



Elements of Roman architecture form a backdrop in Professor Millon's office at MIT. —Photo by Margo Foote

## Art Historian Millon to Head American Academy in Rome

Appointment of Henry A. Millon, professor of the history of architecture at MIT, to be director of the American Academy in Rome has been announced by Henry T. Rowell, president of the Academy.

Professor Millon will assume the directorship on January 1, 1974. He will succeed Bartlett H. Hayes, Jr. who retires as director on February 28, 1973. Frank E. Brown, professor-in-charge of the academy's school of classical studies, will serve as acting director in the interim.

Professor Millon has been closely connected with the academy for many years. He was a fellow in 1958-60 and the art historian in residence in 1966. Professor Millon's art historical studies have been centered in Italy and Rome, where he held a Fulbright fellowship in 1957-58.

During the six months before assuming the directorship, he will again be in Rome preparing a catalogue of the drawings of the early eighteenth century Italian architect Filippo Juvarra.

Professor Millon will be on leave of absence from MIT and retain his connections with the Institute. He will serve as advisor for an architectural design studio which MIT intends to open in Italy for students of MIT and other architectural schools.

Commenting on Professor Millon's appointment, Jerome B. Wiesner, president of MIT, said:

"We are naturally sorry that so creative and distinguished a scholar as Professor Millon will not be at MIT even as we rejoice in the true distinction of the post he will assume and take satisfaction that so prestigious a center for the arts and classical studies should have found new leadership at MIT. The opportunity for some of our students to study in Italy is a most welcome strengthening of the university's programs in architecture and archeology."

Professor Millon has taught at the universities of Harvard, Brown and Pennsylvania State and at the Boston Architectural Center. He served as the president of the Society of Architectural Historians in 1968-69, as co-chairman of the advisory committee of the Cambridge Architectural Historical Survey, and vice chairman of the Boston Landmarks Commission. He is also president of the University Film Study Center and a member of the board of directors of Architectural Heritage.

Professor Millon has written extensively, both in English and Italian, on the Italian baroque in which he is a recognized authority. His books, *Baroque and Rococo Architecture* and *Key Monuments of the History of Architecture*, were published in 1961 and 1964 respectively. For some time he has been engaged in an architectural study of the dome of St.

(Continued on page 2)

## Supports Junior Faculty, Student Research

# \$900,000 Educational Fund Honors Harold E. Edgertons

The MIT Corporation has established a \$900,000 educational fund to honor a much-loved emeritus professor and his wife—Dr. and Mrs. Harold E. Edgerton—who have remained devoted for 45 years to the legions of friends they have won among generations of MIT students and young faculty.

Announcement of the unusual Esther and Harold E. Edgerton Fund to support younger faculty and student research at MIT was

made jointly by Corporation Chairman Howard W. Johnson and President Jerome B. Wiesner. They said the Edgerton Fund will be used to provide new horizons in research and career development for younger faculty and students in the MIT Department of Electrical Engineering with which Dr. Edgerton has been associated since 1926.

The Edgerton Fund will be used to support several assistant pro-

fessors and, concurrently, to provide the funds they need to involve undergraduate students directly in their research. Faculty and students supported by the Fund will be known as Edgerton Professors and Edgerton Fellows.

"There is no more fitting way for us to honor this man and this woman for the devotion, affection and warm friendship they have given freely to young people at this university over a period of nearly half a century," they said.

"Dr. Edgerton has achieved international and lasting recognition as a pioneer in stroboscopy and ultra-high speed photography. His remarkable photographs of stopped motion have been seen and used and enjoyed by millions the world over for years. Edgerton, Germeshausen & Grier, Inc., which he helped establish—characteristically—with two of his former graduate students, has grown to become a major element in the world's electronics industry.

"But inside MIT, we know and love Doc and his wife as friends to the young—particularly those who may be fearful or lonely or homesick or just perplexed about learning and life. Dr. and Mrs. Edgerton have sought out and befriended them. We know Doc, too, as guitarist *extraordinaire*, whose music has enlivened innumerable functions. The Esther and Harold E. Edgerton Fund is one way we have of saying thank you."

Monies for the Edgerton Fund are being provided by a bequest made to MIT specifically to support undergraduate and institutional needs. Dr. Edgerton, who became emeritus professor of electrical measurements in 1968, has been a part of the electrical engineering department since 1926 when he came to MIT as a graduate student. Although now emeritus, he still maintains his laboratory and a full daily schedule at MIT.

Dr. Edgerton was born April 6, 1903, in Fremont, Neb., where his father was a practicing attorney. When the younger Edgerton received the S.B. degree in electrical engineering from the University of Nebraska in 1925, he had a position waiting for him with the Nebraska Light & Power Co. where he had worked summers as a student. But his father persuaded him to go on to graduate studies and, after a year working in a machine testing laboratory at General Electric Co., Schenectady, N.Y., he came to MIT where he has remained ever since.

Dr. Edgerton received his S.M. degree from the Institute in 1927 and his Sc.D. degree in 1931. After receiving the S.M., he was made a research assistant in the electrical engineering department, was promoted to instructor in 1928, assistant professor of electrical measurements in 1932, associate professor in 1938, and full profes-

(Continued on page 3)

## Study in 'Economic Dualism'

# Why Poor Amid Wealth In Advanced Economies?

If advanced industrial economies are so smart, how come so many people remain poor?

That, in essence, is the question researchers at MIT hope to answer in a research project on economic dualism in advanced countries that has just won a three-year \$150,000 grant in the Ford Foundation's competition for research on common problems of advanced industrial societies.

The MIT research proposal, submitted through the MIT Center for International Studies, was one of six selected for full funding out of 61 entries in the competition. The competition represented a new experimental approach toward research support by the Foundation's Office of European and International Affairs and was designed to encourage groups of scholars to undertake coordinated attacks on problems with international dimensions.

The MIT project will combine the interests and disciplines of four faculty members. They are: Suzanne Berger, associate professor of political science; Lisa Peattie, professor of urban anthropology; Michael Piore, associate professor of economics; and Martin Rein, professor of sociology.

"The study is designed to see if one reason for persistent poverty is that it allows an economic system to shift the costs of economic change and fluctuation onto the least-protected groups in a society," Professor Berger said. "We will then be interested in seeing what alternative solutions might be found."

The project will, the researchers write, "explore the processes responsible for patterns of inequality in income and economic opportunities in advanced industrial societies by extending the concepts of dualism elaborated to describe developing countries. Our objective is to explain why those structured inequalities we call dualism are maintained in advanced industrial societies and how they affect the content and outcome of

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## Faculty Meets

The faculty will hold its regular monthly meeting today, Wednesday, February 21, at 3:15pm in Room 10-250.

The agenda for today's meeting includes: changes in Institute Patent Policy; recommendations of the IAP Committee and of the Committee on Educational Policy with regard to the continuation of IAP (see page 7); a report of the Special Faculty Committee on MIRVS; and a report of the Chancellor on fiscal matters.

IAP recommendations and statistics are presented on pages 6 and 7.

## Womens' Applications Increasing

More young women than ever before are seeking admission to MIT, according to Peter H. Richardson, director of admissions.

Applications from women from the United States and Canada are up ten percent this year and applications from foreign women while small in total number have doubled. Altogether there are 433 domestic applications and 26 foreign applications.

"We are encouraged by this indication of growing interest from women," Mr. Richardson said. "In general, young people who apply to MIT show an early commitment to a career field and this is particularly true of women applicants."

"With career opportunities expanding and a recruiting effort focused on women with MIT related interests, the number

(Continued on page 3)

# All Roads

The mind of man, or so we have a tendency to think when our own mind is left free enough for thought to occur, has worked pretty much the same throughout recorded time, and we are pleased to pass along to others who share this plausible outlook the news that Henry Millon, professor of architecture at MIT who has just been appointed Director of the American Academy in Rome, shares it too.

We dropped by Professor Millon's office last week—a partitioned room comfortably cluttered with artifacts of culture and literacy like film posters and old issues of *Encounter*—to extend him our congratulations.

"Several people have sent their commiserations," Professor Millon said with a laugh as he waved us into a chair. "After all, when you get thirty intelligent people together, half of them artists, they all want to tell the director how to run the place. I probably did a bit of that myself when I was a fellow at the Academy some years back. Most of the fellows are under 30—still trustworthy, that is—and are writing their doctoral theses. The rest are residents in the various fields the Academy takes in: sculpture, painting, music, landscape architecture, architecture, environmental design, and of course art history and the classics. The classical school existed before the turn of the century, but the Academy wasn't chartered by Congress until 1905. It's located on the Janiculum Hill. That's the one of the seven on the right bank of the Tiber. There's a nice 16th century villa, which is the chief reception space and has apartments as well, and was in fact Garibaldi's headquarters during the siege of Rome. The main building was designed by Charles McKim of McKim, Mead and White in palace-form with a square courtyard, around which are most of the studios. McKim is also responsible for getting the Academy endowed. There was a large fund-raising dinner in Washington for which McKim designed a great silver bowl. The bowl was passed once around the table and came back with enough checks to endow the Academy for a generation or two."

Professor Millon speaks in a pleasantly modulated voice. His dark hair is slightly unruly and touched here and there with gray. He wore a corduroy jacket, button-down shirt, and a thin grey tie somewhat awry at the neck. He follows a conversation with his eyes, punctuates his sentences with pauses for thought. We asked him how he intended to handle the ancient tension between administration and his own work.

"Well," he said after a pause, "if the post were a static thing, I wouldn't have been interested. But I've been assured by the Academy's trustees that it's anything but static. What makes it so interesting is the potential range. Just as in this department...and the reason, really, that I'm here... well, the best way to say it, I suppose, is that I believe there is no real separation between the practice of the arts and thought about the arts.

"I'd like to have a hand in strengthening and extending the arts at the Academy, not in the fine arts so much as in the art forms not now represented at the Academy. I mean photography, graphics, film, and I'd like to see some creative writing and criticism done there too. This will mean a certain amount of new financial undergirding because for

the first time in its history the Academy is a bit pinched. There's an endowment of some \$10 million from the original drive and subsequent bequests, but the combination of our inflation and Italy's, plus the need to increase stipends for the fellows and expenditures for staff, maintenance and library have combined to make new programs difficult. Still, I think we must have them."

We asked Professor Millon what intrigued him about the mingling of theory and practice. He paused:

## Millon Named

(Continued from page 1)

Peter's basilica in Rome. Professor Millon is married and has three children.

The American Academy in Rome is a nonprofit educational institution, chartered in 1905 by the Congress of the United States. Through fellowships awarded on the basis of merit, the academy enables promising young American artists and scholars to develop their abilities and pursue their interests in Rome. Advanced work is carried out in music and the fine arts, classical and post-classical studies, and the history of art.

"It is intriguing, yes indeed: Why you spend your life doing what you do. You know if you really look at a building you begin to see that there's not much difference between thinking about building and the process of bringing a building into being. And therefore, since man cannot not think about his physical environment, how a building got to be the way it is tells you a lot about how the people who made it thought. Of course, any building has roots in quite pragmatic matters, too, such as the workable space at the site or the availability of certain materials. But any building also has roots in sets of human consciousness about meaning, and in this way the act of building doesn't differ in kind even though buildings differ greatly. You can see in Boston City Hall ripples from the great plop of the Parthenon. It recalls Eliot's wonderful point about continuity: your perception is inescapably altered by those who wrote before, and so meaning is invested with a cultural load. I happen to believe that man is free only when he is aware of what has formed him.

