

## Hanham Appointed Humanities Dean

Dr. Harold John Hanham, professor of history at Harvard University and a leader in educational innovation, has been appointed Dean of the School of Humanities and Social Science at the Massachusetts Institute of Technology effective April 1, 1973.

Announcement of the selection



Dean Harold J. Hanham.

—Photo by Margo Foote

## J. Buttrick to Conduct MIT Music

John LaB. Buttrick, associate professor of humanities, has been appointed chairman of the music faculty and Director of Music at MIT, Provost Walter A. Rosenblith has announced.

Professor Buttrick succeeds Klaus Liepmann who retired in June but continues to teach part time at the Institute. Professor Liepmann was MIT's first full time professor of music and established many of the present musical programs during his 24 years at the Institute.

After receiving B.S. and M.S. degrees from the Juilliard School of Music in 1957 and 1959 respectively, Professor Buttrick

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was made by Professor Walter A. Rosenblith, MIT Provost.

Dean Hanham's chief concern will be with programs and projects that will strengthen the traditional partnership that exists at the university between the humanities, the social sciences, the physical sciences and technology.

Dean Hanham, 44, a New Zealander educated in that country and in England, was formerly a faculty member at the University of Manchester in England and at the University of Edinburgh in Scotland before joining Harvard in 1968.

As Dean of Humanities and Social Science, Dean Hanham will succeed Dean Robert L. Bishop who has held the post since 1965. Dean Bishop, an MIT faculty member since 1946, is a distinguished economist and specialist in economic theory, who announced earlier this year his hope to be relieved as dean in order that he might devote himself to his own teaching and research.

"MIT already is well known as a pioneer in the development of new and innovative programs designed to bring technology, the natural sciences and the humanities together," President Jerome B. Wiesner said, "and Dean Hanham is admirably prepared by background and experience to continue and to strengthen this tradition."

President Wiesner, who as an electrical engineering professor in 1947-49, took part in a critical appraisal of MIT's principles of education which led to the establishment of the School of Humanities and Social Science in December, 1950, on the ground that "any claim to liberal education" involves the development of competence in natural science, social science and humanities.

Dean Hanham believes that there presently is wide spread ferment through colleges and universities regarding future directions in higher education and MIT's traditions in liberal education give the university unique opportunities to make contributions to change.

"Through primarily a university (Continued on page 7)

## Institute's First Sea Grant Lecture to Be Given by Athelstan Spilhaus

Dr. Athelstan Spilhaus, the noted meteorologist and oceanographer and former chairman of the American Association for the Advancement of Science, will present the first Sea Grant Lecture at MIT on Wednesday, September 27.

The lecture, which will inaugurate an annual series, will highlight a convocation beginning at 3:30pm in McDermott Hall, (Room 54-100) that will mark the designation of MIT as a Sea Grant Institution. Until now, MIT has been administering a Coherent Area Project under the National

Sea Grant Program, and the new Sea Grant Institution designation is a direct outgrowth of the former program.

The Sea Grant Program was begun at MIT in 1968, when the Institute was awarded the first grant under the national program. Since then, MIT Sea Grant has sponsored and coordinated ocean-related research in various disciplines at MIT and has served a variety of projects related to coastal-zone development and regional planning. Director of the MIT Sea Grant Program is Alfred A. H. Keil, dean of the School of



The bright sun casts sharp shadows on late summer afternoons.

—Photo by Margo Foote

## Brailleboss Chosen for Magazine Award

CHICAGO, September 20—A high-speed braille embosser developed at MIT's Sensory Aids Evaluation and Development Center to produce reading material for the blind has been selected as one of the 100 most significant new technical products of 1971 by *Industrial Research* magazine.

The machine, called the MIT-

BRILLEBOSS, was cited by the magazine's editorial advisory board for "importance, uniqueness and usefulness in its field." The award is to be accepted by MIT Professor Robert W. Mann of the Department of Mechanical Engineering and chairman of the steering committee for the Sensory Aids Evaluation and Development Center, who initiated and advised the development of the system.

According to George Dalrymple, acting director of the MIT Sensory Aids Evaluation and Development Center, many organizations who employ blind men and women have called or written in to find out about the possibilities of using the system, and field tests designed around specific occupations have indicated that the system can be used in a variety of configurations.

A blind television announcer, using a modified embosser only, can be supplied with wire and local news copy in braille which he can read on the air. A demonstration of this application was made in Springfield last year.

In public schools with one or two blind children, office workers can (Continued on page 2)

## Financial Outlook Is Optimistic

The Institute ended the 1972 fiscal year on June 30 with a financial picture more optimistic than both the budget forecasts and the prior year's experience, Chancellor Paul E. Gray reported this week.

But he warned that the university's fiscal problems, brought on largely by inflation, are not yet solved, and urged continued attention to those cost-reduction efforts that can be implemented without impairing the Institute's programs in teaching, in research, and in public service.

Dr. Gray noted that the demand for unrestricted funds required to balance the 1971-1972 operating budget was less than in the prior year and was smaller as well than the budgeted figure. He said that \$2.9 million of the university's \$5.4 million in unrestricted income received in the fiscal year was used to balance the operating budget of \$235.4 million.

Dr. Gray said that "a major reason for the downturn was splendid university-wide cooperation in an economy drive begun a year ago. Departments, laboratories, and administrative offices throughout the Institute ended the year with unexpended balances amounting to about \$1.5 million, a figure nearly \$400,000 larger than had been anticipated in the Spring.

"Many activities, anticipating budget reductions they had agreed to make during the current 1972-1973 year, went ahead and started the reductions before the last year was completed," Dr. Gray said, "leaving many accounts with larger-than-normal unexpended balances for the year. While we knew in April that unexpended balances would be up, the year-end situation provides encouraging confirmation of careful management of funds in a time of fiscal stringency."

In addition, Dr. Gray said, 1971-1972 operating income was adjusted upward because of settlements reached during the year with the federal government concerning research indirect cost reimbursement in three previous years. At all colleges and universities federal agencies sponsoring research programs pay in addition to direct costs—salaries, wages, materials and services—a portion of shared indirect costs—facilities operation, utilities, libraries, central administration, etc. The share of such indirect costs which the government pays is based on its own audit of the universities' accounts.

In the case of the years 1968-1969 through 1970-1971 at MIT, the estimates for reimbursement of these costs were less than the actual audited figures. Settlement of under-payments for all three years was accomplished in 1971-1972 and yielded a one-time-only additional recovery of indirect costs of nearly \$1.0 million.

Normally, Dr. Gray said, MIT- (Continued on page 7)

# Black Art

An hour of conversation that changes one's view of the world—that is a gift of no little magnitude. The man whose debt we are in is Paul Tishman, the noted collector of African art. A passionate man and a pursuer of causes worth pursuing, Mr. Tishman is an MIT alumnus, has served on the MIT Committee for the Visual Arts, lent selections of his collection for an exhibit at Hayden Gallery three years ago, and is a moving spirit behind the new Council for the Arts at MIT.

Paying him a visit in his Sutton Place apartment in New York last week, we were quite unprepared for the effect of a first confrontation with what turned out to be only a part of the Tishman collection. Mr. Tishman's study, which overlooks the East River, commands a spectacular view, but it is a tribute to the power of the art he has assembled that a visitor overlooks the outside because of what the room contains. The study is about 25 feet square and its four walls are lined with masks and sculptures, over a hundred of the most compelling objects we have ever seen. An almost palpable force, a gathered energy of an intensity that could only be called holy, emanates from these assembled works. From the point-blank holes in masks, from visages of rough or polished wood, from heads and totems, from faces of terra-cotta and bronze the hundred eyes of a complex culture burn out at the visitor. We were quite literally stopped in our tracks by this concentrated energy as we entered the room.

Mr. Tishman settled himself in a tan leather swivel chair behind his ample desk, and we voiced the thought that he must be a strong man to work in the presence of such power. "They are strong works, aren't they?" he agreed. Mr. Tishman speaks with not a little energy himself, building up to a point he wishes to make not only with the tone of his deep voice, but also with gestures of hand and eyes. His head is leonine, thatched with silvered hair. "The first thing you have to do if you want to begin to understand the art of Black Africa," he told us, "is to forget the word 'art' completely."

"Western art is for display—as this is here," Mr. Tishman continued with a wave of his hand at the walls, "but you have to realize that this is taken totally out of context. Art for display alone would simply be trivial from the African point of view." As he continued to explain the differences between an art oriented of ornamentation and an art for daily use, we began to realize that the West had come to think of art as something produced by a small group of people called artists and had, in the pursuit of something called artistic purity placed art in a special category of its own, divorced from life. Ironic that, while in America, the demand for public art, for a culture for the people, was just now being felt, the very involvement so lacking here had existed in Africa for literally, we were astonished to learn, millenia.

"You know the stereotype of deepest, darkest Africa is quite false," Mr. Tishman told us firmly. "The best research we have indicates that a very complex, rich, articulated culture has existed in an unbroken line in Africa for thousands of years, a very long time, indeed. It is difficult to reconstruct historically because there are no written materials from early African history, a condition that led early anthropologists to assume, mis-

takenly, that African culture was 'primitive' and 'pre-literate.' But the fact is that African philosophy, profound and complex, was articulated through manifold cultural events. These art objects are literature in a very real sense, except that we don't know how to read them very well. They were used in various ways, frequently with ceremony, dance, and music to explain to every member of the African public the truth and mystery of human existence and the relation of man to his world.

"The Africans saw," Mr. Tishman went on warming to his subject, "that much of human life, indeed the most important aspect of life, was deeply mysterious, and they embodied these mysteries in various spiritual forces and allowed them to permeate their whole existence. The African tradition is not only oral; it is ceremonial, emotional and physical as in dance, musical, and artistic all at once because it was through the combined power of all these elements that Africans expressed their views of reality. The Greeks, for example, made extraordinarily beautiful sculptures to express their views, and in essence what they did was to make gods of men. To the African, who was much more pragmatic, that would just be silly. Men could not be gods; they were men.

"Of course not all the meanings of their art were available to all. Some particularly holy objects were kept away in the houses of kings and priests, for example, or in special places in the jungle to mark a site or protect a village. Art was not made by special people, but by those workers who made the other useful utensils of everyday life. And some of the things we now regard as objects of art were really badges of special office, kept by various civil servants, chiefs of police, justices of their supreme courts and the like. Did you know that African kingdoms sent people to England to learn English well before Shakespeare's time?"

Mr. Tishman has allowed his collection to be widely exhibited as a venture in the education of black and white alike. "There is such immense dignity and thought in the African heritage," he said, that it seems to give black people a new sense of self-respect and white people a new sense of respect. Our cultural debt to Africa is simply enormous, and for the most part unknown or unacknowledged. Nearly all our music, for instance, stems from African rhythmic and melodic ideas. Modern dance is taken directly from the Africa heritage. Our language has been enriched: the phrase 'do one's thing', for example, is African.

