

Welcome Class of 1978

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Telescope 'Blind Shot' Was Success

By WILLIAM T. STRUBLE
Staff Writer

MIT astrophysicists who were forced to take a blind shot with their high-flying x-ray telescope launched in Canada earlier this month now have good news:

The telescope was right on target, preliminary analysis of on-board film shows.

Data from the film check provide the first firm evidence of scientific success of the balloon flight, which was made Aug. 13 to map x-rays from the Crab Nebula.

The x-ray telescope, designed and built by a group in the MIT Center for Space Research, was sent aloft from North Battleford, Sask., in "a perfect launch" at 6:22am (MDT) on that day, according to Professor Walter H.G. Lewin, leader of the MIT group. The launch was made by a crew from the National Center for Atmospheric Research (NCAR), Palestine, Texas.

But just 12 minutes later NCAR's telemetry transmitter began to work fitfully and during the next four hours of flight the MIT group had only about four minutes of operable telemetry in which to communicate with the telescope.

Schedule for the flight called for the 20 million-cubic-foot helium balloon to rise to an altitude of

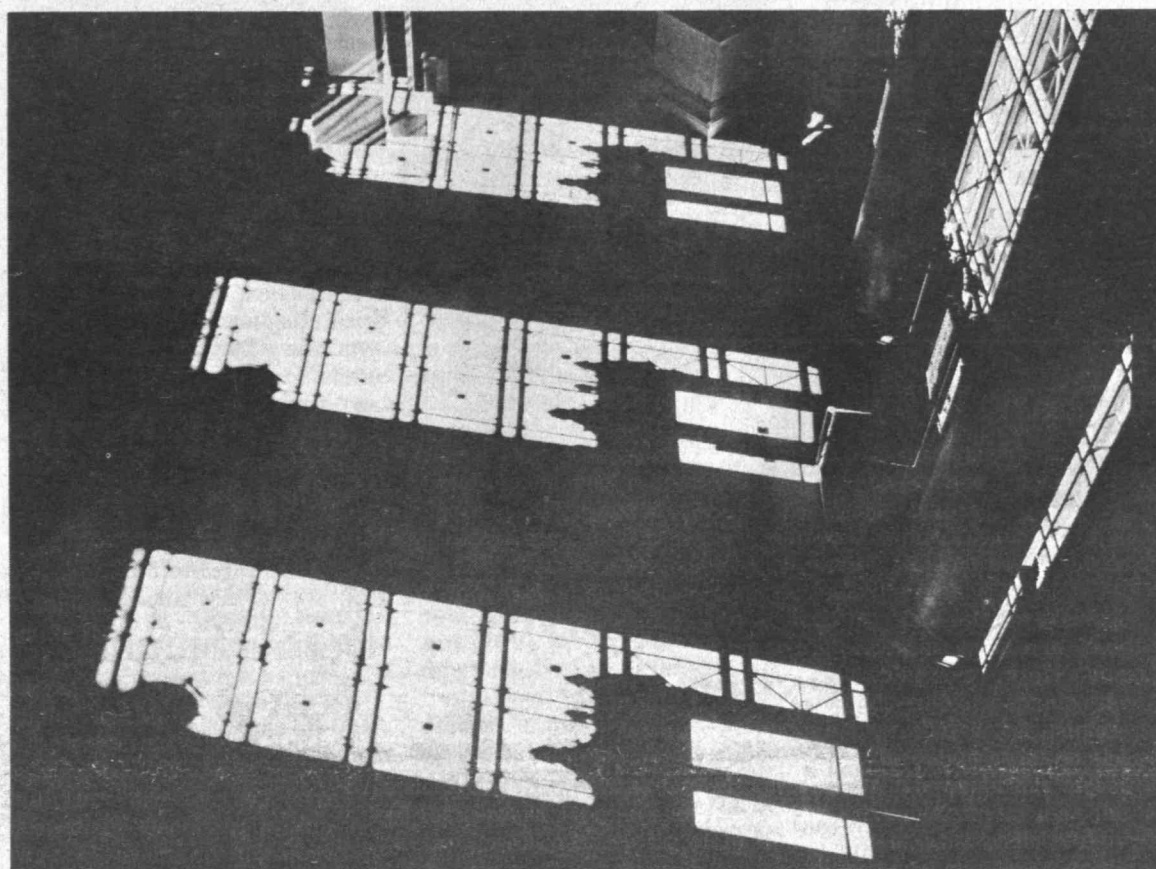
(Continued on page 12)

Antoine M. Gaudin, Pioneer Metallurgist, Dies at 84

A memorial service was held Sunday, Aug. 25 at Trinity Episcopal Church, Newton Centre, for Dr. Antoine M. Gaudin, Richards Professor of Mineral Engineering emeritus, who died Friday morning, Aug. 23, at Massachusetts General Hospital following a long illness. He was 74.

Professor Gaudin, an internationally recognized pioneer in the field of process metallurgy, made extensive contributions as educator, author and consultant to government and industry. He was particularly active in research on flotation, a technique for the recovery of fine mineral particles. His reference work, "Flotation," written in 1932 and revised in 1957, has been the standard text in many other languages.

Dr. Gaudin directed the research that led to the first continuous production of uranium from ores, and for that work he received, in 1957, the distinguished Robert H. Richards Award of the American Institute of Mining,



Has the Institute flipped?—or the photographer? Well, neither, but perspective gets easily out of joint in this picture of strong afternoon shadows

that MIT photographer Calvin Campbell saw from a balcony in the lobby of Building 7.

Lipotropes Necessary in Maternal Diets

By DENNIS L. MEREDITH
Staff Writer

Research by MIT nutritionists has revealed that a maternal diet even marginally deficient in common nutrients, called lipotropes, can produce long-term damage to an offspring's ability to ward off disease. And people with such "invisible" deficiencies—

prevalent in this country, say the scientists—can appear perfectly normal and healthy in all other respects, as can their offspring.

The scientists were led in their research by Dr. Paul M. Newberne, professor of nutritional pathology, who termed the effects of the invisible deficiency like "laying a nutritional time bomb." Professor Newberne advocates a program to supplement maternal diets with the substances.

The substances being studied by the scientists—the so-called "lipotropes"—are choline, methionine, folic acid, and Vitamin B-12. These interrelated chemicals are involved in reactions of the living cell which are vital to the development of the body's immune defense system part of which is controlled by the thymus gland.

Choline is an important methylating agent in the body's protein metabolism, and folic acid and Vitamin B-12 are both carriers of methyl groups for chemical reactions. Methionine is a vital sulfur-containing amino acid, and, thus a constituent of many proteins.

The MIT scientists emphasize the importance of their findings by citing studies showing that two-thirds of the pregnant women in this country possess below-normal levels of folic acid. Because of hormonal effects, women taking birth control pills and those taking certain anticonvulsants are also commonly marginally deficient in folic acid. Thus, the scientists call for programs to supplement diets of pregnant women with folic acid and other lipotropes.

Metallurgical and Petroleum Engineers.

The research on uranium recovery, sponsored first by the Manhattan District of the Army

(Continued on page 4)



Professor Gaudin

Class of '78 To Begin Orientation

By PATRICIA M. MARONI
Staff Writer

One of the main differences between last year's freshman class at MIT and this year's—one of the largest in history—may be computerized organization.

As about 1,035 freshmen start arriving on campus Friday (Aug. 30), an on-line computer will begin keeping track of them. The Clearinghouse system, a tradi-

The Freshman Advisory Council urges all freshmen advisors to attend the annual Freshman Picnic in Killian Court Friday, August 30 at 4:30pm.

tional function of Residence/Orientation Week (Aug. 30-Sept. 9) will use the new system to replace punch cards and standard manual systems of years past.

David A. August, a junior from Shelburne, Vt., is this year's coordinator of R/O Week, a student-run activity under the direction of Peter Buttner, associate dean for student affairs and executive officer of the Freshmen Advisory Council, and Nancy H. Wheatley, assistant to the dean for student affairs.

The computerized information system that will aid David and his committee of 20 student volunteers this year represents a year's research by MIT upperclassmen James R. Miller of Cleveland, Ohio; John Sybalsky of Poughkeepsie, N.Y. and Robert Halstead of Chatham, N.J. The on-line system, made possible by a grant from the Dean's Office Special Projects Fund, is a modification of

The complete Residence/Orientation schedule appears on page 7.

the TENEX System owned by Bolt, Beranek and Newman, of Cambridge, which contributed more than \$1,000 in phone lines and terminal time to the R/O Week Clearinghouse. MIT will provide additional lines to service the 29 fraternities that will become the main users of the system.

The R/O Center, where temporary room assignments will be issued Friday and permanent dorm assignments at 11am Tuesday, Sept. 3, is located in the West Lounge of the Student Center. It will be open from 8am to midnight. The computer clearinghouse will operate from 8am-2am, Fri.-Tues., Sept. 3, the busiest days for fraternity rushing and bidding.

More Host Families Needed

The MIT Host Family program, under the aegis of the Technology Matrons, needs more families to provide friendship to students from abroad.

More than 30 students have requested chances to meet Americans outside the classroom. Among the countries represented are India, Pakistan, Japan, China, the Philippines, Iran, Israel, Thailand, Turkey and Lebanon. American families who have participated previously, have said that their horizons were widened by getting acquainted with their foreign guests.

To sign up, call Mary Pinson, Ext. 3-3656 or Anne Berg, 862-8690.

Patrol Issues Theft Alert

The Campus Patrol again urged the MIT community this week to guard against thefts of personal and Institute property.

"This is a constant problem and we issue these appeals periodically," Chief James Olivieri said. "We are doing so now because we have noticed some instances of laxity recently."

Chief Olivieri said he had in mind about five thefts "that shouldn't have happened."

"These were cases where people left wallets or pocketbooks in full view and then walked out of open, empty offices. When this happens, their property becomes fair game for anyone walking by."

The Patrol, in a notice sent throughout the Institute, said that the potential for loss is high at MIT because of "the continuous open aspect of our community."

"It has been proven that our efforts directed toward crime prevention are far more fruitful than 'after the fact' reports," it said.

The Patrol, saying that security should be the concern of everyone, made these recommendations:

Never leave a pocketbook or wallet in plain view or in an unlocked desk drawer even for a few minutes. Placing pocketbooks under typewriter wells, under desks, or in unlocked file cabinets does not constitute a safe practice. The experienced thief is aware of these locations.

Do not leave a wallet in a suit-coat or jacket hanging on a coat rack in an unattended office. Since it is often impractical to lock one's office or lab on every brief departure, develop the habit of keeping all valuables in a locked cabinet or drawer.

Be especially vigilant on pay days or after cashing checks. Do not continuously day by day carry large sums of money that you do not require. Petty cash funds and postage stamps, items in your office that are easily observed due to constant use should be safeguarded.

All departments should join the "Bolt Down" program for office machines. During 1973, 13 unbolting typewriters were stolen. Installation of the special locks can be accomplished by contacting Physical Plant at 3-1370. Be sure to require identification and authorization from repairmen wanting to remove a typewriter or other pieces of office equipment from your area.

Small size or miniature equipment including hand calculators, meters, cameras, etc. should be secured in locked cabinets. Electric scribes may be obtained on a loan basis from Campus Patrol for use in marking department property as part of "Operation Identification."

Departments may inquire about alarm systems for limited access areas such as supply rooms and equipment storerooms, or to protect heavy concentrations of extremely valuable property.

Notify the Campus Patrol regarding suspicious persons found in unauthorized areas. The numbers to call for assistance are x3-2997 or x3-2998.

'Charlie Brown' To Open Season

"You're a Good Man Charlie Brown," a musical, will be presented by the MIT Musical Theatre Guild in Kresge Little Theatre at 8pm on Friday, Sept. 6; Saturday, Sept. 7 and Saturday, Sept. 14 with a matinee on Sunday, Sept. 15 at 4pm. Tickets are \$1.50 and will be available at the door only.



CROQUET IN A CAST is played on Killian Court by Cy Markley of the MIT Programming Development Office. Waiting for his turn is Ernie Thurston of Somerville.

Architecture's CPL Gives 'Hands On' Experience

A battered Roxbury brickfront, a Back Bay condominium and a vacant shopping center store all have something in common—an architecture student from MIT.

Simon Wiltz is designing a theater that will turn the empty Roxbury building on Massachusetts Avenue into an important community resource.

Only a few blocks away Kevin Ruedisueli is creating a kitchen for the new owners of a Commonwealth Avenue condominium. He'll do the actual building, too.

Adrienne Albert is tackling the challenging task of designing a store interior for a Boston art gallery's suburban branch.

The community group, the condominium owners and the art gallery—poles apart economically and in motivation—were brought into contact with the graduate students through a six-year-old MIT program that has recently developed a new dimension through the efforts of Ann M. Beha of Rye, N.Y., and Mike S. Harris of Van Buren, Me., also MIT graduate students in architecture.

Since 1968 fieldwork and project experience have been an important part of the curriculum at the Department of Architecture at MIT.

That was the year the Community Projects Laboratory was started with a grant from the National Endowment for the Arts. The laboratory's purpose: To serve as a resource center which brings together students in need of experience with community groups that need architectural services but haven't the money to pay for them. It places strong emphasis on participation of the client group in shaping its environment.

Through CPL students have undertaken a variety of projects with community groups, including renovations, construction of day care centers, community centers and playgrounds.

A typical CPL project is the

work Mr. Wiltz is doing for the Society of Creative Concern, a neighborhood group interested in providing an outlet for the dramatic talents of young people.

Miss Beha and Mr. Harris, who took over the administration of CPL in June for the current academic year, have expanded the fieldwork program to include not only unfunded community groups but clients who are able to offer students a modest compensation—such as the owners of the wealth Avenue condominium.

To coordinate the CPL kind of project with those undertaken for a fee, Miss Beha and Mr. Harris set up the Architectural Assistance Program.

Department-sponsored and aided by faculty advisers, the Program follows up all short-term field work in the departments and recruits students for various projects.

"Jobs done for a fee often resemble those done through the Community Projects laboratory," Miss Beha and Mr. Harris said.

"Previously these jobs, the placement of students, follow-up and advising have not been handled by any organized group, and had been more casually undertaken by students than the work performed through CPL.

One common characteristic of both kinds of projects, they said, is that both tend to be short-term in length.

In the case of CPL projects, academic credit is generally arranged if the nature of the work contributes to the student's program. However, in some cases the student is paid through work-study funds.

"Our aim is to continue and to expand the established precedent of student involvement in field work in the Department and to encourage student interest in a wide variety of architecture-related projects outside, but related, to their academic experience," Miss Beha and Mr. Harris said.

Willsky Named to ESL Post

Professor Alan S. Willsky has been appointed assistant director of the MIT Electronic Systems Laboratory (ESL), effective August 1.

Announcement of the appointment was made jointly by Professor Wilbur B. Davenport, head of the Department of Electrical Engineering, and Professor Michael Athans, director of the Electronic Systems Laboratory.

Professor Willsky's primary responsibility in ESL will be to coordinate research in the theory and applications of the Decision and Control Sciences area.

Born in Newark, New Jersey in 1948, Professor Willsky received a bachelor's degree in Aeronautics and Astronautics in 1969 and a PhD degree in the same field in 1973, both from MIT. In 1969 Professor Willsky received the De Florez Award for outstanding undergraduate research in the Department of Aeronautics and Astronautics and also the Salisbury Award as Outstanding Senior in the Department of Aeronautics and Astronautics. From 1969 to 1973 he held a fellowship from the Fannie and John Hertz Foundation.

Professor Willsky was appointed an Assistant Professor of Electrical Engineering in September 1973. His major areas of interest are in nonlinear stochastic theory and algebraic system theory. He has written a number of papers on the use of Lie group theory and harmonic analysis in the design of estimation systems for such applications as synchronous communication and satellite attitude control. He is also the author of

Dean's Summer Spent as Student

If students find Dean for Student Affairs Carola B. Eisenberg has a new perspective on what it's like to be a student, there's good reason.

She was one herself this summer.

She was one of two MIT participants—the other was William R. Dickson, director of Physical Plant—in the Harvard Institute for Educational Management. The six-week residential program is run jointly by the Harvard Business School and the Graduate School of Education.

"The work was intensive and there was an incredible amount to read, but I found it very rewarding," Dean Eisenberg said. "I had not planned to live on campus, since my home is nearby, but I soon discovered that I could study much better in the dormitory."

Also, Dean Eisenberg said, much of the effectiveness of the program derived from personal interactions of the participants.

"I would have missed the richness of this experience if I had stayed at home. So I stayed in the dormitory and went home on Sundays—our only free day each week."

The program drew more than 120 participants from colleges and universities throughout the United States and several foreign countries.

Curriculum included university governance, organizational psychology, extra-institutional relations, and control and planning, which Dean Eisenberg said, was essentially budgeting. The case study method was followed, using in some instances actual experiences encountered by various universities.

"What I learned will surely help me be more knowledgeable about the administration of MIT," Dean Eisenberg said. "But more than that, I have a new appreciation of how students feel about things like dormitory living and university bureaucracy."



Professor Willsky

several papers in the field of automata theory.

At this time Professor Willsky is continuing his work on a Lie-theoretic-harmonic analysis approach to filtering theory under a Research Initiation Grant from the National Science Foundation. He is also involved in the development of "Fault-tolerant" control system design techniques, and in the design of control techniques for large-scale data communication networks.

Professor Willsky and his wife, the former Gail Fleischman, '70, live in Eastgate, Cambridge.

English Classes

A new English course, No. 23.41, open to all foreign students, faculty and staff of the MIT community, will be held three evenings a week, beginning Tuesday, Sept. 10 at 7pm.

The course, which is not listed in the current MIT catalogue, will be divided into sections in writing and vocabulary [Tuesdays, 14E-303], pronunciation (Wednesdays, 14E-307), and grammar review and oral drill (Thursdays, 4-151).

For further information, instructors Barbara Raither or Linda Sibley should be contacted after Sept. 2 at x3-3925.

'Rides' Relocated

The APO ride board, formerly in the Building 10 lobby, has been relocated to the wall in Building 7, opposite the Office of the Dean for Student Affairs (7-133).

The new board in the form of a map of the United States in red with blue trim has major cities pinpointed with hooks. People looking for rides and drivers looking for riders to particular cities and areas may consult the board, attaching slips of paper on points of destinations which give their names and approximate departure dates.

The new board is the work of members of the Alpha Phi Omega service fraternity under the direction of Diane Gilbert, summer service vice president.

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Franklin Institute Honors Forrester

Jay W. Forrester, Germeshausen Professor of Management at MIT, will be awarded the Howard N. Potts Gold Medal October 16 by the 150-year-old Franklin Institute of Philadelphia.

Professor Forrester, who first obtained the basic patent on the magnetic core memory system used in most major commercial computers until recently, will be recognized for his "pioneering work in the mathematical and computer modeling of urban, regional and global problems."

Author of numerous university textbooks, including "Industrial Dynamics," "The Principles of Systems," Professor Forrester is best known for his use of high-speed computers to model and simulate physical, business, urban and world systems.

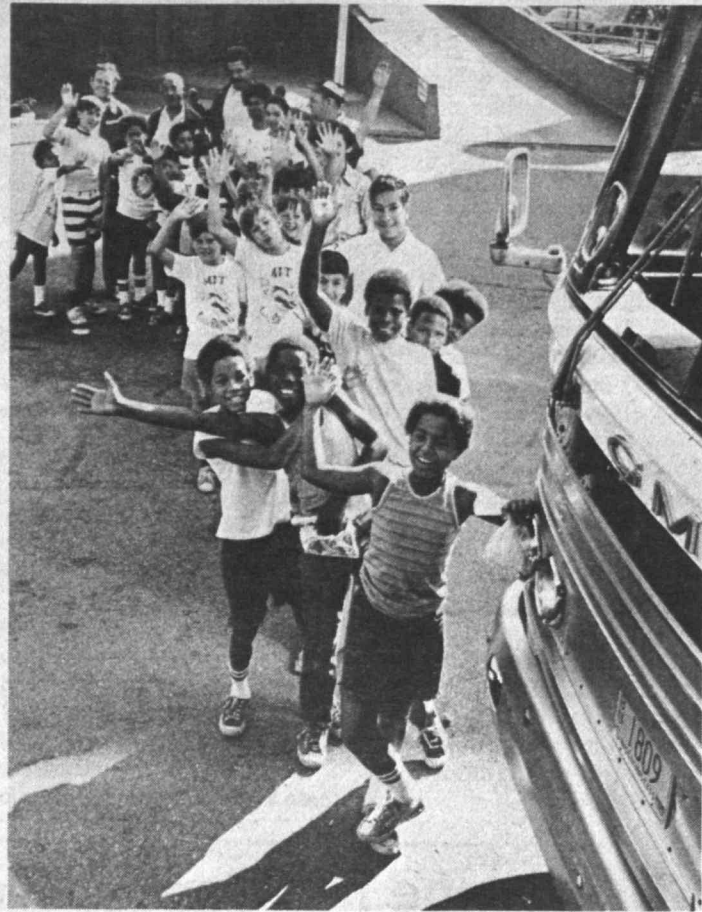
Born in Anselmo, Nebraska, he received the PhD degree in engineering from the University of Nebraska. As a recipient of the Potts Medal, which was established in 1906 by the Franklin Institute of science, technology and education, Professor Forrester joins such prominent scientists as MIT Institute Professor Emeritus Charles S. Draper, a past holder of the award.