"If an architect is aware of the influences of the past in his work" Professor Millon continued, "he is free to accept, reject, modify, or create. Of course, there may be reasons exterior to the work of art that restrict the architect's freedom. The facade of the Milan cathedral is an instance of a work that was delayed for centuries pending resolution of disagreements over whether it should be completed in its original gothic, or in contemporary style, or some sort of mixture of the two. Finally it got settled in fairly decent gothic by a typically academic 19th century committee.

"We recently had a seminar here in the department called Art in the Service of Politics. It centered on the ways political ideas enter art and shape it before the work is done. Eventually the papers will be assembled into a book. Even if an artist is theoretically free, his work may be controlled prior to its inception by specifically political ideas, and when this happens you can read the aim in the work. One splendid paper by Kenneth Kaiser was on

certain architectural forms of the Nazi state. Kaiser called it an extremely highly developed form of hallucinogenic architecture, in which the Nazis used particular styles for particular buildings. Boys' camps were done in a thatched roof, vallaggy sort of style, S.S. buildings were crusader's fortresses, government buildings had classical references, and so forth. The point was that the state was everywhere.

"There's a lot of talk about arts and politics these days, but I don't think there's been enough care to distinguish the precise ways they can affect each other. Of late, for example, Goya's *Disasters of War* has been being seen as his 'protest' against his government, but it's equally possible to see it in something less political: Goya's personal revulsion against war. In fact, once completed, an artwork is independent of the man and his intent, and can be used for a host of different purposes. What we need is a better understanding of the relation between purpose and quality. In any case, these are issues we ought to be thinking about."

## Blood Drive To Feature Music, Strobe

A pint of blood is the price of admission to a free concert and a strobe light show to be held in the Sala de Puerto Rico from March 5-16.

For the first time in its history, the Institute's annual Spring Blood Drive will feature live entertainment for donors. Members of the MIT Symphony Orchestra will serenade donors with quiet music and Dr. Harold Edgerton's popular "Double Piddler Hydraulic Happening Machine" will blink its bright light on drops of green "dragon's blood."

Donor solicitation is in high gear with less than two weeks to go before the start of the Blood Drive. To meet the 2,500 pint goal, however, some 3,000 advance registrations are needed. So far only 500 donors have signed up. When a solicitor visits your office or living group, be sure to fill out a registration form and drop it in interdepartmental mail as soon as possible.

The Blood Drive promises to be an exciting event this year—don't miss it.

## Marksmanship Course Offered

The MIT Pistol and Rifle Club will offer a course in basic pistol marksmanship beginning Thursday, February 22.

Held on five consecutive Thursdays, the class will meet in the duPont Pistol Range from 6:30 to 8:30pm. Enrollment is limited to the first 20 adult members of the MIT community who apply. A \$10 fee covers pistols, ammunition and targets used in the course.

Persons interested in applying should call Range Master Thomas P. McLennan at Ext. 3-3296.

## Degree Applications

Graduate students expecting to receive advanced degrees in June 1973 must return degree applications to the Registrar's Office, Room E19-335, by Friday, February 23.

# Obituaries

## Professor Donald G. Marquis

Dr. Donald George Marquis, David Sarnoff Professor of Management of Technology at the MIT Sloan School of Management and international authority on industrial and organizational psychology, died Saturday, February 17, at Massachusetts General Hospital following a heart attack. He was 64.

Professor Marquis was stricken in his office at MIT, Friday morning, February 16, and was taken to MGH where he was placed under intensive care. He died Saturday morning. His home was at 101 Revere Street in Boston.

Professor Marquis, a former professor and chairman of the Departments of Psychology at Yale University and at the University of Michigan, joined the Sloan School faculty in 1959 as Professor of Organizational Psychology and Management. Since 1961, he has been director of the Sloan School's Research Program in the Management of Research and Development. Last fall, he became MIT's first David Sarnoff Professor of Management of Technology when the chair was established by RCA in memory of the late RCA president and board chairman.

Howard W. Johnson, Chairman of the MIT Corporation and a former Dean of the Sloan School, and William F. Pounds, present Dean of the School, said Professor Marquis' death "brings sadness to all of us at MIT and to his students and colleagues in the social sciences the world over."

"He was a great psychologist, and imaginative and creative social scientist and, above all, a great and compassionate human being," they said.

"His respect for rigorous scholarship and his affection for individual students and colleagues are reflected in all those who have been privileged to work with him."

Born at Two Harbors, Minn., June 22, 1908, Professor Marquis received his A.B. degree in psychology from Stanford University in 1930 and his Ph.D. degree in psychology from Yale in 1932. He was a National Research Council Fellow in neuro-physiology at the Yale Medical School 1932-33, an instructor in psychology at Yale 1933-35, and a Rockefeller Foundation Fellow at National Hospital, London, and the Laboratory of Physiology at Oxford 1935-36. From 1936 to 1945 he was professor of psychology at Yale and from 1942-45 was chairman of the department there.

In 1945, Professor Marquis went to the University of Michigan where he served as professor and chairman of the Department of Psychology until 1957, when he left to spend two years with the Social Science Research Council in New York City.

Professor Marquis often had served numerous public agencies in various capacities. During World War II, he directed the Office of Psychological Personnel for the National Research Council and served also in the Office of Scientific Research and Development under Dr. Vannevar Bush. He was chairman of the committee on human resources of the Research and Development Board in the Department of Defense from 1947 to 1950, was president of the American Board of Examiners in Professional Psychology from 1953 to 1957, served as a member of the US National Commission for UNESCO from 1954 to 1960, and was a member of the National Advisory Committee to the National Institute of Mental Health

from 1956 to 1960. From 1966 to 1967, he was a visiting professor at the London Graduate School of Business. He has been a consultant to many public and private organizations, including the Carnegie Corporation, the Ford Foundation, the US Veterans' Administration and the National Science Foundation.

He was the author or co-author of numerous professional articles and several books, including: *Conditioning and Learning* with E. R. Hilgard (1940), *Psychology* with R. S. Woodworth (1947) and *Successful Industrial Innovations* with Sumner Myers (1969). In addition, he was co-editor with W. H. Gruber of the book *Factors in the Transfer of Technology* (1969).

A memorial service will be held Monday, February 26, at 2:30pm in Kresge Little Theatre. Contributions may be made to a fund to support an annual prize to doctoral students at the Sloan School in Professor Marquis' name.

Survivors include his wife, the former Peggy Cook, of the home address, and two sons by a previous marriage, Kent Marquis of Raleigh, N.C., and William Marquis of East Lansing, Mich. His first wife, the former Dorothy Postle, makes her home in Michigan.

## William Schwabe

William J. Schwabe, 52, of South Boston, a former employee in the Research Laboratory of Electronics (RLE), died on Sunday, February 11.

Mr. Schwabe was a senior electronic technician for RLE from 1957 until he was disabled in 1970.

He leaves his wife, Elizabeth M. (Hartford), and five children—William J., Jr., Edmund P., Elizabeth M., Steven J., and Sally-Ann, all of South Boston.

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

# New System Of Service In Personnel

The major planning of the reorganization of the MIT personnel operation has been completed, and a new system of service to the community will go into effect on Monday, Feb. 26. These changes, first announced in the Jan. 10 issue of *Tech Talk* will, hopefully, provide more effective delivery of personnel services both to individuals and to supervisors in the Institute's departments, laboratories and offices, according to John M. Wynne, Vice President for Administration and Personnel.

The new system differs from the previous structure in two major ways, he said. "First, one person from Personnel will be assigned to a group of departments or offices as "Personnel Officer" with the responsibility for providing a full range of personnel services for all non-academic personnel in each payroll category. Second, emphasis will be placed on specialization in such principal areas of personnel administration as employment, wage and salary policy, union relations, training and career development.

In the reorganization, all personnel operations have been grouped into 3 major areas: *Personnel Relations*, *Personnel Services*, and *Personnel Development*.

*Personnel Relations* will be headed by Robert J. Davis. Included in his group will be union relations for which James J. Fandel will take direct responsibility; wage and salary policy and administration under Kerry B. Wilson; and benefits policy and administration, managed by Allan J. Urquhart and Nancy Woodman.

*Personnel Services* is being organized by James J. Culliton, Assistant to the Vice President for Administration and Personnel. Within that group, Susan A. Lester will assume a major responsibility as Employment Officer, the duties of which include employment and recruitment policy and procedures as well as coordination of interviewing and placement. Carol Van den Avyle will be her principal assistant. Robert J. Nelson will continue to manage information processing and records maintenance including the new computer-based integrated personnel file. Virginia Pickren will assist Mr. Nelson in this area as well as expand her responsibilities for the statistical reports required in Personnel.

A major change is the transfer of the present functions of the hourly, bi-weekly and professional representatives to new positions as "Personnel Officers" for all payroll groups in specific departments. They will be responsible for a detailed knowledge of the departments to which they are assigned and will provide assistance in personnel planning, salary administration, career planning and personnel counseling. The Personnel Officers and their assignments are:

Office of the President, Chancellor and Vice President—Richard E. Higham.

Provost area (except for Libraries, Engineering Library—Project INTREX, and Center for International Studies)—Claudia B. Liebesny.

School of Engineering—John E. Newcomb, Jr.

School of Science—Sally H. Hansen.

School of Humanities and Social Science, Sloan School of Manage-

## Fort Award Applications By March 2

Students who wish to apply for the Marron William Fort Fellowship should submit applications to Dean Clarence G. Williams (Room 3-140) no later than March 2, 1973.

Each candidate should submit an informal one-page autobiographical essay that sets forth his career plans, Dean Williams said.

The Fort Fellowship was established to encourage MIT minority seniors with high scholarly qualities to consider the possibility of graduate study at MIT. The award, which will cover tuition and living expenses for nine months, commemorates the late Dr. Marron William Fort, the first Black American to receive a Ph.D. from MIT.

Minority seniors may apply for the fellowship directly or may be nominated by departments or faculty members, Dean Williams said.

ment, Libraries, Engineering Library, Project Intrex, and Center for International Studies—Patricia M. Williams.

Vice President and Treasurer, Vice President for Business and Fiscal Relations, and Comptroller—Virginia A. Bishop.

Vice President for Research—John A. McDonnell.

Vice President for Operations—Michael J. Parr.

School of Architecture and Planning, Vice President for Administration and Personnel, Vice President (Kenneth Wadleigh), Vice President and Secretary, and Vice President for Resource Development—Richard Finnagan.

*Personnel Development* will include career development and training. A head for this area has not yet been selected, Mr. Wynne said. An invitation for applicants was recently published. Responsibility involves organizing the Institute's career development program and the planning and coordinating of training activities. The newly formed Administrative Development Program is an example of the programs which will be developed within this group.

Included in Personnel Development will be John A. Carley and Priscilla E. Mead with major responsibilities for supervisory training and the tuition assistance program. Another important component will be the Training Section, which now conducts clerical skills training under Bernard A. Morris, and includes as instructors Vera Borum, Ada Diaz, Janice Morgan and Peter Jarvis.

Collectively, the three major areas of personnel administration will be known as the MIT Personnel Office. Coordination and overall direction will be provided by the Vice President for Administration and Personnel, John M. Wynne.

Interaction between Lincoln and Draper Laboratory personnel functions and the campus personnel activities will continue very much the same under the new structure.

## Transcripts Mar. 5

The Registrar has announced that transcripts with January period grades will be available beginning the week of March 5.

# New Fund To Honor Edgertons

(Continued from page 1)

Dr. Edgerton saw that if rapidly flashing light could be synchronized with the rotation of motors, generators and flywheels it would provide the means for engineers to study these parts while in motion. He and his students spent years developing the circuitry, the brilliant flash tubes, the energy-storing capacitors, etc., to achieve this. He first published his success in 1931. It quickly became a new tool in engineering.