"And of course it was African people who developed the concepts of abstraction in art that have proved so fruitful in Western art of all kinds." Mr. Tishman pointed to an imposing figure of a woman, sculpted in dark wood. "Even when an African artist did a portrait of a queen, it was not really of that person, of a single woman, but rather a picture of womanliness, and what that meant. This abstract, generalizing impulse is present in most traditional African art. It was meant to be used. And the power of the object was infused with spiritual energy. You know, we still speak of 'inspired' artistic work, but we've really forgotten the spiritual force that art is about. The word has just become a habit. These works, humane and religious, don't let you forget that.



Dr. Killian, left, and Professor Scrimshaw talk with Professor Hartley at the Presentation ceremony in Dr. Killian's office.

—Photo by Marc PoKempner

## Scrimshaw Receives Killian Faculty Award

Dr. Nevin S. Scrimshaw, professor of human nutrition and head of the Department of Nutrition and Food Science, last week received a \$5,000 check as the first winner of the James R. Killian, Jr., Faculty Achievement Award.

The check was presented to Dr. Scrimshaw by Professor Hartley Rogers, Jr., chairman of the faculty, in a brief ceremony held in Dr. Killian's office. Also attending the ceremony were President Jerome B. Wiesner and Professor W. Ted Martin, who was chairman of the faculty at the time it established the award, in addition to Dr. Killian.

The award was established last spring by the faculty as a permanent tribute to Dr. Killian, tenth president of the Institute from 1948 to 1959 and chairman of the Corporation from 1959 to 1971. Dr. Killian is now honorary chairman of the Corporation. The purpose of the award is "to recognize extraordinary professional accomplishments" by members of

the faculty and to communicate these accomplishments to the Institute community.

The recipient of the Killian Award holds the title of Killian Award Lecturer for one academic year. During the course of the year, the recipient will present one or more lectures to the community concerning his professional activities. Dr. Scrimshaw plans to present two lectures during the spring semester.

Professor Scrimshaw was selected for the award by a faculty committee which cited him as being "not only a researcher of extraordinary accomplishment, but also a distinguished administrator and teacher, a scientist whose career exemplifies the ideal of science as a search for human answers to the most basic of human needs."

The selection of Dr. Scrimshaw as the first recipient of the award was originally announced at the annual meeting of the faculty last May.

## Braille System Aids Many Blind Workers

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quickly produce braille classroom materials—textbook pages, tests, assignments, workpapers, etc.—from printed materials submitted by a teacher.

In addition, blind persons whose work requires them to use computers—college students (two at MIT already use it), engineers and scientists, programmers, etc.—can use—and are using—the system directly. They type commands out on the typewriter keyboard and proofread them on the embosser. The computer replies also appear for them on the embosser.

One application now under test in Little Rock, Arkansas, is with the Internal Revenue Service which for years has been able to include blind people among those employed to answer telephone inquiries from taxpayers. Previously, a blind taxpayer service representative could, in his or her own turn, telephone other IRS offices to get verbal answers to questions, then call the taxpayer

back with the needed information.

IRS, however, recently has started storing its information in computer-based data centers to which sighted taxpayer service representatives have accessed via teletypewriters. IRS authorities are experimenting with the MIT-BRAILLEBOSS system at Little Rock in hopes that blind taxpayer service representatives will have the same ease of access to stored data.

The BRAILLEBOSS began several years ago as an undergraduate project at MIT, then was explored in several graduate theses, and later refined under actual working conditions by the Sensory Aids Evaluation and Development Center.

Support for the original research on the BRAILLEBOSS and current vocational applications has been supplied by the Social and Rehabilitation Services of the US Department of Health, Education and Welfare. Development of the hardware was supported by the John A. Hartford Foundation of New York City.

## Patil Named to MAC Post

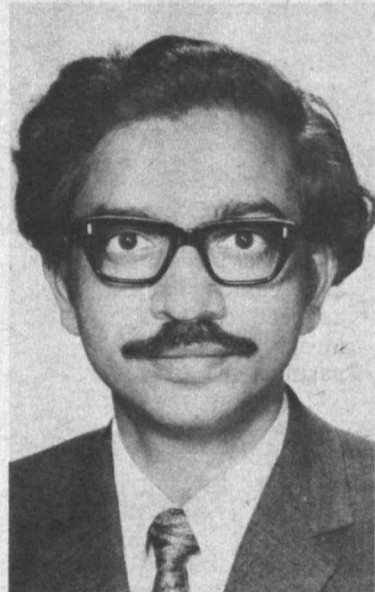
Suhas Patil, Assistant Professor of Electrical Engineering, has been appointed Assistant Director of Project MAC.

Project MAC, which was established in 1963 for the advancement of time-sharing computing systems, has developed the Compatible Time-Sharing System (CTSS), and Multics, and is now engaged in many research activities, including the area of automatic programming.

Announcement of the appointment was made by Professor Walter A. Rosenblith, MIT Provost.

Suhas Shrikrishna Patil was born in Jamshedpur, India, in 1944. He received the Bachelor of Technology degree from Indian Institute of Technology, Kharagpur, in 1965, and in the same year came to MIT as a graduate student and teaching assistant in the Department of Electrical Engineering. In 1966 he became a research assistant at Project MAC. In 1968 he was appointed Instructor in Electrical Engineering and, in 1970, with the award of his Sc.D., he was appointed Assistant Professor.

According to Edward Fredkin, Professor of Electrical Engineering and Director of Project MAC, Professor Patil will continue his academic work as well as his research in the Division of Fundamental Studies at Project MAC.



Professor Patil.

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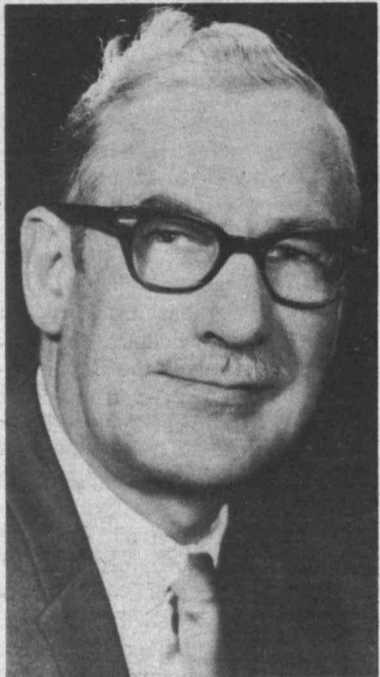
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Please address all news and comment to the editorial office, Room 5-111, Ext. 3-3277.

# Chapman to Receive Award, Give Lecture

The 10th annual Underwood-Prescott Memorial Award at MIT will be presented to Canadian Dr. Ross Alexander Chapman, Assistant Deputy Minister, Food and Drugs in Ottawa, at a luncheon in the Faculty Club, Thursday, September 28.



Dr. Ross A. Chapman.

## Locke Heads Foreign Study

Dr. William N. Locke of Newtonville has been appointed Foreign Study Advisor at MIT following his retirement as Director of Libraries.

In this post he succeeds Dr. Harold L. Hazen, professor emeritus of electrical engineering and dean emeritus of the graduate school, who is retiring after five years in the Foreign Study Office.

Professor Locke, retiring from the post of Director of Libraries in June, came to the Institute in 1945 as head of the Department of Modern Languages (now the Department of Foreign Literatures and Linguistics). While in the field of modern languages, he initiated projects in speech analysis, in mechanical translation and in the teaching of French by television and films. Director of Libraries since 1956, Professor Locke promoted research into application of computers to inventory control and other library procedures.

The office of the Foreign Study Advisor was established in 1963 in response to the increasing interest of undergraduate students in study abroad. The Foreign Study Advisor works closely with both the MIT faculty and the faculties of foreign universities in advising those students whose future careers would most benefit by foreign study.

## Placement Office Lists Job-Seeking Students

The Career Planning and Placement Office is compiling a computer listing of students who will be finishing at MIT this academic year and are interested in working in industry or government.

The list, which will group students by area of interest and academic background, will be made available to companies and government agencies who are in the market for MIT graduates. Students may appear under more than one heading.

The format of the listing will allow for women and minority students to be listed separately as well as under the area headings

Dr. Chapman has been the scientist primarily responsible for establishing the Canadian government's food and drug regulations in recent years and has been prominently identified with the development of international standards for foods and food additives.

Following the presentation, at 2pm, Dr. Chapman will lead a panel at a symposium in the Little Theater of Kresge Auditorium entitled, "Wholesome Foods for the 1970s—The Role of Government, Industry and the Consumer." More than 200 food scientists, food industry executives and students are expected to attend.

Other panel participants will be Mrs. Ester Peterson, who was Special Assistant to President Lyndon B. Johnson for Consumer Affairs and who now holds the post of Consumer Advisor to Giant Food, Inc. in Washington; Sherwin Gardner, recently appointed Deputy Commissioner of Food and Drugs of the US Food and Drug Administration; and Dr. Richard L. Hall, Vice President for Research and Development of McCormick and Company, Inc. and the present President of the Institute of Food Technologists.

Dr. Chapman was selected for the award this year by an MIT Department of Nutrition and Food Science faculty committee headed by Dr. Samuel A. Goldblith. The committee said the award was granted to Dr. Chapman "in recognition of his contributions to the field of food science and technology in laying a sound foundation for the development and establishment of regulatory procedures for the food and drug industries based on a logical approach, sound judgment, creative thinking and good science. His researches in the field of food chemistry and his administrative ability have led to international recognition."

This is the 10th year in which outstanding food scientists from the world over have delivered lectures in Boston on their work. The lectureship honors the memory of William Lyman Underwood, grandson of William Underwood, founder of the William Underwood Company, which this year celebrates its 150th anniversary; and Dr. Samuel Cate Prescott, the first Dean of the School of Science at MIT.

In one of the very first industry-university research partnerships, they were the first to establish, in 1895, that spoilage in canned foods was due to bacteria, and they developed the temperature and time guides necessary to destroy the spore-forming organisms responsible for the spoilage.

that match their interests.

The Placement Office is also participating in an experimental computer-matching program sponsored by the College Placement Council in Bethlehem, Pennsylvania.

Student qualifications and job interests will be fed into a central computer. Students will receive a listing of companies which match their interests and companies will receive a brief description of students.

Forms for students interested in either of these programs are available from the Placement Office, Room E19-455 or the Information Center, Room 7-111.



Professor Buttrick, left, discusses music plans with Professor Emeritus Klaus Liepmann.

—Photo by Margo Foote

## Pianist John Buttrick Named Chairman of Music Faculty

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held teaching appointments at Brandeis University, Emmanuel College and the University of Washington before coming to MIT in 1967. A noted pianist who studied with Beveridge Webster, Isador Philipp and Rudolf Serkin, he has performed annually in

### LIS Offers Statistics

The Lowell Institute School will present a special course in statistics starting October 10.

"Introduction to Probability and Statistics" taught by Martin Hurwitz, a Sloan Fellow in management, is intended to provide the student with a working knowledge of probability and statistics. The course will cover sample spaces, combinations, permutations, expected value, Bayes Theorem, normal and binomial distributions, the mean, standard deviation and variants, hypothesis testing and decision trees.

Persons interested in the course should have some knowledge of elementary algebra. Classes will meet Tuesday evenings from 7pm to 9pm starting October 10 and will continue for 15 sessions. A \$20 fee covers the course and cost of notes to be supplied to each student.

