet computer tapes, racks; bk shlvs; packing boxes; notebk cvrs & misc office supplies. Call, 547-3336.

Heathkit guitar spkr, 2 woofers, horn, \$100 or best; Heathkit-Vox Jaguar organ, 4 oct & bass octave, 4 voices, nice string tone, \$150 or best. Gerald, x3-4726.

Dual 1212 changer w/brkn arm, otherwise gd cond, same mechanism as 1225, \$20 or best; Watts Parastat, orig, wrapper, b nw, \$2. Karen, x3-6247.

Pr AR2ax spkrs, Dyna PAT-4 preamp, x3-7510, kp try.

F wht slim-line Samsonite briefcase, nrly nw, \$15 or best; f bike w/bstkt, \$25. Alan, x3-4218.

Bkcase, \$15; pr side lamps, \$15; side tbl, \$10. Call, 731-5347, evgs.

Gray mtl 5 drwr desk, 28"x56", \$20. Call, 492-3940.

Sofa & chr, fair cond, \$100/both. Hedy, x3-7719.

Elec stove, Kelvinator 40" w/deep well cooker, auto-oven, old but works v well, 3 storage drwrs, \$60. Call, 484-0802, aft 1pm.

Colonial mpl K tbl w/6 mtch chrs, gd cond. Call, 389-8837, 6-9pm.

Pr 6.00x12 snows, 1 mtd, gd cond, \$15; compl hcky outfit; m Hyde fig skates, v cheap. Call, 494-8303.

Wl exch sm desk for big one; also want dbl sofabed, LR set, TV. x3-7107.

Sears best qual 39" fold bed, no-sag tubular frame, Serofoam matt; Sunbeam 2 sl thin-line toaster; Ambassador infrared bake & broil, sm mdl, cont ctn. Ann, x3-2168.

Beaut natural hair fall, approx 15" long, dark brn, red hiltes, case & std, nego. x3-6244.

Port 5" r-to-r tape recdr, \$50; k sz waterbed & pad, \$15; GE refrig, \$45. x3-5656.

Hart Comp skis, 195cm, Look-Nevada bndgs, exc cond, \$100. Pete, x279 Linc.

W. Barnstable, Cape Cod lds, 4, 24-33,000 sq ft, all road frontage, deeded rt way to pond, price range \$8,500-\$11,500. Rick, x5845 Linc.

Shredder, 3 1/2 hp w/bg attach & bags, \$50. x3-4834.

Pr G78x14 belted tires, few thou miles left, \$5/pr. Dave, x7689 Linc.

Philco stereo console w/amfm radio, wnt cab, 60"L, orig \$500, moving sacrifice \$100. Joe, x8-4417 Draper.

China, 12 settings, 75 pces, b nw, nvr used, \$35. James Hsia, x3-4192.

CM 911 power amp, 140 W/chnl, \$275. Roland, x5-9648 Dorm.

Pr snows, 6.85x15, used 2 seas, mtd vw rims; 1 reg tire, 6.00x15, b nw; fit VW Sqbk, Fstbk, 411. x8-1752 Draper.

Storm door, 80x32" \$7; wd door, 80x36", \$8. x3-2008.

Pr ww G78x15 tires w/approx 5 K, \$25/pr. Alice Rm 7-133, 646-6301 aft 7pm.

Skis, Rosignol Strato 102, 210 cm Tyrolia-Nevada bndgs, Northland poles, best. Roy, x8-4200 Draper.

Pr unmtd Rosignol Strato 102 skis, 190 cm, 3 yrs, fair cond, best. Call, 734-0648, evgs.

Aquarium, 15 gal all glass w/compl set up, exc cond, \$65; Pro golf clubs w/bag, \$50; beach umbrella, \$5. Hank, x8-4166 Draper.

HP 65, \$394. Bill Grace, x3-2234.

Pr nw C78x14 snows, \$30; pr almost nw radials, \$25. Ken, x3-5561.

M fig skates sz 11 1/2, \$10; f fig skates sz 7, \$10. Carol, x3-1332.

Stereo equip, 25-50% off most brands, fully grntd. Bob, x3-4242.

Singer zig-zag, I hate to sew, gd cond, \$60 or best. Sandy, x3-1757.

Rollaway bed, \$25; Burrows add mach, \$20; humidifier, \$20; Pitney Bowes mail mach base mdl 5830 for use w/touchmatic postal mtr mdl 5702, yr old, \$375. M. Freeman, 484-3017.

Pr 6.85x15 stud snows, ww, used 2 seas, \$15/pr. x5332 Linc.

Rock'n'roll rare tapes, live & studio, Beatles, Stones, Dylan, etc. Gary, 494-8234.

Elec appl: hotpot, \$2; waterpik, \$6; dutch oven, \$5; 3 spd mixer, \$3; pillows, \$2/ea; chaise lge, \$7; muffin tin, \$1; coffee pots, \$3. \$5; asst glasses. Andrew, 266-5742, aft 6pm.

Fbrglas Indry sink, 18x27, 15 deep, incl std drain bskt, chrome mixing faucets; baby dressing tbl. Al, x8-1419 Draper.

B nw genuine leath jckt, dark tan, hand sewn, \$100. Ranjan, x5-6126 Dorm, aft 8.

Dinette set, oval tbl, 30"x48" w/formica top & leaf, 4 chrs \$35. Newton, 527-1596.

Surprise the girl in your life w/beaut hand crocheted shawl (\$25), or sporty scarf (\$10) w/match beret (\$5), your choice color(s), taking Xmas orders. Diane, x8-1766 Draper.

Fbrglas skis, 190 cm, Solomon 444 bndgs, \$50. Nordica Alpina boots sz 9 1/2, \$20. Mark, x3-2991.

Omega B-22 enlarger, compl darkroom set-up, all \$150. Dick, x3-5568.

GE color TV, gd cond, best. Carolyn, x3-7051.

B nw qn sz (7'x3'x2') sofabed, 2 mos old, \$250. Tang Hall 18E, 494-8257.

Snow plow, hydraulic lift, gd working cond. Chuck, x8-3360 Draper.

Desk, \$35; 9x12 rug, \$50; drafting tbl, \$20; old trunk, \$10; dresser, \$30. Lesley, x8-2185 Draper.

Hcky skates: sz 5 Bauer, \$9; sz 6 CCM, \$12. Dan, x7430 Linc.

Sq Shooter II clrpck film 88, nw \$4.10, \$2; '65 VW hubcaps, 2, mtd type, \$2.50/ea. Erica, x3-2117.

Sofa, \$20; sgl bed w/firm matt, box spr, frame, \$25. Sharon, x3-1805.

Pr Frstne T&C ww stud snows, 5.60x15, lb nw, 1 nrly nw, mtd, bal on lk nw VW 4 bolt rims, \$60/pr, buyer get free \$10 misc nw VW parts. Tom Keim, x3-2237.