Dr. Edgerton has been referred to as the father of electronic flash photography. Although he didn't invent the stroboscope (the word was coined in 1832) it was his research that transformed it from a scientific curiosity into an important tool. The earliest stroboscopes were toys that produced optical illusions using light flashes to make rotating wheels and discs appear to be stopped.

But Dr. Edgerton felt there were still wider applications and to dramatize the stroboscope's capabilities he began photographing bullets in flight, light bulbs shattering, hummingbirds in flight, athletes in multiple exposure action.

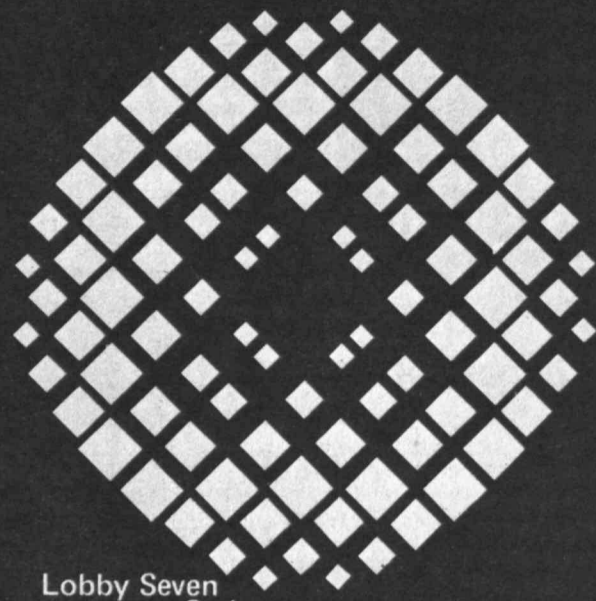
In 1939, he was co-author with Dr. James R. Killian, Jr., now Honorary Chairman of the MIT Corporation, of the popular book, *FLASH: Seeing the Unseen with High Speed Photography*, which brought stroboscopic pictures to wide public attention.

During World War II, he helped develop photo flash photography for aerial reconnaissance and went to the European war theater to direct the use of his equipment in photographing enemy troop movements and gun emplacements. Later, his company developed equipment to photograph and study atomic bomb explosions.

With support from the National Geographic Society, Dr. Edgerton pioneered in developing electronic flash equipment and cameras capable of making pictures miles beneath the sea. He still pursues this interest vigorously throughout the world in collaboration with such renowned oceanographers as Capt. Jacques-Yves Cousteau.

In addition, Dr. Edgerton has extended his interests to short pulse sonar instruments which he designs, builds and uses to chart underwater phenomena the world-over. He helped organize and build Boston's New England Aquarium and serves as one of its trustees. And, at MIT, he has been a staunch supporter of the arts in their myriad forms, and is a member of the Council for the Arts at MIT.

The firm he helped form with two graduate students, Kenneth J. Germeshausen and Herbert E. Grier, in the 1930's, has grown to multimillion dollar size with more than 3,000 employees throughout the US. Despite his position as honorary chairman of the board, however, "Doc" Edgerton has been known to take students to EG&G shops to borrow and use tools for student projects.



## Lobby Seven Series

First Concert: Mozart Woodwind Trios  
Noon  
Wednesday 21 February  
William Draper, Clarinet  
Gregory Rothman, Clarinet  
William Moran, Bassoon  
Presented by the  
Lobby 7  
Committee

Poster by Ralph Coburn of MIT Design Services.

# 22 Named In ADP-I Group

Twenty-two MIT people have been selected to take part in the first Administrative Development Program (ADP-I) starting this week.

ADP-I is a two-phase pilot program for members of the MIT administration and is part of general career development plans now under study at the Institute.

The opening session of ADP-I will be Thursday, Feb. 22. Spring work will stress organizational behavior. The continuation of ADP-I will begin in September and will emphasize an "MIT Financial Perspective." The second program—ADP-II—also will begin next fall and applications will be invited in early September.

Those selected for the first ADP are: Nancy Brigham, Earth and Planetary Sciences; David M. Carney, Office of Administrative Information Systems; John L. Cochrane, Nuclear Engineering; Kathryn Cusick, Neurosciences Research Program; John M. Fresina, Safety Office; Jon E. Hartshorne, Student Affairs; William J. Hecht, Educational Council; Jane H. Katayama, Lincoln Laboratory; James M. Kyed, Project Intrex; Nelson C. Lees, Resource Planning; Susan A. Lester, Personnel; Peter R. Lovell, Draper Laboratory; Joseph F. Lynch, Housing and Dining; Sylvia McDowell, Libraries; Bernard A. Morris, Personnel; Patricia S. Moulton, DSR; Eleanor R. Moushegian, Draper; Captain James Olivieri, Campus

## Women Applicants Increase

(Continued from page 1) considering the Institute will continue to grow."

Mr. Richardson said the increase in the number of applications was particularly appropriate in that 1973 marks the 100th anniversary of the graduation of the first woman from MIT.

The number of women admitted to MIT has been increasing steadily since 1963 when the first on-campus residence for women was opened. There were 23 women in the 1962-63 freshman class and

Patrol; Charles R. Peatfield, Lincoln Laboratory; Leo J. Ryan, Information Processing Center; Thomas E. Shepherd, Physical Plant; Edna O. Squires, Architecture.

John M. Wynne, Vice President for Administration and Personnel and who, as chairman of the Personnel Policy Committee convened a panel from the committee to select the first members, said the panel found selection difficult because of the high interest in the program. All told, 97 persons applied, he said.

"The selection panel tried to pick a group as diverse as possible in terms of Institute organization and levels of responsibility to provide a variety of points of view within the group," he said. "All who were not chosen this time were encouraged to apply next fall, if they continue to be interested."

The selection panel members, all members of the Personnel Policy Committee, included: James C. Allison, Assistant to the President and Chancellor for Minority Affairs; Douglass V. Brown, Professor Emeritus, Senior Lecturer, Sloan School; William R. Dickson, Director of Physical Plant; George H. Dummer, Director, DSR; Joseph F. O'Connor, Assistant to the Vice President, Research; Dr. Mary P. Rowe, Special Assistant to the President and Chancellor for Women and Work; and Mr. Wynne.

118—or slightly over ten percent—in the 1972-73 freshman class.

In 1970 residence regulations were standardized for all undergraduate students. Until then all undergraduate women were required to live in campus housing whereas male upperclassmen could live off campus if they chose. Permitting female upperclassmen also to live off campus made additional space available in the women's residence for freshman women as did the introduction of coeducational dormitories.

# THE INSTITUTE CALENDAR

February 21 through March 2

## Events of Special Interest

**Maggie Lettvin's Exercise Class**  
Will be held in Bldg 7 Lobby for all, Thurs, Mar 1, 1pm.

## Seminars and Lectures

### Wednesday, February 21

**Studying the Teaching and Learning Milieu\***  
Dr. Malcolm Parlett, University of Edinburgh. Education Division Colloquium. 12n, Rm 9-150.

### Thursday, February 22

**Structure and Properties of Grain Boundaries\***  
Dr. Bruce Chalmers, Harvard, Ceramic Seminar Series. 3pm, Rm 31-161. Coffee, 2:30pm.

**Planning and Control Problems in Production Management\***  
Prof. A. Hax, management. Productivity, Automation and Manufacturing Seminar Series. 3:30pm, Rm 37-212.

**Experimental Investigation of Vortex Rings and Helicopter Rotor Wakes Using a Laser Doppler Velocimeter\***  
John Sullivan, graduate student. Aero & Astro Doctoral Thesis Seminar. 4pm, Rm 33-206.

**Utility of Trimethylsilyl Derivatives in Trace Analysis\***  
Richard Stolzberg, research assistant, chemistry. Analytical Chemistry Seminar. 4pm, Rm 8-105.

**Health Work and the Federal Government**  
Linda Robinson, Occupational Safety and Health Administration, US Dept of Labor. Career Seminar Series with Black Professionals. 4pm, Rm 4-145.

**Helicopter Noise Experiments in an Urban Environment\***  
Wayne A. Kinney, mechanical engineering. Interdepartmental Acoustics Seminar. 4pm, Rm 3-370. Coffee, 3:30pm, Rm 1-118.

**A Systems Approach to Analysis and Design of Antibiotic Fermentations**  
Dr. Thomas B. Young III, Squibb Institute for Medical Research. Microbiology and Biochemical Engineering Seminar. 4pm, Rm 16-310.

**Scientists in Politics: Lessons from the SST**  
Prof. Joel M. Primack, Harvard. Physics Colloquium. 4:30pm, Rm 26-100. Refreshments, 4pm, Rm 26-110.

**The Reception of Relativity Theory in the United States: A Case Study in the Attitudes of American Basic Science**  
Prof. Stanley Goldberg, Hampshire College. Commentators: Prof. Elting Morison, 1926 Killian Professor, and Prof. Philip Morrison, physics. Technology Studies Workshop. 4pm, Rm 14E-304. Coffee, 3:45pm.

**The Paradox of Progress—Decline and Decay in the Wealth of Nations**  
Prof. R. L. Heilbroner, economics, The New School. Graduate Economics Association Seminar Series. 4:30-6pm, Penthouse, Bldg E52.

**Political Image Making Using TV Commercials**  
Presentation and discussion of three short films made for Rep. Martin Linsky by UROP students. 5:15pm, Rm E53-482.

### Friday, February 23

**Quantum Mechanics, Chemical Kinetics and Bound Reactive Systems**  
Ruben G. Carbonell, doctoral candidate, Princeton. Special Chemical Engineering Seminar. 10am, Lewis Conference Rm.

**Studies of Electro-Chemical Reactions in Glass-Metal Systems\***  
Dr. Joseph Pask, Dept of Materials Sciences and Engineering, U of California at Berkeley. 2-4pm, Rm 31-161.

**Chemical Engineering 10.992 Seminars**  
T. Burke, "Tailoring a Macromolecule: Medical Grade PVA for Biomaterials," 2pm; P. Stroeve, "Diffusion with Reversible Chemical Reaction in Heterogeneous Media—Application to Biological Transport Phenomena," 3pm. Rm 10-105.

**Multiply Separated Position Theory in Kinematics**  
Prof. Delbert Tesar, Dept of Mechanical Engineering, University of Florida. Mechanical Engineering Seminar. 3pm, Rm 3-270. Coffee, 4pm, Rm 1-114.

**Laser Damage to Transparent Media\***  
Dr. Michael Bass, Raytheon Research Division. Materials Science Colloquium. 4pm, Rm 9-150. Refreshments, 3:30pm.

**Collective Contributions to Plasma Transport—Computer Simulation and Analysis\***  
Dr. John Dawson, Princeton Plasma Physics Lab. Plasma Dynamics Seminar. 4pm, Rm 26-214.

**Indian Schools of Philosophy IV: Modern\***  
Swami Sarvagatananda, MIT Vedanta Society. 5:15pm, Chapel.

## Monday, February 26

**Nuclear Engineering Doctoral Seminars\***  
J. Ferguson, "Fuel Element Design Limits in Gas-Cooled Fast Breeder Reactors for Undercooled Transients." S. Shultz, topic to be announced. 3-5pm, Rm NW12-222.

**On the St. Venant Principle for Thin Elastic Shells**  
Prof. Frederic Y. Wan, mathematics. Applied Mathematics Colloquium. 4pm, Rm 2-338. Tea, Rm 2-349.

**Electromechanical Coupling with Collagen Fibers**  
Prof. Ioannis V. Yannas, mechanical engineering. Harvard-MIT Program in Health Sciences and Technology "Joint Polymeric Materials Program." 4pm, Rm 3-133. Refreshments.