Application for admission is available by calling the LIS Office, Ext. 3-4895. All applications must be received by October 3 and notification of acceptance and registration details will be mailed.

### Obituaries

#### Robert Amsden

Robert Amsden, 40, of Salem, died on Friday, September 8.

Mr. Amsden worked in the Fiscal Office at Lincoln Laboratory. He came to MIT in 1959. He leaves his wife Joan Marie.

#### John Olsson

John H. Olsson, 83, of Holliston, died on Thursday, September 7.

Mr. Olsson was a Physical Plant heat and vent mechanic until his retirement in 1957. He joined the Institute in 1934. He leaves his wife Henrietta.

Europe since 1961.

Discussing music at MIT, the new chairman said, "We want to make performance and physical involvement in music available to more students. During the summer, for example, we acquired new grand pianos for practice and rehearsals, appointed William Draper to our staff for chamber music coordination and coaching and initiated a basic piano program in conjunction with Theory I (21.821). Music should be experienced first hand, whether in listening, performing or composing.

"Additionally we will work towards integrating academic studies and performing aspects of mu-

sic as well as introducing music into other disciplines of the Institute without compromising music's character," Professor Buttrick said.

The presentation of formal concerts open to the public will continue to be a function of the music faculty. This year it will present a chamber music series, noonhour concerts every Thursday in the MIT Chapel and performances by many institute groups and faculty members.

A native of Philadelphia, Professor Buttrick is married to the former Georgia Atkins. They have two children and reside in Concord.

## Spilhaus to Present Sea Grant Lecture

(Continued from page 1)

Concept. In a lecture at an American Fisheries Society meeting in 1963, he pointed to the effect that land grant colleges had and asked "Why not have Sea Grant Colleges?" Enthusiastic response led to the passage of Sea Grant legislation just three years later.

In his Sea Grant Lecture, Dr. Spilhaus is expected to raise strong criticism of individual, uncoordinated projects, such as current plans for ocean platforms to support everything from off-shore refineries to cities at sea, and to call for a national program to determine proper uses of the sea much as land-use has been regulated. He has entitled his lecture "Bountiful Grants of the Sea."

Now a fellow of the Woodrow Wilson International Center for Scholars, Dr. Spilhaus has spent a distinguished lifetime in the service of science, although he is perhaps most widely known for this Sunday cartoon science feature "Our New Age."

A native of South Africa, he took his bachelor and doctor degrees at the University of Cape Town, with time in between to earn the S.M. degree at MIT in 1933. He holds 10 honorary degrees, and is a

past president of the AAAS and of The Franklin Institute in Philadelphia. From 1938 to 1960 he was associated with the Woods Hole Oceanographic Institution, where he is now an Honorary Staff Member. He has taught at New York University, where he started and became first chairman of the Department of Meteorology and Oceanography, and has been dean of the Institute of Technology at the University of Minnesota.

Dr. Spilhaus was twice appointed by President Eisenhower as United States Representative on the Executive Board of UNEASCO, and has been United States Commissioner, Seattle World's Fair, (appointed by President Kennedy) and a member of the National Science Board (appointed by President Johnson). A Fellow of three societies—Royal meteorological Society, American Institute of Aeronautics and Astronautics, and the AAAs—and a member of five more, Dr. Spilhaus has also had numerous other professional appointments and associations. He is the author of eight books and over 200 articles in scientific journals and magazines, and is the inventor of the Spilhaus Space Clock, which tells not only time, but also tides, phases of the moon, and other planetary data.

# THE INSTITUTE CALENDAR

September 20  
through  
September 29

## Events of Special Interest

### Spirit in Flesh\*

Concert sponsored by Undergraduate Association. Friday, September 22, 8pm, Kresge. Tickets \$2.25/person.

### Wholesome Food for the 1970's--The Role of Government, Industry and the Consumer\*

Underwood-Prescott Symposium. Speakers: **Dr. Ross A. Chapman**, special advisor, Department of National Health and Welfare, Canada, 1972 Underwood-Prescott Memorial Awardee; **Mrs. Esther Peterson**, former special assistant to the President for consumer affairs, consumer advisor to the president of Giant Food, Inc.; **Dr. Richard L. Hall**, immediate past president, Institute of Food Technologists, vice president of research and development, McCormick & Co., Inc.; **Sherwin Gardner**, deputy commissioner, Food and Drug Administration, US Department of Health, Education and Welfare. Thursday, September 28, 2pm, Kresge.

## Seminars and Lectures

### Wednesday, September 20

#### Barker Engineering Library Tour\*\*

Tour of library, description of its collections, introduction to catalog searching techniques, explanation of some services offered. Wednesday, September 20, 10:15am; Thursday, September 21, 5:15pm. Tours start in orientation room on fifth floor of Barker Library.

#### Hart Nautical Museum†

Guided tour of Hart Nautical Museum and the Museum research room sponsored by Dept of Ocean Engineering. 12n and 1pm, leaves from lobby of Bldg 5.

#### Nuclear Physics before the Atom Bomb, An Eyewitness Report\*

Concourse Forum with introduction by **Prof. Brian Schwartz** of physics and guest speaker **Prof. Irving Kaplan** of nuclear engineering. 3pm, Rm 10-105. Discussion and coffee, 4pm.

### Thursday, September 21

#### A Man-Interactive Simulator System for Above-Knee Prosthetic Studies\*

**Woodie C. Flowers**, doctoral thesis presentation, Dept of Mechanical Engineering. 1pm, Rm 5-217.

#### Bio-Electrical Engineering Open House\*

Tours of individual laboratories, primarily for new graduate students. 3-5pm, Rm 20E-017. Refreshments following.

#### Rotor Noise Radiation from Aircraft

**Dr. M.V. Lowson**, Dept of Transportation Technology, Loughborough University of Technology. Interdepartmental Acoustics Seminar. 4pm, Rm 5-134. Coffee, 3:30pm, Rm 1-114.

#### Protein-Calorie Malnutrition of the Gastrointestinal Track\*

**Dr. J.F. Brock**, University of Capetown, South Africa. Dept of Nutrition and Food Science Special Seminar. 4:15pm, Rm 54-100.

#### Quasars: Are They Really Exploding at Super-Relativistic Speeds?\*

**Prof. Irwin I. Shapiro**, earth and planetary science, physics. Physics Colloquium, 4:30pm, Rm 26-100. Tea and cookies, 4pm, Rm 26-110.

### Friday, September 22

#### Chemical Engineering 10.991 Seminars\*

**I. Farag**, graduate student, "Temperature and Concentration Profiles in Flames, Thermal Probing in Depth"; **D. Anthony**, graduate student, "Coal Gasification: Rapid Devolatilization and Hydrogasification." 2pm and 3pm, Rm 10-105.

#### Synthetic Diamonds

**Rodney E. Hanneman**, manager, Inorganic and Structures Branch, General Electric Co. Research and Development Center. Mechanical Engineering Seminar. 3pm, Rm 3-270. Coffee, 4pm, Rm 1-114.

#### A General Finite Element Solution to the Hydrodynamic Equations

**Dr. Gary L. Guymon**, assoc prof of water resources, University of Alaska. Special Water Resources and Hydrodynamics Seminar. 3:30pm, Rm 48-316.

### Monday, September 25

#### Science Library Tours\*\*

Tour of the library and introduction to the more important science reference tools. 12n, meet in 14S-100.

#### Flow States in a Rapidly Rotating Horizontal Cylinder

**Roger Gans**, instructor, mathematics. Applied Math Colloquium. 4pm, Rm 2-338. Tea, 3:30pm, Rm 2-349.

#### Plasma Instabilities involving Inhomogeneities\*

**Y.Y. Lau**, electrical engineering. RLE Active Plasma Seminar. 4-5pm, RLE Conference Rm, Bldg 26.

### Tuesday, September 26

#### Science Library Tours\*\*

Tour of the library and introduction to the more important science reference tools. 12n, meet in 14S-100.

#### Lunar Surface Electrical Properties Experiment in Apollo 17\*\*

**James W. Meyer**, Center for Space Research. Lincoln Lecture Series. 3:30pm, Lincoln Lab Cafeteria.

#### The French Connection--Educational\*

**Prof. Martin Abkowitz**, ocean engineering. Dept of Ocean Engineering Seminar. 4pm, Rm 5-217. Coffee, 3:30pm, Rm 5-314.

### Wednesday, September 27

#### The Development and Explosion of the First Atomic Bomb\*

**Prof. Philip Morrison**, physics. Concourse Forum. 3pm, Rm 10-105. Discussion, coffee, 4pm.

#### Transcendental Meditation\*

Students' International Meditation Society presents introductory lecture on technique of Transcendental Meditation as taught by Maharishi Mahesh Yogi. **Fred Ponneman**, SIMS New England coordinator, special guest speaker. 8pm, Student Center Mezzanine Lounge.

### Friday, September 29

#### Chemical Engineering 10.991 Seminars\*

**K. McNulty**, graduate student, "Hydrogen Deuterium Exchange and Temperature Programmed Desorption Studies on Polycrystalline Nickel"; **M. Bautista**, graduate student, "Maragone Effect on a Sieve Tray." 2pm and 3pm, Rm 10-105.

#### 10.6 Micron Laser Scattering from Cyclotron-Harmonic Waves in a Plasma\*

**Dr. Cliff M. Surco**, Bell Telephone Laboratories. RLE Plasma Dynamics Seminar. 4pm, Rm 26-214.

## Community Meetings

#### Women's Forum\*\*

**Dorothy Pendergast**, retired Regional director of the Women's Bureau for the US Dept of Labor, and **Regina Healey**, attorney who has worked with law reform for women in Massachusetts and with family and welfare laws, will speak at the Forum. Monday, September 25, 12n, Rm 10-105.

#### Family Day Care\*\*

Orientation meeting. Monday and Tuesday, September 25-26, 7pm, Student Center Mezzanine Lounge. For more information call Margaret Sand, X3-1592, or Marilyn Swartz, X3-5831.

## Student Meetings

#### Tech Engineering News\*\*

Stop by to work or learn. Every Sunday, 5pm, Student Center Rm 453. For more information, call Dorm X8376.

#### Student Information Processing Board Meeting\*

Every Monday, 7:30pm, Rm 39-200.

## MIT Club Notes

#### APO Open Meeting\*\*†

An attempt to give an overview of Alpha Phi Omega service fraternity. Wednesday, September 20, 7:30pm, Rm 10-105. Refreshments.

#### Scuba Club

Dry session to discuss club memberships and see film. Wednesday, September 20, 8pm, Rm 20E-017.

#### Mandarin Classes\*\*

Chinese Student Club. Organization meeting. Thursday, September 21, 7pm, Rm 5-231. Class fee is \$5. For more information call Wen-ning Hsieh, Dorm X9576.

#### Chinese Students Club\*\*†

General membership meeting. Thursday, September 21, 7pm, Student Center Mezzanine Lounge. Membership fees: \$2 students; \$3 non-students.