Guitar, folk or classical, \$30. Julie, x3-4791.

Sgl bed, box spr & matt, gd cond, \$25 or better, x8-1494 Draper.

Polaroid Land camera, clr pack, blt in timer, case, less yr old, \$20. Alex, x3-7273.

Spkrs, KLH-5, \$200/pr; port cassette tape recdr, \$20; Lange ski boots sz 8M, \$10; Lady Sunbeam hrdry, \$8; sm dresser, \$12; wd shlvs, \$8; lg sofa, \$60. Shinji, x3-5957.

Xmas present for grandma? Give her Norman Rockwell Retrospective, b nw, in shipping ctrn, \$5. Helen, x3-7690.

Wstghse 9000 BTU AC, wrnty, list \$300, \$200; nw Shure M91ED stereo ctrdrg, list \$55, \$35. Larry, x3-3409.

Pr glass belted snows, B78x13, lots miles left, \$30. Jeff Kurtze, x7352 Linc.

Plants, incl cacti, billbergia. Steve, Rm 26-257 or call x3-5959.

Singer Stylist sew mach, perf cond, all orig access, str stitch & zigzag, case, ask \$75, nego. Ken or Helene, x5-6262 Dorm.

Graflex XLRf 1/100 mm Zeiss Tessar, rangefinder, 120 back, grip, focus lever, lens hood, UV fltr, perf cond, ask \$270. Don, 785-0174, evgs.

Car radio, amfm, stereo, \$80; 5X7 Jensen spkr, \$10; Cory auto coffee perc, 6-12c, \$24; all nrly nw, nego. Batra, x3-2223, lve msg.

Vehicles

'59 Porsche 356, 1600 cpe, restored, nw eng, \$3,100. George or David, 646-1579.

'65 Mustang conv, nds some work, \$75 or best. Call, 354-5934.

'65 Chevy, gd cond, radio, big trunk, 2 stud snows, nw muff & pipes, \$125. Russell, 569-2805, evgs.

'66 VW Fstbk, gd body, nds nw eng but has gd parts, \$140 or best. Richard, 491-2193.

'67 Chrysler T&C wgn, exc cond, must sell, \$695 or best. x3-3873.

'68 VW bug, 83 K, runs well, 28 mpg, \$700. x5763 Linc.

'68 Olds 98, nds manifold, gd ride, \$300 or best. x5-6649 Dorm.

'68 Chevy Imp, 3 spd std, 6 cyl, 4 dr, running cond, nds body work or can use for parts, \$100. Call 484-4422.

'69 Mercedes Benz 220, wht w/blu int, body exc cond, gd mech cond. Call, 298-4423.

'69 Olds Cutlass, ac, gd shape, \$700 or best. x3-5804.

'69 VW, nw batt, clutch, brakes & motor job, nw muff, 30+ mpg, radio nds nw running brd, \$875. Call, 547-2828.

'70 Austin America, std, 33 mpg, has nw muff, starter, \$895. Brian, x3-6294.

'70 Toyota Corona hdtv, v gd cond, auto, radials, amfm, tach, nw parts, exc car around city, ask \$700. Bern, 354-1140.

'70 BMW, gd cond, nw shocks, tinted wndws, \$2,350. x5-8644 Dorm.

'72 Vega Htchbk, 32.6 K, gd cond, \$1,400 or best. Marsha, x3-1502.

'74 Volvo 142S, dark vel, 19 K, perf cond, \$4,000. x3-3842.

VW engines rebilt, valve or ring jobs, v reas rates, gd work, grntd. Will, 288-7793.

'72 Yamaha 350, working cond, recent eng ovrl, nw rear shocks; also 2 mos old compl Dunstall exh sys for Honda 500-4, exc cond, \$125. Nelson or Tom, 782-7689 aft 8pm.

Kawasaki, Enduro mdl F-7, 175 cc, street or trail, lo miles (1,500), mint cond, metal blu clr, Call, 395-8751.

Housing

Arl, avail 12/15, spac 2 BR apt w/LR, DR, full attic, partial bsmnt, frpl, off-st pkg, nr Mass Ave T, pref married cpl w/ no chldrn. Lois, x8-4466 Draper.

Camb, BR apt Harv St, nr Sq, sunny, \$180 incl ht, Jacqueline, x3-3223.

Camb, Cent Sq, 3 BR, 4th fl walk-up, qt bldg, lse req, \$280 htd. Mr. Keenan, x8-2028 Draper.

Camb, rm for visiting scholar avail antique-furn home, 10th fl river view, bldg w/security, blk Kendall Sq T, share B w/L, lite K priv, \$50/wk. Bullowa, x3-7719.

Carlisle, 1 1/2 yr estm contemp, 2 wdcd acres, 3 BR, 2 1/2 B, fam rm, den, DR, LR w/frpl, eat-in K, 2 car gar, deck, Mike, x3-5250.

Mattapan, 3 BR apt, 2nd fl 2 fam hse, lg LR, den, DR, K w/d&d, AC, avail 11/15, \$250. Charles, x3-6275.

Som, 2 BR apt, carpeted, avail 1/1-7/31, \$275 incl ht, pkg, elec. Call, 547-5993, evgs.

Mt Sunapee, cottage for ski rental by wk or seas, blacktop rd, many conv, call for particulars. Tom, x613 Linc.

Animals

Adorable pups seek loving home, fluffy & free. Jane, x3-5042.

Ferri-poo pups, 9 wks, 4 f, m. X8-3550 Draper.

Old Eng sheepdog, f, 7 mos, pedigree w/papers, niece of champ show dog, all shots, gd personality, \$250. x3-7183.

Kittens Tonkanefe, weaned, \$20/ea. Call, 729-5062, aft 6pm.

Lost and Found

Lost: keys nr Weeks Ftrdrg during regatta Sun, Oct 26. Lve name, x3-3210.

Lost: notebook, 12n, Oct 28, at Stu Ctr common rm, Behruz, x3-5095.

Found: Physics bk for MIT course, ownr must identify title & loc lost. Mel, x3-4192.

Wanted

Want to rent garage in Bos-Dorchester area. Tom, 288-7793, evgs.

HP 150 scope. John, x5-6179 Dorm.

F stu, 2 want to lse housing on nr campus for Jan. Call, 494-8625.

Nw or used GE Parti-Fi spkr for GE console stereo. JK, x8-3235 Draper.

Want to rent htd garage, barn or bsmnt thru 5/76 to restore Piper Cub. Jerry, x8-1634 Draper.

Fr stu, bilingual Canad & Amer stu nded for psych exp w/pay. Lve name & numbr w/Judy, x3-6047.

Hd or block for 6 cyl 170 cu in inline eng, Ford. Call, 641-0680, aft 5pm.

Ride to DC or Balt area, lvg 11/6-11/7, rtn 11/9-11/10, w/share driving & exp. Joel, 547-1420.