**Everything You Always Wanted to Know about High Resolution Electron Microscopy, But Didn't Know Where to Ask\*\***  
Prof. John D. Vander Sande, metallurgy. Physical Metallurgy Seminar. 4pm, Rm 13-2101.

## Tuesday, February 27

**An Overview of the Surface Effect Ship Program\***  
Lt. Michael Hayes, USN, Naval Ship Engineering Center. Ocean Engineering Seminar. 3:30-5pm, Rm 3-446.

**Some New Concepts in Fracture Mechanics**  
Prof. George Sih, Lehigh University. Aero & Astro Seminar. 4pm, Rm 33-419. Coffee, 3:30pm, Rm 33-411.

**Studies of Membrane Structure and Function in Lipid Mutants**  
Dr. P. Roy Vagelos, Dept of Biological Chemistry, Washington University of Medicine. Biology Colloquium. 4:30pm, Rm 6-120. Refreshments, 4pm, Rm 56-520.

**Women in Business**  
Prof. Francine Gordon, Stanford University, School of Business. Career Seminar. 4pm, Rm 4-145.

**Perceptual Aspects of Character Recognition, Part I**  
Bob Shillman, research assistant, RLE. CIPG Seminar. 4pm, Rm 20B-224. Refreshments, 3:30pm.

**Physical and Chemical Interactions on Interstellar Grains**  
Prof. J. M. Greenberg, State University of New York, Albany. Astrophysics Colloquium. 4:15pm, Rm 37-252. Coffee, 4pm.

## Wednesday, February 28

**Fiscal 1974 Federal and Defense Budget**  
Prof. William Kaufmann, political science. Political Science and Center for International Studies Seminar. 12:30pm, Rm E52-482. Bring lunch.

**Reactor Pressure Vessels Are Safe\***  
Dr. William Cooper, vice president and technical director, Teledyne Materials Research. Nuclear Engineering Seminar. 3:30pm, Rm NW12-222. Refreshments, 3pm.

**The Environmental Area: One Man's View**  
Louis I. Stern, Dames and Moore. Career Seminar. 4pm, Emma Rogers Rm 10-340.

**Joyful Technology and the Polis\***  
Prof. John O'Neill, Dept of Sociology, York University. Technology and Culture "Images of Man" Series. 5:15pm, Rm 9-150. Followed by buffet dinner and discussion.

## Thursday, March 1

**Trace Metal Studies in Boston Harbor\***  
Dr. Thomas R. Gilbert, New England Aquarium. Analytical Chemistry Seminar. 4pm, Rm 8-105.

**On the Excited and Self-Excited Flexural Non-Linear Vibrations of Rotating Shafts\***  
Dr. Angnieszka Muszynska, Polish Academy of Science. Interdepartmental Acoustics Seminar. 4pm, Rm 3-370. Coffee, 3:30pm, Rm 1-114.

**Why Was the Ideal French Physicist ca. 1900 not Expected to Be Speculative? Social Circumstances and the Nature of Research**  
Dr. Spencer Weart, U of California at Berkeley. Commentators: Prof. Elting Morison, 1926 Killian Professor, and Prof. Laszlo Tisza, physics. Technology Studies Workshop. 4pm, Rm 14E-304. Coffee, 3:45pm.

**Thermodynamics as a Spin-off from Hydro and Steam Technology**  
Prof. Joseph H. Keenan, mechanical engineering. Thermodynamics Seminar. 4pm, Rm 3-343. Coffee.

**Chemotaxis as a Potential Neuromodel**  
Dr. Daniel P. Koshland, Dept of Biochemistry, U of California at Berkeley. Biology Colloquium. 4:30pm, Rm 6-120. Refreshments, 4pm, Rm 56-520.

**Understanding Unequal Economic Opportunity: The Role of Schooling, IQ and Family Economic Status\***  
Sam Bowles, Dept of Economics, Harvard. Graduate Economics Association Seminar Series. 4:30-6pm, Bldg E52 Penthouse.

**Electrons in Unsolids**  
Laura M. Roth, Abby Mauze Rockefeller Visiting Professor of Physics. Physics Colloquium. 4:30pm, Rm 26-100. Refreshments, 4pm, Rm 26-110.

## Friday, March 2

**Chemical Engineering 10.992 Seminars**  
A. Schneider, "Flow of Pure Liquids through Microporous Vycor," 2pm; J. Dearth, "Hydraulic Effects in Cyclically Operated Tray Absorbers," 3pm. Rm 10-105.

**Strength of Polymers**  
Prof. Ali Argon, mechanical engineering. Mechanical Engineering Seminar. 3pm, Rm 3-270. Coffee, 4pm, Rm 1-114.

**Neutron Scattering and the Dynamics of the b.c.c.-Hexagonal Lattice Instability in a Zr-Nb Alloy\***  
Prof. S. C. Moss, Dept of Physics, University of Houston. Materials Science Colloquium. 4pm, Rm 9-150. Refreshments, 3:30pm.

## Community Meetings

The Faculty will hold a regular meeting on Wednesday, Feb 21, 3:15pm in Rm 10-250.

**Association for Women Students**  
AMITA Centennial Celebration. Monday, Feb 26, 4-6pm, Rm 3-310. Refreshments. Everyone welcome.

**Technology Matrons' Seminar**  
Prof. John Collins, management, former mayor of Boston, "Urban Needs and National Policies." Wed, Feb 28, 11:30am, Rm 10-105.

## MIT Club Notes and Meetings

**Alpha Phi Omega\*\***  
Open meeting, chance to meet and talk with the brothers. Wed, Feb 14, 7:30pm, Rm 10-105. Refreshments.

**Bridge Club\***  
ACBL Duplicate Bridge. Thurs, 7pm, Student Center Rm 4-105. Admission: MIT community, 50 cents; others, 75 cents.

**Chinese Students Club\*\*\***  
General election meeting. Thurs, Feb 22, 4:15-6:15pm, Student Center West Lounge.

**Chinese Students Club\*\***  
Mandarin class, every Tues, 7:30-9:30pm, Rm 5-231. \$5 charge. Contact: Victor Zue, 273-0326.

**Ergo**  
Staff meeting. Every Sun, 7pm, Student Center Rm 443.

**Graduate Student Council**  
Agenda meeting, Thurs, Feb 22, 12:30pm, Muddy Charles Pub. General meeting, Wed, Feb 28, 5:30pm, Walker Dining Rm.

**Hobby Shop\*\***  
Monday-Friday, 10am-6pm, Rm W31-031. Fees: \$6/term for students; \$10/term for community. Call X3-4343.

**Judo Club\*\***  
H. Yanagi, 5th degree black belt, chief instructor. Mon, Wed, Fri, 5-6:30pm; Sat, 1-3pm; duPont Exercise Rm. M. Portnoff, X3-5931.

**Karate Club\*\***  
Beginner and intermediate classes in Goju style. Mon and Wed, 7:30pm, duPont T-Club Lounge. For info, call X3-2018.

**Kung Fu Club\*\***  
Northern School of Praying Mantis. Tues, Thurs, 7-9pm, duPont Athletic Center. For info, call M. C. Wong, 876-5071.

**MIT/DL Duplicate Bridge Club\*\***  
Every Tues, 6pm, Student Center Rm 473.

**MIT Wheelmen\*\***  
All aspects of bicycles and bicycling discussed, events planned, advice and help given. Every Thurs, 7:30pm, Rm 1-246. Call Harv X2384 Dorm.

**Prelaw Students**  
William Keogh, associate dean, Stanford School of Law. Wed, Feb 28, 5pm, Rm 8-105.

**Premedical Students**  
Bryan Williams, associate dean for student affairs, University of Texas Medical School. Thurs, Mar 1, 12n-1pm, Rm 7-102. Group meeting. Tues, Feb 27, 5pm, Rm 10-250.

**Rugby Club\*\***  
Practice sessions; Tues, Thurs, 8pm; Sat, 1pm; meet in duPont Gym.

**Science Fiction Society\***  
Every Friday, 5pm, Rm 1-236.

**Scuba Club**  
Dry session. Wed, Feb 28, 8pm, Rm 20E-017.

**Student Homophile League\***  
Meeting and coffee hour. Every Sun, 4-6pm, Rm 14E-307. All men and women welcome. For gay help (anonymous) at MIT, call the student gay tutor, 492-7871, anytime.

**Student Information Processing Board Meeting\***  
Every Monday, 7:30pm, Rm 39-200.

**Tae Kwon Do Club**  
Tues, Thurs, 5-7pm; Sat, 11am-1pm. duPont T-Club Lounge. Contact: Jae Kim, X9212, 9236 or 9120 Dorm.

**Technique**  
Staff meetings. Every Sat, 11am, Student Center Rm 451.

**Tiddlywinks Association\***  
Every Wed, 8pm, Student Center Rm 491.

## Social Events

**GSC Spring Party**  
Live music by Break Thru, beer, punch, wine, snacks, door prizes. Fri, Feb 23, 8:30pm-1am, Walker. Admission: \$2 at door, \$1 advance; invitation cards for ladies available; faculty guests invited. Tickets in Rm 50-110 or Ashdown.

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

**Muddy Charles Pub\*\***  
Join your friends for music, beer, wine, snacks and conversation at the Muddy Charles Pub, 110 Walker. New hours: Mon-Fri, 11:30am-2pm and 4-7:30pm; Sat, 7-12pm. Nightly specials include: Mon, all wines 25 cents; Tues through Thur, free pretzels and chips. Call GSC, X3-2195.

**SCC Pot Luck Coffeehouse\***  
Live entertainment every Fri and Sat, 8:30pm to 12m. Student Center Mezzanine Lounge. Free coffee, cider, doughnuts. Sponsored by Student Center Committee. Volunteers to perform or otherwise help out, call Paul Mailman, X9626 Dorm, or Doug Fried, X8767 Dorm.

## Movies

**Polar Corona\***  
Screening and discussion of new computer movie with Michael J. Heeler, Artificial Intelligence Lab, and Dr. George Withbroe, Harvard Observatory. Thurs, Feb 22, 3:30pm, 5th Flr Conference Rm, 545 Tech Sq. Free.

**The Gospel According to St. Matthew**  
Humanities movie. Thur, Feb 22, 7pm, Rm 54-100. Free.

**2001: A Space Odyssey\*\***  
SC. Fri, Feb 23, 6:30pm and 10pm, Kresge. Tickets 50 cents. Must show MIT or Wellesley ID.

**The White Sheik and The One Romantic Venture of Edward\***  
Film Society. Fri, Feb 23, 7:30pm and 9:30pm, Bldg E21. Tickets 1.00.

**CC: The Mummy and The Red Balloon**  
Student Center Committee Midnight Movie Series. Fri, Feb 23, 12m, Sala de Puerto Rico. MIT or Wellesley ID.

**Come Back Charleston Blue\*\***  
SC. Sat, Feb 24, 7:30pm and 9:30pm, Kresge. Tickets 50 cents. Must show MIT or Wellesley ID.

**The Scoundrel\***  
SC. Sun, Feb 25, 7pm, Rm 10-250. Tickets 50 cents. No ID.

**Paris Girl Friday**  
Humanities movie. Mon, Feb 26, 7pm, Rm 10-250. Free.

**Play It Again Sam\*\***  
SC. Fri, Mar 2, 7pm and 9:30pm, Kresge. Tickets 50 cents. Must show MIT or Wellesley ID.

**Nights of Cabiria\***  
Film Society. Fri, Mar 2, 7:30pm and 9:30pm, Bldg E21. Tickets 95¢.

**CC: Midsummer Night's Dream**  
Student Center Committee Midnight Movie Series. Fri, Mar 2, 12m, Sala de Puerto Rico. MIT or Wellesley ID. Free.