W.A.C. Seeks Foreign Students

Eugene R. Chamberlain, Foreign Student Advisor at MIT yesterday welcomed incoming foreign students by encouraging MIT's 1400 international students to participate in the 1974 Student Professional Intercultural Exchange sponsored by the World Affairs Council of Boston.

The Council, which is funded by the National Association for Foreign Student Affairs, last year hosted lectures by MIT research associate Uri Ra Anan of the Center for International Studies and Dr. Mary Rowe, special assistant for women and work to the MIT President and Chancellor.

Its fall series of intercultural seminars, weekend workshops and field trips will feature trips to the United Nations and Washington.



Happy young voices greeted parkers in East Garage last week as the Junior Beavers, a program for neighborhood youngsters sponsored by the Campus Patrol, embarked on a day-long trip to visit the USS Massachusetts in Fall River and the Whaling Museum in New Bedford. The program began earlier this year and has 15 regular members, each of whom may bring a friend for special trips. The trips, which are greeted with enthusiasm by both the youngsters and the Patrol counsellors, have included attending a Red Sox game and a visit to Edaville Railroad.

Coed Listed In Fair Condition

Margaret G. Hainsworth, 19, Edwardsville, Ill., an MIT junior in economics, was reported in fair condition at Carney Hospital, Dorchester, Tuesday, but still too ill to tell police what happened to her.

She was found bound, blindfolded, and unconscious in the rear of a wrecked station wagon in Canton, Mass., last Wednesday. Metropolitan District Commission police said they chased the vehicle, with a male driver, from the MDC Blue Hills Reservation into Canton where the car crashed into a tree and the driver fled on foot.

They discovered Ms. Hainsworth in the rear, they said, tied up with rope, her eyes covered with adhesive tape. She had suffered very severe head injuries, they said, apparently in the crash.

A suspect arrested in Canton, Joseph Guillroy, 28, Boston, pleaded not guilty to charges of kidnapping and several motor vehicle offenses in Quincy District Court. He was freed on personal recognition and the case was continued to Sept. 27.

Ms. Hainsworth transferred to MIT from Wellesley College at the beginning of last spring term and has been a resident of Tang Hall.

Food Programs Fail to Reach The Poor, Scientists Charge

By ROBERT C. DIORIO
Staff Writer

Two members of the MIT International Nutrition Planning (INP) Program told a Western Hemisphere nutrition conference last week that many food programs have been unsuccessful in reaching those in greatest need—the poor.

Dr. F. James Levinson, director of the INP Program, and Olav T. Oftedal, a research assistant in the INP Program, presented a paper before the Western Hemisphere Nutrition Congress IV, held Aug. 19-22 in Bal Harbour, Florida.

"Malnutrition and public health problems, for the most part, are concentrated among the poor," they said.

"The problem is that, in fact, nutrition and public health programs to date have not been much more successful in reaching the poor than national development programs in general."

Levinson and Oftedal said that country programs "are small and characterized by pilot projects rather than national efforts."

"The most prevalent nutrition activity today is the school lunch program. While valuable in many respects, school lunch programs clearly are not aimed at the groups most in need, neither at the very young child nor at the poorest who are the least likely to attend school."

Nutrition education programs, they said, "Can be critically important and yet, almost by definition, have relatively little effect on the lowest income groups whose nutritional status is most limited by purchasing power rather than by deleterious belief patterns."

"Such programs, where effective, provide their major benefits to those economically more advantaged and may have the net effect of widening existing differentials in well-being."

"Evaluations of Applied Nutrition Programs and nutrition rehabilitation centers indicate that these instruments, with some

potential to reach the poor, have not yet done so on a large scale, cost-effective basis."

Programs which rely on medical or public health facilities and personnel, Levinson and Oftedal said, have been less successful in affecting the poor. For example, they said, Thailand's rural health center system reaches only six percent of the rural population. Two-thirds of Turkey's private physicians practice in Istanbul, fewer than 20 percent of the country's total number of physicians practice in towns and rural areas. In Senegal, a country suffering from some of the worst malnutrition and health problems in the world, 40 percent of the annual health budget is allocated for a large teaching hospital in Dakar, they said.

The MIT nutrition experts said a basic objective agricultural production and import-export policies in low-income countries "must be adequate food to meet domestic nutritional needs. It's not enough to meet 'effective demand,' the basis for so many claims of self sufficiency in food, when most of the poor can't afford an adequate diet without some form of subsidized distribution."

"The provision of nutrition and public health services on a genuinely society-wide scale also will require far greater use of committed, effective local para-professionals, volunteers or other semi-skilled persons working in a context which places a high premium on this kind of service. The concept of 'quality care' which in low income countries is translated 'care for the privileged,' must be thoroughly reformulated."

Activities Notice

Student organizations are urged to list their regular activities in the Institute Calendar as they resume operation for the fall term. Deadline information is listed in the Calendar, page 6.

Hydrogen May Be A Clean Fuel, But It Has Drawbacks

The year is 1977. At last the day has come! Ever since the 1970's, when scientists dreamed of a hydrogen energy economy, there had been hopes that clean-burning hydrogen could become the principal medium of energy exchange for the nation.

Instead of coal, oil, natural gas or other scarce and polluting fossil fuels, the nation now manufactures hydrogen to store its energy from nuclear plants, to burn in its furnaces, and most importantly to fuel its automobiles.

You have just bought a hydrogen-powered automobile very much like the gasoline-powered vehicle of the old days, except that it runs on hydrogen stored in a tankful of solid chemical compound called hydride.

You climb into the automobile, and muse on the beauty of using almost totally pollution-free hydrogen as a fuel, as you wait the 30 minutes required for the fuel tank to heat up to drive hydrogen gas from the hydride into the motor. You are still marveling at how lucky you are as your car—burdened with a 700-pound fuel tank lumbers out of the driveway. The enormously heavy tank is required to hold enough hydrogen compound to equal the energy in 20 gallons (120 pounds) of gasoline. You remember that your hydrogen-powered car needs a fill-up so you head for a gas station. Looking at your watch you realize you will be late for work, for it takes 30 minutes for hydrogen gas at the filling station to seep into the fuel tank and react properly with the

storage chemical.

Obviously such a hydrogen-powered automobile would not be very popular with the public, but according to two MIT scientists, this is generally what the driver of such a vehicle would have to put up with.

Gary J. Powers, MIT duPont Assistant Professor of Chemical Engineering and a graduate student, Daniel L. Cummings, of Pittsburgh, Pa., have just completed what they believe to be the first engineering analysis of the storage of hydrogen as a metal hydride. Their results appear in the April, 1974, issue of *Industrial and Engineering Chemistry Process Design and Development*.

Advocates of a hydrogen economy have often cited the possibility of such a storage scheme, but have not realized the inherent disadvantages, the MIT scientists say.

Metal-hydride storage is based on the fact that hydrogen reacts with metals such as sodium, magnesium or potassium to form a hydride, in which two atoms of hydrogen are attached to one atom of the metal. By heating this compound, the hydrogen can be driven off and reformed as a gas to fuel the engine. The metal can be "recharged" merely by re-exposing it to hydrogen gas.

Constantly Cold. As cumbersome as it is, metal hydride has inherent advantages over storage of hydrogen as a compressed gas, or as a liquid at -250 degrees centigrade, the MIT scientists say. For instance, a container of compressed hydrogen gas equivalent in energy to 20 gal-

lons of gasoline would weigh 2,250 pounds and occupy 66 cubic feet. Although the same amount of liquid hydrogen would weigh a less cumbersome 353 pounds and occupy 10.2 feet, it would have to be kept constantly cold during the long periods which the average car sits idle.

A metal hydride bed equivalent to 20 gallons of gasoline would weigh a whopping 692 pounds, but would occupy only 10.8 cubic feet—about the size of an automobile gas tank. Unlike low-temperature liquid hydrogen the hydride could be kept at ambient temperatures.

Professor Powers points out that there will probably be significant improvements in the metal hydride storage method, and in energy requirements of automobiles. Both these developments will make metal hydride storage somewhat more attractive.

Heat-up Time. Researchers will probably develop hydride compounds that can hold twice as much hydrogen per metal atom, perhaps reducing the weight of the hydride by one-half, he said.

And, as plastics come into wide use in automobiles, vehicles will certainly get lighter, getting better mileage, and thus requiring smaller fuel tanks.

But the heat-up and fill-up times will still remain a problem, he said, which means that hydrogen-power for vehicles will probably always be restricted to buses, trucks and taxicabs that run continuously and can be filled at leisure during off-hours.

Although the MIT engineers, thus, rule out hydrides as hydrogen storage for the

stop-and-go kind of use required by automobiles, they are much more optimistic about its use in huge stationary storage units.

Because large hydride storage tanks would operate more-or-less continuously to discharge their load, there would be none of the constant heating up and cooling down of an automobile hydride bed. Since the hydride would not have to be carried around, weight would cease to be a problem in stationary storage.

Help for Utilities. And, perhaps most important, the hydride storage would be eminently safe. If such a tank were ruptured, it would simply lose its hydrogen-generating heat and stop producing gas. Most often, says Professor Powers the ignition expected in an accident would cause a few pops and crackles of leftover hydrogen.

Hydride storage also could prove useful to electric utility companies. Perhaps the major problem of utility companies operating their electric power systems is how to cope with the enormous fluctuations in demand for electricity. For instance, the electricity demand on a hot day in the eastern U.S. is frequently twice as high as the minimum demand on the same day. By switching over to hydrogen production during these off-peak hours, electric companies could produce energy far more efficiently, and, according to Professor Powers hydrides represent a promising method of storing this hydrogen.

Lipotropes Supplement Recommended

(Continued from page 1)

processes of their offspring," Dr. Newberne said.

The MIT nutritionists discovered that if they fed female rats with diets marginal in lipotropes—but not severely deficient—and then mated them with healthy males, the offspring were far more subject to disease. The scientists exposed the rats to the microorganism *Salmonella typhimurium*, similar to a common food-poisoning microbe. The mother rats' diets were normal in all other respects.

Conversely, rats whose mothers were fed adequate lipotrope diets during pregnancy, but themselves fed a marginal diet after birth, did well in fighting disease. This implied that critical aspects of intrauterine development may be more dependent on nutrition than some postnatal events, said Professor Newberne.

Also significantly, the scientists found that feeding the affected offspring a diet rich in lipotropes did not improve their resistance to infection appreciably, because the intrauterine deprivation had resulted in a biochemical lesion not reversible after birth.

Upon examining the maternally-deprived rats, the scientists found the rats' thymus glands to be smaller in size and with fewer cells. The thymus is a small organ lying high in the chest. One of the central controls of the body's immunity system, it is relatively large in relation to body size during fetal life and the first years after birth. It increases in size until adolescence, and then begins to atrophy. The thymus liberates a chemical factor early in life that stimulates the body's lymphatic system to produce infection-fighting lymphocytes. The gland also processes bone marrow cells which are then sent to lymph nodes and the spleen endowed with special capabilities in local cells. This is called cell-mediated immunity.

The scientists also discovered that the maternally-deprived rats' spleens and lymph nodes—parts of the lymphatic system affected by the thymus—failed to respond vigorously to disease.

"All these results have led us to believe strongly that lipotropes—particularly methionine, an amino acid, and folic acid, a vitamin—have a vital role in the development of the thymus gland before birth. If a pregnant female is deprived of lipotropes even marginally, long-term damage results to the offspring's thymic-dependent immune system," Dr. Newberne said.

Special tests have shown the scientists that the thymic-dependent systems of maternally-deprived animals is the principal immune system damaged.

The scientist cultured lymphocytes with substances called mitogens, that stimulated only thymic-dependent cells, and not those from the body's other immune defense system, the bone marrow. They found that thymic cells of deprived animals functioned only about one-third as well as those of normal rats. Marrow cells functioned normally in response to marrow-cell-stimulating mitogens, however.

The MIT researchers are now probing deeper to discover how the marginal lack of lipotropes affects biochemical reactions in the fetus' developing thymus and how they can be prevented or reversed. They already foresee steps to prevent lipotrope deficiency in pregnant women.

"In Great Britain, obstetricians automatically provide pregnant women with folic acid pills, but in

this country folic acid is a prescription drug, and is not supplied in maternal vitamin supplements," Professor Newberne said. "Clearly such a supplement should be supplied in this country."

Women taking birth control pills and patients taking anticonvulsants are generally malnourished in folic acid and perhaps in the other lipotropic factors—methionine, choline and Vitamin B-12, said Professor Newberne. Vitamin B-12 and folic acid are found primarily in meats, eggs, fish and green, leafy vegetables. Families seeking to avoid the high prices of these foods by eating spaghetti, rice, and potatoes are consuming foods notably lacking in lipotropes.

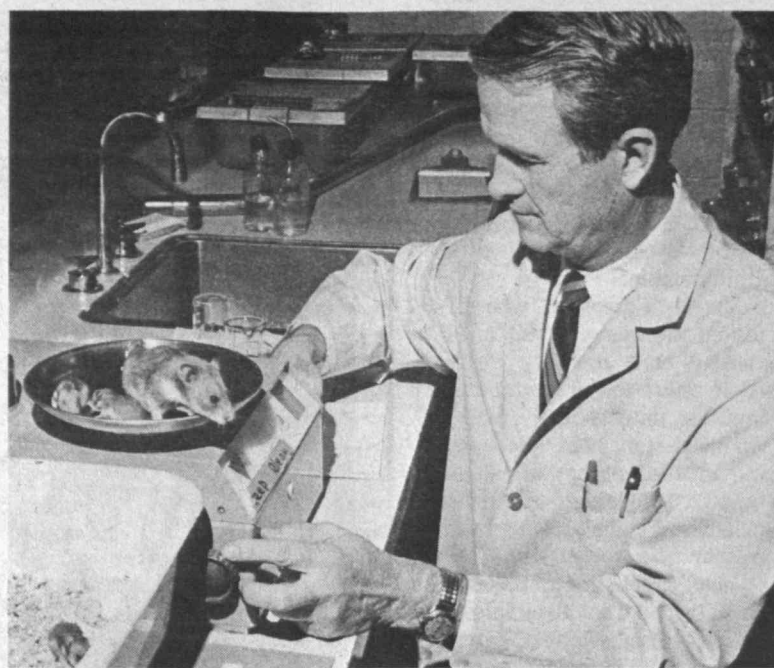
Vegetarians may get some folic acid in leafy vegetables, but miss the significant amounts in meat, producing a possible lipotrope deficiency.

Professor Newberne said a

number of studies are being done in other laboratories on the children of vegetarians to discover the effects of these and other deficiencies.

Professor Newberne has been a long-time investigator of the effects of diet on susceptibility to cancer. He has discovered that, in addition to being disease-sensitive, animals whose mothers were marginally deficient in lipotropes, are more susceptible to certain cancer-causing agents. This susceptibility also applies to animals deprived of lipotropes during early postnatal life.

"Combating cancer appears to be in part a function of the thymic-dependent immune system, so it is logical to us that lipotrope deficiencies may make it easier for cancers to overcome the body's defenses and proliferate," Professor Newberne said, although he stressed that much work remains to be done.



WEIGHING IN—Professor Paul M. Newberne prepares to weigh a mother hamster and her babies. Professor Newberne has found long-term effects on offspring of lipotrope deficiencies in mothers.

"I would be very surprised if these kinds of deficiencies are not significant in making people more susceptible to cancer."

Professor Emeritus Antoine M. Gaudin Dies at 74

(Continued from page 1)

Engineer Corps. and later by the Atomic Energy Commission, was the first to apply the techniques of leaching and ion-exchange resins to extract uranium from lean ores and helped lay the basis for the large US uranium processing industry.

Besides his wartime research, Dr. Gaudin served in 1942 and 1943 as consultant for the Materials Division of the War Production Board and, in 1942, as head production specialist for the Board of Economic Warfare.

In the course of his work he also investigated the fields of comminution and microscopy of opaque materials and made important contributions to the knowledge of crushing, screening and classification of ores, the synthesis of sulfide minerals, and the optics of mineralogy. He held several patents for processes of ore treatment. He was the author of a second book, "Principles of Mineral Dressing," published in 1939, and contributed about 150 articles to professional publications such as *Engineering and Mining Journal*, *Economic Geology*, *Journal of Physical Chemistry* and the literature of the American Institute of Mining and Metallurgical Engineers.

His paternal grandfather was Marc-Antoine Gaudin, a well-known chemist and mineralogist and for many years secretary of the Academie des Sciences in Paris, whose primary interests included the synthesis of precious stones.

In an autobiographical sketch written in 1939, Dr. Gaudin recalled: "As a child I saw many of the original synthetic sapphires, and rubies which my father had inherited. This coupled with my father's avocations of mining ventures and archaeology, early decided that I would become connected with the mineral industry."

His father, Paul Augustin Gaudin, was an engineer and manager of a French-owned railroad when Dr. Gaudin was born on August 8, 1900, in Smyrna, Turkey. Later, the family moved to Haifa when Gaudin senior was commissioned by Sultan Abdul-Hamid to construct and operate a railroad from Haifa to Mecca.

Following the "Young Turk" revolution in 1908, the family returned to France, where the younger Gaudin studied at the Lycees in Versailles and Toulon and in 1917 completed requirements for the bachelor's degree at the University of Paris.

During World War I his father was sent to the United States as a member of the French War Mis-

sion in charge of purchases of rolling stock and other railroad materials. The younger Gaudin joined him in 1917 and entered Columbia University, where in four years he completed a six-year course leading to the degree of Engineer of Mines. In the summer of 1918 he enlisted in the United States Army, serving until shortly after the Armistice.

In 1924, he was invited to become a lecturer in mining at Columbia University, where he remained until 1926. Rapid developments in the field of mineral dressing and the application of flotation methods to the complex metalliferous ores of the Rocky Mountain region led him, in 1926, to accept an appointment as associate professor of metallurgical research at the University of Utah. Three years later he was appointed Research Professor of Mineral Dressing at the Montana School of Mines, where he remained for ten years. In 1941 that school awarded him The honorary degree of Doctor of Science.

Dr. Gaudin joined the MIT faculty in 1939 as professor of mineral dressing and was appointed Richards Professor of Mineral Engineering in 1948. The Richards professorship as well as the Richards award are named in honor of Robert H. Richards, who graduated from MIT in 1868 in the Institute's first class and who achieved renown for his pioneering work in ore dressing. He served for more than 40 years as head of the MIT department of mining and metallurgy.

Research on uranium recovery began during World War II when the Manhattan District, which developed the atomic bomb, asked Dr. Gaudin to head an MIT team to investigate ways of extracting uranium from low-grade ores by flotation methods.

Dr. Gaudin, who asked for a carte blanche so as not to be restricted to one method, subsequently developed a leaching process—which then had never been applied to uranium on an industrial scale—in which uranium is dissolved into cold sulphuric acid and recovered from the acid by the ion-exchange resins.

In developing their process, Dr. Gaudin's group first experimented with cation exchange resins which were found not to be selective enough for uranium separation. Their subsequent use of anion exchange resins was successful and a new industry was born.

ly in applications of surface chemistry drew him in later years into such fields as hydro-metallurgy, solvent extraction and metallurgical applications of radioactive isotopes. He foresaw the feasibility and potential of seabottom mining and carried out experiments that applied ore flotation methods to the separation and isolation of bacteria from soils and foodstuffs. He retired from the MIT faculty in 1966.