#### APO Open Project\*\*†

Come find out what Alpha Phi Omega is all about as we attack a local Boy Scout camp. Saturday, September 23, 9am, meet at Student Center Rm 415. Call X3-3788.

#### SANGAM Lecture Series on Geeta\*

**Swami Chinmayananda** will discuss the Geeta, the Hindu book which was told to the world by Lord Krishna. Sunday through Wednesday, September 24-October 4, 7:15pm, Student Center Rm 491. Free. For information, call 491-0080.

#### MIT Committee for the Right to Choose\*

General meeting. Tuesday, September 26, 12n, Rm 39-540.

#### White Water Club\*\*†

Organizational meeting with an introduction to the club and discussion of activities. Tuesday, September 26, 7:30pm, Student Center Rm 473.

#### Alpha Phi Omega

Chapter meeting. Wednesday, September 27, 7:30pm, Student Center Rm 407.

#### Hobby Shop\*\*

Open weekdays, 10am-4:30pm, duPont Gym basement. Fees: students \$6/term, community \$10/term. Call X3-4343.

#### Tiddlywinks Association\*

Every Monday, 8-11:15pm, Student Center Rm 491.

#### Judo Club\*\*

Every Monday, Wednesday, Friday, 5pm; every Saturday, 1pm. duPont Gym Exercise Rm. Beginners welcome.

#### Outing Club\*

Every Monday, Thursday, 5pm, Student Center Rm 473.

#### Nautical Association\*\*

**Basic Sailing Shore School**, repeated every Monday and Thursday throughout the fall, 5:15pm, Sailing Pavilion. Non-members welcome.

#### MIT/DL Duplicate Bridge Club\*\*

Every Tuesday, 6pm, Student Center Rm 491.

#### Rugby Club

Rugby practice. Every Tuesday and Thursday, 5pm, Briggs Field.

#### Glee Club\*\*

Rehearsals. Every Tuesday, Wednesday and Thursday, 5pm, Kresge. For more information call John Chandler at 494-8550.

#### Fencing Club\*

Every Wednesday, 7:30pm, duPont Gym Fencing Rm.

#### Tiddlywinks Association\*

Every Wednesday, 8pm, Student Center Mezzanine Lounge.

#### Classical Guitar Society\*\*

Classical guitar lessons, group and private. Wednesdays and Thursdays, 5-8pm, Rms 1-132, 1-134, 1-136. Call Vo Ta Han, 494-8353.

#### Science Fiction Society\*

Every Friday, 5pm, Rm 1-236.

#### Student Homophile League\*

Meeting and mixer meets Fridays, 8pm, Odd Fellows Hall, 536 Mass Ave, Cambridge. For gay help (anonymous) at MIT, call the student gay tutor, 492-7871 anytime.

#### Chess Club\*\*

Every Saturday and Sunday, 1:30-5:30pm, Student Center Rm 473 (unless otherwise noted).

## Social Events

#### Muddy Charles Pub\*\*

Join your friends at the Muddy Charles Pub, 110 Walker, daily 11:30am-7:30pm. Call X3-2158.

#### Friday Afternoon Club\*\*

Music, conversation and all the cold draft Budweiser you can drink. Every Friday, 6pm, the Thirsty Ear in Ashdown basement. Admission: men \$1, women 50 cents. Must be over 21.

## Movies

**Symphony of a Great City (1927)\***  
Urban Studies and Planning City Symphony Film Series. Wednesday, September 20, 8pm, Rm 9-150. Followed by discussion with Prof. Stanford Anderson on architecture. Free.

### Symphonies on Paris\*

Includes Eugene Atget's "Paris," "Paris Qui Dort" (1936), and "Rien Que Les Heures" (1926). Urban Studies and Planning City Symphony Film Series. Thursday, September 21, 8pm, Rm 9-150. Free.

### New York, Points West and Other Places\*

Includes "New York, New York," "Notes on the Port of Francis" (1952), "Daybreak Express," "Sky over Holland," "Visions of the City," "Fantasy City," "National Flower of Brooklyn," and "New York Experiment." Urban Studies and Planning City Symphony Series. Friday, September 22, 8pm, Rm 9-150. Followed by discussion and popcorn and wine. Free.

### Ball on the Balcony

Faculty Society. Friday, September 22, 7:30pm and 9pm, Student Center Rm 407. Tickets \$1.

### Panama\*

8:30AM. Sunday, September 24, 3:30pm, Rm 200. Tickets: \$1.50, members; \$2, non-members. For information, call 491-0080.

### Oval (Good Morning)

Faculty Society. Friday, September 29, 7:30pm and 9pm, Student Center Rm 407. Tickets: \$1.

## MUSIC

### Faculty Concert with Sushil Mukherjee\*

8:30AM. Saturday, September 23, 8pm, Lobdell. \$2 donation. For information, call 491-0080.

### Classical Guitar Recital\*

Walter Stanul will play works by Bach, Scarlatti, Casanova-Tedesco, Tansman, Tarrega and Sor. Classical Guitar Society. Sunday, September 24, 3pm, Kresge. Tickets at the door: \$1.25 students; \$2 general public.

## Theater and Shows

### Musical Theatre Guild\*\*†

Productions for *Camelot* by Lerner and Loewe, directed by Nancy Rainier. Through Thursday, September 21, 7:30-3:30pm, Kresge Rehearsal Rm B. Call 253-2994 or 354-7795.

## DANCE

### Faculty Students Association\*

Folk dancing. Every Sunday, 4-7pm, Student Center Rm 407.

### Folk Dance Club\*

International folk dancing. Every Sunday, 7-11pm, Sala de Puerto Rico (exceptions to be posted).

### Folk Dance Club\*

Balkan folk dancing. Every Tuesday, 7:30-11pm, Student Center Rm 407.

### Ten Squares\*\*†

Western style square dancing. Every Tuesday, 8-11pm, Sala de Puerto Rico. Admission: \$1; first time free.

### Dance Workshop\*\*†

Beginner. Every Wednesday, 7pm, McCormick Gym.

### Folk Dance Club\*

International folk dancing. Every Thursday, 7:30-10pm, T-2 Lounge, duPont Gym.

### Friday Afternoon Dance Break\*

International folk dancing on the Kresge Oval, every Friday (weather permitting), 12:30-1:30pm.

## Exhibitions

### MIT Collection\*

Selection of recent American painting and sculpture from the MIT Collection, sponsored by the Committee on the Visual Arts, through October 1, Hayden Gallery, 10am-4pm Monday-Saturday.

### Historical Museum\*

Exhibits include "Ocean Engineering Summer Laboratory Projects 1971 and 1972," and "Tugs and Tows." Bldg 5, first floor.

## Athletics

### Women's Sailing\*

Single-handed Eliminations. Saturday, September 23, Charles River Lower Basin.

### Women's Sailing\*

Single-handed Finals. Sunday, September 24, Charles River Lower Basin.

### Varsity Soccer\*

Harvard. Wednesday, September 27, 3:30pm, Briggs Field.

### Varsity Soccer\*

Holy Cross. Saturday, September 30, 2pm, Briggs Field.

## Religious Services and Activities

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

### MIT Hillel Holiday Services\*

**Sukkot:** Friday, September 22, 7:30pm, Chapel; Saturday, September 23, 9:30am and 7:30pm, Chapel; Sunday, September 24, 9:30am, Student Center Mezzanine Lounge. **Hoshanah Rabbah:** Friday, September 29, 7am, Rm 7-108. **Shemini Atzeret:** Friday, September 29, 7:30pm, Chapel; Saturday, September 30, 9:30am, Chapel. **Simchat Torah:** Saturday, September 30, 7:30pm, Chapel; Sunday, October 1, 9:30am, Kresge Rehearsal Rm A. **Daily Services:** Mondays, 8am, Rm 7-106; Tuesdays-Fridays, 8am, Rm 7-108.

### Roman Catholic Masses\*

Every Sunday, 9:15am, 12:15pm, 5:15pm. Every Wednesday, 5:05pm, and every Friday, 12:05pm. Chapel.

### Protestant Worship Service\*\*†

Every Sunday, 11am, Chapel.

### Divine Light Mission\*

Discourses on the direct experience of Truth given by Guru Maharaj Ji. Every Monday, Wednesday, Friday, 7:30pm, Rm 8-105. Call 369-1603 (Concord).

### Christian Science Organization\*\*

Every Tuesday, 7:15pm, Rm 8-314.

### United Christian Fellowship\*\*†

Christians for Dinner. Food and fellowship. Every Wednesday, 5pm, Walker (at the sign of the fish).

### United Christian Fellowship\*\*†

Singing, praying, sharing meeting. Every Wednesday, 5:45pm, East Campus Fasset Lounge.

### Christian Bible Discussion Groups\*

Every Thursday, 1pm, Rm 20B-031. Call Prof. Schimmel, X3-6739, or Ralph Burgess, X3-2415.

### Ananda Marga Yoga Society\*

Yoga classes, every Thursday, 4pm, Student Center West Lounge. For information call X3-3664.

### Islamic Society Prayers\*

Every Friday, 12:15pm, Kresge Rehearsal Rm B.

### Campus Crusade for Christ/College Life\*\*†

Every Friday: 7pm family time; 8pm Open Book teachings. Rm 1-132.

### Chinese Christians Fellowship\*

Bible study, hymn singing, praying, sharing. Every Friday, 8-11pm, Student Center Rm 491.

## Announcements

Society of the Sigma Xi certificates may be picked up daily from 2-5pm in Rm 5-230.

### Technology Nursery School\*

Limited openings are available on a 2, 3 or 5 day per week schedule. For information, call ext 3-5989.

- \*Open to the Public
- \*\*Open to the MIT Community Only
- \*\*\*Open to Members Only
- †Freshmen encouraged to attend

Send notices for September 27 through October 6 to the Calendar Editor, Room 5-111, Ext. 3-3279, by noon Friday, September 29.



Mrs. Peg Shea of Academic Staff Records greets Mr. White at his reception. —Photo by Margo Foote

## Arthur White Honored at Fiftieth Anniversary

More than 125 friends and associates gathered at the Faculty Club last Wednesday evening to honor Arthur White on his completion of fifty years service to the Institute as Manager of the Office of Laboratory Supplies.

Professor Walter A. Rosenblith, Provost, and Paul V. Cusick, Vice President for Business and Fiscal Relations, representing the Institute were introduced by G. Edward Nealand, Director of Pur-

chasing. Professor Rosenblith brought the greetings of the Institute on behalf of President Wiesner and Mr. Cusick presented a watch to Mr. White. Mr. Nealand presented a color television set to Mr. and Mrs. White on behalf of their friends.

Among the guests were two other 50-year veterans, Frederick Broderick, formerly of electrical engineering and H. H. Carter of chemical engineering. Another guest was Frederic Fennerty, a retired member of the purchasing staff who was visiting from Florida.

Mr. White, who retired from the Institute on September 1, is the sixth man at the Institute to reach the 50-year milestone and is believed to be the last person who will do so because of stronger labor and retirement regulations.

## Harvest Moon Ends Summer

Weather permitting, a full harvest moon will be visible this week as summer bows out to autumn.