Used full sz refrig, wl pay to \$35. Dave, x5-8318 Dorm.

Electronics whiz to repair 3 volt mtrs, 1-2 radios, wl pay. John, x3-6418.

Hcky players, C or B league caliber, to share rented ice for reg wkly scrimmages, cost \$2-\$4/player depending on grp size. Tom, 494-8277.

Ride for 2 to NYC Thanksgiving, wl share gas, any other exp. Roger, x3-1708.

Desperately nd lgd cage for growing rabbit living in shipping crate. Ellie, x3-4642.

One or more v rich, benevolent prsns to make property investment, monetary rtns grntd. Sam Benichasa, x8-3686 Draper.

Mic &/or mic stand, suit for stage performances, Hi or Lo Z. Mark, x3-7350.

LR furn in v gd cond, reas. Grace, 354-0433, evgs.

Iron Deficiency Relationship To Intellect to be Studied

One of the most comprehensive studies of the effects of simple iron deficiency on children's intellectual performance is scheduled to begin next month at MIT.

As a result of the MIT research, directed by Dr. Ernesto Pollitt of the Department of Nutrition and Food Science, 400 Cambridge, Mass., youngsters will be treated to free blood tests and physicals, and more than 200 of them will receive iron repletion therapy. Dr. Pollitt plans to divide the group of sample youngsters, aged two to six years, into three test groups: "normal" subjects, iron deficient children, and iron deficient children with anemia.

The three-year \$290,000 study is being funded by the National Institutes of Health (Institute of Child Health and Development).

While past studies have focused primarily on iron deficiency with anemia, the MIT researchers, in conjunction with Dr. Rudolph Leibel of Cambridge Hospital and Harvard Medical School, expect to determine whether iron lack per se may affect narrow attention processes, memory, and a host of other cognitive difficulties in children.

Project psychologist Dr. Daryl Greenfield, who will administer a battery of game-like tests to the children in specially constructed rooms in Building 20, said, "The children will be invited to participate through neighborhood lead poison detection centers." Blood tests administered by MIT biochemist Vernon Young will be used to determine the groups of children to be studied according to their iron levels.

The study will also be the first to determine whether nutritionally induced behavior defects are reversible. Short- and long-term memory tests as well as a sustained attention task in which a child must respond to a target picture randomly embedded in a series of pictures flashed at the rate of 50 per minute, are expected to show that intermediate brain processes are more directly affected by iron deficiencies than higher conceptual processes.

Metals Conference Planned

The Second International Conference on the Rapid Quenching of Liquid Metals will be held at MIT from November 17-19.

An estimated 200 scientists and engineers from 17 countries are expected to attend. They will present 111 papers on various aspects of what Professor Nicholas J. Grant of MIT has called a "fast-moving, fascinating field" that has experienced exponential growth since the first international conference was held in 1970.

Professor Grant, Director of the Center for Materials Science and Engineering, and Professor Bill C. Giessen, of Northeastern University,

are co-chairmen of the conference. Rapid-quenching of liquid metals—also called splat cooling—affords great potential for the production of alloys of unusual properties, Professor Grant said. Extreme grain refinement, diminution or even elimination of harmful segregation, refinement of hard and brittle phases, production of metastable structures and even the formation of glassy metals are possible as quench rates increase from about 100 to 1 billion degrees per second. Strength, ductility and toughness increase with refinement of the crystalline structure and superplasticity is found for certain appropriate alloy compositions. Strength values in excess of 500,000 pounds per square inch have been reported for some glassy metals.

Funding for the conference has been provided by five government agencies: The Office of Naval Research, the National Aeronautics and Space Administration, the National Science Foundation, the Energy Research and Development Administration, and the Army Research Office.

The conference is dedicated to Professor Pol Duwez of the California Institute of Technology, who reactivated interest and activity in splat cooling early in the 1960s through improvements in quenching techniques that led to much higher rates than had previously been achieved. The quench rates were measured and calculated shortly thereafter at MIT.

Conference sessions will be held in Room 9-150. The proceedings of the conference will be published in book form by the MIT Press in the Spring, and in a special issue of Materials Science and Engineering, a professional journal.

Registration is necessary to attend the conference. Members of the MIT community interested in attending should call Ann Wallace, x3-6841, conference coordinator, by Wednesday, Nov. 12.

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"The body's natural saving mechanism works to protect the brain from the effects of depletion," Dr. Greenfield said. "Iron deficiency suggests an insufficient supply of oxygen in the blood, but the brain, at the expense of other organs, is the last organ to be cut off from that limited oxygen supply."

Consequently, a child's rate of learning and ability to retain information are likely to be affected less directly than attention processes or motor functions like activity level. However, once they are affected, according to Dr. Greenfield, the higher processes stand a greater chance of being permanently impaired.

The experiment will require six months of regulated iron repletion therapy for one half of the iron deficient group and for all of the iron deficient/anemic children, Dr. Pollitt said. The therapy will be introduced following extensive physical examinations of the children by Dr. Leibel at Cambridge Hospital and an analysis of parent questionnaires on the children's behavior at home.

Burns Honored By MSA Award

Roger G. Burns, professor of mineralogy and geochemistry in the MIT Department of Earth and Planetary Sciences, has received the Mineralogical Society of America Award for 1975 in recognition of his contribution to mineralogical applications of crystal field theory.

The award is given by the MSA in recognition of an outstanding contribution to the field of mineralogy by a person whose research was published before age 35.

Professor Burns has written a book and numerous professional papers. His research interests are in transition element geochemistry and metallogenesis; spectroscopic studies of minerals; the crystal chemistry of lunar and terrestrial silicate minerals; and the mineralogy and origin of deep-sea manganese nodules.

POSITIONS AVAILABLE

This list includes all non-academic jobs currently available on the MIT campus. Duplicate lists are posted on the women's kiosk in Building 7, outside the offices of the Special Assistants for Women and Work (10-215), and Minority Affairs (10-211), and in the Personnel Office (E19-239). Personnel interviewers will refer any qualified applicants on all biweekly jobs Grades II-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.

Dick Higham 3-4278
Pat Williams 3-1954
Carolyn Scheer 3-1595
(secretary — Dixie Chin)

Virginia Bishop 3-1591
Mike Parr 3-4266
Ken Hewitt 3-4267
(secretary — Joy Dukowitz)

Sally Hansen 3-4275
Evelyn Perez 3-2928
(secretary — Susan Bracht)

Academic Staff, Asst. Science Librarian, part time, in Science Library to provide information and library services to Dept. of Transportation; compile bibliographies; answer reference questions regarding traffic and environmental management, economic and technical aspects of transportation; expedite photocopy requests; perform other tasks as assigned. Position requires MLS and library experience (may be pre-professional). Reference experience desirable. 15 hrs/wk. Please submit resume. C75-29 (11/5).