**Dance Free Films\***  
Movies (16mm), dancing, multimedia happening, audience participation. Architecture student project. Every Thur, Fri, Sat, 7-12pm, Ddd Fellows Hall, 536 Mass Ave, Cambridge. Tickets: \$1 or 75 cents w/costume. Fruit and cider.

## Music

**Mozart Trios\***  
William Draper, MIT music instructor, and students Gregory Rothman and William Moran, will present concert of Mozart trios for clarinets and bassoon. Wed, Feb 21, 12n, Bldg 7 Lobby.

**Luncheon Concert\***  
The Composers' Ensemble from New York. Thurs, Feb 22, 12n, Chapel. Free.

**LOGJAM\***  
Intercollegiate sing with MIT Logarhythms, Wellesley Tupelos, Jackson Jills, Tufts Beelzebubs, Pembroke Chattertocks. Sat, Feb 24, 8pm, Kresge. Free.

**Concert Band\***  
Works by William Maloof, Gerald Maslin, Edgard Varese, Ralph Vaughan Williams, Percy Grainger, Paul Creston. Directed by John Farley. Sun, Feb 25, 3pm, Kresge. Free.

**Luncheon Concert\***  
Les Antiqua de Paris. Thurs, Mar 1, 12n, Chapel. Free.

**Sarod Concert\***  
Ali Akbar-Khan, India's Sarod wizard. SANGAM. Fri, Mar 2, 8pm, Kresge. Tickets: \$3 or \$5.

**Ree Club**  
Rehearsals. Works by Stravinsky, Brahms, Mozart, Schubert. Tues, Wed, Thurs, 5pm, Kresge.

## Theater and Shows

**The Knack\***  
Community Players will perform excerpts. Tues, Feb 27, 12n, Bldg 7 Lobby.

**The Knack\***  
Ann Jellicoe play performed by MIT Community Players. Directed by Karen Matson. Thurs-Sat, Mar 1, 2, 3, 8pm, Little Theater. Tickets \$2. Reservations, X3-4720.

## Dance

**Folk Dance Club\***  
International, Sun, 7:30-11pm, Sala. Balkan, Tues, 7:30-11pm, Student Center Rm 491. Israeli, Thurs, 7:15-10:15pm, duPont T-Club Lounge. Afternoon dance break, Fri, 12:30-1:30pm, Bldg 7 Lobby.

**Modern Dance\*\***  
Intermediate. Every Sat, 11am, McCormick Gym, Beginning Feb 24. Ten classes, \$5 registration.

**Tech Squares\*\*\***  
Western style square dancing. Every Tues, 8-11pm, Sala de Puerto Rico. Admission \$1 (first time is free).

## Exhibitions

**Imaginary Architecture\***  
Exhibition of works by Friedrich St. Florian, fellow at Center for Advanced Visual Studies. Hayden Gallery, through March, open 10am-4pm, Mon-Sat.

**Visual Design Experiments by Science and Engineering Students\***  
Organized by Prof. Robert Preusser. Hayden Corridor Gallery, through Feb 27. Corridor Gallery is always open.

**Photographs by Gregory Smith\***  
Hayden Corridor Gallery, Feb 28 through Mar 15.

**Music Library Exhibit**  
Photographs of early instruments up to 1600. Daily, Rm 14E-109.

**Hart Nautical Nuseum\***  
Exhibits include "Ocean Engineering Summer Laboratory Projects 1971 and 1972," and "Tugs and Towing." Bldg 5, first floor.

## Athletics

**Varsity Hockey\***  
Nichols. Wed, Feb 21, 7pm, Skating Rink.

**F/V Basketball\***  
Bates. Fri, Feb 23, 6:15pm and 8:15pm, Rockwell Cage.

**Fencing**  
Stevens Tech. Sat, Feb 24, 2pm, duPont Fencing Rm.

**Pistol**  
Villanova, Boston State, Penn. Sat, Feb 24, 2pm, duPont Pistol Range.

**F/V Squash**  
Yale. Mon, Feb 26, 7pm, duPont Squash Courts.

**Women's Basketball\***  
Endicott. Tues, Feb 27, 7:30pm, Rockwell Cage.

**Freshman Basketball**  
Phillips Andover. Wed, Feb 28, 3pm, Rockwell Cage.

**Women's Basketball\***  
Lowell State. Thurs, Mar 1, 7:30pm, Rockwell Cage.

**Women's Fencing\***  
URI. Fri, Mar 2, 4pm, duPont Fencing Rm.

## Religious Services and Activities

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

**Campus Crusade for Christ/College Life\***  
Family time, fellowship and teachings from God's word. Every Fri, 7-9:30pm, Rm 1-132.

**Christian Bible Discussion Group\***  
Every Thurs, 1pm, Rm 20B-031. Call Prof. Schimmel, X3-6739, or Ralph Burgess, X3-2415.

**Christian Science Organization**  
Every Tues, 7:15pm, Rm 8-314.

**Hillel Meeting**  
Multi-media lecture and presentation "The Rise and Fall of the East European Jew." Wed, Feb 28, 7:30pm, Student Center West Lounge.

**Hillel Services\***  
Mon-Fri, 8am, Rm 7-108; Fri, 8:15am, Chapel; Sat, 9am, Chapel.

**Islamic Society\***  
Prayers, every Fri, 12:15pm, Kresge Rehearsal Rm B. Discussions on the Qur'anic interpretations of various aspects of life, every Sat, 4pm, ISC Lounge, Walker 2nd floor, coffee served.

**Protestant Worship Service\***  
Every Sun, 11am, Chapel.

**Roman Catholic Masses\***  
Weekly masses in the Chapel: Sun, 9:15am, 12:15pm, 5:15pm; Wed, 5:05pm; Fri, 12:05pm.

**Vedanta Society\***  
Services, every Fri, 5:15pm, Chapel. Followed by discussion hour, 6pm, Lobdell Dining Rm.

**United Christian Fellowship\***  
Christians for dinner, food, fellowship. Every Wed, 5pm, Walker (at sign of the fish). Followed by singing, praying, sharing meeting, 6pm, Rm 14E-303.

**Zen Society\***  
Meditation meetings. Mon through Fri, 8-9am, Chapel. Call 492-4945.

## Announcements

**Rental Typewriters**  
Now available at Student Center Library. MIT ID required.

**R/O Week**  
Work has started on organizing R/O Week for next year. If you have any modifications, new ideas or are interested in helping out, leave name at FAC Office, Rm 7-103.

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

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

Send notices for February 28 through March 9 to the Calendar Editor, Room 5-111, Ext. 3-3279, by noon Friday, February 23.

## New UROP Listings

### United States Coast Guard

The USCG has funded a proposal for ocean-related research by MIT undergraduates and faculty advisors. The plan is for several undergraduates to begin UROP projects for credit (or perhaps pay) during the spring term at MIT, and then continue the work as summer UROP projects for pay at MIT, the Maine Maritime Academy or a USCG installation. In addition, arrangements may be made for the use of USCG equipment for instrumentation, overflights, cruises (e.g., San Francisco, New York), etc.

For ideas and information in the following three research areas, contact the faculty members below or Keatinge Keays, 5-228A, X3-4330.

1. Small Boat Safety and Stability and (2) Safe Powering of Recreational Boats. Projects will emphasize the safety of hulls for "johnboats"—that is 12-14 feet long, flat bottom, aluminum, outboard powered hulls. Each year, many of these small recreational boats swamp or sink at sea because of poor design, improper operation, or operator ignorance. Also, many operators drown when thrown overboard due to the craft instability. The USCG must soon prepare and announce standards for powering and safety to minimize the loss of human life and the number of rescue missions run. Project possibilities include everything from computer modeling, to instrumentation, to a testing program. Contact Prof. Douglas Carmichael, 5-222B, X3-4316 or Prof. Phillip Mandel, 5-325, X3-4335.

3. Oil Pollution. (a) Detection and Measurement: The USCG has done some preliminary work on a remote sampler for determining oil contents for surface waters using polyurethane blocks and other materials for filtration. Students might investigate this or other physical ways of measuring the extent of harbor and ocean oil pollution quickly and accurately. Contact Prof. James C. Weaver, 26-317, X3-4194; and (b) Operations and Removal: Students might investigate schemes for the

efficient deployment of oil spill containment equipment following an accident. Contact Prof. David P. Hoult, 3-252, X3-2174.

### Artificial Intelligence Laboratory

Opportunity for a student with some Electrical Engineering hardware experience to design and build a computer terminal to be used by preschool children to program LOGO's "Turtle." Credit. Contact Russell Noftsker, X3-6765 or Radia Perlman, X3-6201, Room 111, 545 Tech. Square.

### Children's Hospital

A laboratory engaged in cardiovascular research with heavy emphasis on the use of ultrasonic and radio telemetry techniques to measure such parameters as blood flow, blood pressure and internal organ dimensions under a variety of laboratory and field conditions. Engineering and Bio-Engineering students with background and experience in physics, chemistry, the design of analog and digital circuitry and ideally with some physiological course background desired. Specific projects arranged based on mutual interest.

### Peter Bent Brigham Hospital

A preliminary investigation at PBB hospital has shown that some bacteria inhabit hospitals which pose a threat to some patients. Undergraduate interested in working with a doctor to collect and analyze from PBB and other nearby hospitals, develop a computer program to correlate available data, as well as take samples and study the life cycles of bacteria.

### Harvey Simons Drum Studio

The Studio is looking for an undergraduate with knowledge of acoustical engineering and building design to re-design the studio's practice rooms. The studio will provide the materials and labor to implement the design. Credit only.

# IAP Recommendations and Statistics

Following are the recommendations of the IAP Policy committee which were originally published with the full report of the committee in December. The graphs have been updated to include data gathered following IAP '73. In addition three new graphs are presented showing IAP '73 activity, statistics on incomplete grades, and units of credit granted for IAP work.

We recommend that the faculty continue the "4-14" calendar, with a January Independent Activities Period, as the regular academic calendar of the Institute.

In order to implement the above recommendation we propose the following policy and administrative recommendations pertaining to the IAP.

## Academic Credit

We recommend that students have the option of receiving academic credit for subjects taken

during the IAP at the discretion of the instructor. The limit on the total amount of credit hours a student may receive during any one IAP will be six hours, with the following exceptions:

(a) A student may obtain twelve hours of credit, concentrated in one subject, with the approval of the chairman of the department in which the student is earning credit.

(b) A student wishing to earn more than six credit units, in circumstances not covered by item (a) above, must petition the Committee on Curricula for permission to receive more than six units. The decision of the Committee on Curricula will be final.

## Grades

Credit awarded for subjects taken during the IAP will carry the grade of "P" (pass) in the student's records.

Limitations in credit or grade apply only to subjects taken during the IAP and do not apply to

completion of incompletes of thesis credit.

## Credit Transfer

Requests for academic credit earned at other Universities during the IAP will follow the already established procedures for credit transfer.

## Tuition

Full-time students for the fall and/or spring semester may participate in the IAP with no additional tuition.

## Employees

Employee participation in IAP will be governed by the same rules and regulations that apply to their participation in academic activities during other times of the year.

## Student Exchange

Tuition free "one-for-one" student exchanges between MIT and other Universities may be arranged through the appropriate offices at each school.

Students from other schools

wishing to attend MIT during the IAP must apply for admission as "January Special Students." Application and admission will be handled by the admissions office. January Special Students will be admitted for specific subjects rather than as special students at large.

A minimum charge will be required which will cover minimum tuition, fees and insurance. For students wishing to earn more than the minimum credit, additional tuition may be charged.