Gerald Ouellette, astronomer and deputy associate director of Draper Laboratory, says, "A full moon will occur near midnight on Friday, September 22. This is within six hours of the autumnal equinox at 6:34pm. Astronomically speaking, the equinox signals the end of summer and the beginning of autumn."

For several days before and after September 22, the nearly full moon will rise within an hour of sunset. This will tend to extend the length of each day by providing brilliant moonlight. Mr. Ouellette explains that the repeated rise of a full moon at sunset only occurs at the time of the autumnal equinox. And the equinox coincides with harvest time—thus the phrase "harvest moon."

Mr. Ouellette has taught astronomy at Boston College and Boston University and has lectured at the Museum of Science. This year he is conducting a freshman seminar at MIT entitled "Man in the Universe."

## Day Care Is Meeting Topic

A Family Day Care Orientation Program will be held in the Student Center Mezzanine Lounge on Monday and Tuesday, September 25 and 26, at 7pm for all persons interested in day care.

The Orientation Program is geared for people who would like to earn money by caring for children in their homes, for those who need day care for their own children, and for anyone interested in volunteering to visit homes to teach children and day care mothers special skills like music and dance. The program is open to all members of the Institute community.

The first session on Monday, September 25, will focus on how the Family Day Care Program works. Guest speaker Francis Ackerly, formerly of the Catholic Charities Family Day Care Program, will lead a group discussion about the choices parents make. Applications will also be accepted from those parents who wish to take care of children and those who need day care.

Tuesday evening the discussion will deal with what family day care can be, using the Catholic Charities program as a model. Jackie Daly, assistant director of the program, and a family day care aide, will describe the Catholic Charities day care facilities. They will also discuss activities for children.

## CLASSIFIED ADS

Ads are limited to one per person per issue and may not be repeated in successive issues. All ads must be accompanied by full name and extension. *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. The deadline is noon Friday.

### For Sale, Etc.

Gld couch, 31x86", 1 leg nds minor repair, \$10. Arnold Herzog, X3-4935.

Artley flute, solid silver, open hole with natural foot, \$350. Dorm X8658.

Lg rugged baby carr, \$12; bassinet, \$5; light crib & matt, \$25; folding, nylon side playpen, \$12; new tone range hood, \$15; old, gd refrig, \$40. Tony, X3-5783.

Free, child's swing set, come & get it. X3-6962.

Hoover waher, best offer. George, X8-3531 Draper.

Sitars from India. Douglass Frost, X3-5743.

Studio couch, opens to dbl bed, \$20; 2 Danish seign LR chrs, \$15 ea; 2 maple captain chrs, \$8.50 ea; coff tbl, painted glass top, \$2; over stuffed chr, \$5; ironing board, \$1. Erica, X3-2728.

Dressers, 2, w/mirrors; metal cab desk; snl bed, \$15; qu sz matt, \$10; refrig, \$35. Larry, X3-1960.

Brother port elec calculator w/constant & Ni-Cad, \$85 or best. Neil, Dorm X9508.

Premium Armstrong Cornet tires, F78-14, 4 ply nylon, tubless, best offer. X8-2465 Draper.

Drexel desk, light nat wd finish, match chr, \$35. Ken, X3-4428.

AR trntbl w/new stylus, \$60. Stephanie, X3-1961.

Sewing Mach, zig-zag, wal cab, 2 yrs old, exc cond, \$75. Carol, X7485 Linc.

Wool gld plush rug, 5'11"x11'4", \$30; Luxo blk rectangular flourescent lamp, \$20. Gary, 262-2543.

Aquarium, 20 gal tank, incl pump, filter, flour light, fl hood, wrought iron stand, \$40. Bill, X3-2393.

Sofa, 8', brwn wool tweed, 4 loose back pillows, you move, \$200. Melonie Barron, X3-2045.

Oven proof dinner ware, 52 pc, ser for 8, mostly wht w/burnt org border design, perf cond, \$15. May Hipshman, 868-7417.

Full sz refrig, yr old, exc cond, \$85 or best. Flora, 547-9728.

Hamond elec organ; Sears elec guitar, hardly used. X397 Linc.

Snow tires, pr, 7.75x14, \$45. X3-5708.

Frigidaire elec stove, 30", self clean, 4 yrs old, \$150 or best. Dick, X8-4570 Draper.

Boy's hockey skates, sz 7, \$5; soccer shoes, sz 7, \$1.50; wall hung mahog desk, bar or stereo cab, 15"x16"x36", \$20. Drouilet, X401 Linc.

Gen Tire, 8.55x15, wht wall, 2, 6-ply belted, mounted on hvy duty Chrysler rims, 8K, \$60 for pr. Garry, X7763 Linc.

Maple rock chr; lg spindlebk chr w/loose cushions; 18' dp burgundy 90" drapes, dbl & trpl widths, best offers. Jeannie, X8-3584 Draper.

Gas & elec stove; grn broad loom; chandelier & misc lght fixtures; old gas refrig. Harley, 3-5323.

Antenna tower, 25', 3 secs, \$10. Howard, X5466 Linc.

Stoves: Spedi Baker gas, \$50; Frigidaire elec, 2 ovens, \$125. Donna, X7884 Linc.

Umbrella tent, 10x10', camel, \$20. Jane Kosut, X3-3762.

Lady's bike, \$25; toys; Dan uphol wool; lg bucket. Gundersen, X3-6085.

VW Camper pop-top tent, 23K, exc cond, best offer. Johnson, X3-2752.

New dkrm equip, comp set, nvr used, \$125. Ann, X3-4401.

B flat clarinet, gd cond, \$35. X8-3607 Draper.

GE washing mach, sht, 5 yrs old, v gd cond, \$60. X7628 Linc.

Mersman drum cof tbl, antiwue blue, \$15, wl haggle. Molly, X3-4868.

Hockey skates, sz 1, \$16 new, \$8 almost new. Bill Bartlett, X8-3546 Draper.

Teac 6010 tape deck, lists for \$800, new heads, \$582. Dave, X3-6675.

Sansui 2000A receiver, 120w, AM/FM, exc cond, yr old. David, X8-1286 Draper.

Yashicamat 124 camera, case, sun shade, filters & bc flash, \$60; Minolta 16mg camera, case, flash, \$40. Joe, X8-2847 Draper.

Minolta SRT-101, brand new, 50% off; wnted, bike. Jan Willums, X3-7828.

Nikon F w/50mm, f1.4, \$240; 28mm, f3.5 Nikkor lens, \$115; 85mm, f1.8 Nikkor lens, \$135; Yashica D, 2 1/4 TLR w/case, \$50; Bressler Topcon C w/35mm f2.8 Topcor lens, \$70. Jeff, 731-0971.

Magnavox port stereo, \$30; red shag rug w/pad, 6x9, \$25. Julia, X8-1156 Draper.

Desk w/chr & shelves, \$25; dbl bed w/matt, \$30; reclin chr, tbl, lmps, iron, ports pans & radio/phono, best offer. Jose, X3-1691.

Cedar picket fence, 70 linear feet, 3' hi, incl gate, best offer; woman's dresses, 5 & 9, new slightly used, from \$1; lady's gld watch, best offer. Malcolm Jones, X3-6606.

Sgl bed, stand, matt & box spring, used yr by grad st who didn't slp much, \$40 or \$35, whichever you prefer. Call 625-1457 evgs.

New tires, 5, 5.60x13, orig equip on Datsun, ww, tubless, \$15 ea; 135mm telephoto for Pentax, \$20; qu sz box springs, \$5; dressing tbl, \$3. X3-5330.

Scott 357 FM/AM stereo receiv; Garrard Synchrolab 95B turntbl, best offer. Mary Bell, X3-6736.

VW luggage rack, new, \$10; VW serv/repair man, '61-'72, \$4. Wong, X3-2108.

Electrovoice 12" spkr in big cab, \$20; Garrard trntbl, exc cond, \$20. Jacob Widhopf, X3-5607.

Air cond, 12,000 BTU; 220v, new motor, 2 yrs left on guar, \$80. Susan, X8-3620 Draper.

Woman's figure skates, sz 7, \$3; guitar, almost new, \$30. Adriana, X3-2013.

Bundy flute, nickel plated, gd cond, \$85. Dorothy, X3-2054.

Contarex, used 35mm, f2 & 135mm f2.8; Luna-pro lght meter; Dynaco stereo, 70 amp, PAS-3 preamp, KLH model 18 tuner. Les Boden, 354-0807.

AM/FM clock radio, \$20; alarm clock, \$7. Nahum, X3-1539.

### Vehicles

'59 Plymouth, 66K, runs, \$45 or best. X8-1117 Draper.

'62 VW sedan, 72K, new snows, runs well, \$160; '65 VW camper w/pop top, 55K, new snows, always been garaged, rebuilt engine at 30K, \$750. Howard Babbitt, X5860 Linc.

'63 Healy Sprite, nds new crank shaft bearing, gd body & exc tires, many extra parts, best offer. Joe, X5843 Linc.

'63 T-bird, all pwr, air cond, gd run cond, many new parts, 4 new tires, \$330. John Cheh, X3-6662.

'63 Chev Belaire wgn, gd reliable transport, new exhaust, gd tires, 2 snows, \$200 or best. Thomas Facet, X3-2094.

'65 Chev Belaire, exc cond, 35K, \$750. Frank Morgan, Dorm X0307.

'65 Falcon convert, flr shift, 67K, gd cond, \$400 or best. Call 354-7165.

'65 Mustang convert, 8 cyl, 3 spd, gd cond, 2 snows, \$450. Pete, X3-1940.

'65 Plymouth Sport Fury, auto, p-str & brake, bucket sts, sht, perf body & eng, \$450. Ronnie, X3-2173.

'65 Buick Special wgn, exc cond, fall sticker, pr stud snows, \$375. Dave, X3-2816.

'65 Volvo 122S, 2-dr, v gd cond, \$450. Jaun, X3-1691.

'66 Opel Kadett, eng nds rng job, exc cond, new tires, v cheap. Patrick, X3-9872.

'66 Ford Fairlane, 6 cyl, 4 dr sedan, exc cond, \$350. X8-3685 Draper.

'66 Chev wgn, std, 4 gd tires w/2 snows, mech sound, best offer. X3-2484.

'66 Ford Mustang, V-8, gd cond, 4 new tires & 2 snows, avail 9/25, \$400. X3-2445.

'66 Rover 2000, gd mech cond, runs well, lthr inter, nds body work, best offer over \$300. Mike, X3-7597.

'66 VW, \$300, runs well. Bob Miller, X8-3388 Draper.

'67 Ford Custom, 6 cyl, gd run cond, \$300. X8-4597 Draper.

'67 Pontiac Firebird convert, 326 V-8, exc cond, new polyglass tires, \$900. Dorm X0145.

'68 Pontiac Firebird Spt Cpe, vinyl top, overhead cam, \$950. Merle Carter, X1830 Middleton.

'68 Buick Skylark, V-8, 38K, p str & brake, air cond, asking \$1000. Dabney White, 923-9246.

'69 VW sqbck, \$1400. Fritz Keilmann, X3-7071 or X3-7079.