Most likely, one of the greatest accomplishments of Professor Gaudin was the establishment of a scientific basis for ore-flotation. In connection with this work, he was instrumental in involving the outstanding Dutch surface chemist, Professor G. Theodoor J. Overbeek, who has since become closely associated with MIT as Carbon P. Dubbs Visiting Professor of Chemical Engineering.

In addition to his academic and theoretical activities, Professor Gaudin has acted as adviser to various agencies of the US government and to several foreign governments, and as consultant to many industrial concerns for the management of industrial research and for the design and development of new mineral-recovering processes.

But "Tony", as he was affectionately called, was not only an eminent engineer and scientist, he was above all an educator at heart. As one of his former associates remembers: "As a young and inexperienced student I was encouraged by Tony to attend weekly AIME meetings at the faculty club. I was awed by the environment and by the experts I met. During the social hour preceding one of the first meetings I attended, I was approached by a well-known scientist who engaged me in conversation. Because of my limited knowledge of mineral engineering, the situation became embarrassing in no time. Tony, standing nearby, noticed my predicament and joined the conversation. Through a slight twist in the nature of the conversation, Tony managed to put the slightly rude scientist, who was minutes ago the aggressor, on the defensive. As we later walked to the diningroom, Professor Gaudin patted both of us on the shoulder and with his knowing smile rumbled: "Don't worry, here at MIT we are, all of us, students who still have a lot to learn."

Another former student put it: "I liked the old man; he taught me so much more than just mineral dressing."

One of his young colleagues fondly recounts this experience: After having worked with him for

a year, he came one day with a stack of envelopes in his hand: "I discussed your results with our sponsors. They are truly excited. I managed to tell them that your work could be even better if you had some experience in the field, and I got permission to send you for four weeks, all expenses paid, to Arizona to visit the copper mines. I already called several people there informing them about your arrival, and here are 14 letters of introduction." With a smile he said, "Have fun," and left.

Dr. Gaudin became an American citizen in 1926 but throughout his life carried forward the heritage of internationalism from his youth. Well-known abroad and fluent in French, English and German, he was a member of the Societe des Ingenieurs Civils de France and an honorary member of the British Institution of Mining and Metallurgy, which invited him in 1952 to give the third Sir Julius Wernher Memorial Lecture—the first to be delivered by a representative of the American mineral industry. In 1957 he was a special lecturer in Russia at the invitation of the Academy of Sciences of the USSR.

In American science, he was named in 1964 as a founding member of the National Academy of Engineering in recognition of his outstanding contributions in engineering. He was a fellow of the American Academy of Arts and Sciences and member of a number of scientific and engineering societies, particularly the American Institute of Mining, Metallurgical and Petroleum Engineers, the Canadian Institute of Mining and Metallurgy, the American Chemical Society, and the American Institute of Chemical Engineers.

Dr. Gaudin is survived by his wife, Mrs. Anna (Nancy) Brooks Gaudin of Newtonville, whom he married in 1926; two sons, Paul Brooks Gaudin, of Upper Saddle River, N.J., and Robert Morris Gaudin of Birmingham, Mich.; a daughter, Elinor Gaudin Everts of Needham, Mass., and 12 grandchildren.

Volunteers Needed

Volunteers are still needed for the three-day open house for foreign students, Sept. 3-5 in the Vannevar Bush Room. Persons interested in greeting new international arrivals are asked to sign up for at least an hour on the yellow chart outside the Foreign Student Office.

Hours of the reception are 9:30-5pm for the three days.



Harold Tonsing, '32, right, points out a detail of his architecture thesis to Richard Osborne, left, Mrs. Tonsing, and Mrs. Osborne. Mr. Osborne is execu-

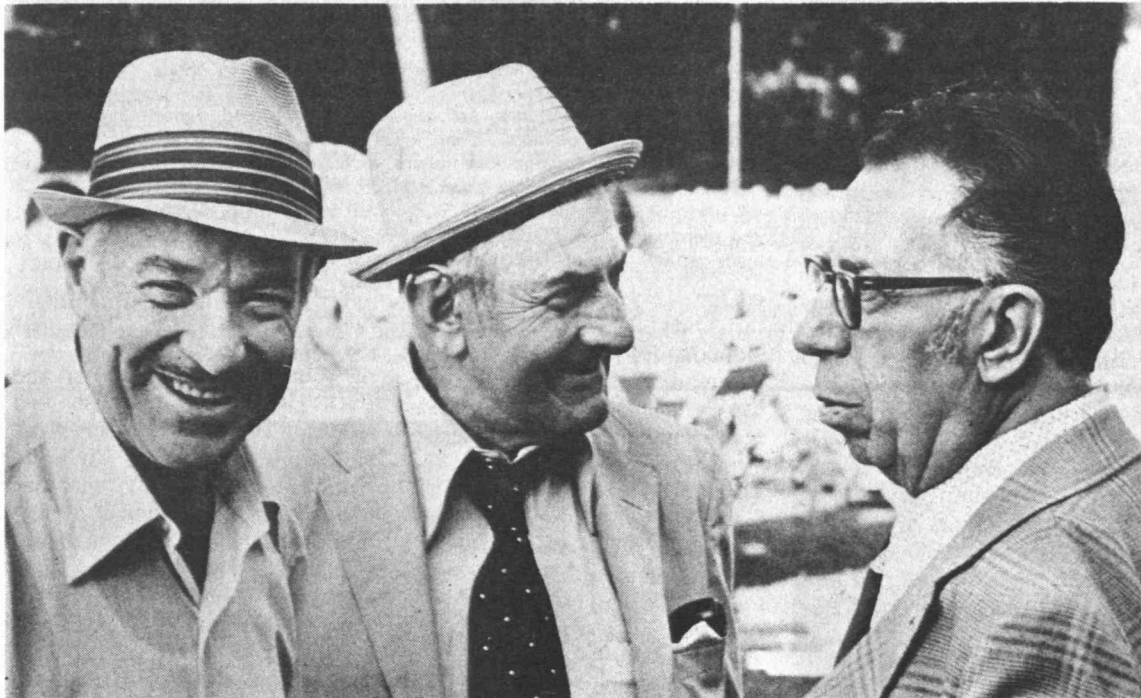
tive officer of the Electronic Systems Laboratory, with which Mr. Tonsing was associated before his retirement.



Seeing MIT's collection of historic telephones again was a special treat for Mr. and Mrs. Frederick Broderick. Mr. Broderick, one of MIT's fifty-year employees before his retirement, had an office in Building 10, near where the telephones formerly were. Photos by Calvin Campbell

Quarter Century Steer Roast

The third annual gala steer roast dinner served more than 350 members of MIT's Quarter Century Club in style. An informed open house-sherry hour was held at MIT's Historical Collections prior to the dinner and Quarter Century members browsed through MIT memorabilia.



Left to right are Sam Ricci of Meteorology, Mike Arena who recently retired from Physical Plant,

and Joe DiNapoli of the Walker Dining staff in conversation on Kresge Plaza.



No second call was necessary to draw hundreds of hungry veteran MITers to the feast served up by the Student Center dining staff.

Computer to Track Freshmen Through R/O

(Continued from page 1)

Programmer Miller, who plans to sleep with the computer those five nights to ensure its success as promised, commented, "Besides being able to locate any freshman within a half hour of his last visit to the Clearinghouse, the system will generate statistics for the Dean's Office on temporary room assignments and most importantly, will keep the dorms from ever again being flooded by phone calls from anxious fraternity scouts."

A student-run shuttle service will take newly arrived students from Logan International Airport to MIT throughout the day on Friday.

About two hours before rushing activities commence Friday evening, the Freshmen Picnic—a 4-year tradition at MIT—will be held in Killian Court at 4:30pm.

Highlights of the first weekend on campus will include fraternity bidding and dorm open houses, folk dancing on the Kresge Oval and special orientation programs for MIT's some 210 entering women students. R/O Coordinator David August says however, "Women's orientation is becoming less necessary as women become a more significant proportion in the entire student population."

In their first week of university life, students will decide on residence assignments, confer with faculty advisors and learn about MIT's academic subjects from panel discussions, to be chaired by Chancellor Paul E. Gray. This year, additional time has been allotted for a discussion of MIT's new Humanities Requirement, with Donald L. Blackmer,

Official forms requesting booth space at the Activities Midway scheduled for Thursday, Sept. 5 of R/O Week should be returned to Bruce Lacy, treasurer for the Association of Student Activities, (7-103 or W20-401) no later than Tues., Sept. 3.

The hours for the Midway are 6-9pm, in duPont Athletic Center. Although freshmen are the major participants in the Activities, the event is open to the entire MIT community.

associate dean for the School of Humanities presiding.

A blood drive, sponsored by the Technology Community Association (TCA) to coincide with increased blood needs on the Labor Day weekend, will be held

Tuesday and Wednesday, Sept. 3, 4 from 9:45-3:30pm in W20-407. (The room assignment was listed incorrectly on previous R/O Week schedules.)

Following tours of such MIT exotica as strobe alley, Project MAC, and the MITV studios, freshmen will spend the concluding weekend of orientation period dancing to Dixieland and orienting their parents to MIT.

An "unending happening," scheduled from noon to 8pm Friday, Sept. 6 will climax the social events of the week with such firsts as a block party, sponsored jointly by R/O committee-CORMCON, and the performance of a Dixieland band.

Saturday, Sept. 7 the password will be that of a previous generation ("Plastics!") as freshmen are given a screening of the film *The Graduate*.

Sunday, at the President's Reception for both parents and students, (3:30-5:30pm, 111 Memorial Drive) they will be toasted as the class better prepared and more mature than students who joined MIT a decade ago, when the Nichols film was made.

Registration will be held Monday, Sept. 9 with classes beginning for the entire MIT community the following day.

Frogs Found to Croak in Dialects

The article, by Boston Globe science writer Robert Cooke, appeared in the August 5 issue of the Globe.

Different dialects—like the Yankee's twang and the Southerner's drawl—are also being found now among frogs.

According to a report by Robert R. Capranica of Cornell University, Lawrence S. Frishkopf of MIT and Eviatar Nevo of Haifa University, Israel, cricket frogs that come from different geographical areas speak different dialects.

Working with two species of cricket frogs—one found in the American Southeast, the other widely spread east of the Rocky Mountains—the experimenters found that the females prefer the males of their own species, particularly those males from their own localities.

"When the mating call of a male crepitans (cricket frog) and the mating call of a male crepitans from a different geographical locality are played simultaneously through different loudspeakers, female crepitans will respond differentially to the mating call from her local population," they reported in *Science* magazine.

They said their work was done

with cricket frogs collected in New Jersey, South Dakota and Kansas.

Their recordings show that the signal of a typical mating call from an adult New Jersey frog consists of a sequence of clicks with the energy centered at 3350 hertz (cycles per second).

The South Dakota frog's mating call peaks at a lower frequency, 2900 hertz, the researchers found, while the Kansas frog's signal had its energy maximum at 3750 hertz.

It was also found that the patterns of the clicks differed according to geographical areas, so the mating calls differed in temporal as well as spectral structure.

Capranica, Frishkopf, and Nevo found evidence that the frog's auditory nervous system responds best at the frequency of maximum energy of its local dialect, and this appears to provide a major basis for the female's selective response to the calls of males from her own population.

The scientists hope through further research to learn how such regional dialects and parallel receptor mechanisms originate, as well as to understand their role in species formation.

THE INSTITUTE CALENDAR

August 28
through
September 7

Events of Special Interest

Blood Drive* - There will be a Blood Drive Tues & Wed, Sept 3 & 4, 9:45am-3:30pm, Stu Ctr Rm 407. (Note: this is not the room previously announced.) No appointment is needed, but please call x3-4885 before coming to donate.

Foreign Students Reception** - Second annual open house for new foreign students, faculty, staff and spouses will be held Tues, Sep 3-Thurs, Sept 5, 9:30am-5pm, Rm 10-105. Members of the administration, department heads, international organization representatives to be on hand for answering questions. Refreshments.

Community Meetings

Women's Forum* - Meet with the Steering Committee to make plans for the fall. Mon, 12n, Killian Court; bad weather, Rm 10-280.

MIT Club Notes and Meetings

Bridge Club - ACBL Duplicate Bridge. Open pairs Thurs, 7pm; Knockout teams, Sat, 2pm; Stu Ctr Rm 473. New event starts Sat, Aug 24, entries due Fri, Aug, 23, 2pm. Jeff, 864-5571.

Tiddlywinks Association* - Tues, 7:30pm, Stu Ctr Rm 407. month. Classes Mon, Wed, 7-9pm; Fri, 7-10pm; 4th fl Stu Ctr. Terry

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

Goju Karate Club* - Beginners enter class first week of each month. Classes Mon, Wed, 7-9pm; Fri, 7-10pm; 4th fl Stu Ctr. Terry Gibbs, 440-9631.

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

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

Scuba Club*** - Summer compressor hours: Mon & Thurs, 3-5pm.

Strategic Games Society* - Offers opponents and discounts on merchandise to members plus gaming and periodical library. Sat, 1pm-1am, Walker Rm 318. Info, Kevin Slimak, 868-5203 or Robert Sacks, 494-8889.

TCA General Meeting** - To discuss R/O Week activities and plan for the fall term. Thurs, Aug 29, 8pm, Stu Ctr Rm 450. New members welcome. Refreshments and bowling afterwards.

Social Events

24-Hour Coffeehouse - Opening for academic year Thurs, Aug 29, 9am. Enjoy relaxing conversation, piano playing, games, inexpensive food, candy & drinks. Stu Ctr 2nd fl center lge.

Movies

Assassin of Youth - LSC. Wed, Sept 4, Rm 10-250. Time to be announced. Admission 50 cents.

The Graduate - LSC. Sat, Sept 7, 7 & 9:30pm, Rm 10-250. Admission 50 cents.

Theatre and Shows

You're A Good Man, Charlie Brown* - Presented by Musical Theatre Guild. Fri, Sept 6, and Sat, Sept 7 & 14, 8pm; Sun, Sept 15, 4pm; Kresge Little Theatre. Admission \$1.50 at door.

Special Performance for Freshmen Only - Music Theatre Guild production of *You're A Good Man, Charlie Brown* will be followed by a general discussion and meeting for frosh. Sat, Sept 7, 2pm, Kresge Little Theatre. Free. Cider & donuts.

Dance

Folkdancing: R/O Week - Dancing and teaching daily, Fri, Aug 30-Sun, Sept 8 (except Tues, Sept 3), 12n-12m, Kresge Oval. **International:** Sun, 7:30-11pm, Sala. **Balkan:** Tues, 7:30-11pm, Stu Ctr Rm 491. **Israeli:** Thurs, 7:15-10:30pm, T-Club Lge. Everyone is welcome.

Exhibitions

In Honor of Charles Ives* - An exhibit of photographs, manuscripts, and other items in celebration of the centennial of the birth of Charles Ives, Oct 28, 1874. Music Library, through Wed, Sept 25.

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.

Be-Ing Without Clothes* - Theme show created by Minor White while director of the Creative Photography Gallery. Hayden Gallery,

Thur Fri, Aug 30. Hours: 10am-4pm weekdays, 12n-4pm weekends.

Hayden Corridor Gallery* - Modern prints from the Catherine N. Stratton Collection, including works by Robert Motherwell, Claes Oldenburg, Victor Vasarely, Larry Rivers and Frank Stella. Sponsored by Committee on the Visual Arts, thru Fri, Aug 30. Free.

Religious Services and Activities

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

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

Christian Science Organization* - Meetings which include the sharing of healing experiences, every 2nd & 4th weeks of the month. Tues, 7:15pm, Rm 8-314.

Islamic Society - Qur'an and Tafseer study group, Thurs, 8pm, Rm 14E-311; Friday Prayers, 1pm, Kresge Rehearsal Rm B; discussions on topics related to Muslims, Sat, 4pm, LSC Lge, Walker Memorial.

Roman Catholic Mass* - Sun, 10am, Stu Ctr West Lge.

United Christian Fellowship* - Singing, sharing, praying meeting. Thurs, 7pm, Westgate 708.

Westgate Bible Study* - Currently covering the Book of Revelation. Wed, 8pm, Westgate Apt 1210. Info, 494-8778.

Announcements

Announcement - Applications for Administrative Development Program IV are due in the Office of Personnel Development (Rm E19-220) on or before Fri, Aug 30.

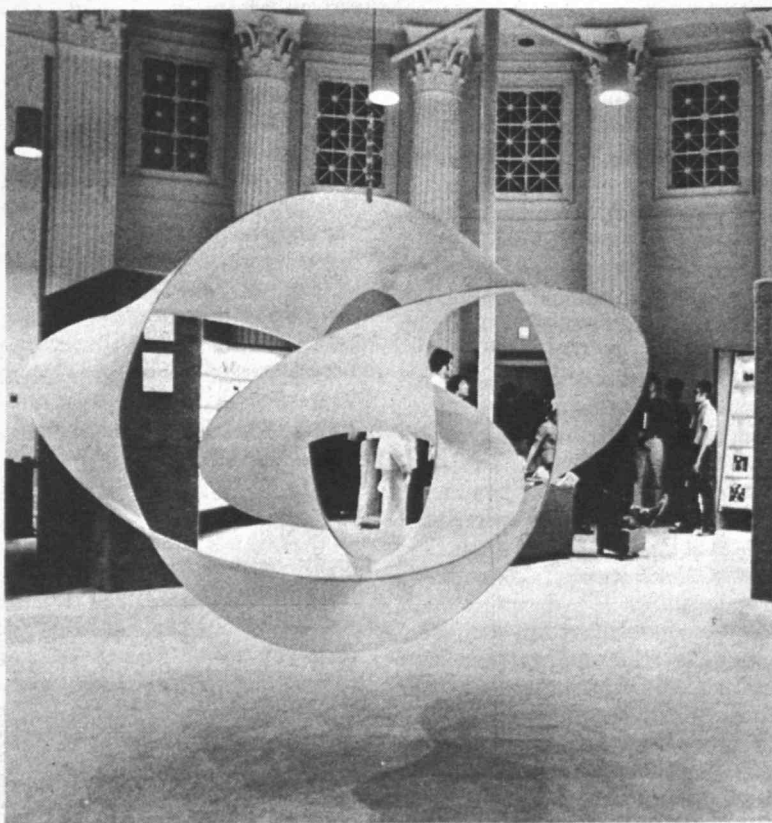
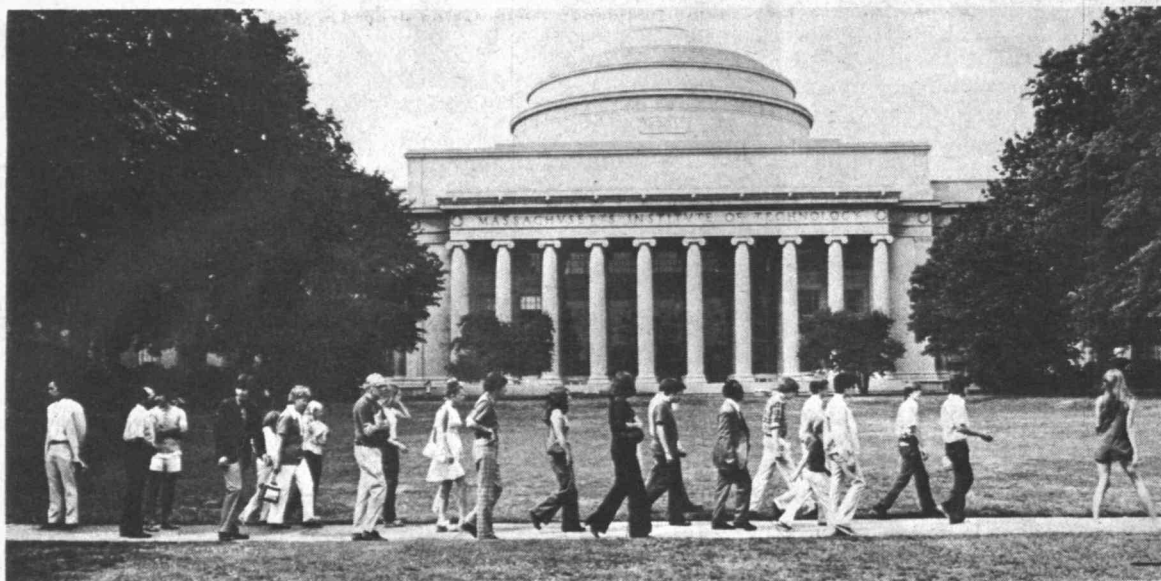
HoToGAMIT and Freshman Picturebook '78 - Available beginning today and Thurs, Aug 29, respectively, in the TCA office, Stu Ctr Rm 450. TCA hours are Mon-Fri, 11am-3pm.