Academic Staff, Technical Instructor, in Mechanical Engineering to instruct in the use of the scanning electron microscope (Jeolco JSM-3); perform occasional scanning electron microscopy; supervise student projects; insure operating order of microscope; perform electronic failure analysis; supervise programmable testing facility. Degree in Mech. Eng., Electrical Technology or Electrical Engineering plus a strong background in experimental physical sciences and engineering, electronic equipment and circuitry, small computers, physical measurements and instrumentation required. Experience in an instructional capacity and 2 or more years experience in an instrumentation or research environment preferred. Please submit resume. C75-30 (11/5).

Admin. Staff, District Officer in Resource Development to coordinate volunteer solicitors in the New England States; requires extensive travel through N.E. Candidate should have a wide familiarity with the Greater Boston business and financial community, a high degree of poise and orientation towards other people, demonstrated initiative and ability to work independently, oral and written communication skill. Familiarity with MIT desirable. A75-26.

Admin. Staff, Area Coordinator/Systems Analyst in the Office of Administrative Information Systems to analyze and resolve user information systems problems. Duties include development of new modified external specifications for computer programs; ensure program testing and release documentation; manual development; interpretation of systems use for client users. Bachelor's degree or equivalent combination of education and experience, plus experience in systems analysis or computer related activities required. A75-64 (11/5).

Spons. Res. Staff in Nutrition and Food Science to perform assays of brain neurotransmitters, enzymes and amino acids in laboratory of Brain and Metabolism; teach assay methods to students and others; maintain quality control of lab techniques and oversee lab maintenance. Methods used are fluorescence assay, scintillation counting, and spectrophotometry. BS or MS in Biochemistry or related field required. D75-222 (11/5).

Spons. Res. Staff, part time, temporary, in Earth and Planetary Sciences to assist in mineralogical, chemical study of marine manganese nodules and synthesis of manganese oxide phases. Graduate training in advanced chemistry and mineralogy required; MS in Chemistry preferred. Experience in reflected light optics, electron-microprobe and XRF analyses, chemical synthesis of inorganic oxides and ligand-field calculations of mineral oxide systems desired. 17½ hrs/wk, temporary for 3 months but may be extended. D75-223 (11/5).

Spons. Res. Staff, Executive Director, for Chemical Engineering project involving the development of a continuing education project in Chem. Eng.: will have overall responsibility for project management, assisting in definition of objectives and supervision of project staff; will also coordinate work of project participants at other universities and industrial organizations. Other duties include steering committee, consortium and task force meeting arrangements; report preparation, budget management, editing of instructional materials. Advanced degree in

Chemical Engineering or closely related field, training and/or research experience at university level, communications and management skills necessary. Industrial experience helpful. D75-220 (10/29).

Spons. Res. Staff, in the Center for Cancer Research, to do research on nucleic acids of leukemia viruses. Work involves isolation of DNA and analysis of its ordering using restriction enzymes. Ph.D. in biochemistry or related area and at least 3 years of experimental laboratory experience required. Experience in sterile techniques and tissue culture desirable. D75-217 (10/29).

Spons. Res. Staff in Chemical Engineering to assist in the development of a model program of continuing education in chemical engineering, specifically in the area of "modular instruction." Will perform research relating to development of computer-based techniques, analysis of subject content of selected fields to reduce them to modular elements, development of computerized and non-computerized testing techniques and instructional modules. Ph.D. in Chem. Eng. or related field, interest in teaching, innovation, communications skills required. D75-219 (10/29).

Admin. Staff, Assistant Director, Development Office to handle varied responsibilities related to the provision of research and information for the MIT resource development effort. Duties include donor identification and evaluation, extensive writing (background briefs, proposals, etc.), participation in strategy development, direct developmental support of Institute senior officers. A minimum of 3 years active experience, ideally in a university environment, is preferred. Bachelor's degree and excellent written and oral communications skill required. A75-63 (10/29).

Spons. Res. Staff, Technical Asst., to Psychology to process experimental brain tissues primarily for light microscopic analysis. Main emphasis is on newly developed techniques involving autoradiography and enzyme histochemistry for tracing neuronal pathways. Experience in histological techniques including performance of standard and non-standard methods required or Bachelor's degree in Biology, Chemistry or related area required. D75-218 (10/29).

Tech. Asst. IV in School of Humanities and Social Science Oral History section. Duties include historical editing and writing, setting up and maintaining document files and indices for oral history projects. Bachelor's degree in history or history of science desirable. Position is full time but can be adjusted to part-time to accommodate selected candidate. B75-596 (10/29).

Secretary V to the Director, Division for Study and Research in Education: take and transcribe meeting minutes, correspondence, research reports; maintain a busy calendar; handle large volume of telephone calls; arrange travel. Excellent shorthand, typing and organizational skills required. Applicants must be able to exercise judgment and sensitivity in a position which includes interaction with a wide variety of people. B75-607 (11/5).

Section Head V in Medical to have responsibility for operation of X-Ray/ECG unit; supervise ECG technician and clerical assistant; administer state-required chest x-ray program; process x-ray reports including report transcription, distribution, record keeping, compiling of statistics; scheduling; maintaining of supplies. Supervisory and organization skills, excellent typing and ability to transcribe radiologic reports required. Applicants should have previous experience in a responsible secretarial position. 37½ hr/wk. B75-616 (11/5).

Secretary V to Chemistry Department Faculty member working with large international research group in field of enzymology; take and transcribe shorthand dictation; maintain small library; arrange appointments; answer telephones; order lab materials; handle varied administrative matters. Excellent secretarial skills, including shorthand. A mature, sensitive manner in dealing with people required. B75-475.

Secretary IV-V to Sea Grant Program Executive Officer will type varied material from draft; answer and refer inquiries on Program activities; organize meeting agenda; maintain files; arrange luncheons, dinners and other social activities; coordinate work of other secretaries in peak loads; arrange travel and appointments. Perform occasional secretarial duties for Program Director and the Advisory Services Staff. Secretarial school training and 2-3 years secretarial experience required. Shorthand and machine dictation skill helpful. B75-609 (11/5).

Secretary IV, part-time, to faculty member in Civil Engineering to type technical reports, correspondence; answer phone; maintain files. Position requires good secretarial, organizational, technical typing and machine dictation skills. 15-20 hrs/wk. B75-612 (11/5).

Secretary IV to Director, Secondary Technical Education Project, Office of the President and Chancellor to organize office (set up files, procedures, etc.) for new office directing MIT's role in Boston desegregation plan (East Boston schools). Excellent shorthand, typing, writing skills plus ability to deal effectively with people required. MIT experience helpful. Non-smoking office. B75-615 (11/5).

Secretary IV to several Mechanical Engineering faculty members will type varied material: arrange travel appointments; coffee seminars; maintain accounts. Excellent secretarial skills including shorthand/machine dictation, technical typing and the ability to interact well with people required. B75-253.