## Faculty and Departmental Responsibilities

Faculty obligations during the IAP are no different from those during the rest of the academic year. Academic-year appointments run from September 1 to May 31; faculty members are expected to be on hand and available to students during January, just as they are during the rest of the academic year.

Faculty advisors are expected to inform themselves about IAP

activities and be able to assist students in planning for their participation in IAP.

Each department has the obligation to offer a variety of activities sufficient to meet the needs and desires of those students who wish to study, read, do research, etc., under that department's auspices during IAP.

We recommend that an IAP Policy Committee, composed of students, faculty, and staff, be established to deal with policy matters and the continued evaluation of IAP.

We recommend that responsibility for the IAP administration rests in the office of the Provost.

We recommend that an IAP Planning Committee, composed of representatives from each department, laboratory, and other interdepartmental centers be created. This committee will be responsible for coordinating plans for the IAP. The committee should be chaired by a representative of the Provost's office.

## STUDENT EVALUATION OF 1973 INDEPENDENT ACTIVITY PERIOD

Please help us evaluate the Independent Activity Period (IAP) by filling out this brief questionnaire and returning it as instructed by your Faculty Counselor/Registration Officer. Your rapid response is especially important this year, since the future of the IAP and the new academic calendar is to be decided at the next faculty meeting.

1. PLEASE FILL IN APPROPRIATE BOXES:

Undergraduate		
Year (1,2,3,4, or 5)	<input type="text"/>	(1)
Course	<input type="text"/>	(2)
Graduate		
Course	<input type="text"/>	(5)

PLEASE USE THE REVERSE SIDE TO AMPLIFY YOUR ANSWERS TO QUESTIONS 2, 3, and 4.

2. DO YOU THINK THE IAP IS A GOOD IDEA FOR YOU PERSONALLY? Yes  Undecided  (8) No

3. DO YOU THINK THE IAP IS A GOOD IDEA FOR THE INSTITUTE AS A WHOLE? Yes  Undecided  (9) No

4. COMPARING THIS YEAR'S IAP WITH LAST YEAR'S IAP, DO YOU FEEL THIS YEAR'S IAP WAS PERSONALLY: More satisfactory?  Equally satisfactory?  (10) Less satisfactory?

Please answer the questions below and return this to Joel Orlen as soon as you can (today or tomorrow). We are trying to get some immediate, if informal, sense of what's happening during IAP. A more considered evaluation will be compiled later.

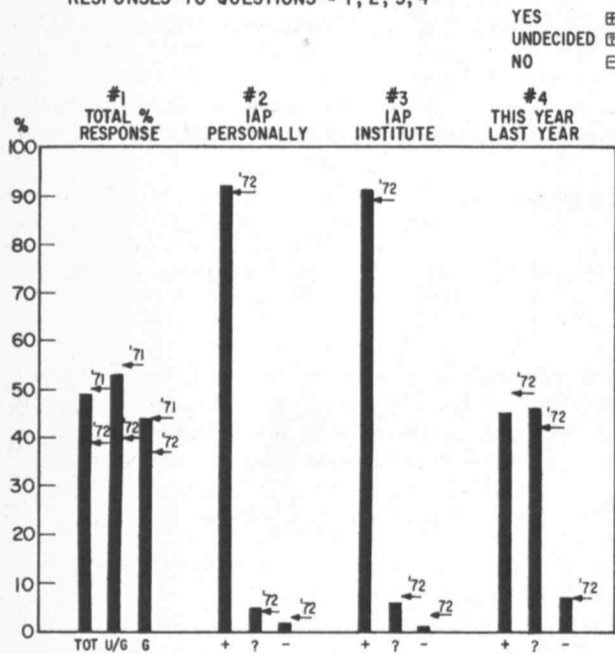
Is your IAP activity (IAP Guide No. \_\_\_\_\_) underway? \_\_\_\_\_

How many students are participating? \_\_\_\_\_ More than anticipated? [ ] Fewer than anticipated? [ ]

Is there anything noteworthy about the mix of students or attitudes? What? \_\_\_\_\_

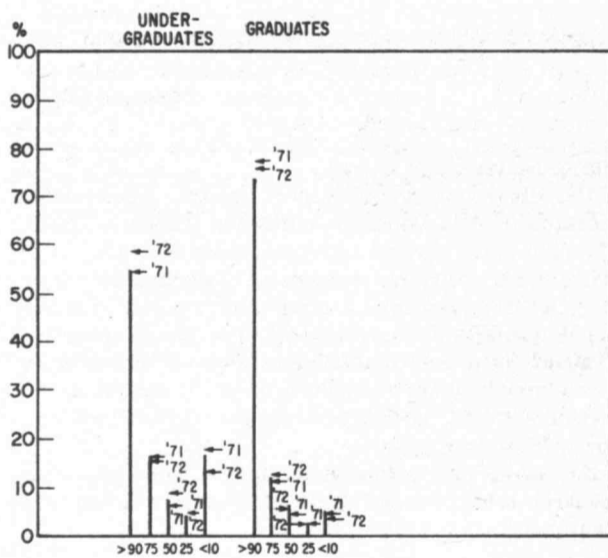
Other comments: \_\_\_\_\_

1973-STUDENT IAP QUESTIONNAIRE: SUMMARY OF RESPONSES TO QUESTIONS #1, 2, 3, 4

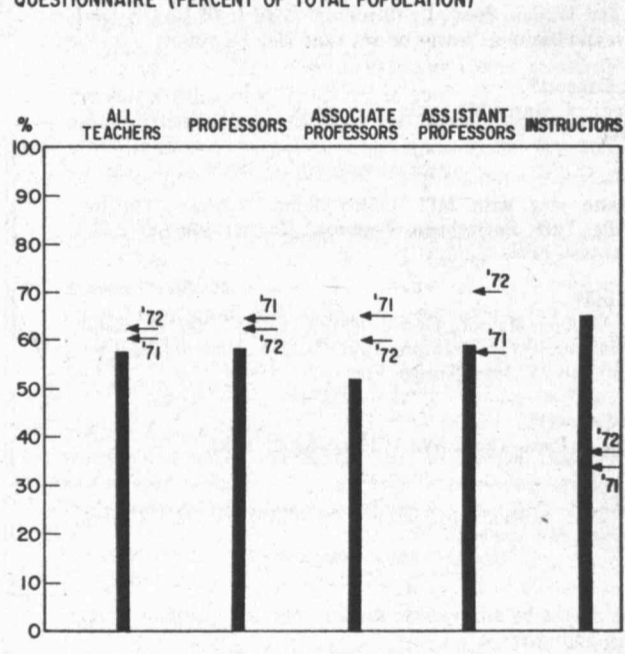


1973-STUDENT IAP Q.#5

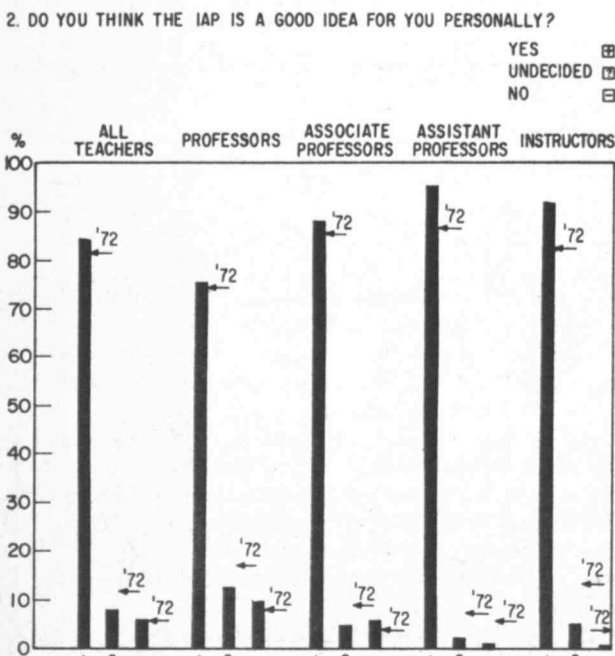
5. APPROXIMATELY WHAT PERCENT OF YOUR TIME DID YOU SPEND AT YOUR TERM ADDRESS DURING JANUARY? >90  75  50  25  <10



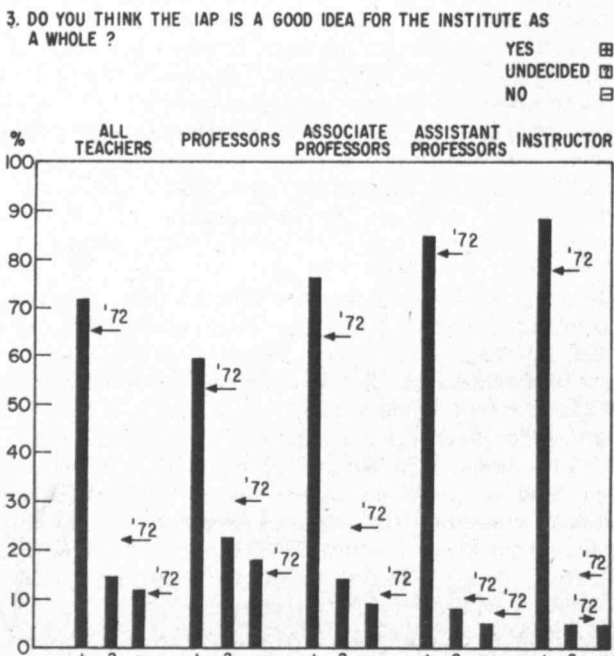
1973-TEACHER IAP Q.#1: TEACHER RESPONSE TO IAP QUESTIONNAIRE (PERCENT OF TOTAL POPULATION)