Technology Children's Centre Nursery School* - Applications now being accepted for the fall. Openings are available for 5, 3, or 2 mornings for children ages 2½-5 years, in Eastgate and Westgate. Call Fran Olsen, x3-5907.

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

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

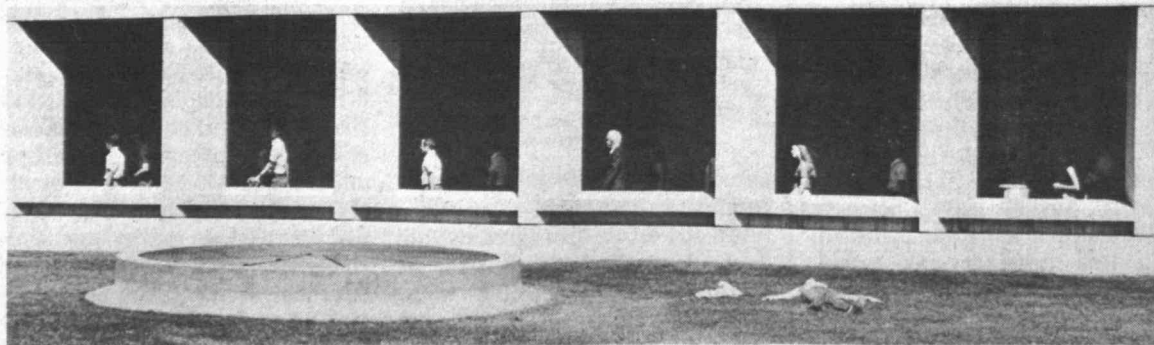
Send notices for Sept 4 through Sept 15 to the Calendar Editor, Room 5-111, Ext. 3-3279, before noon Friday, Aug 30.



On Tour

The sights of MIT will shortly become familiar to the members of the Class of '78, but visitors to MIT get a quick overview on Institute tours which leave twice daily from the Information Center. Some of the sights are, clockwise from above right: Killian Court and the Institute's trademark, the main dome; the "double piddler hydraulic happiness machine" in Professor Harold Edgerton's strobe lab; Robert Engman's cast aluminum sculpture suspended from the dome in Barker Engineering Library; and tour members spaced out like chessmen in the windows of the Dreyfus Building.

Photos by Calvin Campbell



Schedule for Residence/Orientation Week

This schedule is a chronological listing of the events planned for R/O Week. Any alterations will be noted in the newsletter (*The Daily Confusion*) distributed around campus each morning of the week. Events which are of major importance to most or all freshmen are preceded by an asterisk [*] and typeset in bold face. The events comprising the Parents' Orientation Program are indicated by a dagger [†] and are typeset in *bold italics*.

Locations of events are indicated within parenthesis. Unless otherwise noted, all tours will leave from the R/O Center at the

designated time.

The R/O Center will be open daily from 8AM to 12M in the Student Center West Lounge starting Thursday, August 29.

The Clearinghouse will be open daily from 8AM to 2AM, starting Friday, August 30 at 6PM through Tuesday, September 3 at 9AM.

The Dean's Office Open House will be in Room 7-133, 10AM-5PM, September 3-6.

Information about Black Students' orientation will be forthcoming in the R/O Center and/or *The Daily Confusion*.

WEDNESDAY, August 28

10AM: Transfer Students Housing Seminar (Mezzanine Lounge in Student Center)

12N: Foreign Students Luncheon for Transfer Students and Freshmen (The Country Kitchen in McCormick Hall)

3-5:30PM: Foreign Freshmen informal group activities.

THURSDAY, August 29

* 8AM-12M: Residence/Orientation Week registration in the R/O Center. ID pictures taken from 9AM to 5PM (West Lounge in Student Center)

10AM: Tour of MIT (Leaving from the MIT Information Center, 7-111)

10:30AM-4PM: Foreign Freshmen informal group activities

7:30-10PM: Transfer Students informal get together (Private Dining Room 3 in Student Center)

8:30PM: R/O Coffeehouse with munchies and live entertainment (Mezzanine Lounge)

FRIDAY, August 30

* 8AM-12M: Residence/Orientation Week registration in the R/O Center. ID pictures taken from 9AM to 5PM (West Lounge in Student Center)

9AM-4PM: Experimental Studies Group (E.S.G.) Open House (24-612) [Note - E.S.G. will have an information table set up on the second floor of the Student Center throughout R/O Week]

10AM: Tour of MIT (Leaving from the Information Center, 7-111)

12N-2PM: Folk Dancing Club, all welcome (Kresge Oval)

1:15PM-2:30PM: Ju'ma Prayer Meeting (Room 491 in Student Center)

2PM: Tour of MIT (Leaving from Information Center, 7-111)

† 3-4PM: *Hospitality Hour, Parents' Orientation (Mezzanine Lounge)*

* 4:30-6:30PM: The Freshman Picnic. Be sure to bring your ticket. (The Great (Killian) Court; in case of rain Dupont Gym)

* 6:30PM: Fraternity Rush begins

SATURDAY, August 31

11AM-3PM: Experimental Studies Group (E.S.G.) Open House (24-612)

12N-2PM: Folk Dancing Club, all welcome (Kresge Oval)

2-4PM: Women Students' Ice Cream Get-Together (Mezzanine Lounge)

4PM: Islamic Society Discussion Group (International Students' Lounge, Walker)

SUNDAY, September 1

* 7AM: Earliest time that a fraternity can extend a bid to a freshman

11AM-3PM: E.S.G. Open House (24-612)

12N-2PM: Folk Dancing Club, all welcome (Kresge Oval)

7:30-11PM: Folk Dancing Club, all welcome (Kresge Oval, in case of rain, lobby of bldg 13)

10PM: Pub Crawling Tour

MONDAY, September 2 (Labor Day)

* 8AM: Earliest time that a freshman may pledge a fraternity

* 9AM: Dormitory Preference Cards available (R/O Center)

* 9AM-10PM: Dormitory Open Houses

11AM-3PM: E.S.G. Open House (24-612)

11AM: MIT Exotica tour

12N-2PM: Folk Dancing Club, all welcome (Kresge Oval)

2PM: Tour of Arnold Arboretum

* 6PM: Dormitory Preference Cards due (R/O Center)

10PM: Pub Crawling Tour

TUESDAY, September 3

9AM-5PM: E.S.G. Open House (24-612)

9:30AM-5PM: Open House for new Foreign Students and Foreign Faculty, Staff, Guests, and Spouses (Bush Room, 10-105)

9:45AM-3:30PM: TCA Blood Drive. Anyone able to donate is urged to do so (Room 407 in Student Center)

10AM: Tour of MIT (Leaving from the Information Center, 7-111)

10:30AM: Tour of MIT Athletic Facilities

* 1PM: Dormitory assignments available (Sala de Puerto Rico, Student Center)

* 2PM: Group meetings with Freshman Advisors

2PM: Tour of MIT (Leaving from the Information Center, 7-111)

* 4PM: You must check out of your temporary assignment IF you have received a permanent housing assignment

* 5PM: Meet at permanent housing assignment to receive specific room assignment

7:30-11PM: Folk Dancing Club, all welcome. (Room 491 in Student Center)

8:30PM: R/O Coffeehouse with munchies and live entertainment (Mezzanine Lounge)

[Note: Baggage Shuttle begins sometime today. Check in R/O Center for details]

WEDNESDAY, September 4

* 9AM-5PM: Individual meetings with advisors.

9AM-5PM: E.S.G. Open House (24-612)

9:30AM-5PM: Open House for new Foreign Students and Foreign Faculty, Staff, Guests, and Spouses (Bush Room, 10-105)

9:45AM-3:30PM: TCA Blood Drive. Anyone able to donate is urged to do so (Room 407 in Student Center)

10AM: Tour of MIT (Leaving from the Information Center, 7-111)

* 10AM-1PM: Academic Core Orientation followed by refreshments. (Kresge Auditorium)

10:30AM: Transfer Students' Seminar (Mezzanine Lounge)

12N: Muslim Students' Luncheon (Room 491 in Student Center)

12:15PM: Transfer Students' Luncheon (Sala de Puerto Rico)

2PM: Deans' Office Open House Seminar. Dean Eisenberg discussing needle-point, medicine, and Argentina. (7-133)

* 2-4PM: Academic Midway (Dupont Gym)

4-6PM: Women Students' Ice Cream Get-Together (Mezzanine Lounge)

8:30PM: R/O Coffeehouse with munchies and live entertainment (Mezzanine Lounge)

THURSDAY, September 5

* 9AM-5PM: Individual meetings with advisors

9AM-5PM: E.S.G. Open House (24-612)

9:30AM-5PM: Open House for New Foreign Students and Foreign Faculty, Staff, Guests, and Spouses (Bush Room 10-105)

10AM: Tour of MIT (Leaving from Information Center, 7-111)

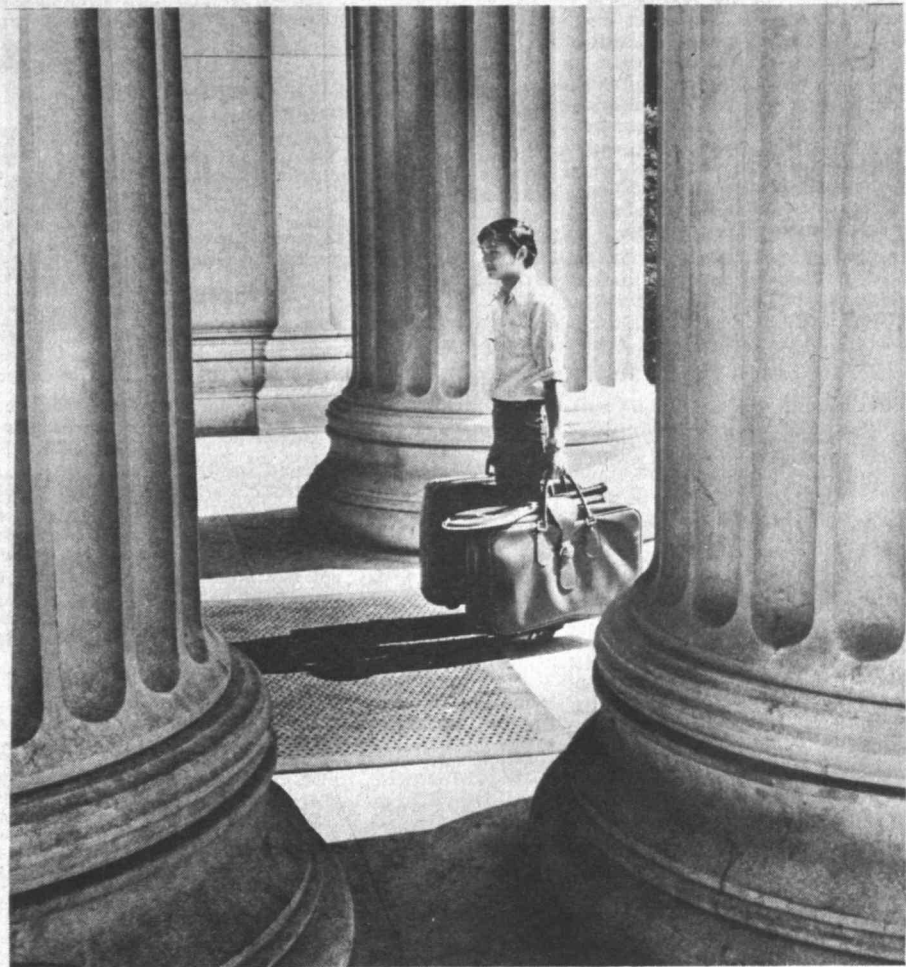
10:30AM: Tour of MIT Athletic Facilities

11AM: Tour of Downtown Boston Shopping Areas

11AM-1PM: R.O.T.C. Orientation (Mezzanine Lounge)

1PM: Deans' Office Open House Seminar. Dean Holden discussing Generalities. (7-133)

1-4:30PM: Air Force R.O.T.C. Tour of Cambridge Research Lab (Leaving from the Mezzanine Lounge)



EARLY ARRIVAL Bounpheng Khowong, of Laos, was one of the first members of MIT's Class of 1978 to arrive on campus last week. He is the only representative of his country in this year's class of 1,035 students. The bulk of the freshmen will arrive Friday, Aug. 30, for a 10-day Residence/Orientation program that will acquaint them with MIT before registration Monday, Sept. 9.

2PM: Tour of MIT (Leaving from Information Center, 7-111)

2PM: Tour of Science Museum

3PM: Tour of Francis Bitter National Magnet Lab

* 4PM: Registration forms due to 7-111 or E19-335

* 6-9PM: Activities Midway (Dupont Gym)

* 6-9PM: Athletics Midway (Rockwell Cage)

7:30-11PM: Folk Dance Club, all welcome (Kresge Plaza)

8:15PM: Qur'anic Study Meeting (14E-311)

FRIDAY, September 6

9AM-5PM: E.S.G. Open House (24-612)

9AM: Tour of the Haymarket Square Area

10AM: Tour of MIT (Leaving from the Information Center, 7-111)

11AM: Tour of the Kendall Square Area

* 12N-8PM: R/O Committee - Dormcon Block Party. Food, brew, munchies, music and more. (Kresge Plaza)

1-4PM: R.O.T.C. Orientation (Mezzanine Lounge)

1:PM Deans' Office Open House Seminar. Dean Hartshorne discussing Jungian Psychology (7-133)

1:15-2:30PM; Ju'ma Prayer Meeting

2PM: Tour of MIT (Leaving from the Information Office, 7-111)

* 3PM: Registration Correction Cards due to 7-111 or E19-335

5-7:30PM: Dixie Land Band at the Block Party. Hamburgers and Hot Dogs served for dinner (Kresge Plaza)

8PM: M.T.G. production of "You're a Good Man, Charlie Brown" (Kresge Little Theatre)

12M: SCC Midnight Movie, *Cat Ballou* (Sala de Puerto Rico)

[For interested individuals, admission to both the Boston Aquarium and the Science Museum is \$1.00 with a college ID]

SATURDAY, September 7

9AM: Tour of the Central and Harvard Square Areas

12N-2PM: Folk Dancing Club, all welcome (Kresge Oval)

12:15PM: Tour of Science Museum, \$1.20 per person

2PM: M.T.G. production of "You're a Good Man Charlie Brown" (Kresge Little Theatre)

2-5PM: Tour of Boston Common Area

4PM: MIT Islamic Society Discussion Group (International Students' Lounge, Walker)

7 and 9:30PM: Lecture Series

Committee Movie: *The Graduate* (Kresge Auditorium)

SUNDAY, September 8

9:30AM: Tour of the Fine Arts Museum

† 10 and 10:15AM: *Parents' Orientation Bus Tours of Boston, \$3.25 per person (Register in front of Kresge Auditorium)*

† 11:00AM: *Parents' Orientation outdoor tour of MIT (Leaving from Kresge Auditorium)*

12:15PM: Tour of Science Museum, \$1.20 per person.

† 1:30-3:30PM: *Parents' Orientation Panel Discussion (Kresge Auditorium)*

† 3:30PM: *President's Reception at the President's House, 111 Memorial Drive (In Sala de Puerto Rico in case of rain)*

7:30-11PM: Folk Dancing Club, all welcome (Sala de Puerto Rico)

MONDAY, September 10

* 9-11AM: Registration Day. Register alphabetically by first name (DuPont Gym)

* 8:30PM: Student Center Committee Rock Revival (Sala de Puerto Rico)

TUESDAY, September 11

* Classes begin

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, Aug 30.

For Sale, Etc.

RCA color 19" cabinet TV, ask \$150. Call x3-5484.

Snows: VW Continental studs w/rims, \$20; Gulf (for Mercedes) 7.8x15 w/out rims, \$20. Jim, x3-3109.

Lg Gibson refrig, v gd cond, ask \$50. Jerry, x3-2540.

K sz waterbed w/frame, liner, foam pad, hose, fittings, \$75. Rich, x3-3244.

Fbrglas 12" Sears boat, 5/8 hp Johnson motor, cartop boat carrier, \$200. Don, x5570 Linc.

M bike, 3 spd Raleigh Sort, mint cond. x5789 Linc.

Free big old Carrier AC, take it away. Call, 484-2898, aft 6.

Sears best stereo tape player for car or boat, all transistor, 4 & 8 trk, full auto w/fm radio, orig \$139, 6 mos, \$60. Matthew, x8-4229 Draper.

Mtch chrside tbls, 2, \$5. x3-3150.

Sears refrig, \$75 or best. x3-7917.

Dbl box spr & matt, \$18. x3-3408.

KLH 40 tape deck, b nw, w/preamps, best over \$55. Bob, x3-2593.

Dr chrs, 21, iron frame w/plstc covered seats & backs, gd cond, some nd screws, minor repair. Pi Kappa Alpha, Dan Nolet, 492-6983.

Lg couch, old but comf, \$10; 2 chsn chrs, \$5/ea. x3-5890.

BSR phone butler, no.1000, used 2 wks, \$85. Linda, x7244 Linc.

Child car seat, v gd cond, \$10. x384 Linc.

GE deluxe toaster oven, nego. Mark, x9498 Dorm.

Mtd snows: (2) 7.75x14 stud ww, used 1 seas, \$40; 2 VW, gd cond, \$20. Billy, x366 Linc.

Moving, must sell: k sz waterbed w/frame, platform, cost \$180, 4 yr grnty; misc chrs, tbls, desks, \$5/ea. Renee, x3-6742.

Nordica m leath bckl ski boots, sz 9, 3 yrs, gd cond. Dave, x3-3621.

Rugs; lamps; fans; TV; baby carriage; stroller; hichr; DR set; sgl bed; typwrtr; cassette tape rcrdr; m 10 spd Raleigh bike. Call 494-8259.

Blu shag rugs, exc cond, nrly nw: 11x16, \$75; 9x12, \$40; blu antique satin drapes, 144x72, \$20; blu decorative beads, \$15. Seffens, 494-8833.

Rugs: 6x9 brn, 5/8x7 1/2 grn, \$40. x3-7137.

Asst Kware, cheap, nego; sm iron brd, \$1. Colin Warren, Rm 9-420, x3-7084.

'69 Frolic camper trlr, 15', many xtras, gas/elec refrig, holding tank, Frolic toilet, slps 6, \$1,750 nego. Pat, x7784 Linc.

Moving: desk, \$35; 4 drwr bureau, \$15. Sandy, x3-5115.

Counter top refrig, yr old, gd cond, \$70. Jeanne, x3-5851.

Free shingled, well constructed brn & wht doghouse. Jane, x3-3762.

Wool 8x9 braid rug, \$10; mtl shelving, (1) 48x23x9 1/2, (2) 72x36x17, \$25/all; 5' wd step ladder, \$5; colonial tbl lamp, \$10; Simmons twn box spr, matt & fr, \$30; exercise bike, \$15. Call, 862-7776, aft 5:30pm.

Fluor desk lamp, \$10; 2 Michelin snows & Ford rims, 1.95x14, \$40; trunk ski rack, \$7; 2 prs Rieker ski boots, 10 1/2 m & 7n, \$17/pr; 20 gal aquarium, \$5; 2 pr wd skis, \$10/pr, Marker spring & Tyrolia step in bndgs, \$17/pr; 2 pr alum ski poles, \$5/pr. Dick, x3-2173.

Full sz matt & box spr, \$40; comf sofa, \$55; armchr, \$25; grn shag rug, almost nw, \$55; tbl, \$10; dresser, \$25, etc. Call, 492-0522.

Dishes, cups, glasses, slvrware, 8 place settings, pref sold as unit, \$40. Fred, x3-3406.

Stl desk, \$25; dresser, \$5; sgl sofa, \$15. Herman, x3-5483.

Refrig, sofa, chr, cheap. Steve, x3-7730.