Secretary IV, temporary, to Research Associates at the Center for International Studies: type letters, manuscripts; arrange seminars and perform

other general secretarial duties. Excellent typing, ability to set priorities and work effectively with a variety of people required. Temp. through June, 1976, but may be extended. B75-595 (10/29).

Secretary IV to two Chemistry faculty members will type correspondence and reports from machine dictation; type technical manuscripts, grant proposals and course material from draft copy; arrange appointments and travel; monitor research accounts. Applicants should be effective in dealing with people, able to set priorities and organize work without detailed supervision. B75-545.

Secretary IV in Urban Studies and Planning Dept. to perform general secretarial duties: take and transcribe dictation, prepare documents, type manuscripts, correspondence, reports; maintain files and records; handle mail, arrange travel, appointments, meetings. Excellent typing skills, shorthand, dictation transcription skills, ability to communicate with people, prior secretarial experience required. B75-603 (10/29).

Secretary IV to Head of Engineering Libraries and professional staff will handle general secretarial duties as well as record orders and prepare bills; order supplies and equipment; review and analyze monthly statements; prepare payrolls and act as liaison with other Institute offices. College or secretarial school training plus secretarial experience and familiarity with accounting procedures required. B75-600 (10/29).

Secretary IV to Special Assistant to the President for the Arts and the staff of the Council for the Arts: act as information source about MIT arts events and Council activities; arrange travel, appointments, meetings; assist with major conference arrangements; transcribe and type correspondence, proposals from shorthand and machine dictation; maintain files. Shorthand/speedwriting, excellent typing skill, secretarial school training or previous secretarial experience necessary. Position requires the ability to organize and complete work with minimal supervision and to work overtime occasionally. 37½ hr. wk. B75-605 (10/29).

Secretary IV in Resource Development will perform general secretarial duties including occasional typing of letter-perfect copy. Organization skills, ability to work independently, pleasant telephone manner required. College and/or secretarial school training plus a minimum of 2 years secretarial experience necessary. B75-593 (10/29).

Secretary III-IV to two faculty members/researchers in the Artificial Intelligence Lab: type correspondence, class material, technical manuscripts; answer phones, maintain files. Will do library research and assist students and visitors with problems. Selected candidate will be trained to edit manuscripts with computer. Good typing, organization skills required. College training and/or MIT experience desirable. B75-526.

Secretary III-IV will handle secretarial responsibilities for several faculty members in the Technology Studies Program and for the Office of the Dean, School of Humanities and Social Science: type manuscripts, correspondence; compile simple statistical data; arrange meetings. Excellent typing and machine dictation skill required. Candidates should have a flexible attitude to perform varied tasks for several people. B75-597 (10/29).

Secretary III, part-time, temporary in Laboratory for Nuclear Science will assist permanent secretary to high energy physics group: type technical papers, correspondence, handle weekly seminar arrangements. Good typing skill, command of English language required. Knowledge of French and/or German desirable. 20 hrs/wk (1pm-5pm) temp for 2-4 mos. B75-611 (11/5).

Secretary III in Medical Department to work with two social workers and share in secretarial duties for Psychiatric Service: act as liaison with social worker clients; arrange appointments; type from machine dictation; handwritten draft; compile statistics; coordinate Social Service and Psychiatry joint programs. Good typing skills, sensitivity in dealing with people required. Key punching ability desirable. B75-606 (10/29).

Secretary III, part-time, temporary, in Psychology will transcribe interview tapes; type letters, manuscripts; order books and reprints; tabulate data keypunch; do miscellaneous errands. Typing skill, ability to deal sensitively with neurologic patients required. 20 hrs/wk (mornings). Temp for 3-6 months. B75-598 (10/29).

Sr. Lib. Asst. IV, in Rotch Library to process all new book materials; catalog and maintain pamphlet collections; supervise card corrections, maintain accuracy of card catalog; process special collections; supervise student assistants; assist in special projects. May be asked occasionally to cover circulation/reserve desk and to work in evening. Position requires previous library experience/training, organizational ability, creativity and typing skills. College graduate preferred; background in art, architecture, urban planning desirable. B75-610 (11/5).

Accounting Asst. V in Comptroller's Accounting Office to perform internal cost audits on research programs; prepare monthly invoices and fiscal reports; assist in cash flow and forecast functions. Position requires general business background, 2-3 yrs. applied accounting experience, and 2 yrs. college or business school education. B75-613/614 (11/5).

Sr. Clerk III-IV in Architecture will handle varied duties related to departmental admissions procedures: process applications; maintain applicant files; compose and type correspondence to prospective students; act as office receptionist; answer phone and other inquiries concerning admissions procedures; act as clerical support to 3

admissions committees. Organization and typing skills required. Candidates must enjoy working with and assisting a variety of people. Position available December 1. B75-604 (10/29).

Sr. Clerk III in Student financial Aid Office will maintain application file system; assist in assignment of funds and report preparation; answer student inquiries; type reports and correspondence from draft; assist with other clerical duties, as necessary. Excellent typing required. Previous office experience preferred. B75-594 (10/29).

Messenger Clerk II in the Arteriosclerosis Center will perform messenger duties between the Center and several campus locations and the Mass. Genl. Hospital; handle lab test billing procedures; maintain office supplies; file; perform other clerical duties as necessary. Applicants must be reliable and able to perform a variety of duties. 40 hr/wk. B75-608 (11/5).

Technician C (EM), temporary, in the Lab for Nuclear Science to perform routine duties such as wiring, keeping apparatus in good condition, performing lab tests and analyses. Work requires handling of epoxies and the ability to work with delicate equipment. Experience with machine and hand tools desirable. 40 hr. week. Temp. for a maximum of 1 year. H75-156, H75-157 (11/5).

The following positions were still available at Tech Talk deadline. The date following each position is the date of the most recent Tech Talk issue in which the position was described.

ADMINISTRATIVE STAFF:
A75-44, Proj. Planner, Planning Office (8/20)
A75-49, Asst. Director, Admissions (9/10)
A75-54, Sec. for Alum. Relations, Alumni Assn. (9/24)
A75-56, Sr. consult/Trainer, Personnel (10/8)
A75-58, Industrial Liaison Officer, ILO (10/8)
A75-59, Applications Programmer, Off. of Admin. Inf. Syst. (10/22)
A75-59, Applications Programmer, Off. of Admin. Inf. Syst. (10/22)
A65-60, Ststems Analyst, Off. of Admin. Inf. Syst. (10/8)
A75-62, Alumni Regional Director, Alumni Assn. (10/29)

BIWEEKLY:
B75-195, Comp. Op. IV, Off. of Admin. Inf. Syst. (9/10)
B75-273, Sec. IV, Mt. Sc. & ng. (7/9)
B75-306, Sec. V, Physics (10/8)
B75-427, Comp. Op. IV, Off. of Admin. Inf. Syst. (9/10)
B75-537, Sec. III-IV, Sloan School (10/8)
B75-543, Sec. IV, Chem. Eng. (10/15)
B75-547, Sec. V, Civil Eng. (10/15)