'69 Pontiac Tempest convert, new top, all power, air cond, tape deck & many extras, must be seen. Call 233-0813 after 6.

'69 Triumph Spitfire, grn, \$950 or best. Dan or Ann Shanahan, 957-1741.

'69 Chev Malibu, 2 dr, vinyl top, auto, 40K, wl sacrifice, reas offer, see it at DL6 after 4pm. Jeff, X8-4093 Draper.

'69 CB 450 Honda, gd cond low mi, \$500. Phyllis, X7156 Linc.

'69 Toyota Corona HT, 20K, gd cond, best offer. X3-3632.

'70 Maverick, 6 cyl, 200 cu in, vinyl rf, 2 mtd snows, gd cond, \$1200. Joe, X3-6275.

'70 Austin America, 28K, std, fun car, exc cond, \$950. X3-6852.

'70 Cougar XR-7, many extras, v gd cond, \$2250. X3-6285.

'70 Fiat 850, R, gd cond, std, asking \$1000. Frances, X3-6733.

'70 Austin America, 3 43K, std, nds trans work, \$400. Michael, X3-6035 lv msg.

'66 Yamaha 250cc, gd cond; Honda S-90, not running; 2 lg unmatching hifi speakers, \$25 ea. Rick, X8-1469 Draper.

'67 Honda 305 Scrambler, rd racing tank, seat, bars, \$150 or best. Mark Arronoff, X3-2920.

'67 Honda 305cc, oversz sprocket on r wheel, low mi, lock & chain, \$250 or best. Tatsuya, 648-1614.

'71 Yamaha CS3B, 200cc, exc cond, \$500. Alan, X3-4384.

'71 Yamaha R5B, 350cc, street; '70 Yamaha CT1B, 175cc, trail; both low mi, exc cond, extras. Myron Frommer, X3-3241.

Honda 160 CB, 13K, \$200; wicker headboard, twin; mahog arm chr w/down cushion; 9x12 rug; sew mach cabinet. Richard Lanza, X3-2396.

'67 Nimrod Rivera tent camper, sleeps 5, built in storage, new bearings, 3 new tires, \$400. Tiny, X3-3771.

Corsair 17' travel trlr, sleeps 6, comb gas-elec refrig, self contained, \$1100. John, X8-3371 Draper.

Trlr, 4'x6', fits any car, gd for hauling, \$35. Margaret, X3-7147 9am-1pm.

Girl's 26" reg Eng bike, yr old, lk new, \$30. Pat, X3-4878.

Man's bike in gd cond & reas. Carlos, Dorm X9575 after 12m or lv msg for rm 407B at X3-2961.

### Housing

Camb, 2-BR furn apt, 1st flr, htd, walk to MIT, Sidney St, \$225/mo. Carlos, X3-2739.

Bel, sunny rm in antique farm hse for respon profes person, trees, barn, land, 15 T mins to Harv Sq, K priv. Kate, X3-2282.

Brk, lg, 1st flr apt, 3BR, LR, panl DR, K, pantry, frplc, tile B, gar, back yard, \$310 heated. Craig Balon, X3-3877.

Chelmsford, 8 rms, split entry, frplc, LR & fam rm, 2 car gar, screened porch, w-w, combinations throughout, 1 1/2 b, 1 acre treed lot, above grnd pool w/patio, asking \$46,500. X8-1216 Draper.

Chelsea, Wdlawn sec, 4-rm apt, yd & patio, no pets, exc loc, \$190/mo incl ht, hw & gas. Tony, X5467 Linc.

Gilford, NH, chalet for winter rentals, wkly. X8-4415 Draper.

Lex, new 4 BR house, full & 2 half Bs, eat in K, DR, LR, finished playrm, wl furn appliances, \$400, lease required. Steve, X7140 Linc.

Newton, 4 sts/workers seek 2 more to share lg hse in lovely neighborhood, own rm, share meals & cleaning, near Mass Pike & trans. Lee, X3-2030.

Som, 50 Craig St, avail to MIT married cpls, mod 1 BR apt, air cond, w-w, dish-disp, pkgng, heated, great people, avail 10/1, \$210/mo. Jim, X3-1610 or Mrs Hunter, X3-1493.

Westgate II, 4 BR apt on 14th flr. Hsing office for apt 14B, X3-3181.

Winch col, lg capK w/dishwash, formal DR, spac LR, 3 lg BR, fam rm w/bar, w-w carpet, enc porch, gar, yd, \$31,000. Paul, X3-6770.

### Animals

Kittens, 2 ador wht, free to gd homes. Marty Davidoff, X3-1461 lv msg.

Gerbils, lively & curious, mo old, free. Joel, X3-4722.

Satin rabbits, 2 3 mo old does, \$3 ea; adult Siamore satin doe, \$2; all are pedigree & tattooed, pet quality animals from sho stock. Betty Reid, X3-2186 or Bob Reid, X8-1511 Draper.

### Wanted

Full time babysitter for sm boy. Wendy, X3-6089.

Tap dancing lessons, priv or grp. Elaine, X3-3139.

Used flute for teenager, reas. Frank, X8-2865 Draper.

Fem rmmate, own rm, nr Harv Sq, \$85/mo incl heat. X3-4571.

Part time sec assistants for free lance journalist w/internat corres & term papers, elec typewriter necess, pef on campus. Dorm X0218.

Wheel rims, 14" & 13", for '71 MGB & '71 Fiat 850. Marshal, X3-5794.

Qu or kng sz mattress. John Hanser, X3-6185.

Rmmate to share hse in Peabody, own rm, pt furn, \$80/mo, carpool. Charlie or Rocco, 532-1368.

Low mi mini bike or trail bike. George, X5775 Linc.

Chain saw, gas pwr, gd cond, for lght duty use. H. Curtis, X3-6116.

Ride to MIT-Sloan Sch daily from Som, nr Davis Sq. Susan, X3-4437.

Daily ride, Bos-Linc Lab, wl pay. Chasin, X5435 Linc.

Riders or drivers for carpool from Waltham-Newton area to MIT, daily, lv home about 7:30 or 8am, lv school about 6-8 pm. Lee, X3-6037.

Ride, daily, Marblehead to MIT & back, wl share exp. Ran, X3-5869 or X3-5685.

Violin, 1/8 sz, rent or buy. X7612 Linc.

Apt or hse to rent by 2 Eng wom visiting profs, last wk of Sept to Christmas. Jessie, X3-3141.

Handyman for odd jobs (yd cleaning, snow removal, painting, etc.) in Jam Pl, about twice/month, wl pay up to \$10. Nancy, X3-7426.

VW snow tires, 2. Ethel Vokey, X358 Linc.

### Miscellaneous

WI tutor French or Ger, bilingual honor grad, several yrs teaching exp, most recent at U of Mass. Barbara or Pierre, X3-6997.

WI do gen or scien Russian translation. Connie, X3-5764.

Wd flrs sanded & refin professionally. Denny, X3-5606.

WI trade Eng conversation for Fr. Valian, X3-5763.

Appliance repairs, all models, anytime day or night, free estimates. David Butler, X8-3677 Draper.

WI do typing, 8 yrs exp. Marsha, X3-2342.

WI do gen or thesis typing on Selectric, fast & accurate. X3-6864.

German, practice in reading &/or conversation w/priv Camb tutor fluent in Ger & Eng, moderate fees. X3-3231.

WI teach piano in my home nr MIT, children or others. Lee, X3-5259.

WI do gen or thesis typing on Selectric. Susan, X3-2138.

Commercial & instrument flight training avail, well equip aircraft, low rates. Doug, X3-1636.

Openings still avail in alternative pre-school, ages 4-5, & primary sch, ages 5-8 in Som, both co-op, moderate tuition. Sam, X8-4989 Draper.

*Note to parking sticker swappers: please remember to inform your supervisor and the Campus Patrol of the exchange you have made so that their records accurately reflect your new parking area.*

WI swap Monroe pking sticker for almost anything else. Linda, X3-3278.

WI swap West garage sticker for Albany. Strong, X3-4368.

WI swap West garage sticker for Windsor. Ron, X3-7273.

WI swap West garage sticker for Albany or East. Frank Canali, X3-1733.

WI swap W Gar sticker for Windsor sticker. Alex, X3-7273.

WI swap West Gar sticker for Windsor. Roy, X3-6105.

WI swap East sticker for Kresge. Liz, X3-6808.

WI swap Albany sticker for East. Cathy, X3-7237.

WI swap Albany for East. Ed, X3-7238.

WI swap West for Windsor. John Donaghy, X3-6143.

WI swap West Gar pkgng sticker for East or Albany. Tom, X3-5162.

WI swap Sibany for Windsor. John Goddard, X3-4955.

WI swap West gar sticker for Windsor. Ed, X3-6113.

WI swap West gar pkgng stker for East, 46-48 lot, or Albany. Charles Blake, X3-2394.

WI swap Albany stker for East. Norm, X3-7238.

WI pay for Albany or East gar pkgng stker. Bob Domnitz, X3-2534.

WI swap Albany for Windsor. Audre Childs, X3-4878.

WI swap Albany stkr for East. Marie LaPrade, X3-4558.

WI trade Albany for Kresge or West Gar. Carol, X3-1628.

WI trade 2 Monroe stkers for 1 or 2 West gar stkers. Jeff, X3-5113 or X3-7920.

### Positions Available

The Office of Personnel Relations each week lists a sample of the available opportunities at the Institute. Interested employees are encouraged to call the appropriate extensions for further information about these or other current jobs.

*Section Head V, Data Processing* for large administrative office will be held responsible for all communications and liason between the office and the Data Processing group, and will be responsible for the administration and implementation of all department computer programs. Will work in conjunction with the computer group on the design, development and implementation of a new data base and system. Will also be responsible for the expansion

of this system and the ultimate conversion to CRT console record keeping. Responsible for generating modifications and improvements to the current system, thereby simplifying many manual tasks. Responsible for coordinating the work of two key-punch operators. Three to five years keypunch and/or computer processing experience. Some supervisory experience helpful, though not required.

**Secretary V** to Academic Department Chairman. Excellent shorthand and typing skills needed for taking and transcribing minutes of faculty meetings; type manuscripts and letters; handle heavy volume of mail-sort and answer some letters on own; make travel arrangements; responsibility for busy calendar. An experienced secretary with organizational ability and college is preferred to make decisions and to anticipate. Some overtime necessary.

**Secretary IV** to the Executive Director of an MIT Science Research Program located in Brookline, will arrange seminars, meetings and conferences for many foreign and domestic scientists attending Work Sessions and Intensive Study Programs; will compile, arrange, type and disseminate research reports; will handle many non-scientific matters independently; will schedule appointments; may type on IBM Composer. Shorthand, dictaphone, excellent typing, experience are required. 40 hour work week—8:30 to 5:30. Applicant must provide own transportation.

**Secretary IV** to researcher in newly-funded medical research project. One secretary-one supervisor situation requires an experienced secretary to set up patient appointments, research medical topics in library, prepare medical and technical manuscripts, make and paste up graphs. Unique opportunity for a skilled secretary.