Dumont 3" scope mdl 224-A, works poorly, manual & schematics incl, \$15. Donald Cook, x3-4192.

Formica top 5 pc K set, chrome legs, \$25. Emerson, x3-2593.

Minolta SR-1 SLR, w/55 mm 1.4 lens, incl lite mtr, strobe attach, best reas. x3-2772.

LR sofa w/flat mpl arms, \$50. Call 354-7361, aft 6.

Moving 8/31, must sell: 2 couches; chr; TV; dbl matt & box spr; tbl; misc, dirt cheap. Joan, x3-4875.

From '71 Pinto: 2 mtd stud snows, 700x13; shop manual; 4 RN9Y spark plugs; also 2 wd sash sndws, 31x60 1/2". Ed Philbrick, x7838 Linc.

Fri, Aug 30, 1 day apt sale: office desk, \$20; twn bed, \$45; fold bed, \$10; 8x13 blu rug, \$15; 6 org crates, \$2/ea; easy chr, \$5; bridgetbl & 4 chrs, \$5. Mel, x3-1870.

Medallion (4 full plies) polyester E78-14 tires, 2, tubeless, only 4K, ww, \$25; 1 b nw Gulf tire on VW rim, DOT 173, \$10. Bob, 734-4853.

DR tbl & 4 chrs, \$35; armchr, \$6; sofabed, \$30; end tbl, \$4; TV tbl, \$5; box spr & matt, \$35; dresser, \$15; bkcses, \$10 & \$7; drapes, \$20. Call, 494-8929.

K chrs, 4, gd cond, \$20. Carol, 661-9262.

Qn sz box spr? squash rckts; pr Caber f sz 9 1/2 ski boots. Ivan, x8-1379 Draper.

Used refrig, \$25. Nick, x5883 Linc.

K tbl w/4 chrs, \$20; sofa, \$35; end tbl, \$2. Bob, x3-4519.

Tbls, chrs, K items, mirror, child rocking chr, vinyl covered foam slab, bargain prices. Francois, x3-5787.

LR couch, \$25; LR chr, \$10; K tbl, \$10; full sz bed, \$80; K chrs, \$1/ea; rug, lamp, chest drwr, etc, nego. Naomi, x3-6408.

Sgl bed w/box spr, matt, mtl frame, castors, \$35. Chris, 646-6994, aft 6.

McIntosh MA230 integrated stereo amp, \$200; JBL 88 spkrs, \$250; Phillips 212 trnttbl, \$120 w/out crtrdg; KLH 40 tape deck, \$150. Phil Mandel, x3-3161 anytime, lve msg.

DR set, 4 chrs, nvr used, smoke glass top, moving, must sell, \$750 nw, \$500. Marge, x3-2974.

Philco AC, gd cond, \$50. Wojciech, x3-2936.

Half-sz refrig for apt or dorm. Sally, x3-2871 days, lve msg.

F blk 3 spd Royal Scot bike, v gd cond, lock & chn, ask \$55. Chin, x3-7920.

Full sz bed, br nw matt & box spr, mtch triple dresser w/mirror, wint finish, exc cond, ask \$275; red 9x15 rug w/pad, print 84" drapes, dbl & trpl width, therm lining, ask \$175; grn mtl china cab w/glass doors, exc cond, ask \$45. Tom, x3-5162.

BR set, dbl bed, triple dresser, etc; chldrn bunkbed; 5 pc dinette; divan; rocker; cocktail tbl; exc cond, 2 yrs old; nice bksc; old TV; stereo set; drapes; K access, etc. Call, 661-9839, kp try.

Pine dinette w/4 chrs, \$85. Dave, x3-1980.

Tbl 58x41 w/2 lvs (10" ea), \$30; refrig, 32x24x63 hi, \$50; couch w/2 curved sections, approx 9', old, nds cover, \$30 or best. Maureen, x3-3380.

Comet plywd 16' sailboat, 2 sets sails, trlr, \$550. Call, 1-826-3228.

Free workshop & instruction manual for BMW mtrcycls. x3-3223.

Moving, must sell: old refrig, \$25; lg frost-free refrig, \$125; port dishwshr, \$75; 12x12 red crpt, \$50; '60 TR-3, good for parts, best. John, 444-2015, evgs.

Vehicles

'54 Checker, body terrible, rest gd, price nego. Call, 267-2672, anytime.

'57 Chevy, 4 dr, 6 cyl auto, 31 K, runs beautifully, \$350 or best. Marshall Devor, x3-5798.

'62 Mercedes Benz 220, 72 K, orig ownr, \$250 or best. x3-3809.

'66 Ford Falcon, 6 cyl, \$300 or best. Ron, x466 Linc.

'66 Ford Gal 500 conv, v gd cond, must sell, lvg cntry, best. x3-6737, Aug 28 or 29, 9am-12n only.

'67 Rover 2000, auto, body rot, runs well, \$250 or best. x8-2692 Draper.

'67 Ford Frline, auto, 4 dr, gd mech cond, ask \$400. Cheng, 661-1635, evgs.

'68 (late) Rover TC 2000, 4 spd, Michelin X radials, tach, amfm tape deck, leath int, nw tune up, muff, 30 mpg, only 54 K, nd \$1,200 for school. Call, 861-9506.

'69 Rambler wng, std, 6 cyl, 56 K, best. Tom, x3-2953.

'71 Chevelle, 4 dr, 6 cyl, auto, p st, 30 K, 18 mpg, \$1,600 or best. Jerry, x3-3304.

'72 Chevelle Concours wgn, gd cond, many xtras, glnd brn, 46 K, radial tires & snows, \$2,195 firm. Joe, x470 Linc.

'72 Olds Delta 88, 4 dr hdtpr, auto, p st & br, ac, tint glass, elec rear wndw defrost, vnyl top, \$2,395. Charlie, x460 Linc.

'74 Toyota Corolla 1600, SR5 spd, 4 mag whls, radials, 6 K, silver, blk vnyl int, am radio, \$2,900. Joan, x3-5201.

'74 Toyota Corolla 1600, SR5 spd, 4 mag whls, radials, 6 K, silver, blk vnyl int, am radio, \$2,900. Joan, x3-5201.

'74 Toyota Corolla 1600, SR5 spd, 4 mag whls, radials, 6 K, silver, blk vnyl int, am radio, \$2,900. Joan, x3-5201.

Housing

Arl, 7 rm cape, 3 BR, LR, DR, fantastic fam rm off K, nw ww, 220 svc, nr T, steam heat by oil, storm wndws, garage under, \$38,000. Dick, x3-6186.

Bos, Beac Hill, BR, pets allowed, avail 9/1 or sooner, \$170 incl ht & hot wtr. Joh, xc-3184.

Bos vicinity, 5 rm apt, 2 BR, ctn, no pets or chldrn, ref, \$200 incl ht. Call, 427-2110.

Jam Pl, nr T, furn rm in priv hse, qt, ctn, on st pkg, no K priv, \$20/wk. Nancy, x3-4433.

Manchester by the Sea, 4 BR colonial (2 lg & 2 sm BR), 2 full B, LR, eat in K, den, furn, yr lse beg Sept, nr ocean, \$375 + lo util. Sally, x3-2701.

Marblehead, charming antique hse in Old Town, 2 BR, frpl LR, mod K, grdn, pkg, \$47,000. Pieter, x8-1189 Draper.

Marshfield-Hummrock, Sept-June rental, 6 furn rms, no util, \$200. Pat, x8-1425 Draper.

Wayland, 8 rm 3 BR ranch, garage, patio, 1/2 acre, grdn tool hse, lg veg grdn, priced in 50's. June, x7103 Linc.

Maine lkfront cabin, 3 BR, nr Bethel, 3 1/2 hr bos, beach, sm rowboat, running wtr, avail thru Sept & Oct, \$95/wk, \$35/wkend. Rae or Chris, 625-9383.

Rangeley, Me, 3 BR lux contemp hse on huge lake, v private, superb mtn & lake view, wilderness area, canoe incl w/wkly rent, avail aft Labor Day. x8-2577 Draper.

Rangeley, Me, 3 BR lux contemp hse on huge lake, v private, superb mtn & lake view, wilderness area, canoe incl w/wkly rent, avail aft Labor Day. x8-2577 Draper.

Rangeley, Me, 3 BR lux contemp hse on huge lake, v private, superb mtn & lake view, wilderness area, canoe incl w/wkly rent, avail aft Labor Day. x8-2577 Draper.

Animals

Free beau tan mongrel dog, used in research in local hosp, healthy, shots, pls give gd home or will be put to sleep by hosp. John, 648-3036.

Home needed for young cat who was abandoned Harv Sq. Helene, x3-2029.

Siamese kittens, m, f, 4 mos, raised w/both parents, chldrn, dog, \$15/ea, both for \$25. x7237 Linc.

Lost and Found

Found: young siamese cat, on campus, too gd to be alley cat, did you loose it? Call Manchester, 526-7043, evgs.

Wanted

Person to sit 2 chldrn, 8 & 9, alternate Fri evgs, 7-12, Winter Hill area, Som. Alice, x3-3400.

Hydraulic elec control arm for trlr brakes. Dot or Jim, x7592 Linc.

Domestic help, ctn 6 hrs/wk, schedule flex. Toni, 491-0507.

Babysitter, wklys 8:30-1:30pm, Blkne. Ethel, x3-6334.

Babysitter for 2 mos, 3 dys/wk, 9-5 for 2 chldrn, \$1.50/hr, nr Inman Sq. Call, 492-4035, evgs.

M or f rmmate for qt 1/2 hse, Melrose, own rm, nr T, driveway, lg yard, grdn, \$75 incl ht. Clyde, 665-3027.

Mtl file cabs, 1 or 2 drwr, gd cond not necessary, low cost is. x3-6772.

Bike, 10 spd; flute or sax; any cond. Larry, x7500 Linc.

Woman desires work late aft or wkend, catering, cooking or babysitting, refs. Call, 427-2110.

Bike, 16". x8-1476 Draper.

F grad stu to share spac 2 BR Arl apt, 1/2 blk T to Harv Sq, \$100 + ht & util. Call, 646-0646, evgs.

Super 8 low lite movie camera w/zoom lens, projector. Paul, x3-6407.

F rmmate for 9/1, mod 2 BR Som apt nr Inman Sq, on bus line, ac, d&d, \$125 + elec. Doris, x149 Linc.

Hebrew typwrtr. Dan, x3-6404.

Someone to fix my 10 transistor radio and teach me to use a nw Sony tape rcrdr. Write, give address, no., Paul S. Borit, Rm E18-439.

Used refrig, gd cond, pref dbl door, not more than \$25. Ellen, x3-4276.

Sofa that converts to dbl bed, gd cond, cheap; also lg crtns. Georges or Michelle, 661-0460.

Ride to Cleveland, Ohio, Aug 29 or 30. Andy, x3-3248.

Carpools

Want people for carpool btwn MIT & south end for Sept. Irene, x3-4931.

Ride btwn Porter Sq (Kentucky Fried Chicken on Mass Ave) & MIT. Allan, x3-4996.

Ride from Harv St & Comm Ave to MIT, 9-5. Reva, x3-3257.

Anyone interested in carpool West Newton-MIT, 9-5. Don, x3-2105.

Am moving to Forest Ridge, Nashua, NH, Oct 1, would like to start carpool or join existing one to MIT. Anne, x3-5915.

Carpool wanted Cen Sq area-Babson College, 8am-9pm daily, hrs flex, wl share exp. x-3-5915.

WI take riders Auburndale-MIT, 8:30-5:30 during term, 8:30am-9pm 1 day/wk. Fred Soule, x3-4675.

Ride from Bel-Camb-Wtrtwn intersection area (Mt Auburn or Bel St) to MIT, 8:30-1, wd rather share exp than drive. Sue, x3-3270.

Miscellaneous

Moving? Call Dan's Van for experienced stu movers, rates 1 man/\$7, 2 men/\$12. Call, 354-2542.

Profs: vacationing or lbg on sabbatical? Cln, neat, responsible f grad stu wl babysit your apt or home, wl pay rent. Kris, x3-1917.

A+ secretarial office: typing theses, manu, transcriptions, translations, prof. Josephine, x3-3287.

Tech, stat & general typing. Denise, x3-4162.

Piano technician: tuning, repairs, appraisals, sq pianos & harpsichords. x3-4118.

Canoes, car racks for rent, \$10 ea/wkend, \$15 minimum. Write MITOC, Rm W20-461.

Typing svc: all kinds done fast & effc. Virginia, x3-6121.

Positions Available

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

- | | |
|---|---------|
| Virginia Bishop | 3-1591 |
| Mike Parr | 3-4266 |
| Phillip Knight (secretary - Joy Dukowitz) | 3-4267 |
| Sally Hansen | 3-4275 |
| Jack Newcomb | 3-4269 |
| Evelyn Perez (secretary - Mary Ann Foti) | 3-2928 |
| Dick Higham | 3-4278 |
| Pat Williams | 3-1594 |
| Claudia Liebesny (secretary - Dixie Chin) | x3-4595 |
- New applicants should call the Person-

nel Office on extension 3-4251.

Technical Assistant-Academic Staff in Physics will develop and maintain experiments in an undergraduate teaching laboratory. Work involves electronics, vacuum technology, optics, and small machine shop equipment. BS in Physics or EE desirable. 74-937-R (8/14).

DSR Staff for the Center for Cancer Research will perform a variety of duties in an immunologically oriented laboratory. Techniques will include a wide range of immunological methods and protein chemical fractionations using columns, polyacrylamide gels, high voltage paper electrophoresis, isoelectric focusing, radioactive labeling. Bleed, inject, prepare cells from mice and rabbits; maintain cell and organ cultures. Applicant should have considerable laboratory work experience; Master's degree preferred. Superior manual dexterity required for performing a wide range of techniques. 74-983-A (8/28).

DSR Staff for the Center for Cancer Research will assist in experiments on RNA tumor viruses. Maintain cell culture and assay virus, perform general biochemical procedures, help maintain equipment and supplies. BS degree in Biology or Biochemistry or related fields required; experience with cell culture or microbiology useful. 74-983-A (8/28).

Placement Counsellor-Administrative Staff-Part-time will coordinate the Family Day Care program of child care in the home. Interview participants; help with licensing; keep records; manage the budget for the program; arrange workshops, discussion groups, lectures. Interviewing skill, knowledge of growth and development in preschool aged children, minimum one year experience with family day care or similar type of program required. Ability to work independently important; Spanish very helpful. Half-time position. 74-1032-R (8/28).

DSR Staff in the Cell Culture Center will perform mass cell production and other cell culture techniques. Duties will include some virology techniques including infection of cells, propagation and titration of viruses. Cell culture experience mandatory; Bachelor's degree preferred. 74-1029-A (8/28).

DSR Staff in the Cell Culture Center will perform mass cell production and other cell culture techniques including infection of cells, propagation and titration of viruses. Bachelor's degree in Biology or experience in cell culture required. 74-1030-A, 74-1035-A (8/28).

DSR Staff-Temporary in the Research Laboratory of Electronics will work on molecular beam stabilized Argon laser for ultrahigh resolution spectroscopy. Ph.D. in Physics or equivalent required. Temporary 9/74-8/31/75. 74-1072-A (8/28).

Administrative Staff-Assistant Director for a program which provides member industrial firms direct and convenient access to the Institute's educational and research programs, while at the same time providing the Institute with unrestricted financial assistance and professional relationships. Primary responsibility is liaison function between MIT faculty and research staff and representatives of participating companies. Requirements include bachelor's degree (MIT preferred), approximately two years of technical experience (preferably engineering) and management perspective (MBA preferred and ability to deal with executives of small to medium-size corporations). 74-1080-R (8/28).

Meteorologist/Programmer-DSR Staff in Meteorology will be responsible for running computer model of the stratosphere which is being used to assess ozone chambers associated with high latitude aircraft and the space shuttle and to produce output displays. Will adapt present code to Iliac IV computer. BS in Mathematics, strong experience of Fortran programming required. Some meteorological experience desired. 74-1082-R (8/28).

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

Technical Assistant-Academic Staff in Nutrition and Food Science will be responsible for the operation of Amino Acid Analyzer; measure small molecules in the brain and other tissues using standard fluorescent techniques. BS degree in Biochemistry required, MS preferred. 74-1075-A (8/28).

Technical Asst.-Academic Conduct animal studies and biochemical experiments concerned with protein metabolism and aging. B.S. degree in biology or related field. 74-1007-A (8/24).

DSR Staff in the Joint Center for Urban Studies will work on the

National Housing Goals project. Review theory and existing models; assist in developing theory and forecasts requiring extensive computer analysis of data; design and implement computer model documenting all stages of the work. Demonstrated skill in quantitative urban/social science research required. (Masters degree or equivalent). Working knowledge of FORTRAN IV, familiarity with computer analysis of U.S. census data important. 74-958-R (8/14).

DSR Staff-Temporary (11 months) As member of System Dynamics Group, will work on national economic model, translating equations into DYNAMO III language. Organize and man computer files, prepare flow diagrams. Strong interest in economics and systems dynamics; some programming experience required. 74-1022-A (8/21)

DSR Staff in the Cell Culture Center will assist in the preparation of cell culture media including all aspects of quality control. Knowledge of sterile technique and tissue culture desired. BS degree or coursework and laboratory experience required. 74-886-A (8/7).

DSR Staff at Civil Engineering will develop federal criteria for allocation of mass transit funds. MS in transportation Systems Analyses required; knowledge of economic criteria, experience in urban transportation systematic analyses, familiarity with DODOTRANS computer models important. Excellent writing and communication skills essential. Some travel necessary; will work with federal, state, and local officials, faculty and students. 74-927-A (8/7).

DSR Staff Engineer in Earth and Planetary Science will be responsible for design, construction, and operation of prototype instruments to be used on ground-based telescopes and spacecraft for remote study of planets and other celestial bodies. Degree or strong background in EE required. Familiarity with charge couple and charge integrating devices, silicon vidicons, digital and analog circuit design, astronomical facilities necessary. 74-929-R (8/7).

Technical Assistant-Academic Staff in Nutrition and Food Science will inject animals and study the toxic compound effects on animals. BS degree in Biology required. 74-915-A (8/7).

DSR Staff in the Arteriosclerosis Center will assist in laboratory research studies involving biochemical procedures for the determination, in VIVO, of lipoprotein turnover rates. Duties also include ultracentrifugation, immunological techniques and various forms of electrophoresis. BS in chemistry or Biology required; some laboratory experience helpful. 74-841-R (7/31).

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

Applications Guidance Coordinator-Administrative Staff in the Office of Facilities Management Systems, Planning Office, will be responsible for providing all non-technical support of the INSITE System; provide expertise and guidance to apply the system to problems; assist in membership expansion by making presentations and writing proposals. Knowledge of/or ability to learn quickly MIT's INSITE system required. Good communication skills, aptitude for providing expertise and help to users essential. Some travel will be required. 74-858b-R (7/31).

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

DSR Staff in Civil Engineering will work on transportation planning in developing countries. Will spend at least 3 months a year in Africa. MS in Civil Engineering, highway construction experience required. Familiarity with systems engineering, transportation economics, computer programming, transportation modeling important. Candidate must be a US citizen because of foreign travel involved. 74-805-A (7/24).

DSR Staff Economic Advisor at the Joint Center for Urban Studies will advise the Presidents of MIT and Harvard on the state of the economy and labor force of Cambridge, and prospects for future economic development; evaluate and develop economic development proposals; review and evaluate proposals in fields of health, education, housing, transportation, and community development in view of

their impact on the local economy. Will be assisted by an advisory committee of faculty and administration members from both institutions. Doctoral degree or equivalent experience in urban economics, manpower, community development required. Ability to work effectively with local government and university officials. Ability to plan and conduct research. 74-753-A (7/17).

DSR Staff member in the Electronic Systems Lab will study the application of modern control theory to optimize freeway traffic flow. Develop mathematical models and feedback control algorithms. Evaluate feasibility of using other control policies with existing freeways. Ph.D. in Systems related discipline, including working knowledge of techniques in stochastic optimal control theory, state estimation, etc. Familiarity with vehicular traffic flow theory, state estimation, etc. Familiarity with vehicular traffic flow highly desirable; practical experience in electronic traffic sensors and signal processing helpful. 74-778-A (7/17).