B75-561, Sec. V, Resource Development (10/22)
B75-562, Tel. Op. III, Phys. Plant (10/22)
B75-566, Sec. IV, Medical (10/22)
B75-571, Clk-Typ. III, Develop. Off. (10/22)
B75-575, Sr. Clerk III, Purchasing (10/29)
B75-578, Tech. Asst. IV, Psychology (10/29)
B75-580, Sr. Clerk II, Admissions (10/29)
B75-584, Sec. IV, Development Off. (10/29)
B75-585, Sec. III, Mat. Sc. & Eng. (10/29)
B75-586, Sec. IV, Planning Off. (10/29)
B75-587, Sec. IV-V, Preprof. Advising & Education (10/29)
B75-588, Sec. V, Civil Eng. (10/29)

ACADEMIC STAFF:
C75-28, Nursing Supervisor, Medical (10/8)

SPONS. RES. STAFF:
D75-8, Biophysicist, Nat. Magnet Lab. (6/25)
D75-48, Economist, Energy Lab. (6/25)
D75-107, postdoc. res., Lab. for Nuc. Sc. (6/25)
D75-109, Medical Technologist/Technician, Clin. Res. Cntr. (9/17)
D75-111, Programmer, Artificial Intell. Lab (6/25)
D75-112, Engineer, Energy Lab. (6/25)
D75-120, Systems Programmer, Lab. for Nuc. Sc. (10/29)
D75-125, energy modeling, Energy Lab. (8/6)
D75-126, postdoc. res., Energy Lab. (8/6)
D75-127, postdoc. res., Energy Lab. (8/6)
D75-129, Proj. Mngr., Cntr. for Trans. St. (8/20)
D75-138, Programmer, Proj. MAC (9/3)
D75-143, Plasma Physicist, Cent. for Space Res. (9/3)
D75-150, Systems Programmer, Hlth. Sc. & Tech. (9/3)
D75-153, Applications Programmer, Lab. for Nuc. Sc. (9/10)
D75-161, Economist/Policy Analyst, Energy Lab. (9/10)
D75-164, computer graphics Architecture (9/17)
D75-166, Operations Branch Mngr., Energy Lab (9/17)
D75-167, end-use technology, Energy Lab (9/17)
D75-169, Plasma Physicist, Res. Lab. of Elec. (9/17)
D75-178, Programmer, Center for Space. Res. (10/1)
D75-181, immunology, Center for Cancer Res. (10/1)
D75-202, Scientific Programmer, Earth & Pl. Sc. (10/15)
D75-204, machine vision research, Artificial Intell. Lab. (10/22)
D75-205, Research Engineer, Economics (10/22)
D75-210, machine vision research, Artificial Intell. Lab (10/29)

EXEMPT:
E75-39, Unit Coordinator, Medical (10/22)
HOURLY:
H75-55, Tech. B., Lab. for Nuc. Sc. (6/25)

Edgerton Art Shows In Europe

The Galerie Agathe Gaillard on the Rue de Pont Louis in Paris will be the setting in January for a month-long exhibit of the stroboscopic photographs of Dr. Harold E. Edgerton, Institute Professor Emeritus in electrical engineering.

The exhibit is one of several that "Doc" has mounted to travel both domestically and abroad. One collection of 55 black and white prints will be on display at the National Academy of Science in Washington, D.C., from November through January.

The first exhibition in Great Britain devoted to the work of Dr. Edgerton is tentatively scheduled to open in January at the Ikon Gallery in Birmingham, England, with subsequent month-long stops at seven other galleries, universities and museums. According to Professor Geoffrey W. Holt of Foley College in Stourbridge, England, who is coordinating the British showing, the collection will eventually be permanently housed in the British Museum.

The British exhibit, with scheduled stops in London, Newcastle, Nottingham, Oxford, Bristol and the new Fox-Talbot Museum in Lacock is significant, Dr. Holt said, because it honors Dr. Edgerton as an artist as well as a scientist concerned with photography as a tool for his research.

Dr. Edgerton's work, in time scales that range from tenths to one third of a millionth of a second, has in the past applied the principles of the stroboscope and electron flash to aerial reconnaissance, deep sea photography, and more recently, spectrographic work.

A modern strobe exhibit, donated to the Fox-Talbot Museum by Dr. Edgerton, was presented at the museum's Royal opening last June by Jean Mooney, administrative assistant to Dr. Edgerton. The display of his famous milk drop, bullet and golf photographs, together with the strobe exhibit, will mark a classic moment in visual imagery since William Fox-Talbot (1800-77) is considered to be the original discoverer of the negative-positive process as it is known today.

Dr. Holt said, "Like Fox-Talbot and other early pioneers of photography, Dr. Edgerton's work contains the element of magic, and our response to his pictures must be similar to the disbelief, excitement and wonder that people must have felt when confronted with the first photographs."

Douglas to Speak

"Reformation Views of Human Nature" is the title of the Humanitas lecture to be given Thursday, Nov. 6, by Richard M. Douglas, professor of history and former head of the Department of Humanities at MIT. The lecture will be held from 4-6pm in Room 9-150, followed by refreshments and informal discussion in the Student Center Mezzanine Lounge.

H75-117, Tech. B. Radioactivity Center (10/15)
H75-120, Campus Patrol Officer (10/1)
H75-125, Electrician, Phys. Plant (10/8)
H75-143, 2nd Cl. Eng. (10/15)

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

B75-565	Tech. Asst. V
B75-546	Sr. Clerk III
D75-70	Spons. Res. Staff
A75-57	Admin. Staff
B75-544	Clerk III
B75-570	Secretary IV
B75-459	Sec./Recept. III
B75-550	Secretary IV
B75-554	Secretary IV
E75-37	Exempt (cancel'd.)
B75-290	Sec. III-IV (cancel'd.)
B75-560	Comp. Op. III-IV
B75-503	Tech. Asst. IV-V
H75-130	Waiter/Waitress
B75-573	Cashier II

The following positions are on HOLD pending final decision:
H75-149 Machinist B
B75-552 Admin. Asst. V
D75-201 Spons. Res. Staff
B75-583 Jr. Lib. Asst. II
B75-549 Comp. Op. III-IV
B75-602 Sec. IV

Sports/Physical Fitness Enthusiasts Breaking MIT Records

MIT's athletic facilities are being used this year by more people than ever before in the history of the Institute, thanks to an unprecedented surge of interest here in sports and physical fitness.

John G. Barry, assistant director of athletics, says all levels of activity show dramatic increases.

For example, the varsity soccer team has drawn 90 candidates, nearly two dozen more than last season. Women's intercollegiate sports, which included one basketball team last year, has attracted so many players that a junior varsity team has been formed this season. Intermural participation has increased sharply, spurred by an increased interest among women in competition at this level. And graduate students are making more use of facilities and turning up in greater numbers as members of club sport teams. Another measure of the increased interest, Professor Barry said, is the number of athletic cards sold.