**Secretary IV** to a professor and colleagues in an engineering department. This one-secretary office requires the talents of office experience and familiarity with MIT academic and accounting procedures. Will compose letters, arrange appointments, meetings and travel; will type technical manuscripts, papers and class material. Much contact with advisors and students. Shorthand would be helpful.

Biweekly, Ext. 3-4251

#### APPLICATIONS ANALYST

The Information Processing Center is seeking an Applications Programmer/160 Analyst who would assume the following responsibilities:

Advise users on procedures and techniques in setting up a statistical package for the problem, on using the package, and on debugging the problems.

Evaluate statistical packages available on the market.

Incorporate packages attained from other installations into our libraries.

Prepare documentation on the use of statistical routines and packages in our libraries.

Maintain and test packages of routines to assure their continued operation under new versions of the operating system.

Conduct seminars and teaching classes on the use of language and packages which may be assigned.

Applicants should have a bachelor's degree or equivalent in statistics, applied mathematics, or computer science, or a bachelor's degree in social science and an advanced degree or formal training in statistics. Experience required in solving statistical problems using: regression analysis, analysis of variance, correlation analysis, Guttman scale, and factor analysis; as well as experience in computer programming.

#### TRAINING INSTRUCTORS

The Office of Personnel Relations' Training Section is preparing at present to expand and diversify its training and instructional services for Institute employees, particularly for those in the bi-weekly area. This program will be in response to training assessment surveys conducted earlier this year which showed a need for such services. To this end the training section is seeking applicants who have teaching experience or who are knowledgeable in general office procedures and management and such specific skills as shorthand, speedwriting, and general and technical typing.

In addition to the above, applicants should have ability and desire to diversify their talents in such areas as employee counseling and special skill development programs.

Interested applicants are welcome to submit resumes or updated applications to: R.E. Higham E19-220.

# O'Neal Becomes Head of Real Estate Office

The appointment of Charles D. O'Neal, Jr., of Acton as director of the Institute Real Estate Office, effective September 18, has been announced by Frederic W. Watriss, MIT associate treasurer.

Mr. Watriss also announced the promotion of two other members of the Real Estate Office Staff. Mrs. Sheila B. Beyer, formerly assistant director, has become associate director, and Leigh S. Woodward, formerly project manager, has become associate director.

Mr. O'Neal, also a former project manager, succeeds Antony Herrey who resigned recently to assume a new position with the Ford Foundation. Mr. Herrey will be in charge of a new investment program in real estate and other properties throughout the world.

A graduate of Yale University in 1949, Mr. O'Neal has done graduate study in business administration at Boston University. He has been in the real estate business, specializing in brokerage, appraisal and management for more than 20 years. For three years he had been with the Cambridge Redevelopment Authority, serving as chief of the real estate services before coming to MIT in 1969.

Mrs. Beyer, who lives in Ipswich, received bachelor's degrees in 1965 and 1966 and a master of education degree in 1968 from Boston University. She joined the staff of the Real Estate Office in 1968 after having served as assistant registrar at the Boston University College of Business Administration.

Mr. Woodward came to MIT in 1969 from Cabot, Cabot and Forbes, where he served in the project management division. He had been involved with a number

of local projects, including Technology Square and the New England Merchants Bank Building. He received the bachelor of architecture degree in 1951 from Rensselaer Polytechnic Institute, is a registered architect, and resides in Saxonville.

The Institute Real Estate Office is responsible for three major programs: "A Housing Program in Cambridge," the Northgate Community Corporation and the Community Housing Service.

"A Housing Program in Cambridge" is aimed at alleviating the housing shortage in the city. The Program includes nearly 700 units of public housing for the elderly now under construction on three sites—Cambridgeport, East Cambridge and North Cambridge—with completion and conveyance to the Cambridge Housing Authority scheduled for the summer of 1973. In addition, proposals have been submitted to the Cambridge Housing Authority for an additional 54 units of low income family housing under the public housing Turnkey Program.

Northgate Community Corporation, a real estate affiliate of the Institute, was formed to achieve a controlled inventory of off-campus housing for MIT staff and students. Altogether there are now some 470 dwelling units operated by Northgate in Cambridge, Arlington, Medford and Somerville.

The Community Housing Service maintains listings of apartments and houses within the greater Boston area and assists members of the community in finding suitable housing and advising on housing problems which may arise.

# Hanham Chosen for Dean's Post

(Continued from page 1)

having a special relationship to science and technology, MIT also is strong in the branches of the humanities and the social sciences," Dean Hanham said. "There already is here a working partnership between the several cultures and there is concern that the partnership be strengthened and extended."

The School of Humanities and Social Science—composed of the Departments of Humanities, Psychology, Economics, Philosophy, Political Science and Foreign Literatures and Linguistics—includes some of the foremost scholars in the nation.

Dean Hanham was born in Auckland, New Zealand, received the B.A. degree in 1948 and the M.A. degree in 1950, both from the University of New Zealand, and studied at Selwyn College, Cambridge University, England, where he received the Ph.D. degree in 1954.

He taught for 10 years in the Department of Government at the University of Manchester and from 1963 to 1968 he was professor and head of the Department of Politics at the University of Edinburgh.

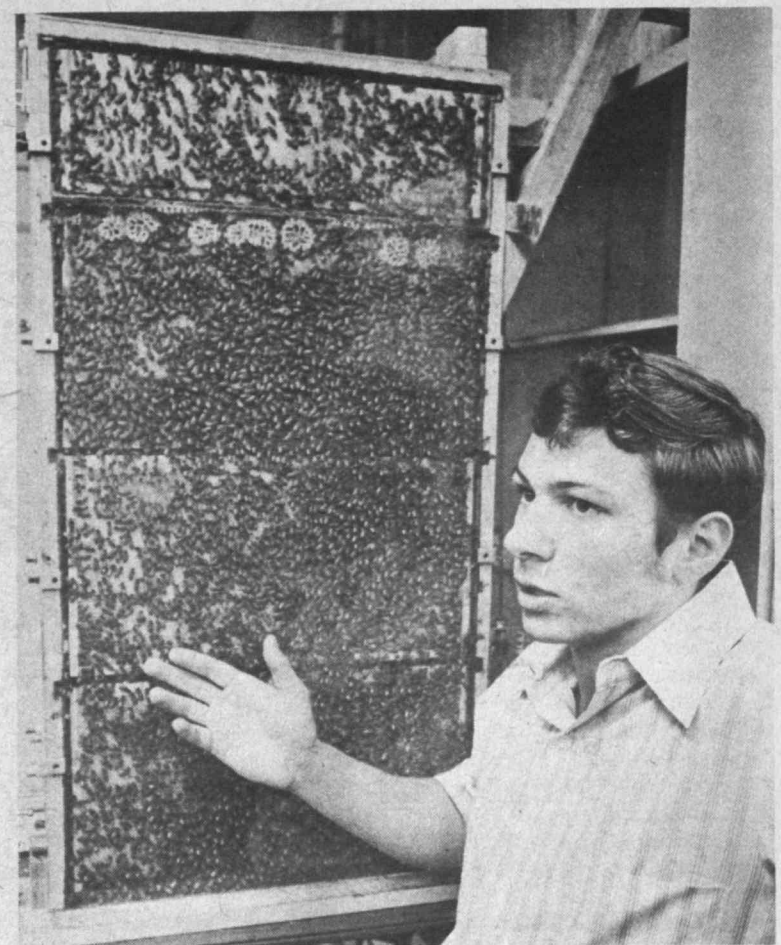
In Scotland, Dean Hanham served as chairman of a committee of educators which developed a new high school curriculum called "modern studies" presently in use in Scottish secondary schools. He also was chairman of a committee of medical and social sciences educators which drew up the first degree program for nursing edu-

cation in Great Britain and he served on the advisory committee at the International School of Nursing (WHO) at Edinburgh. From 1964 to 1968 he was chairman of the faculty board of research at the University of Edinburgh with specific responsibility for the university's Social Science Research Center.

Also in recent years Dean Hanham has established extensive academic and administrative connections with numerous colleges and universities in Africa. He is the author of several scholarly articles on African affairs. He has served as external examiner and consultant to universities in the Sudan, Lesotho (formerly Basutoland), and Malawi (formerly Nyasaland). At Harvard, he is a member of the committee charged with review of the work of the university's Department of Afro-American Studies.

Dean Hanham served on the University Press Committee at Edinburgh, is now associate editor of the *Journal of Interdisciplinary History*, a member of the editorial board of the *Journal of British Studies*, and, at Harvard, serves as chairman and sole member of the committee responsible for the Harvard historical studies and the Harvard historical monographs published by the Harvard University Press.

Dean Hanham is the author of numerous scholarly articles dealing with politics, government and history as well as several books, including *Elections and Party*



Bob Gahl displays his colony of bees.

—Photo by Margo Foote

# Student Investigates Bee Communications

"Communication among bees comes closer to human language than communication among almost any other animal," explains Robert Gahl, a junior in biology, who has cultivated a colony of some 10,000 bees in his Building 20 laboratory.

Gahl, who has worked with bees at his family's hives in New Berlin, Wisconsin for more than seven years, started studying bees at MIT after Professor Lawrence Frishkoph of electrical engineering expressed interest in building

a hive to observe bee communication. Gahl took Professor Frishkoph's course in animal communication systems last spring and studied the bees' "shaking dance."

"Bees are social insects," Gahl says. "It has already been established that their 'tail wagging dance' indicates the direction and distance to a food source relative to the sun. But no one knows what the 'shaking dance' is all about."

The "shaking dance" is entirely instinctive and begins after a bee runs through the hive and approaches another bee from a random direction. The "shaker" bee crawls on top of the "shakee" and rapidly moves his abdomen up and down. The "shakee" remains still during the entire dance which lasts only for a second.

Gahl began studying the shaking dance with the hypothesis that the dance is a manifestation of the hierarchy within the hive. After making more than 5,000 observations of his colony of Italian *Apis mellifera* L bees, Gahl has recorded data which might support his hypothesis. In 96 percent of his observations, Gahl has found that the bees perform the dance with their peers or with younger bees.

# Financial Forecast Shows Improvement

(Continued from page 1)

receives between \$3 and \$4 million in unrestricted gifts and bequests, in royalty income on patents, and in charges for the research use of its facilities in lieu of plant depreciation. The figure of \$5.4 million in 1971-1972 is larger than normal because of four substantial bequests.

Since such income is subject to large fluctuation from year to year, he said, the Institute does not normally include it in anticipated income for budget-making purposes. Ordinarily, such unrestricted income is used to underwrite new programs, to fund plant improvements, or to add to endowment funds.

In recent years, however, the Institute has increasingly used

these unrestricted funds to balance the operating budget, which has been upset by the relentless pressure of inflation.

"A year ago," Dr. Gray said, "all of the current unrestricted income in addition to balances accumulated in prior years—\$5.4 million in all—was used to balance the operating budget. The salary reduction achieved in the year just ended is a healthy sign for the future. In addition, the availability in 1972 of nearly \$2.5 million in unrestricted income not required for operations allows MIT to make a modest addition to its endowment and to fund a portion of a much needed program for the renovation of Ashdown House, the oldest of the graduate student residences."