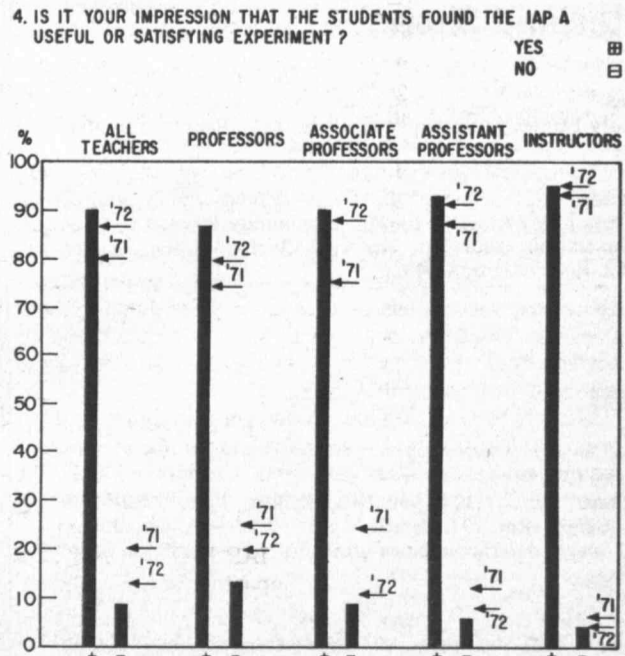
1973-TEACHER IAP Q.#2



1973-TEACHER IAP Q.#3

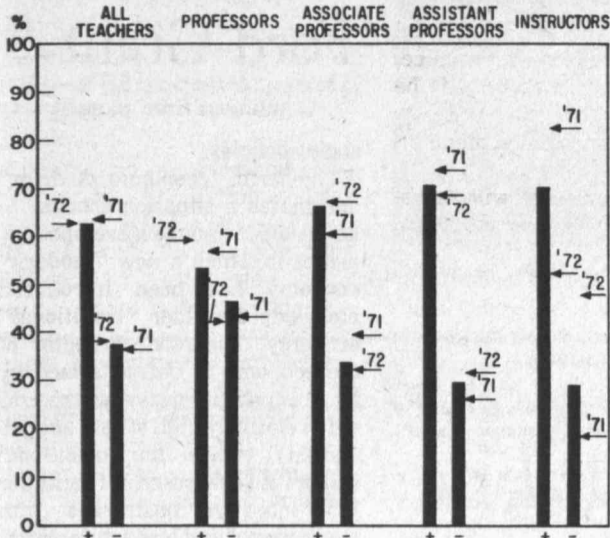


1973-TEACHER IAP Q.#4



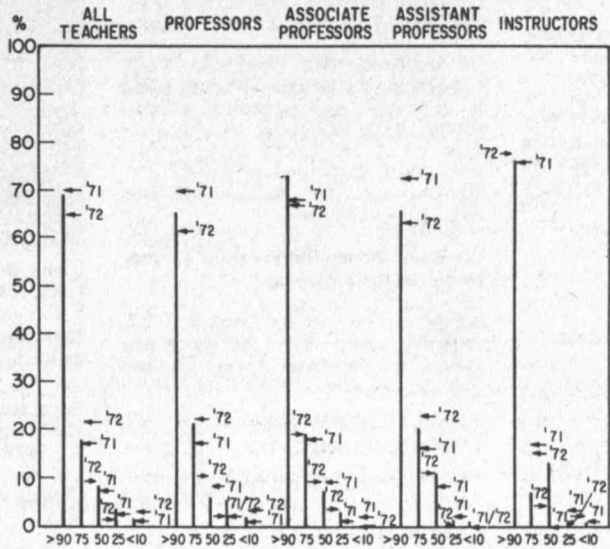
5. DID THE IAP PROVIDE YOU WITH THE OPPORTUNITY TO ENGAGE IN NEW AND DIFFERENT ACTIVITIES ?

YES  NO

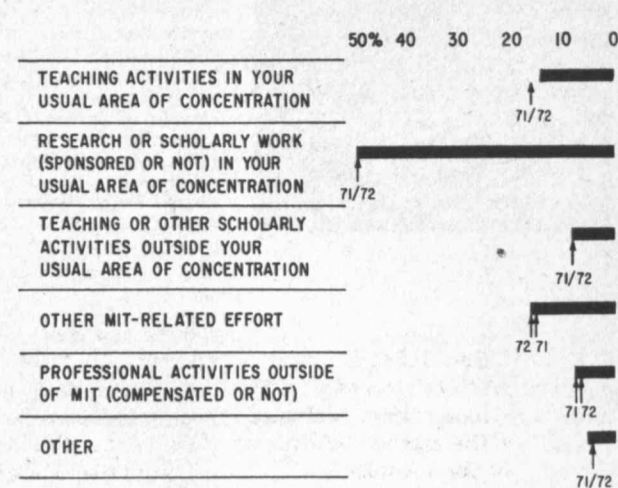


6. APPROXIMATELY WHAT PERCENT OF YOUR TIME WERE YOU IN RESIDENCE DURING JANUARY ?

>90  75  50  25  <10



7. FOR THE PERIOD YOU WERE IN RESIDENCE DURING JANUARY, HOW WAS YOUR WORKING TIME SPENT ?



# IAP Evaluation: Freshman Interviews

By William P. Orchard, Member of the IAP Policy Committee

In order to supplement the quantitative analysis of IAP which has been carried out each year, these interviews were arranged as part of the IAP Policy Committee overall evaluation. We contacted 80 freshmen by mail at the end of IAP and asked them to participate in a 15-minute interview. Thirty-six freshmen were actually interviewed, a 45 percent response.

Our first question had to do with use of time during IAP. Twenty-six percent of those interviewed stayed at home for IAP, spending 68 percent of their time working for a wage. In fact, one student managed to earn his entire second term tuition during IAP. Time not spent at a job was used for general rest and relaxation.

The activities of the 74 percent who spent January at MIT were distributed as follows: course work, 19 percent; organized IAP activities, 51 percent; time away from campus, 5 percent; mostly wasted time, 25 percent.

There did not seem to be any significant amount of time spent on unorganized, independent activities, except for the 19 percent involved in course work either for the previous term or, more commonly, for the coming term. These figures are based on an eight-hour day, because we felt use of evening hours was not relevant to our study. However, in many cases these eight hours included parts of the evening since some individuals didn't get up until the early afternoon. Some did not attend lectures they had planned on because these were scheduled for the morning, and sleeping late meant sleeping until noon or so.

In our second question we tried to find out how much freshmen planned for IAP, and what goals they had in mind for it. We wanted to see the correlation between these goals and the outcomes. We also asked them what they, in retrospect, would have done differently during IAP, and/or what they would like to do next year.

Apparently, very few gave any real, constructive consideration to IAP before it started. Most freshmen thought about it as they flipped through the first IAP Guide, but not before that. A few made phone calls to pre-register for activities in case they would eventually decide to take it. But in no case were there any definite plans made either to go home or to get involved in a project at MIT. Most freshmen were satisfied with seeing many interesting activities in the Guide and felt that they could wait till January to decide what they were going to do.

Those that got involved in interesting and sustained projects during IAP said that things just worked out nicely at the last minute. One student, perhaps the most enthused IAPer in the group, arranged for an interview with the chief surgeon of a Boston hospital at the beginning of IAP, and within a few days he was working 10 hours a day with a surgical research team.

Those that planned to carry out unorganized, independent studies or hobbies such as reading, learning a language, or photography, did not manage to get far with their projects. They commented that time just seemed to "slip by" and they commonly felt that there just wasn't an atmosphere conducive to study in their living groups. Perhaps "reading books" was the most common IAP activity of all, but very few people could easily recall the names of the books they read.

Many freshmen who tried to do some studying on their own, or who attended a scattered sampling of the IAP lectures and movies, said that they would have liked to be involved in something equivalent to a UROP project during IAP.

Our survey also showed that IAP had no significant effect on the choice of a major department by Freshmen, though in some cases, IAP was useful in ruling out a department or finding out about another. Many freshmen said that IAP was valuable as a time to stop and think

about a major without being pressured by particular subjects.

The interviews showed that IAP had no measureable effect on participation in extra-curricular activities. People did not pick up new activities during IAP and usually continued on any they were involved with during the first term.

The IAP activities which seemed most popular among the freshmen we interviewed were: the earth science movies; the automechanics course and shop; the Feynman lectures; 18.02; computer courses; athletics; and touring Boston.

In many of the interviews, we asked how their parents felt about IAP. All parents were either actively enthused or felt that what was good for MIT was good for their son. No parents expressed opposition.

A common opinion among freshmen was that IAP was a necessary breathing spell between semesters. Most felt pressured very much at the end of the first term; if the second term had started at the beginning of January, "they just wouldn't have been ready." Nevertheless, when asked, most freshmen agreed that, in this respect, a one or two week extension of the Christmas vacation would have given a sufficient period to unwind.

In summary, those students who were involved in projects, courses, or jobs that required commitment obtained the greatest satisfaction from what they did and seemed to have made the best use of IAP. Those who either tried to pursue something totally on their own or shopped around on a daily basis for IAP activities felt they had not obtained any lasting satisfaction, and in many cases they wished they had participated in something more extensive. Most of these expected to plan more substantive programs for the next IAP, although they weren't sure where to look for these. This suggests a possible function of the IAP Planning Committee could be to provide some coordination for group project activities.

These figures were compiled from questionnaires mailed to everyone offering IAP activities. The IAP Policy Committee also extrapolated results from a telephone spot check to 47 of the 232 who did not respond to the original questionnaire. No attempt was made to estimate attendance at the activities for which a written questionnaire was not received.

## Incompletes Issued Fall 1969-Fall 1972

	Total grades issued	Percentage incompletes
Fall 1969	27,508	3.6
Spring 1970	26,260	2.2
Fall 1970	28,488	8.4
Spring 1971	26,565	4.6
Fall 1971	28,521	7.2
Spring 1972	26,840	8.2 *
Fall 1972	27,927	5.6

\* Note that the faculty resolved to amend faculty regulations on May 24, 1972, for the Spring 1972 semester, as follows:

The teaching faculty should make arrangements to provide students who wish to complete their regularly scheduled academic obligations with comparable instruction in ways that are mutually agreeable for the students and teachers concerned.

For those students who wish to make other arrangements, all academic obligations (including classes, quizzes, papers, and final examinations) after Thursday, May 11, 1972, be discharged as described in paragraph 3.

These students should be given a letter grade, the grade to be based either on work thus far completed and on work to be completed by October 22, 1972, the latter choice to be decided by the instructor. The Registrar will record the grade without indication of delay.

	Independent Activities Period			no.	pct.
	Number of Activities listed in Guide	Attendance took place	Attendance canceled		
Academic	76	67	9	1331	17
Semi-academic	325	284	41	5282	67
Non-academic	64	57	7	1295	16
Total	465	408	57	7908	100 %
Percent	100 %	88 %	12 %		

## Units of Credit Granted for IAP '73 Activities

Undergraduates									Graduates	
Year 1		Year 2		Year 3		Year 4		Total	Units	Students
Units	Students	Units	Students	Units	Students	Units	Students	Students		
12	16	12	22	12	25	12	5	68	12	6
9	6	9	12	9	3	9	3	24	9	11
8		8		8	1	8	2	3	8	
7		7	1	7		7		1	7	
6	24	6	28	6	39	6	37	128	6	261
5		5	2	5	3	5		5	5	4
4	4	4	2	4	1	4	1	8	4	3
3	11	3	20	3	21	3	18	70	3	44
2		2	2	2	1	2	1	4	2	3
1		1		1		1	27	27	1	83
	61		89		94		94	338		415

# CLASSIFIED ADS

## For Sale, Etc.

Oriental rug w/pad, 12'x9', exc cond, \$39 or best offer; wdn mag stand, \$4; night tbl, exc cond, \$5. David, X3-5350.

Zenith 18" port TV, UHF, lk new, \$75. Tom, X8-1305 Draper.

Skis, Kneissl Blue Star, 200cm, \$60. Jonathan, X3-2351.

Br wdn wardrobe, 6'x3'x2', gd for extra closet, gd cond. Wendy, 547-6918.

Hyde ice skates, ladies 5 1/2 and 7 1/2, \$12/pr; hockey skates, 4 1/2 and 9, \$10/pr. Abigail, X5708 Linc.

Stud snows, Sears best, G78-14, used 4 mos, \$40/pr; one new G70-14 tire \$20, all mounted on Chevy whls. Bob, X455 Linc.

Tasco deluxe hi qual microscope, 1200 pwr zoom kit w/3 filters, slides, preparations, case, \$30. Jerry, X3-6106.

Refrigerator, 3 1/2 cu ft, less than yr old, \$80. Jane, X3-4803.

Munari ski boots, 5 buckle, all lthr, exc cond, man's 8 1/2, \$30. David, X8-0808 Draper.

Humanic ski boots, 11 1/2 M, nvr used, w/tree, \$25. X8-1571 Draper.

Set 15" rims for '65-'69 Ford or Merc, \$5; ski bnlds, br new, \$5; 8/16mm movie editor, \$8. Grande, X1830 Middleton.

KLH 17 spkr, exc cond, \$90 pr; Ultrablit 220 elec flash, rechg, \$25; ski rack, trunk mount, holds 2 pr, lock, \$10. Bruce, X3-5868.

Stud snows, C78-14 Firestone T&C, gd cond, \$10 pr. Jack, X3-1419.

Martin D12-20 12 string guitar, 8 yrs old, \$290; Martin D-35, lk new, \$395. Call 494-8414 evgs.

Lady Schick standup hairdryer, exc cond, \$15. Libby, 354-0741 evgs.