"Last year we sold 8,396 cards, a record. And this year cards are being issued at an annual rate that will

exceed that record," he said.

A total of 6,174 cards were issued to students which means that about 75 percent of the student body holds athletic cards, 379 to faculty, 923 to administrative staff people, 138 to exempt employees, 301 to bi-weekly employees, 162 to weekly employees and 319 to alumni.

Although the increased use of facilities is causing problems there are no complaints from the athletic department.

"Our philosophy of maximum involvement has been very successful, as these figures indicate," Professor Barry said. "We attempt to serve everybody interested in athletics and we try not to shut anybody out."

Under that philosophy, MIT's athletic program has become a national leader in its variety and its emphasis on breadth of participation and individual development. MIT offers more intercollegiate sports than any other college or university in the country—21 for men and 5 for women. There are 19 intramural leagues, 18 athletic clubs and the sailing program. The entire program

is supported from the general budget. Athletes are not recruited, no athletic scholarships are offered and no charge is ever made for admission to an MIT athletic event.

Such a policy would, one might think, insulate MIT from the financial problems besetting other large universities whose athletic programs are designed to be major revenue producers, but such is not the case. For example, The National Collegiate Athletic Association, seeking to help member schools pare the cost of competing, established limits on the size of the home and travel squads for a number of sports. Such a limit is contrary to MIT's goal of total involvement which translates into a "no-cut" rule for varsity sports. If 26 people come out for basketball, 26 people are on the squad.

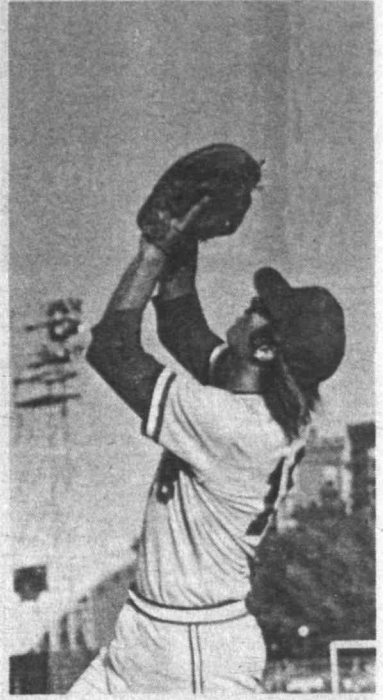
As a result, MIT has been in the forefront of an effort to seek an amendment at the January NCAA convention that would remove all restrictions on Division III teams. (Division I schools are those who play major schedules and offer athletic scholarships. Division II schools

generally have the same approach to athletics, but commit fewer dollars to the program. Division III schools offer no scholarships and do not recruit.)

Since MIT's athletic plant has not been expanded for several years—with the exception of recent additions of locker space and shower facilities to accommodate the growing women's program—scheduling becomes of paramount importance. The department has also taken steps recently to ensure that no unauthorized persons use the facilities. The new weekend pass system, which requires athletic card holders to obtain a special slip admitting them to the facilities, was a step in that direction, Professor Barry said.

"We've got to wage a holding action and not permit any erosion of our philosophy of athletics until the new sports center is ready," Professor Barry said.

He referred to the proposed \$6.2 million athletics and special events center, one of the goals of the Institute's five-year Leadership Campaign for \$225 million in private



support.

The proposed center would house an indoor covered skating rink, replacing the existing outdoor, uncovered rink whose use is severely curtailed by weather, a field house and a special events center for commencement, alumni convocations and other large gatherings.

Moroney Named

The appointment of John R. Moroney as a visiting professor at the MIT Department of Economics for the current academic year has been announced by Dr. E. Cary Brown, head of the department.

Dr. Moroney, who received the BA degree with honors in 1960 from Southern Methodist University and the PhD in economics from Duke University in 1964, has been a professor of economics at Tulane University since 1972. His major professional interests are economic theory, including international trade and money, econometrics and industrial organization. Dr. Moroney was a member of the economics faculty at Michigan State University from 1966-69 and at Florida State University from 1964-66.

IAP Planning

An Institute Programming Contest during IAP—that's Project MAC's suggestion. MIT people interested in arranging such a contest are invited to attend a meeting on Wednesday, Nov. 6, at 3:30pm in Rm. NE43-512A. Or they may contact Daniel Carnese, Project MAC's IAP coordinator, at 3-5882.

Energy Workshop Planned

(Continued from page 1)

women students get involved in this project," said Professor Rose. "So far we have six students signed up—all men."

Interested students should contact Professor Rose at Rm. 24-210, Ext. 3-3807.

The topic of Professor Rose's keynote address will be "Overview of Energy Choices—How Should Educators Look at the Energy Problem?"

The workshop sessions—including several panel discussions—will be held in Kresge Auditorium and will deal with fossil, nuclear and solar energy, as well as with energy conservation.

Reservations are required, but there is no charge for admission.

Massachusetts Governor Michael S. Dukakis will open the conference with remarks of welcome. Professor Rose's keynote address is scheduled for 9 a.m.

The guest speaker for the evening session will be Dr. Dixy Lee Ray, former assistant secretary of state and former chairman of the U.S. Atomic Energy Commission.

Other MIT professors who will speak at the workshop are Dr. Irving Kaplan, professor of nuclear engineering, who will give a description of nuclear power plants and, along with Professor Rose, serve on a nuclear energy panel; Dr. John F. Elliott, professor of metallurgy, who will discuss industrial conservation of energy and fuels; and Dr. Karen Polenske, associate professor of urban and regional studies, and Dr. David Wood of the MIT Energy Laboratory who, along with Professor Elliott, will serve on an energy conservation panel.

More than two dozen energy experts from outside MIT also will participate in the program.

Reservations to attend can be made by calling Dr. George P. Sakalosky of Boston Edison Co., a coordinator for the workshop, at 424-2455, or by writing to the Energy Information Forum Program Committee, Box 343 Prudential Center Station, Boston, Mass. 02199.

Princeton Scientist Here This Term

Dr. Charles G. Gross, professor of psychology at Princeton University, is serving as visiting professor in the MIT Department of Psychology for the fall term.

Dr. Gross received his AB from Harvard College in 1957 and his PhD from the University of Cambridge, England, in 1961.

Dr. Gross was at MIT from 1961-65 as an NIH Post-doctoral Fellow, lecturer and assistant professor. From 1963-70 he served at Harvard successively as visiting lecturer, assistant professor and lecturer.

United Way Solicitors Intensify Efforts

With only two weeks remaining in the 1975 United Way campaign at MIT, solicitors are intensifying their efforts to collect gifts and pledges.

Because pledge cards were distributed with pay statements this year, many people do not know who their solicitor is. The accompanying list names all the chief solicitors throughout the community.