Technical Assistant-Academic Staff in Biology will work on a project concerned with the analysis of macro molecular changes in differentiating myoblasts. Will use cell and tissue culture techniques, electrophoresis, labeling with radioactive isotopes and general biochemical methods. Minimum BS degree in Biology, Biochemistry or related fields; laboratory experience essential. Previous tissue culture experience preferred. 74-759-R (7/10).

Administrative Staff-Editorial Manager in the Institute Information Services will coordinate the organization, design, editing, production, mailing, and budgeting for the General Catalogue, the President and Chancellor's report and other issues of the MIT Bulletin. Additional duties involve work on various projects, ad hoc special reports in association with the Analytical Studies and Planning Group. Bachelor's degree required; graduate work or equivalent experience preferred. Editorial and proofreading skills, excellent command of the English language required. Knowledge and experience with various aspects of graphic design and production very helpful. Ability to organize detailed information regarding academic and other activities, to work with large numbers of people throughout the Institute, and to plan and execute publishing tasks under pressure of deadlines important. 74-692-R (6/19).

DSR Staff at the National Magnet Laboratory will perform experimental and theoretical research of laser-induced plasmas in magnetic fields and laser-plasma interactions; develop optimal, X-ray, magnetic plasma diagnostics; operate advanced CO₂ and far infrared laser systems for plasma research. Ph.D. or equivalent in Physics and minimum 2 years research experimental techniques required. 74-689-R (6/19).

Technical Assistant-Academic Staff-Temporary in Nutrition and Food Science will help in preparation and teaching of a laboratory course in biochemical research methods. Knowledge of chemistry or biochemistry laboratory techniques required; BS degree desired. (8/1-12/31/74). 74-719-R (6/26).

Staff Recruiter (Admin. Staff) will report to the Employment Officer; will be responsible for coordination of search for well-qualified persons to fill nonacademic staff positions. Particular emphasis will be given to assisting laboratories, centers, and departments in fulfilling Affirmative Action Plans with respect to research staff openings. Person will work closely with Personnel Officers and departments in defining description of positions and qualifications required. Frequent travel will be expected. Experience in Personnel and/or recruiting required. Technical background with degree in Engineering or Science preferred. Please submit resume. 74-643-A (6/26).

DSR Staff Physicist in the Research Laboratory of Electronics will work on development of radio interferometry. The project will combine development of computer-controlled electronic systems and participation in the observations. Ph.D. Physicist with several years experience in radio astronomy or allied field required. 74-626-R (6/5).

DSR Staff in the Energy Lab will assist in the construction of a mathematical energy model for US supply and econometric model building and analysis of energy sectors. BS degree in Economics with econometrics and mathematics background desired. Experience in FORTRAN programming and use of Econometric Software Package necessary. Communication skills important. 74-602-A (5/29).

DSR Staff in the Energy Lab will develop a metal-air fuel cell preprototype and conduct research into powdered metal electrodes. MS in electrochemistry or chemical engineering; knowledge of electrochemistry,

semiconductors; experience in fluid mechanics, academic or industrial exposure to metal-metal oxide systems required. 74-605-A (5/29).

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

Administrative Staff-Associate Director of the Alumni Fund will be responsible for staff support to alumni boards and committees engaged in the annual solicitation programs. Duties require extensive interaction with senior alumni and corporation executives throughout the country, at MIT. Individual must be an alumnus/alumna of MIT. Position entails a moderate amount of travel. 74-347-R (4/24).

Marketing Director-Administrative Staff at the MIT Press must have experience and skills in some or all of the following areas: direct mail, scientific/technical, international, research and planning, trade and library relations. Innovation, creativity, adaptability for goals; ability to work as part of publishing team in a university environment. Please submit resume with educational background; accompanying letter must describe in detail marketing methods in achievements. 74-313-R (4/17).

DSR Staff in the Laboratory for Nuclear Science will participate in fundamental particle research at major accelerators and in data analysis. Candidate must have Ph.D. in high energy physics or a related field with experience in scintillation counter and spark chamber techniques and familiarity with large computer data analysis. 74-221-A (3/13).

Programming Analyst-Administrative Staff for the MIT Information Processing Center must have experience and knowledge of large-scale time-sharing systems. FORTRAN, JCL, and PL/1 language and communication skills required. Assist users working by providing programming information and debugging help. Produce user documentation, serve as Programming Assistant and Consultant; conduct seminars, workshops, short courses. Implement and maintain software items such as the debugging compilers and plotting packages. 74-887-R (8/7).

Senior Programmer Analyst-DSR Staff in the Joint Center for Urban Studies will work on a large scale simulation of complex social systems attempting to explain and anticipate the process by which neighborhoods evolve. Familiarity with time-sharing, and with the substance of the study through knowledge of FORTRAN required. Willingness to learn the operating characteristics of the computer installation important. Neighborhood Evolution and Decay Project; 33 month duration. 74-873-R (7/31) Simulation Model of Migration Project, 20 month duration. 74-874-R (7/31).

Systems Analyst (DSR) in Laboratory of Architecture & Planning (Overlap Project) will implement series of mathematical programs originally developed in FORTRAN for other computers and command interfaces for routines. Participate in level design; some original design of mathematical and other routines. Fluency in FORTRAN and PL/1, including knowledge of IBM or Univac and Multics version of FORTRAN. Knowledge of Multics command, programming and debugging environment. Ability to deal with major issues in mathematical programming. 74-795-A (7/17).

Applications Analyst-Administrative Staff at the Information Processing Center will work in the Application services group to advise users on procedures and techniques in setting up a statistical problem for computer solution. The equivalent of a master's degree in statistics or social science with statistical training required. Experience in programming and solving problems is essential. 74-403-R (5/8).

DSR Staff Systems Programmer at Project MAC will perform system analysis and system programming on a research version of Multic operating system. SM or EE degree required; 2-3 years programming experience in the supervisor of some advanced operating system required. Ability to contribute to research and work with students important. 74-1234-R (11/14).

Applications Analyst-Administrative Staff in the Application Services of the Information Processing Center-full or part-time-will assist users of the Center's computer systems by modifying, installing, and testing programs for various purposes, writing descriptions of them, and consulting on their use. The Application Service's responsibilities include statistics, numerical analysis, simulation, linear programming, and special-purpose languages. Will also consult on general aspects of the systems and teach occasional short non-credit courses. Graduate-level study or equivalent experience in

computer science or in some area of computer application required. Experience with an algebraic programming language, particularly PL/1 or FORTRAN, and at least one application area is essential. Adaptability to new subjects and program tools is an important asset. 74-1026-R (8/28).

Computer Operator IV for the Office of Administrative Information Systems will operate the IBM 370/135-145 and all peripheral equipment including disk/tape drives, card reader/punch, printers, etc. Minimum one year experience required. Knowledge of DOS Job Control, Multi Programming experience important. 74-1066-R (8/28).

Computer Operator IV in the Office of Administrative Information Systems will operate the IBM 370/135 Computer console messages. Report operational problems, take corrective action where called for; process production and testing as scheduled. Minimum 1 year operations experience preferably IBM 360 or 370, DOS multi programming or DOS/VS environment required. 74-620-R (6/5).

Computer Operator IV in the Laboratory for Nuclear Science will operate the IBM 360/65; determine equipment set-up and run operations; detect errors, make corrections; assist in the training of junior operators. Must be able to run the entire IBM 360-65 computer complex without supervision. Knowledge of LNS operating procedures and HASP and OS operating commands required. Must be willing to work the evening shift: 4pm-12midnight; 40 hour work week. 74-865-R (7/31).

Senior Key punch Operator III in the Office of Administrative Information Systems will operate the IBM 029 keypunch machine. Punch into computer input cards formatted and unformatted documents. Minimum 2 years experience operating IBM 029 or comparable equipment. 74-764-R (7/10).

Document Coordinator-Exempt for the Center for Policy Alternatives will maintain the collection of English and foreign publications for research group involved in science, technology, and public policy. Order materials; catalogue in Library of Congress System; prepare for reproduction, billing, prepare and type cards and forms, bibliographies, abstracts. College degree, library experience required (MLS desired). Accurate typing, knowledge of French and German or Russian desired. Ability to work under pressure essential. 74-970-R (8/14).

Junior Electrical Engineer-Exempt in the Center for Space Research will design, test and check-out space satellite experiments, participate in prelaunch support. Emphasis is on low noise, low level analogue circuitry, through familiarity with digital electronics and logic design of the experiment. BS in EE with experience in design, development and testing of solid state low level analog systems required. Must be thoroughly familiar with modern semiconductor devices; signal detection theory and applications. 74-845-R (7/31).

Infirmiry Staff Nurse-Exempt-Part-Time will do bedside nursing in the MIT infirmiry. Individual must be a Massachusetts Registered Nurse with 1-2 years experience in a Medical/Surgical Unit. Capability of providing first aid and emergency treatment for the emergency clinic required. Ability to work with students essential. Three day week: 7-3, 3-11 rotating shift. 74-990-R (8/28). Three day week Sat, Sun, evening during week. 74-1070-R (8/28).

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

Nurse-Exempt in the Clinical Research Center will work under close supervision of the Head Nurse and investigators. Responsible for general and specialized nursing procedures and medications in a twelve-bed research unit. Work with laboratory and dietary units; must keep accurate charts and observations on patients' condition. Must have R.N., Mass. registration, previous nursing experience; must be extremely reliable and conscientious; able to assume "take charge" duties when required. Evening shift: 4pm-12midnight. 74-902-R (8/7).

Infirmiry Staff Nurse-Exempt Bedside nurse in MIT Infirmiry. Must be capable of administering first-aid and emergency treatment. Registered Nurse with 1½-2 years experience, preferably in medical/surgical unit. 3-11pm shift. 74-1019-R (8/21).

Assistant Advertising Manager-Exempt for the Alumni Association, *Technology Review*, will research, prepare and produce sales support material. Main-

tain records; bill advertisers; prepare income reports. Typing, shorthand or speedwriting, composition skills needed for preparing correspondence. Ability to organize required. Previous advertising experience helpful. 74-1009-R (8/21).

Administrative Assistant-Exempt in Civil Engineering will handle administrative duties for active research group; responsible for fiscal management for research accounts, budgets, payrolls; compile, edit, compose reports for lay audiences; manage production of all reports; maintain liaison with staff, faculty, students; handle international correspondence. Coordinate a variety of activities; arrange workshops and conferences at MIT. Ability to organize, work independently, exercise tact and good judgment. 74-806-R (7/24).

Food Production Supervisor-Exempt in Food Service will be responsible for all operations of the Kitchen and its food production personnel: daily production, inventory control, quality control and sanitation. Assist in menu planning and estimating food quantities. Manage administrative details in areas of personnel, payroll, budgeting, purchasing. Degree or experience in food production, menu planning, and operation of a food production facility required. Ability to train personnel important. Hours 6am-3pm, 74-837-A (7/24). 2nd opening: irregular hours and weekends.

Area Food Supervisor-Exempt in Food Service will be responsible for the unit serving areas: flow of food and utensils during meal periods; portion controls, sanitation. Will train and supervise pantry employees. Technical knowledge of food production; ability to work under pressure, irregular hours and weekends required. 74-455-A (5/22), 74-834-A, 74-835-A, 74-836-A (7/24).

Building Services Assistant-Exempt for Physical Plant will supervise custodians, polishers and other Building Services hourly personnel. Requires working on various shifts for indefinite periods of time. Minimum of 2 years supervisory experience is required. 40 hour work week. 74-695-R 74-696-R (6/19).

Editorial Assistant V in Nutrition and Food Science will edit and type manuscripts for publication in technical journals; proofread galley, correspondence; maintain office records. Good typing, editorial skills, command of English grammar and spelling required. Ability to deal with people important. College background desired. 74-840 (7/31).

Senior Secretary V to the Director of the Center for Policy Alternatives will handle a variety of administrative and secretarial duties; type speeches, papers, manuscripts; transcribe correspondence from dictation and tapes; maintain director's files; responsible for a variety of personnel procedures; schedule foreign and domestic travel. Excellent secretarial skills, ability to set priorities, make decisions essential. Supervisory skills, knowledge of MIT procedures desired. 74-967-R (8/14).

Senior Secretary V will perform secretarial and editorial duties for the Foundation Scientist, Neurosciences Research Program. Type scientific manuscripts; prepare bibliographies; maintain reference files; excellent secretarial and editorial skills required; shorthand preferred; willingness to learn scientific terminology and interest in the sciences of brain and behavior important. MIT experience helpful. 74-932-R (8/7).

Technical Assistant V in Nutrition and Food Science will order, house, weigh, feed and water rats. Mix diets; order necessary components; autopsy animals; collect, weigh, and prepare tissues for chemical assays. Will also wash laboratory glassware. Knowledge of the care of research animals, experience in conducting experiments involving animals required. BS degree helpful. Individual with a career commitment desired. 74-852-R (7/31).

Secretary IV or Senior Secretary V-Part-time will handle a variety of secretarial and administrative details at the President's home at Watertown. Schedule appointments for Mrs. Wiesner and for the President's House at 111 Memorial Drive; arrange travel, transcribe correspondence, maintain extensive files. Work closely with Dr. Wiesner's secretary; act as liaison for Mrs. Wiesner with other MIT offices, community agencies and businesses. Keep payroll, and other records; attend meetings, when required; write and address invitations for Institute events. Excellent typing skills required; shorthand preferred. Knowledge of the Institute desirable. Discretion, honesty and tact essential to deal with confidential matters and to work in a private home. 25 hour work week; midday schedule preferred. 74-315-R (8/14).

(Continued on page 10)

Positions Available

(Continued from page 9)

Secretary IV or Senior Secretary V for Vice President in the office of the President and Chancellor will handle a variety of duties in a very busy office. Arrange and coordinate complicated appointment and meeting schedules; maintain communications among many people and offices of the Institute. Excellent typing, shorthand, organizational skills and command of language are essential; ability to anticipate, recognize and organize priorities and work as part of a team, resourcefulness for handling complex situations, discretion, tact, and good judgment important. 37½ hour work week. 74-343-R (5/24).

Editorial Secretary IV-Part-Time-Temporary in Humanities will help prepare and tabulate fund raising proposals and questionnaires for faculty and students. Handle all secretarial duties for the Writing Program including liaison between the Program and the Institute. Accurate typing skills, editing and proof-reading experience required. 17½ hour work week; temporary through 6/30/75. 74-934-A (8/14).

Secretary IV to two Civil Engineering professors will be responsible for account summaries, and secretarial work related to coastal zoning, heat pollution, and water resources projects. Excellent secretarial skills required; knowledge of bookkeeping helpful; technical typing ability or willingness to learn necessary. 74-1018-R (8/28).

Secretary IV will handle general secretarial and receptionist duties for the Athletics Department. Ability to answer questions regarding extensive athletic program; excellent typing for correspondence, reports required; shorthand desirable. Outgoing person with willingness to serve MIT community desired. 74-1021-A (8/28).

Secretary IV to several Mechanical Engineering professors will handle correspondence, travel arrangements, coffee seminars. Excellent typing, shorthand/dictaphone skills, knowledge of bookkeeping required. Technical typing ability and secretarial schooling or experience preferred. This position is available for "job sharing". 74-1031-R (8/28).

Secretary IV-Part-Time in Nutrition and Food Science will type proposals, reports, correspondence from rough and finished drafts; handle all general duties. Good typing, dictaphone skills required. Some knowledge of biological and/or chemical terminology helpful. 20 hour work week; possibility of increase to 35 hours for one opening. 74-1074-A, 74-1073-A (8/28).

Secretary IV for the Harvard-MIT Program in Health Sciences and Technology will type correspondence and proposals, handle general office duties, schedule travel. Excellent typing and good office skills required (shorthand desirable). Previous experience necessary, MIT experience preferred. 37½ hour work week. 74-1071-R (8/28).

Secretary IV to the Assistant Dean for Student Affairs will type a variety of materials from dictaphone, provide secretarial support for fraternity-related affairs and assist with overflow work for two other staff members. Excellent typing and dictaphone skills required; ability to deal effectively with students, to organize in the midst of confusion necessary. 74-1086-A (8/28).

Secretary IV to the Director of the new Cell Culture Center will handle general secretarial duties; organize and maintain files; monitor budget records; type and proofread manuscripts. Strong typing, organizational skills required; MIT experience preferred for setting up office in new center. 74-888-A (8/7).

Secretary IV will handle general secretarial duties for staff of International Nutrition Program. Help with special projects, handle small library. Should be able to handle the unexpected. Good typing. 74-1020-R (8/21).

Secretary IV or Senior Secretary V to the Director of a new Special Laboratory will assist in all aspects of developing the new lab; organize the Director's schedule and set up the office systems. Some college and 3-5 years secretarial experience; excellent typing and shorthand required. Ability to organize, establish priorities important. 40 hour work week. 74-1014-R (8/21).

Secretary IV in the Center for Cancer Research will handle general secretarial duties; type manuscripts and letters. Maintain research grant records; schedule travel, meetings. Excellent typing, dictaphone skills required. Editorial skills, ability to compose letters, familiarity with biomedical terminology desirable. Familiarity with MIT procedures preferred. 74-963-R (8/21).

Secretary IV for several Nutrition and Food Science Faculty will handle general secretarial duties; assist with the preparation of scientific manuscripts for publication; type technical material involving tables and scientific terminology. Excellent typing, organizational ability essential. Knowledge of biological and/or chemical terminology helpful. 74-982-R (8/21).

Secretary IV in the Laboratory for Nuclear Science will handle all secretarial duties for a high energy physics group. Type correspondence, reports, articles of publication (some technical); schedule meetings, appointments, travel. Good typing, technical typing experience desirable; discretion, initiative, organizational skills important. 74-992-R (8/21).

Secretary IV in Earth and Planetary Science will handle a variety of secretarial duties of a group of seismology professors and their research staff. Type and edit manuscripts, correspondence, class material (some technical); independently compose some correspondence; handle purchasing and accounting procedures. Excellent typing, editing, proofreading, grammar, spelling essential. Willingness to work independently occasionally under pressure important. 74-993-R (8/21).

Secretary IV to the Head of the Engineering Library will handle all general secretarial duties as well as act as receptionist for library visitors; compile financial statements; responsible for several payrolls and petty cash. Good secretarial training and experience desired. Accounting or bookkeeping skills are necessary. 74-994-R (8/21).

Secretary IV to Assistant Directors Development Office. Handle files, mail, calendars, error-free typing for correspondence. Will produce final reports for senior Institute officials. Some editing. Excellent secretarial skills, shorthand preferred. Discretion, tact, ability to interact with Institute personnel at all levels. 74-1015-R (8/21).

Secretary IV in Civil Engineering will handle all general secretarial duties; type technical research reports, maintain contract files; handle routine correspondence. Good typing skills preferred; ability to organize and work independently important. Knowledge of Spanish helpful. 74-939-R (8/14).

Secretary IV to an Electrical Engineering/Electronic Systems Laboratory group will type correspondence, class materials, reports, papers; schedule travel, appointments; maintain student records. Secretarial school training or experience, good typing (technical typing ability) required. Ability to work independently and effectively with people important. 74-940-A (8/14).

Secretary IV will handle standard secretarial duties for a group of Mechanical Engineering professors. Schedule travel, appointments, seminars; type correspondence, monitor accounts; Secretarial training or experience, shorthand/dictaphone, technical typing skills required. Ability to communicate and to deal with students and staff important. These positions are available for "job-sharing." 74-949-R, 74-950-R, 74-951-R, (8/14).

Secretary IV in the Center for Policy Alternatives will assist with programs related to industrial and social applications of technology. Compose memos, letters; type proposals, reports, correspondence; schedule meetings, travel; share other office responsibilities. Excellent typing, shorthand required. Minimum 3 years experience; college background desired. Knowledge of Spanish or Portuguese helpful. 74-953-R (8/14).

Secretary IV-Part-Time in the Medical Department will provide typing and telephone support for the Psychiatry Service. Transcribe patient case histories, type correspondence, reports; assist with other duties as necessary. Excellent typing required. Maturity in dealing with the sensitivity of patient needs is essential. 74-956-A (8/14).

Secretary IV to a Committee on the Visual Arts professor will handle general secretarial duties; type manuscripts, take minutes at meetings, assist with library research, field work, compose correspondence, coordinate student projects. Excellent typing and French required; research and writing experience, familiarity with seminar processes necessary. Background in art history and/or French literature desired. 74-976-R (8/14).