# Student Center Opens 24 Hour Coffeehouse

The Student Center Committee is sponsoring a 24 hour Coffeehouse, a comfortable place where people can get together for coffee and doughnuts any time of day or night.

Open 24 hours a day, seven days a week, the Coffeehouse is an ideal place to go between classes, dur-

ing the noonhour, or for a late night study break. It is located in the Student Center's second floor Center Lounge.

In addition to coffee and doughnuts, the Coffeehouse also sells tea, yoghurt, bagels and candy. An FM radio provides music when the piano is not in use and there are

plenty of games—chess, checkers, cards, strategic games, Scrabble, etc.—for those who want them.

Bob Ice, a sophomore in physics from Spring, Texas, manages the Coffeehouse. He says, "We started the Coffeehouse as an experiment last May and reopened it during Freshman R/O Week. Right now it is staffed by volunteer students,

but if business picks up, we should be able to pay a small salary."

The Coffeehouse needs the support of the community. Everyone is invited to stop in and visit. More volunteers are needed, too. Anyone interested in volunteering should call Linda Christian at the Technology Community Association, Ext. 3-4485.

# Tech Booters Begin Season

MIT's soccer team begins the 1972 season Wednesday, September 27th when the varsity squad, coached by Bill Morrison, meets Harvard.

This year's Tech Booters include players from seven countries, most of whom are high in skills, but low in teamwork. Coach Morrison's main task will be to mold the players into a team.

Morrison sees a cohesive unit balanced by seven returning lettermen and several promising newcomers. On the forward line he will probably start junior Gustavo Arboleda from Cali, Colombia, freshman Shin Yoshida from Ibaraki, Japan, sophomore Esref Unsal from Istanbul, Turkey and a Freshman William Adu Ntoso from Kumasi Ashanti, Ghana.

One promising player is 18 year old Yoshida. In pre-season scrimmages to date, he has scored five goals in two games and is rated a "good one" by mentor Bill Morrison.

Halfbacks on the squad are sophomores Ted Heuchling from Concord, Ray Marotta from Arlington, Virginia and junior Mark Abkowitz from Lexington. Abkowitz was switched to the halfback position from the forward line.

The fullback situation will be handled by junior Neal Dowling from Grafton, Wisconsin, freshman Greg Hunter from Rochester, New York and anchored by junior and captain Eric Barklis from Fort Worth, Texas.

Although All New England goalie Tom Aden has graduated, MIT will still have a veteran stopper in junior Ritchie Straff from Philadelphia, Pennsylvania.

## Library Holds Guided Tours

Tours of the Science Library will be held Monday, September 25 and Tuesday, September 26 at 12noon and 5:00pm each day.

The tours will include an explanation of where various materials can be found in the library.

Tours will start from the Map Room in the Science Library (14S-100) and should last approximately 30 minutes.

## Marksmanship Course Offered

The MIT Pistol and Rifle Club has announced the beginning of a course in basic pistol marksmanship.

The course will be offered for five consecutive Thursday evenings, beginning September 28, from 6:30pm to 8:30pm in the duPont Pistol Range. The class will be limited to the first 20 adult members of the MIT community who apply. A \$10 fee covers the cost of pistols, ammunition and targets.

Anyone interested in applying should call George Sechen at Ext. 1830 (Linear Accelerator) or Range Master Thomas P. McLennan at Ext. 3-3296.

## Graduate Study Opportunities

The following brief descriptions of selected graduate fellowships and advanced study opportunities have been received recently by the Graduate School Office. More complete descriptions are available in the Office, Room 3-134.

**Danforth Graduate Fellowships for Women** The objective of the program is to find and develop college and secondary school teachers among that group of American women whose preparation for teaching has been postponed or interrupted. In general, the Fellowships are intended for women who no longer qualify for more conventional fellowship programs or whose candidacy in such programs might be given low priority. The career of a typical applicant may have been interrupted by such factors as the raising of her family, personal illness, or the need for a paying job, but she now finds herself in circumstances which will permit her to undertake the graduate work essential for a professional career as a full-time teacher at the college or secondary school level. Appointment is for one year beginning September 1, 1973, and is renewable annually. The maximum award for 1973-74 for a calendar year of study will be \$3,000 plus tuition and academic fees, or, for heads of families, \$4,000 plus tuition and academic fees.

**Ford Foundation Fellowship Programs For Minority Students** The Ford Foundation sponsors four programs for selected minority group students who: A. intend to pursue a teaching or administrative career in higher education; B. plan to study full-time for the doctoral degree; and C. are citizens of the United States. The programs are open to students about to begin graduate study in the arts and sciences in 1973, as well as to those already enrolled in graduate schools of arts and sciences. Separate programs exist for black Americans, Mexican Americans, Puerto Ricans, and American Indians.

**NATO Postdoctoral Fellowships In Science** Approximately 55 awards, known as NATO Postdoctoral Fellowships in Science, will be offered on February 19, 1973, to citizens or nationals of the United States for further study in the sciences. Tenures of either 9 or 12 months are intended for persons planning to enter upon or continue postdoctoral study in the sciences. Fields covered are the mathematical, physical, medical, biological, engineering, and social sciences, and the history and/or philosophy of science. Also included are interdisciplinary fields which are comprised of overlapping areas among two or more sciences (such as oceanography, operations research, meteorology and biophysics.) The stipend for a NATO Postdoctoral Fellow is \$7,500 for 12 months; for 9 months it is \$5,625. Selection of Fellows will be made by the National Science Foundation. To be eligible for consideration, an Application must be complete and must be submitted on the standard official forms. Application materials may be obtained from the Division of Graduate Education in Science, National Foundation, 1800 G. Street NW., Washington, D.C. 20550. The deadline for submitting Applications for NATO Postdoctoral Fellowships is October 23, 1972. Applications submitted by mail must be postmarked no later than this date.

**NATO Senior Fellowships In Science** The primary objective of this fellowship program is to enable universities and nonprofit scientific research institutions in the United States to send senior staff members to study new scientific techniques and developments at research and educational institutions in other NATO nations, or in countries cooperating with NATO. Awards will be made in the mathematical, physical, medical, biological, engineering, and social sciences, and in the history and philosophy of science. Interdisciplinary fields comprised of overlapping fields among two or more sciences are also included. Fellowships are not awarded for support of study or work in clinical, education or business areas, nor in history or social work. Tenures are normally limited to from one to three months. These fellowships are not intended for the support of research, nor a program of sabbatical study, nor to help individuals pursue courses of academic study. Application materials may be obtained from the Division of Graduate Education in Science, National Science Foundation, Washington, D.C. 20550, between August and January. Completed materials for the 1972-73 competition must be received by the Foundation not later than January 31, 1973.

## Undergraduate Study Opportunity

**ASSOCIATED GENERAL CONTRACTORS SCHOLARSHIP** The Education and Research Foundation offers grants of \$1,000 per year for up to four years of undergraduate study, to highschool seniors and college freshmen or sophomores based on financial need, academic standing and demonstrated interest in the construction industry. For more information, see Professor Robert D. Logcher in Civil Engineering, Room 1-253, Ext. 3-7135.

## Foreign Study Opportunities

The Institute of International Education is recruiting candidates for many travel grants and fellowships offered for the 1973-74 academic year. Students interested in a graduate study program abroad can find information and applications in the Foreign Study Office, Room 10-303, Ext. 3-5243. Completed applications must be submitted to Prof. William N. Locke, Foreign Study Advisor, before October 6, 1972.

Briefly the major grants are as follows:

**Fulbright-Hays Full Grants** are available to US citizens who have a bachelors but not a doctoral degree on the date the grant becomes effective. The program offers study in 30 countries, but the applicant must specify only one. Sufficient knowledge of the appropriate language is necessary to communicate with people of the host country and to carry out the proposed study. The full grant includes round-trip transportation, language or orientation courses if necessary, tuition, fees, health and accident insurance, and a maintenance allowance for one year based on living costs in the host country.

**Fulbright-Hays Travel Grants** provide travel expenses to supplement some other grant which provides maintenance and tuition scholarship. Travel grants are available to 11 countries and include round-trip transportation, health and accident insurance, and the cost of any orientation program abroad. These funds may not be used for any other travel purposes or to supplement the student's own funds for studying.

**Fulbright-Hays Post-Doctoral Awards** for research or lecturing abroad are administered by the Committee on International Exchange of Persons, Conference Board of Associated Research Councils, 2101 Constitution Avenue, N.W., Washington, D.C. 20418. Applicants must be U.S. citizens with proficiency in the language applicable to the chosen country. The awards for lecturing and college or university teaching require some experience at the level for which the application is made. Qualifications for research are a doctoral degree, or, in some fields, recognized professional standing as demonstrated by faculty rank, publications, etc. The award includes round-trip travel, a small allowance in local currency for travel, books and services, and a maintenance allowance.

**Foreign Grants** are offered by many foreign governments, universities, and private donors. Generally these cover only a portion of the expenses but may be supplemented by a Fulbright-Hays Travel Grant. Application may be made to one country only.

**Churchill Grants** for research and/or lecturing at Churchill College, Cambridge University, are for women and men between the ages of 19 and 26, who have a bachelor's degree. Postdoctoral students are not eligible. Churchill Scholars have the option of spending one year at Cambridge working toward a Certificate or Diploma, or three years for Ph.D. MIT nominates two candidates to compete with applicants from 28 other institutions for ten scholarships in the natural sciences, engineering, or mathematics. The grant includes full tuition and fees, round-trip travel from New York, and a maintenance allowance for \$1,750. Married students receive an extra \$1,500 for spouse's maintenance and travel, and \$500 for each child.

**Marshall Scholarships** were established in 1953 by the British government as an expression of gratitude for the European Recovery Program instituted by General Marshall in 1947. Its purpose is to enable US citizens, men and women under 26 and graduates of US colleges and universities, to study for at least two years for a degree in a British university. Marshall Scholarships are offered to 24 students for a specific course at a specific university. Applicants may state a preference for a particular university, but the final choice is determined by the Marshall Scholarship Committee. The award averages \$3,000 per year. Married applicants are eligible and may receive an additional stipend, but single students are preferred.

**Rhodes Scholarships** are available to unmarried male US citizens, ages 19-25, (this age limit may be extended 2 years to 27 years of age if military service is completed) for two years of residential study at Oxford University. See Professor David Ness at the School of Management, Ext. 3-6602, Room E53-387.

**Daad (Duetscher Akademischer Austauschdienst)** awards approximately 80 scholarships for graduate and postgraduate study in Germany. Candidates must be between the ages of 18 and 32, with bachelor's degree at the time of the award. The award includes a \$140 per month stipend for ten months in addition to round-trip transportation, health and accident insurance, waiver of tuition and fees, and an additional allowance for married students. Candidates should be fluent in German and must pass a difficult language examination at the German host university.

## Activities Funds

The Activities Development Board is accepting applications to obtain funds for capital expenditures and for minor space renovation. Recognized MIT community activities are eligible. Application forms may be obtained in Room 7-101. Applications submitted by September 28 will be acted upon by October 16.