However, solicitors have lists of persons within their organizational units and are now working actively to complete their solicitation. Meeting the deadline—Wednesday, Nov. 19 at MIT—is important since the United Way must close its books by the end of the month.

More than \$40,000 has been contributed at MIT so far, according to Michele Whitlow, of the MIT Quarter Century Club, who is in the process of compiling the second United Way report.

Though no official goal has been set for the Institute this year, it is hoped that contributions will rise about 15 percent over last year's total of \$100,716.

"The goal of the United Way campaign this year is \$17 million, a 15 percent increase over last year," according to Dr. Irwin W. Sizer, chairperson of the MIT drive. "The increase reflects both the greater need in the Massachusetts Bay area, and the inflationary pressure everyone is experiencing. I sincerely hope that the MIT community will do its part to help meet the goal."

ACADEMIC

Aeronautics and Astronautics, Walter Hollister; Aerospace Studies, Steve Hartford; Architecture, Leon Groisser; Biology, Genevieve O'Hehir; Chemical Engineering, Lloyd Clomburg; Chemistry, John Irvine; Civil Engineering, Ann Shirey and Joan Whitehead; Earth and Planetary Sciences, Virginia Hudson; Economics, Idella Tapley.

Electrical Engineering and Computer Science, Deborah Anthony; Foreign Literatures and Linguistics, Magda Tisza; Humanities, Marcia Conroy, Linda Christian, Robert McMaster and Kathleen Fox; Mathematics, Edward Miller and Paul Wang; Materials Science and Engineering, David Rylance; Mechanical Engineering, Rachael Levin, G.P. Holmes and David Gossard; Meteorology, Jule Charney; Military Science, Mary Hovnanian; Nuclear Engineering, Rachael Morten, John Myer and James Woo.

Nutrition and Food Science, George Wolf; Ocean Engineering, Owen Oakley, Jr.; Philosophy, Marilyn Wilva; Physics, Michael Baranger; Political Science, Jessie Janjigian; Psychology, Lydia Snover and Ina Armstrong; Sloan School, Esther Merrill; Urban Studies and Planning, Ann Aylward.

LABORATORIES AND CENTERS

Arteriosclerosis Center, Gary Uhl; Center for Advanced Engineering Studies, Ruth Hobbs; Center for Cancer Research, Yendis Atkins; Center for Materials Science, Marion DuBois; Center for Policy Alternatives, Judy Katz; Center for Space Research, Kenneth Campbell and Daniel Calileo; Center for Transportation Study, Louise Carella.

Division for Study and Research in Education, Marion Wasserman; Electronic Systems Laboratory, Dick Osborne; Energy Laboratory, Ann Rowbotham; Information Processing Center, Joseph Connors; Joint Center for Urban Studies, Carolyn Quigley; Harvard-MIT Health Program, Virginia Safford; Haystack, Judith Crotty; Laboratory for Nuclear Science, Anna

Fisher; Lincoln Laboratory, John Kessler; National Magnet Laboratory, J. Richard Hale; Neuroscience Research Center, Nancy Burke; Operations Research Center, Jeremy Shapiro; Project MAC, Herbert Hughes; Radioactivity Center, Janet Mehta; Research Laboratory of Electronics, Alice Amdur.

ADMINISTRATION

Admissions, Gail Wilson; Alumni, Elizabeth Pierce; Athletics, Mary Lou Sayles; Audio-Visual, Marie Seaman; Audit Division, Elizabeth Childers; Campus Patrol, Leopold Balzano; Career Planning and Placement, Elaine Mauriello; Comptroller's Accounting, Edward Donnelly.

Credit Union, William Oteni; Graduate School, John Turner; Environmental Medical Service, Karen Knutson; Faculty Club, Ann Hanks; Graphic Arts, Vernon Raine; Historical Collections, Joan Loria; Housing and Food Services, Joseph Lynch and Salvatore Lauricella; Industrial Liaison Office, Gretchen Kurth.

Institute Information Services, Janet Snover; Libraries, Florence Doksansky; Lincoln Fiscal Office, Thomas Saxon; Lowell Institute School, Virginia Pochetti; Medical Department, Kenneth MacAskill, Cherry Oman, W.S. Putnam and Meta Williams; MIT Press, Mary DeSesa; Office of Administrative Information Systems, Robert Shaw and Laura Lupewicz; Office of Sponsored Programs, Patricia Kress; Personnel, Virginia Pickren; Physical Plant, George Pesaturo, Jr.; Planning Office, Elizabeth Burwen; President's Office, Joseph Collins, Joan Sclar and Clarence Williams; Program Development Office, Ross Klinger; Purchasing, Andrea Gordon; Real Estate Office, Charles O'Neal.

Registrar, Johanna Bond; Resource Operations, Jurate Barnes; Safety Office, Raymond Duffley; Secretary of the Institute, Robert Blake and Vincent Fulmer; Student Affairs, Jon Hartshorne; Student Financial Aid, Lois Levine; Summer Session, Maria Murphy; Treasurer's Office, Ann Wiggins; Vice President for Research, Lillian Giuliana.



This Week in Sports

Cross Country Team Qualifies for Nationals

MIT's Cross Country team (8-4) placed sixth out of 21 teams in the 15th annual Eastern Intercollegiate Championships last Saturday. Their performance qualified the Tech harriers to compete in the National Collegiate Cross Country Championships slated for Nov. 15 at Franklin Park.

Junior Frank Richardson (Sac City, Iowa) paced the engineers effort with a strong third place finish in a field of 125 runners. Richardson led for most of the five mile race, but was overtaken by Brandeis' Dom Finelli and Brian Reinhold in the last half mile. Finelli and Reinhold led Brandeis to a low 35-point winning team championship. Finelli was clocked in 24:41, while Richardson was four seconds back, in third place.

Other MIT scorers were freshman Barry Bayus (Beltsville, Md.) 42nd; sophomore Chris Svendsgaard (Piedmont, Cal.) 47th; senior Jeff

Baerman (Skokie, Ill.) 59th; and junior Steve Keith (Dana Point, Cal.) 64th for 215 point team total. MIT's next outing will be Saturday in the New England Championships at Franklin Park.

MIT's soccer team (2-6-1) played its best game of the season last Saturday, beating Colby College 3-1.

The engineer booters, plagued by injuries all season, got strong performances from halfback Frieder Krups (Solingen, Germany) and junior forward "Rajah" Arulpragasam (Stowe, Mass.). "Rajah" scored the MIT go-ahead goal early in the second half and then assisted on Tech's third goal with 2½ minutes left in the game. Krups played brilliant defense throughout the game and assisted on Arulpragasam's second half game winning goal. Junior Jan Krakauer (Cincinnati, Ohio) scored MIT's first and third goals to give MIT their second victory of the season. The engineers face Boston University Tuesday at Briggs Field and Coast Guard on Saturday.