Secretary IV to the Director of the new Cell Culture Center will handle general secretarial duties; organize and maintain files; monitor budget records; type and proofread manuscripts. Strong typing, organizational skills required; MIT experience preferred for setting up office in new center. 74-888-A (8/7).

Secretary IV in the Chairman's Office will handle a wide variety of secretarial and administrative tasks under the direction of a senior secretary. Schedule meetings, organize and maintain

files for correspondence and committee work related to MIT external community relations. Excellent typing and organizational skills essential. Ability to maintain communications with top level offices of the Institute and with the greater Boston community desired. 74-890-R (7/31).

Secretary IV in Political Science will handle all general office duties for a busy group of professors. Type correspondence, manuscripts, from drafts of tapes, arrange travel, meetings, appointments; contact with students. Excellent secretarial skills essential (shorthand helpful); previous experience, ability to establish priorities important. 74-892-R (8/7).

Secretary IV for several professors in Political Science will handle all general secretarial duties; type manuscripts, class material (some with mathematical symbols). Excellent typing skills required; ability to work under pressure in busy office is important. There is much student contact in this job. 74-893-R (8/7).

Secretary IV to three faculty members in Political Science will handle all general secretarial duties; type class material; independently answer routine letters. Transcribe from tapes, confidential interviews pertaining to a study on school desegregation. Excellent typing, shorthand or speedwriting, ability to organize and establish priorities; previous secretarial experience required. Background in sociology/social science preferred. 74-894-R (8/7).

Editorial Secretary IV in Nutrition and Food Science will edit and type manuscripts for publication in technical journals; proofread galley, correspondence; maintain office records. Good typing, editorial skills, command of English grammar and spelling required. Ability to deal with people important. College background desired. 74-840 (7/31).

Secretary IV in Political Science will assist the Administrative Officer and type a variety of material pertinent to the department's administration. Prepare for signature; adjustment reports, appointments, vouchers, requisitions, etc. Assist in collecting data for budgets and reports. Good typing skills, knowledge and experience with accounting procedures, ability to work in a busy environment required. Familiarity with MIT helpful. Position is intended to be full-time, but there is some flexibility for part-time. (24-30 hours). 74-895-A (8/7).

Secretary IV in the office of the Institute Secretary for Charitable Trusts will monitor the office budget; arrange appointment schedules and travel; type correspondence and proposals from dictaphone and handwritten copy; set up and maintain files; act as liaison between the office and other sources inside and outside MIT. May occasionally conduct research on charitable trusts and foundations. Excellent skills, organizational ability, professionalism essential. Previous experience required. 74-293-R (4/10).

Secretary IV to a Civil Engineering Professor will handle general secretarial duties; admissions materials and various department publicity information; maintain research and account records; independently answer some correspondence. Good organizational and typing skills required; ability to work independently and under constraints of deadlines important. 74-898-R (8/7).

Secretary IV to the head of the History section of the Humanities Department will transcribe notes for correspondence, act as liaison between the section and its head, organize seminars, type manuscripts, and handle other general secretarial duties. Excellent typing and shorthand skills, previous secretarial experience and training required. The ability to organize, recognize priorities, handle responsibilities are needed to maintain smooth operation of the section. 74-917-R (8/7).

Secretary IV in the office of the Secretary of the Institute will handle standard secretarial duties, plus liaison with Corporation and committee members, officers of MIT, department heads and faculty; prepare correspondence, large mailings, annual publications. Excellent secretarial skills, training and/or experience required. Initiative, integrity, discretion important. Knowledge of MIT valuable. 74-918-R (8/7).

Secretary IV will handle secretarial duties for two Biology professors. Type manuscripts, correspondence; monitor accounts. Good typing, ability to work with figures and under pressure required. Secretarial experience preferred. 74-928-R (8/7).

Secretary IV to a professor in Metallurgy and Materials Science will handle variety of general secretarial duties; monitor accounts; schedule seminars, travel; handle correspondence independently; type manuscripts, proposals, reports. Good typing, organizational skills required; shorthand or speedwriting preferred; ability to work with figures and to deal with students, staff, faculty important. 74-854-R (7/31).

Secretary IV in the Provost's Office must have good organizational skills to handle a variety of secretarial duties in a busy office; maintain complex filing system; work with complicated calendar. Good judgment; discretion; ability to maintain smooth communication with administrative offices inside and outside the Institute; ability to work with detail; excellent typing, proof-reading skills required. Shorthand preferred. 37½ hour work week: 8:30am-5pm. 74-855-R (7/31).

Secretary IV in the Humanities Department will work for the head of the Literature Section. Type manuscripts and other material, transcribe notes for correspondence, act as liaison between members of the section, coordinate other assignments. Previous secretarial experience and training, excellent skills of shorthand and transcription required. Ability to work with students, faculty and staff important, as well as a strong sense of responsibilities and priorities. 74-857-R (7/31).

Secretary IV in the Office of Sponsored Programs will type correspondence; maintain records of grants, contracts and proposals; take and transcribe dictation; handle a variety of other duties. Good typing required; shorthand preferred. Previous office experience; organizational ability important. MIT experience desirable. 74-863-R (7/31).

Secretary IV in the Laboratory for Nuclear Science will handle all general secretarial duties for an active high energy physics group. Excellent typing needed for memos, reports, correspondence, papers, (some technical). Shorthand skills desirable but not essential. Ability to work independently; good organizational skills important. 74-807-R (7/24).

Secretary IV at Endicott House Dedham, MA, will handle a variety of general secretarial duties: prepare payrolls for hourly and voucher employees, prepare and type bills, maintain inventory of supplies, schedule reservations, welcome visitors. Accurate typing and bookkeeping skills essential; ability to work independently and with guests and staff in a high pressure environment important. 40 hour work week. 74-823-R (7/24).

Secretary IV in the Arteriosclerosis Center will perform general secretarial duties for medical doctors and other staff members; transcribe letters; schedule appointments; type abstracts and manuscripts. Good typing, ability to work independently required. Secretarial school graduate with previous experience desired (preferably in a medical setting). 74-670-R (6/19).

Secretary IV for Mechanical Engineering will handle general secretarial duties for several professors in thermodynamics. Type technical reports and manuscripts; maintain accounts. Excellent typing required, technical typist preferred; knowledge of office procedures; ability to organize, set priorities important. 74-256-R (6/5).

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

Secretary IV in the Office of Administrative Information Systems will handle general secretarial duties; maintain inventory of technical manuals, program test logs, files; type memos, reports, documents. Excellent typing, dictation skills required. Knowledge of English grammar and general office procedures important. 74-617-R (6/5).

Secretary III in MIT News Office. Will answer telephone, type and process news releases, file news releases and photographs, respond to requests for news releases, biographical sketches and pictures; handle general release list; and scan publications for news of MIT. Should have fast, accurate typing, good command of English language, pleasant telephone manner, and be able to work under pressure. 74-1090-R (8/28).

Editorial Secretary IV in MIT News Office. Write, research and type hometown news releases; release hometown newspaper addresses and address and mail releases. Research and prepare biographical sketches on faculty and administration members. Other reporting/writing assignments as needed. Should have fast, accurate typing skills, good command of English language. Experience desired. 74-1089-R (8/28).

Secretary III-IV for several professors and research staff in the Center for Space Research. Type proposals, correspondence, articles for publication; schedule travel and appointments. Good typing skills (technical), ability to work under pressure required. 74-1043-R, 74-1044-R (8/28).

Secretary III-IV to the Assistant Dean of the Graduate School for Minority Affairs will work with students and faculty members from various ethnic, cultural, and economic backgrounds.

Handle all general secretarial duties in one-person office; take dictation, type correspondence, reports. Excellent typing skills (70wpm); previous experience (MIT preferred); ability to work independently required. 74-1049-R (8/28).

Secretary III-IV to two Physics faculty members and Executive Officer will assist with all secretarial duties in the headquarters office. Good typing, shorthand skills; ability to work independently required. 74-1081-R (8/28).

Secretary III-IV in Civil Engineering will type correspondence, proposals, reports, class notes from handwritten, typed drafts, dictaphone. Schedule travel, meetings, appointments. Excellent typing, willingness to work under the pressure of deadlines required. 74-1085-A (8/28).

Secretary III-IV in the Analytical Studies & Planning Group will work on official Institute publications such as the General Catalogue, Courses and Degree Programs, Report of the President; and assist with general secretarial duties within the Analytical Studies and Planning Group. Excellent typing and proofreading skills, willingness to work under pressure of deadlines required. Some experience with production and layout is helpful to work as part of an editing production team. 9:00-5:30; 37½ hour work week. 74-984-R (8/21).

Secretary III-IV in the Center for Advanced Engineering Studies will handle all general secretarial duties for the marketing area of the Center; act as liaison between separate areas of the Center and its customers; monitor office accounts. Excellent typing required; ability to deal with a variety of activities and people of a very busy office important. 74-988-R (8/21).

Secretary III-IV in Personnel will work for the Employment Officer and two Personnel Assistants. Good typing skills needed for correspondence, memos, form letter, reports; maintain special files; assist in arranging schedules for recruiting; handle employee cases, references, applicants for Personnel Assistants. Ability to work independently; maintain a variety of schedules and procedures. Flexibility, experience, and interest in being a part of an active group is necessary. 74-969-R (8/14).

Secretary III-IV in Nuclear Engineering will handle general secretarial duties for several faculty and staff; type class materials, correspondence, manuscripts, reports from handwritten notes, transcription and dictaphone. Schedule travel, appointments, meetings. Good typing, organizational skills required; experience with dictaphone, technical typing, shorthand desired. 74-959-A (8/14).

Secretary III-IV to two faculty members in Electrical Engineering will type class notes, reports, proposals (some technical); schedule meetings, appointments, travel. Technical typing skills required; initiative and the ability to work with a minimum of supervision important. 74-843-R (7/31).

Secretary III-IV in Ocean Engineering will handle general secretarial duties. Type correspondence, class notes, reports, proposals; arrange meetings, appointments, travel. Good technical typing skills, ability to work under pressure important. Familiarity with MIT procedures preferred. 74-909-R (8/7).

Secretary III-IV for a group of Nuclear Engineering professors will type articles, proposals, class notes, correspondence from handwritten drafts, dictaphone; handle other general office duties. Good typing, knowledge of office procedures required; technical typing and shorthand skills desirable. Ability to organize and work independently important. 74-916-R (8/7).

Secretary III to several staff members of the Center for Theoretical Physics. Excellent typing needed for technical reports, manuscripts and correspondence (technical typing skills helpful); ability to work effectively with students, guests, and faculty important. 74-833-R (8/7).

Secretary III-IV in Physics Dept. Theoretical Center will work for three-four busy professors. Ability to handle some pressure, decide work priorities, type technical manuscripts and papers, cover phones as needed. Typing skills must be excellent; shorthand desired, willingness to learn. 74-903-R (8/7).

Secretary III-IV for three professors at the Sloan School will handle general secretarial duties in one-person office; make travel arrangements; type and arrange duplication of course materials including manuscript and technical typing. Secretarial training, experience in technical typing, and ability to organize and work with a minimum of supervision required. 74-829-R (7/24).

Secretary III-IV in the Research Laboratory of Electronics will handle general secretarial duties; type course notes, problem sets and other technical material; maintain special files. Accu-

rate typing; ability to neatly draw diagrams, to work independently important. 74-673-R (6/19).

Secretary III in the Institute Information Office, Design Services will handle general secretarial duties; maintain records and accounts; do some proof-reading and other duties related to the production of graphic design. Accurate typing and a good command of English required. 74-923-A (8/7).

Secretary III in Meteorology will work with several staff members and graduate students; monitor accounts; type manuscripts (some technical); schedule travel. Interest in learning to do technical calculations, good typing, some college background required. 74-1023-A (8/21).

Secretary III will be receptionist for Urban Studies and Planning Department. Receive visitors; supply information regarding class schedules and locations of faculty and staff members; answer call director; screen phone calls; assist with typing; maintain address file of departmental personnel. Good typing skills; previous experience; desire to work with a variety of people important. 74-1041-R (8/28).

Secretary III to two professors and a senior lecturer in the Sloan School of Management will handle all secretarial duties in a one-secretary office. Will type correspondence, class material, exams, manuscripts. Excellent typing, shorthand or speedwriting required. Good command of English important to assist foreign faculty member. 74-1042-R (8/28).

Secretary III in Biology Headquarters will handle correspondence, memoranda, typing of class notes and quizzes for the Undergraduate Officer; assist with the registration process; maintain files. Accurate typing required; ability to deal with students, faculty and staff important. 74-1067-R (8/28).

Secretary III in Career Planning and Placement will type correspondence, interview notes for Alumni Placement Officer, Associate Director. Schedule appointments; receive alumni and company representatives; maintain files and records. Good typing, ability to work with details required. Flexibility, maturity, tact important. 74-1078-R (8/28).

Secretary III-Temporary will be responsible for typing for the various Career Planning and Placement Office project during the fall recruiting season, answer telephone requests; assist company recruiters and students. Excellent typing; ability to work in a busy office required. MIT experience helpful. Temporary 9/16/74-12/6/74; 8am-4pm.

Secretary III-Temporary in the Dean's Office, School of Humanities and Social Science will assist with a variety of duties; type material from dictaphone; answer and redirect questions from students and faculty; maintain files. Excellent typing, dictaphone skills required. Flexibility, tact important in dealing with a large number of people. Temporary 2-4 months. 74-1084-A (8/28).

Secretary III will assist the Aeronautics and Astronautics Undergraduate Officer with a variety of functions, including registration; type correspondence and technical reports for two professors. Excellent typing, good command of the English language, ability to deal effectively with students and faculty important. 74-987-R (8/21).

Secretary III in the Sloan School of Management will handle all secretarial duties in a one-person office; type correspondence; tabulate data; schedule travel, and placement interviews between company recruiters and Sloan students. Excellent typing, communication skills required. Ability to organize and to work independently important. 74-995-R (8/21).

Secretary IV in Medical will handle secretarial duties for two psychiatrists and assist with support for the part-time psychiatric staff and fellows. Transcribe patient case histories; maintain accurate records and schedules. Excellent typing required; maturity, ability to work under pressure and to deal with patients important. 3 1/2 hour work week. 74-685-R (6/19).

Secretary III to the Urban Studies and Planning will handle secretarial duties for the Admission Officer; assist with registration processes; take notes at meetings. Good typing and dictaphone skills required; ability to work with details important. 74-933-R (8/14).

Secretary III to the Head of the Atomic and Solid State Division in Physics. Handle general secretarial duties, type correspondence reports (some technical), answer questions from students and faculty. Good typing and shorthand required; previous secretarial experience preferred. 74-961-R (8/14).

Secretary III to an Urban Studies and Planning professor will type manuscripts, correspondence and reports; maintain office files; set up appointments; arrange travel. Excellent typing,

previous secretarial experience, dictaphone skills essential. 74-972-R (8/14).

Secretary III Secretary to Associate Director of Admissions and Associate Advisor to Foreign students. Compose and type letters, prepare immigration forms, etc. At least three years of clerical experience. Excellent skills, ability to organize, cope with interruptions. Some seasonal pressure. Tact in dealing with students. 74-798-R (7/17).

Secretary III for Project MAC will share secretarial duties for the Automatic Programming group; type technical manuscripts, class notes and correspondence; maintain files, schedule appointments. Excellent technical typing skills required; ability to organize important; previous experience helpful. 74-731-A (6/26).

Secretary III in the Research Laboratory of Electronics will take shorthand, handle correspondence, make appointments, type course notes, problem sets, quizzes, some involving technical typing; will maintain a small library for journals and technical reports. Some secretarial experience or schooling required. 74-634-R (6/5).

Senior Clerk IV in the Committee on the Visual Arts will assist in the research, evaluation, selection and installation of exhibits in and around the Hayden Gallery. Will include some responsibility for curatorial assignments for MIT collections. Strong background in Art History required. 74-1028-R (8/28).

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

Senior Clerk IV in the Center for Policy Alternatives will handle a variety of administrative and clerical duties in accounting, payroll, purchasing, project administration, and space related matters. Will also perform some reception duties for the Center. Good typing required; knowledge of accounting and bookkeeping procedures, ability to work with students and staff important. 74-968-R (8/14).

Senior Clerk IV in the Summer Sessions Office will handle a variety of clerical duties; type letters and memos, distribute mail, keep inventory of office supplies, file purchase orders, process bills and keep track of applications for programs. Will also assist with summer registration and training office assistant. Excellent typing required; ability to work under pressure. 74-789-R (7/17).

Senior Clerk III in the Development Office will maintain central fund raising files, acknowledgment system; review data and post on donor cards; assist with investigation and evaluation of donors and prospects. Flexibility, ability to work with details, accurate typing required. Previous office experience desired. 74-954-R (8/14).

Senior Clerk III Assistant to Corporations Analyst will handle information requests from senior Institute Officers regarding fund-raising objectives. Help maintain files, evaluate donors and prospects, write background memoranda. Excellent opportunity for promotion. Excellent skills; dictaphone. Mature and experienced individual. 74-801-R (7/17).

Technical Typist III will assist in the production of the Neurosciences Research Program Bulletin through use of IBM/MTST composer system. Type manuscripts; adapt format, scientific symbols, tabulations, etc. to style of the Bulletin; proofread copy, check bibliographic format. Good typing skills essential, knowledge of publications procedures. Applicant can be trained on MTST. Off-campus location (Brookline); own transportation desirable. 74-803-R (7/17).

Technical Typist III in Chemical Engineering will type large volumes of reports, manuscripts and proposals from rough drafts using a magnetic tape typewriter. Excellent typing skills required; ability to handle equations and chemical symbols, punctuation and paraphrasing necessary. 74-741-R (7/10).

Senior Clerk III Part-time at the Architecture Department Film Section must be familiar with the use of Sync-sound filming and editing equipment. Check and repair film equipment, sound transfer and mixing. Answer student questions, assist with classes. Hours to be arranged. 74-912-R, 74-913-R (8/7).

Senior Clerk III will take and process orders at Graphic Arts. Price and schedule xerox work, handle requisition details. Knowledge of reproduction processes helpful; previous customer service experience desired. 74-1004-R (8/21).

Clerk-Typist II-Temporary in the Admissions Office will perform general clerical duties; answer busy phones; open, sort, deliver over 180,000 pieces of mail yearly. Accurate typing skills, ability to work in a busy office with a variety of details important. 9 month opening: 9/74-5/75. 74-1017-R (8/28).

Clerk-Typist II in the Information Processing Center will distribute publications; maintain and update collections of reference manuals, mailing lists. Good typing needed for training in the use of the MTST and technical/statistical typing. Ability to deal with people important; (a lot of public contact in this job). 74-1046-R (8/28).

Clerk-Messenger II-III will pick up and deliver all mail to and from the Comptroller's Accounting Office and other locations. Maintain inventory of supplies in storerooms and warehouses; perform other housekeeping duties. High school graduation or equivalent; ability to lift heavy items and equipment (50-100 lbs.) required. 74-1087-R (8/28).

Senior Library Assistant IV in the Barker Engineering Library will maintain the flow of current periodical material into the journal and reference collection; check material; process claims, title changes, materials for binding; supervise student assistant. Some work at the reference desk. Previous library experience and/or graduate school training essential. Knowledge of foreign languages is valuable in working with foreign journal titles. Ability to organize and communicate with the staff and users, accurate typing important. 74-919-R (8/7).

Senior Library Assistant IV in the Science Library will process materials for the reserve collection; maintain files and catalogue. Accurate typing, ability to organize and work efficiently under pressure required. Previous library experience helpful; library school background desirable. 74-986-R (8/21).

Senior Library Assistant IV in the Library Catalogue Department will be responsible for descriptive cataloguing of MIT theses, input theses and technical report literature on the OCLC 100 computer terminal. Accurate typing; ability to accurately follow complex directions; college graduate preferred; background in library science desired. 74-1008-R (8/21).

Library General Assistant III-Temporary will assist in circulation procedures: maintain records and statistics, check materials in and out of library, type overdue notices and collect fines. Individual will also work in reference and information areas. Interest in library procedures, efficiency in maintaining good library relations, ability to deal with people effectively important. Job ends 6/30/74. 74-1027-R (8/28).

Library General Assistant III-Temporary in the Library Cataloging Department will type master catalogue entry on the OCLC 100 terminal; perform clerical aspects of reclassification, and other varied duties. Above-average typing skills required; capacity for details important; college or business school background and previous library experience helpful. Minimum duration: 3 weeks. 74-1040-R (8/28).

Library General Assistant III in the Dewey Library will assist with the maintenance of the Reserve Book Section, handle circulation, process materials. Assist with other library duties as required, including occasional scheduled evening or weekend work at the main Information Desk. Previous library experience desirable; ability to work with details and accurate typing skills required. Candidate must be able to establish and maintain good relations with library users. 74-1045-R (8/28).

Library General Assistant III in the Humanities Library will do bibliographic searching for and type monograph orders; maintain records and files; process materials. Will also answer questions at the Information Desk. Accurate typing, ability to work with details required. College background and library experience helpful. 74-884-R (8/7).

Library General Assistant III in the Library Cataloging Department will type master catalogue entry on the OCLC 100 terminal; perform clerical aspects of reclassification and other varied duties. Above-average typing skills required; capacity for details important. College or business school background and previous library experience helpful. 74-942-R (8/14). 74-1039-R (8/28).

Jr. Library Assistant II Part-Time-Temporary for the Sea Grant Program will handle circulation desk routines; process journals; type catalog cards, maintain reserve collection. Good typing, spelling skills; ability to work with a minimum of supervision required. Previous library experience, library school background desired. 9 month position: ends 6/5/75, 19 hour flexible work week. 74-1076-R (8/28).

Graduate Students Plan Orientation

A special graduate orientation day schedule has been announced by the Graduate Student Council for Friday, September 6.

Dean Carola B. Eisenberg, dean for student affairs, will address the group of about 900 incoming graduate students at 9:30am in Kresge Auditorium. A 15-minute coffee and doughnut break will follow, with workshops and special interest group discussions scheduled to begin at 10:30.

Picnicking will be the order of events at noon in Killian Court, with entertainment to be provided by the West African Drummer Corps.

Afternoon workshops featuring representatives from MIT's various academic departments will begin at 2:30pm. At 4:30 Professor Irwin W. Sizer, dean of the graduate school, will deliver concluding remarks to the group.

A reception with the MIT Academic Council and the Committee for Graduate School Policy will follow immediately in the Kresge lobby.

Tickets for the noon-hour picnic, at \$2 per person, will be on sale at

the Graduate Student Council Office, 50-110, Walker Building, and at the West Lounge of the Student Center during the week of September 2.

Work Resumes As Strikes End

Construction work has resumed on two major MIT building projects—the chemical engineering building and the undergraduate housing complex—after almost nine weeks of building labor strikes.

The strikes by cement finishers and ironworkers are expected to set back construction schedules through this winter as the buildings are still in the initial stages of foundation and structural construction, according to William R. Dickson, director of Physical Plant.

While renovation work on Ash-down House was slowed during the strikes, the building is expected to be ready by the time school opens. The Seeley G. Mudd Building will be completed by the end of August.

Clerk II Part-Time will assist the Director of Exhibitions and Hayden Gallery Manager with a variety of duties. Maintain gallery supplies, distributes posters, perform inventory of materials, assists in hanging exhibitions, handles other general office tasks. Responsible individual, with technical skills and a desire to learn museum work required. Some experience helpful. 20 hr. work week. 74-931-R (8/1).

Jr. Dietary Aide II for the Clinical Research Center will be responsible for all procedures used in preparing, weighing, cooking and serving food for 10-20 patients on metabolic diets. Experience in handling of foods preferred. Ability to work independently required. 40 hr work week. 74-1006-R (8/21); 74-1077-R (8/28).

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

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

Cook at Endicott House, Dedham, MA will cook breakfasts 6 days a week and make desserts for lunches and dinners. May also occasionally prepare lunches and cook dinner one night a week. Expertise in cooking and presenting a variety of breakfast food, desserts, hors d'oeuvres required. Maturity, dependability, honesty important. Must be willing to work on a very irregular and demanding schedule. Will begin at 6am when preparing breakfasts; will need own transportation. 40 hour work week. 74-658-R (6/12).

Reactor Operator IV in Nuclear Engineering will serve as shift operator on the MIT Reactor after passing A.E.C. Operator's Examination. Monitor operation of a 5MW reactor; assist with various technical tasks; maintain logs and check sheets. 3-4 years experience in the Nuclear field will be necessary for preparing for operator's licensing. Knowledge of electronic circuits helpful. Ability to work under pressure of emergencies important. 40 hour work week. 74-766-R (7/10).

Senior Offset Pressman at Graphic Arts will do one, two and four color process printing; expose and develop plates, mix inks, operate and maintain press and associated equipment to perfect a direct image, line and half tone registration. May guide and train other operators. Graduation from high school or its equivalent and a minimum of 7 years applicable experience required. 40 hour work week. 74-351-R (5/15).

Campus Patrolwoman/Patrolman Minimum 3-5 years experience required in all phases of law enforcement to include knowledge of court procedures and case preparation, investigation of criminal and other complaints and reporting on same. Rotating shift/40 hour work week. 74-946-R, 74-047-R, 74-948-R (8/14).

Senior Stock Clerk in Graphic ARTS will perform all stock room functions, initiate orders for stock; keep reserve

stock room records; check requisitions for descriptions. Prepare printed material for delivery to MIT departments and outside vendors. Check slips and purchase orders and forward them to the G.A. accounting office. Must have full knowledge of commercial printing paper including; types, finishes, grains, properties, etc. Must be able to use power cutter and work from material cards. Graduation from high school or its equivalent and two years applicable experience required. 40 hour work week. 74-350-R (7/31).

Tech A (E-M) for the Radioactivity Center will assist in laboratory, research, or analytical work; operate technical experimental apparatus; maintain electronic equipment associated with controlled low-background facility, breath radon, thoron equipment. Troubleshoot nuclear pulse instrumentation, construct, wire, perform routine tasks associated with measurement of subjects and administration of laboratory. Strong background in pulse and digital circuits; experience in use of oscilloscopes and test instruments required. 74-922-R (8/28).

Waitresses/Waiters-Part-Time at the Faculty Club will set up silver and china on dining room tables. Take number orders; serve food and beverages. Clear, clean and reset tables. Experience helpful, but not necessary. Shifts: M-F 11am-3pm; 5pm-9pm. All positions may require weekend work. 74-1050-R, 74-1051-R, 74-1052-R, 74-1053-R, 74-1054-R, 74-1055-R, 74-1056-R, 74-1057-R, 74-1058-R, 74-1059-R, 74-1060-R, 74-1061-R, 74-1062-R, 74-1063-R, 74-1064-R (8/28).

Kitchenperson at the Faculty Club will sweep, mop kitchen floor; empty trash; wash pots and pans; clean serving table, range and broiler, strain grease in fryers. Steady work record desirable; experience in kitchen helpful. 4pm-12pm, Mon-Fri; some weekends. 74-1065-R (8/28).

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

74-856b-R	DSR Staff
74-897-R	Lib. Gen. Asst. III P.T.
74-920-R	Lib. Gen. Asst. III
74-815-R	Tech. Asst.-Acad. Staff
74-955-R	Secretary III
74-429-A	DSR Staff Eng.
74-975-R	Sr. Clerk III P.T.
74-943-R	Sr. Clerk III P.T.
74-650-R	DSR Staff
74-904-R	Secretary IV
74-942-R	Libr. Gen. Asst. III
74-815-R	Tech. Asst.-Acad. Staff
74-1024-A	Admin. Staff
74-938-A	DSR Staff
74-952-R	Secretary IV
74-707-R	Secretary IV
74-663-R	Secretary IV
74-910-R	Secretary IV
74-921-A	Secretary IV
74-971-R	Secretary III
74-957-R	Secretary III
74-973-R	Secretary III
74-775-R	Empl. Coord.-Ex.
74-882-R	Admin. Staff

The following positions are on HOLD pending final decisions:

74-604-A	DSR Staff
74-851-R	Sr. Clerk III P.T.
74-817-R	Secretary IV
74-862-R	Sr. Clerk III
74-905-R	Secretary IV
74-991-R	Acct. Mach. Oprtr III
74-964-R	Ed. Secretary IV P.T.

6:20 LAUNCH SUCCESSFUL

Telescope to study Crab Nebula X-rays

By JIM SWETTENHAM
News Editor

A team of astrophysicists from Massachusetts Institute of Technology, Cambridge, Mass., are spending most of today inside a mobile van tracking and recording data relayed from a 515 foot long, 350 foot diameter, helium-filled balloon which was launched from North Battleford Airport earlier this morning.

The astrophysical group, with the assistance of a team from the National Centre for Atmospheric Research (NCAR), National Scientific Balloon Facility, Palestine, Texas, are taking advantage of an infrequent phenomenon of celestial mechanics in an attempt to find answers about a spectacular stellar outburst that has dazzled and intrigued observers for more than 900 years.

Balloon off course, telemetry signal lost

A change in the pre-planned course for the 20,000,000 cubic foot helium balloon has caused the X-ray telescope experiment to drift in a west-north-west direction at a speed of 25 knots.

The balloon at 12:30 was just north of Myrnam, Alta., drifting far off its original scheduled flight-pattern.

The ground control crew in North Battleford, despite that and another setback, seemed in reasonably good spirits at noon as the Crab Nebula reappeared

from behind the moon about 12:30.

The second setback encountered by the project teams was the loss of telemetry signal shortly after the balloon reached an altitude of 20,000 feet.

Ground crews here said at 12:30 they anticipated no recovery problems providing the craft remains in an area south of the Alberta lake country which lies north of the North Saskatchewan River.

At 6:20 this morning, the NCAR team and the group from MIT Centre for Space Research launched a super-sensitive X-ray telescope by balloon to record emissions from the Crab Nebula, one of the most powerful sources of X-rays in the galaxy.

The balloon, carrying a payload of about 2,000 pounds, was

Nebula by saying that as the moon slides over the nebula, X-rays are cut off. When the moon occults "hot spots", such as the pulsar in the middle of the nebula, the telescope registers sudden decreases in X-rays.

The pulsar in the centre of Crab Nebula is undoubtedly the

remnant of the star that collapsed catastrophically on July 4, 1954," Professor Lewin said.

The star, so powerful that it radiates 100,000 times more energy than the sun, is only ten miles across but is probably as massive as the sun.

"A spoonful of material from the star would weigh more than the entire MIT campus," Professor Lewin stated.

The Crab Nebula, called a neutron star, rotates 30 times per second (in contrast to the sun, which rotates once in 25 days) and on every rotation the pulsar blinks out in radio waves, in optical light and in X-rays. The mechanism of the blinking is unexplained, Professor Lewin said.

"One may want to think of it in terms of a powerful lighthouse that could be used by space travellers for navigation," he said.

The Crab was eclipsed by the moon for about 52 minutes and then began to emerge from behind the moon at 32 minutes and 25 seconds after 12 noon.

Minor Delays
Grady Cole, in charge of

NCAR Flight Operations of Palestine, Texas, told The News-Optimist after this morning's launch that "everything looks good... now."

He was referring to a couple of delays experienced by the MIT-NCAR project earlier in the morning.

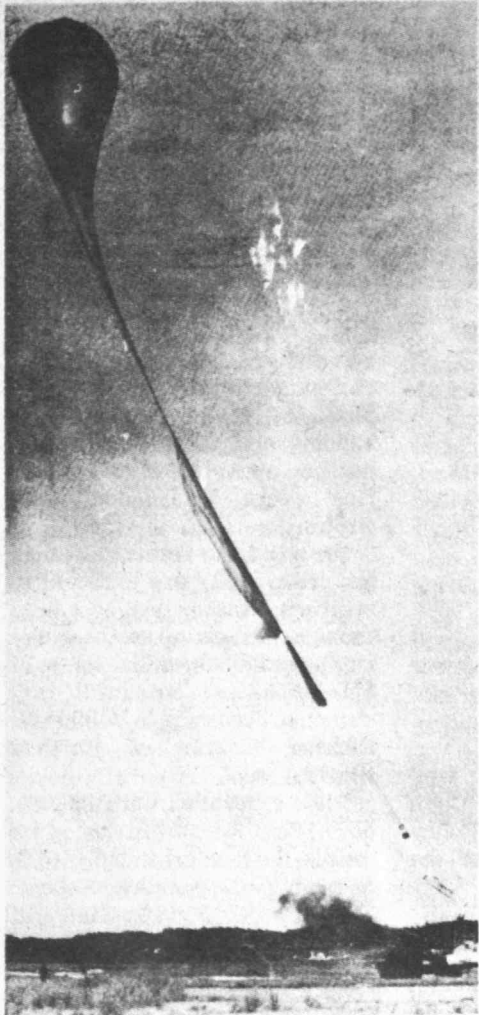
The launch was originally scheduled for 4 a.m., but a wind change of almost 90 degrees resulted in the need to scrap initial plans and launch preparation progress and begin again from the beginning.

Then just before the actual launch, a member of the NCAR crew discovered what was initially believed to have been a tear in the balloon, but the half-mil polyethylene sphere, after concentrated examination, was found to be intact.

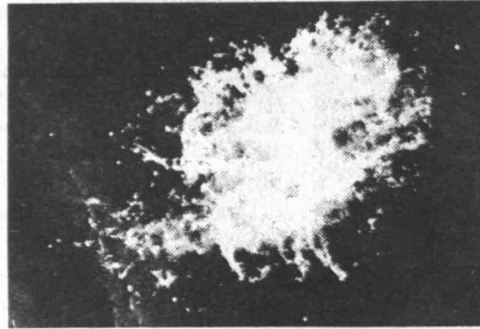
The balloon and its payload are expected to float for about 13 hours before the flight terminates in an area about 25 miles southwest of Calgary, Alta.

A ground recovery crew is stationed in the Calgary area

See BALLOON p-6



Launch support vehicle (lower right) goes into action as inflated balloon ascends skyward to carry 2,000-pound payload.



The Crab Nebula, the explosive signature in the sky of the "death" of a star. (Lick Observatory Photo)

X-Ray Telescope 'Blind Shot' Proved to Be Right on Target

(Continued from page 1)

133,000 feet, where the telescope would be oriented toward the Crab Nebula to take advantage of the occultation of the nebula by the earth's moon. The shutter effect of such occultations, which occur every 11 years: enables scientists to map the x-rays from the Crab, one of the most powerful sources of x-rays in our galaxy.

The balloon soared as planned, but because of the telemetry fizzle, "we immediately fell back on our emergency systems and procedures," Professor Lewin said in a first report from Canada. "To perform the all-important pointing of the telescope, we applied our computer-controlled 'blind steering' technique that Dr. George Ricker had rehearsed carefully on the ground as part of our pre-flight checkout."

In this technique, which relies on the telescope's pointing system and pre-flight aspect calibration, the ground crew commands the telescope to aim in a certain direction in the sky without receiving any confirmation that the commands have been received and executed properly.

"By miracle, after our first blind steering maneuver the telemetry signals came through for the last time for only an additional 30 seconds, which was enough to confirm that this exercise had worked perfectly," Professor Lewin said.

But additional steering maneuvers were made thereafter, and the MIT group could only hope that they had worked as well as the first. The only evidence that they did would come from the film in the telescope itself.

The flight was terminated at 2:07pm (MDT) on radio command from NCAR's tracking plane (a twin Cessna 310) 20 miles northeast of Smoky Lake, in Alberta. The 1700-pound telescope was released from the balloon and took 38 minutes to drift down to earth beneath its 78-foot red and white parachute. It was recovered by NCAR the same day, Professor Lewin said, and was found "standing straight up proudly on its 150-pound crash pad in an open

field about 300 feet from a logging road."

NCAR personnel and James E. Ballentine, of Bethesda, Md., an MIT student member of the MIT scientific team, worked until 2am to load the heavy telescope on a truck, but they found it "in perfect condition" and Mr. Ballentine said then, "we could fly it again tomorrow."

Film from the telescope was developed in Canada (in Vancouver) to avoid complications with customs at the border, then was poured over by Dr. George R. Ricker, Jr., (in Calgary) who spent 10 hours analyzing data from the most crucial 10 minutes of the flight, including "immersion" of the Crab Nebula beneath the moon. Dr. Ricker is a member of the MIT group, including Professor Lewin and Dr. Anton Scheepmaker, that designed and built the telescope, which they say is the most sensitive instrument of its kind.

In a later telephone call from The Hague, The Netherlands, where Professor Lewin (a native of Holland) is now beginning sabbatical leave, he said the telescope had been "dead-on the Crab" and that "everything on the film is beautiful."

Dr. Ricker clearly saw the immersion, when the moon "swallowed" the Crab, Professor Lewin said. Although Dr. Ricker had not had time to analyze all of the film, Professor Lewin said, "there is every reason" to believe that the telescope recorded both immersion and emersion of the Crab Nebula.

"There is little doubt we have both," he said.

Davis Elected Amherst Trustee

William A. Davis, Jr., associate professor of law and urban studies in the Department of Urban Studies and Planning, was recently elected to a six-year term as trustee of Amherst College.

Dr. Davis, a 1963 cum laude graduate of Amherst is a commissioner of the Boston Finance Commission. Earlier this summer he was awarded one of the first annual Mellon Fellowships in the Humanities by the Aspen Institute for Humanistic Studies.

Recruiting Method Shows Touch of Class

A touch of elegance may typify a new trend in personnel recruiting techniques at MIT if last Wednesday's interviewing session in the Presidential Suite of the Copley-Plaza Hotel was any indication.

The informally innovative job open house was held from 4-9pm in an attempt to recruit experienced secretaries for about 70 jobs now available at that level. It was patterned upon similar interviewing sessions conducted at the Copley and the Howard Johnson's Motor Inn in Newton last spring, for MIT's Office of Administrative Information Systems (OAIS). Kenneth T. Finney, Jr., manager of systems development, who had become familiar with the remote location interviewing technique in New York, first suggested it for MIT.

Of 60 persons interviewed for staff positions during those sessions, eight were hired. It is estimated by the Office of Personnel Services, which sponsored both events, that if employment agencies had been used, net savings in recruitment fees would have amounted to about \$17,000.

About 40 applicants attended last Wednesday evening's session, which Employment Officer Susan Lester said would not replace internal job transfer opportunities at MIT.

"Labor Day is always a high turnover time with persons return-

ing to school, student spouses finishing degrees and long-term trips being planned," she explained, "so that even if we fill a job from the inside, another opening still remains."

Assisting Ms. Lester in greeting and interviewing applicants Wednesday evening were Carol L. Van Den Avyle, employment coordinator and Carolyn Scheer, personnel assistant. Interviewing of the cross-section of applicants from industry, universities and the medical field was conducted by seven personnel officers from the Office of Personnel Services.

The Benefits Office was represented by Nancy Woodman, assistant to the personnel officer for benefits.

On-campus referrals to the various departments seeking secretaries was expected to take place earlier this week.

According to Ms. Lester, the normal hiring rate for applicants seen by Personnel Services in past years has been between 20 and 25 percent.

"Judging from the high calibre of persons we saw at the Copley, we expect that rate to rise a bit this fall," she said.

In the past fiscal year, approximately 65 percent of the 4,000 applicants seen by Personnel were referred to departmental supervisors. Of the 2600 persons who underwent departmental inter-

views, 28 percent were hired.

James J. Culliton, director of the Office of Personnel Services, observed that persons seeking new jobs generally reserve their looking until after Labor Day.

"By scheduling an interviewing session in the evening, we felt we could attract experienced secretaries who might not otherwise jeopardize their time to go looking for a job. We seem to have succeeded," he said.

John McKissick, one of three males who applied for secretarial level positions Wednesday evening, thought the idea of recruiting in an off-campus location was "imaginative and highly recommendable from a psychological point of view." McKissick, who graduated from Atlanta's Morehouse College in psychology, applied for positions in the School of Science, which he said would give him "the additional academic exposure" needed before beginning work on his second and third degrees.

Ms. Lester noted that the kind of motivation McKissick is seeking in a job is itself indicative of the secretary's role at MIT.

"The nature of the work environment motivates them to seek higher education. It's all part of the process of widening one's contacts, which brings us back to why we decided to recruit at the Copley in the first place."



Presidential Suite of the Copley-Plaza Hotel served as setting for experiment in "imaginative" recruiting last week as personnel officers interviewed

potential MIT secretaries for 70 job openings now available.

Photo by Calvin Campbell