Harpichord, 4'x8', buff stops, pedals, \$1200. Pat Bevans, X8-1188 Draper.

Aquarium, 20 gal w/light, pwr filter, 2 hrs, \$25. Forrest, X3-6702.

Underwood Olivetti typewriter, Lettera 22 w/carrying case, dust cover, pica type, hrdly used, \$35 or best. Helen, X8-3501 Draper.

Mobil 4-ply nylon tires, w/w, 8.25-14, hrdly worn, \$5 ea; Firestone stud snows, tubeless, 6.78-14, worn but serviceable, \$5 pr. Carley, X3-4276.

Guild Jet-Star bass, \$125; Ampeg B15-N amp, \$125; Stanton 681EE cart, \$20; all in gd cond, w/ haggle a bit. Kenny, X9632 Dorm.

Bell helmet, wh, 7 1/2, \$20; windshield, clear/red, \$15; backrest and lugg rack, \$15; highway pegs, \$10, all fit Honda 450. Dick, X5548 Linc.

Black & Decker's best 3/8 revers variable spd drill, top cond, w/drill std, \$35. Anita, X3-3220.

Rembrandt Color Champ TV antenna, new, \$9. Dick, X3-5568.

Tape deck, Astrocom/Marlux mod 407, 4-hd, 3-motor, auto revrs, sound on sound, sound w/sound, echo, solenoid conrtls, fast transpt, list \$460, selling for \$250. X9444 Dorm after 7pm.

Kenwood KR 3130, 10 mos old, meets spec, new \$225, any reas offer. Bob, 254-2392.

Gossen Sxticolor color correction ltmeter w/8 ser VII, instr, cases, \$50; 14-49mm screw-in filters, \$30; lrg adapt-a-case (16x22x5) w/inserts, \$20; 4 Kodak carousel trays, \$6; steering whl krok-lok, \$5. Hank, X8-2781 Draper.

Br new solid map col K set, drop leaf formica tbl, corner bench w/map chr, org naugahide cush, \$175. Doris, X7155 Linc.

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.

Gibson elec guitar, 2 pickups, gd action, \$35. X113 Linc.

IBM selec typewriter, v little use, red. George, X8-4470 Draper evgs.

Minox "C" camera w/elec flash, br new, \$110. George, X3-6747.

11,500 BTU air cond, fits Eastgate; LR set, sofa/bed, end tbl w/match lmps, chrs, cof tbl; met desk, plus file cab, office chr, desk lmp; rugs; DR set; baby's stroller/carriage/hi-chr; clock radio, exc cond. Call 494-8259.

Br new hand carved Meerschaum pipe, \$15. Jim, X3-5353.

Sony TC-350 tape deck, many hours of use, wrks fine; Concord DBA 10 Dolby noise reduc unit, in pcking box, w/warr cards, etc; \$80 ea or both for \$106.50. George, X3-3934.

Lady's hair dryer w/hrd hood; 2 wdn chrs; 2 wdn stools; K equip, dishes, pots, pans, wdn tbl. Belio, X3-5106.

Cass tape deck, TEAC-350 w/Dolby and spec tape feature, yr old, \$250; Superb tube-type pwr amp, 60w/ch, orig \$500, now \$200. Chip, X3-1558.

Color TV, 19", VHF/UHF, gd cond, rec overhauled, \$110 or best offer. Kal, X3-6060.

Classic guitar w/vinyl case, almost new, \$40. Israel, X3-7826.

Concord DBA-10 Dolby, less than yr old, \$90 or best; BASF LP35 4-track, low noise/hi-output rec tape, 1800' reels w/case, both new and slightly used at \$4/reel. Dave, 494-8609.

Sony TC-355, 4 track stereo tape deck, 3 heads/3 spd, solid st, exc cond, \$120. Dave, X3-7275.

Stud snows, 6.95-14, 40% tread wear, \$20 pr. Don Korn, X7692 Linc.

Head Competition metal skis w/marker bnlds, old, make offer. Ralph, X7320 Linc.

Piano, full Steinway grand, \$70, you pick up. Bob, 266-6576.

Scott 387 stereo rcvr, warr still gd, \$250; Dynaco PAT 4 preamp, lk new, \$60. Ken, X8649 Dorm.

B&W TV, \$20. Laury, X3-6963.

Ski boots, 9, \$5; Knessel White Star skis, orig \$200, now \$58, exc cond. Kevin, X3-1545.

Lthr coat w/fur trim; lthr jacket w/zip-out liner; all wthr coat w/liner, 14-16; blue braided rug; asstd posters and cassetts, negot. Pat, X8819 Dorm, lv msg.

## Vehicles

'30 Mod A Ford, classic, exc cond, runs well, orig eng, new tires, new rf, rumble seat, rec paint, best offer. Paul, X3-7903.

'63 Chevy Impala, auto, 4-dr hrdtop, runs OK, \$50. X8-4095 Draper.

'65 VW sunrf, gd cond, rebld eng, 4 gd tires, compl br job, \$350. Betty, X8-3585 Draper.

'65 VW sedan, nds minor repair, \$200. X3-3209.

'66 Olds Delta, air cond, p st & br, auto, v gd cond. Gints X3-3161 lv msg.

'66 Ply wgn, gd cond, \$400. X3-5829.

'66 Mustang convert, 289 V8, auto, R, \$300. X3-1340.

'67 Datsun wgn, 4-dr, 4-sp, 58K, \$270; also Eureka vac clnr, exc cond, \$35. Take, X3-5548.

'68 Austin America, 30K, gd cond, trans nds repair, \$350 or best offer. Phillip, X3-7466.

'68 Ford wgn, 6 cyl, new eng, seen in Lowell, \$495. Joe, X5550 Linc.

'69 Volvo 144S, 4-dr sdn, 36.7K, std, wht w/red int, try it you'll lk it. Howard, X3-2837.

'70 Austin America std, 43K, \$650. Michael, X3-6035 lv msg.

'71 Ford Club wgn, 5 pass, gd as camper, exc cond, \$2,595. Call 963-8824 after 6pm.

'71 Buick Le Sabre custom, p st & br, vinyl top, 17K. Joe, X8-1234 Draper.

'72 Ply Duster 340, 8 cyl, 2-dr hrdtp, 4-sp, grn met w/stripes, bench seats, R 8K, warr, was \$3300, best over \$2000. Jeff, X3-4093 Draper after 4pm.

'72 Chevelle 2-dr sdn, low mi, reas offer. Pat 492-7274.

'72 Land Rover, fully equip, \$3,700. Jerry, X8-1262 Draper.

Bolens tractor, 10 hp, mower, tiller, snow thrower, cart, grader, blade, chains, whl weights, 3 yrs old, exc cond, \$1200. Ken, X7654 Linc.

'66 Honda 305 Scrambler, v gd cond, \$300. Bill, X3-2587.

## Housing

Allston, Cambridge St, 4 BR, mod B, near T, \$270, inc ht, no lease. Jim, X8-2581 Draper.

Arl, 5 rm, rec renovated bsmt, pking for 2 cars, front and back porches, near T, no pets or kids, \$200. X8-4575 Draper.

Billerica, new 7 rm hse, 3 BR, K, 1 1/2 B, dish, lrg yard, space for horse, \$350/mo. Call 663-8329 after 5pm.

Brk, attractive 1 BR sublet Mar 1, near T, \$196. Jim, X3-7742.

Camb, 5 rm apt, 2 BR, yd, off-st pking, 2 bl from elementary sch, \$205/mo untd. Gay, X3-7241.

Dorch, rm avail, male or fem, share LR & K w/w 2 grads, nr T, \$50 plus \$15 util, immed, Cathy or Ben, X3-2062.

N. Conway, NH, 8 ski areas, 3 lodges, slp 20, 13, 9. Ruth, X8-2476 Draper.

Rox, 7 rms, 5 BR, \$150. Bonnie, 442-9067.

Salisbury, NH, mobile home, 55'x10', w/20' Expando LR, 2 BR, DR, B, in ski country nr Sunapee, 1 acre & home, \$10,000, or home & 10 acres, \$16,000. X7409 Linc.

## Animals

Bl dog, part lab, 6 mos, playful, gd dispo, hseboken, free to gd home. Renie, X3-7106.

Siamese satin rabbits, born 11/24, pedigreed, tatoored, show type, reg parents. Betty, X3-2285.

## Lost and Found

Found: key case w/9 keys on MIT shuttle to Linc Lab 2/9/73. X7501 Linc.

Found: pr glasses, br frames, clear lenses, 2/11, at evg performance "Trial by Jury." Susan, X8863 Dorm.

Lost: gold locket on orange silk ribbon, 2/15, nr duPont & Student Center, reward. Meridel, 776-3424.

Lost: pr gold rimmed glasses in bl case nr 400 Mem Dr, 2/11, reward. Kirsch, X3-4441, lv msg.

Lost: blue knit skullcap, 2/12 on West Campus. Ethel, X3-2982.

Lost: Pink silk scarf, 2/14, nr Lobby Bldg 10, morn. Lakshmi, X6784.

## Wanted

Grads interested in developing research ideas into marketable product nded to work w/Sloan student to secure funds for venture. Mark, X3-6613.

Visiting Prof wants sublet, Aug, apt in Eastgate. Sarah, X3-6607.

Berkeley prof wants 1-yr hse swap; has furn 2-story hse w/5 BR, 2 1/2 B, study, family rm; seeks similar in Boston area. Nancy, X3-7120.

Rmmate to share 2 BR apt w/m grad, Cent Sq, own rm, near T, w-w carpet, ht, ht wat, air cond, off-st pking, avail 3/1, \$104 + utils. Ron, 492-4633.

Daily ride, W. Peabody or vic to MIT, w/ share exp and/or driving. Rusty, X3-6737.

Rider to Jacksonville, shr exp, 1-way or round trip, lvg 3/9, ret 3/24. Paul Mascall, X8-2861 Draper.

Wl do gen thesis or tech typing. Sharon, X3-6025.

Alum or fiberglass canoe, 18'. Lew, X3-6467.

Skin diving equip, reas. X8-2039 Draper.

Man's bike, gd cond, under \$30. X9457 Dorm.

Recorder, alto or tenor, accurate, gd tone. Jeff, 492-6708.

Usable hr meters, 3, 110v, 60 cyl, AC. Tony, X3-5783.

High chr, playpen, child's wht chest of drawers. Mary, X3-2285.

Swap ice skates, lady's Hyde figure, 6, for 7 or 7 1/2 Hyde skates. Sandra, X3-6106.

Cheap, used tennis rackets, 2, light or med, gd cond. India, X3-6784.

Exercise-cycle. Jerry, X3-6034.

Clothes washer and dryer. Tim, X3-6032.

## Miscellaneous

Interested in mtg w/others opposed to legalized abortion. Georgia Nagle, X3-4105.

Opportunity for children 3 1/2-5 to play w/and learn to program computer driven "turtle", work on wkends. Radia Pearlman, X3-6201 or 3-7807 or Greg Mott, 734-0648.

## Positions Available

The Office of Personnel Relations is seeking individuals from within the Institute to fill the following openings:

**Secretary IV** in Administrative Office will be responsible for the maintenance of project reports, internal budgets, status reports to sponsors and reports to directors. Excellent typing needed and some accounting or bookkeeping background helpful. Ability to deal with people important.

**Secretary III** to design assistants and designers to be trained in the processing and checking of all stages within the book design and manufacturing cycle. Position is approximately 2/3 secretary and 1/3 design trainee. Involves typing of composition specifications, letters, memos, purchase orders, answering phones, maintaining files, and logging in and out of illustrations and galleys. Publications background with some secretarial experience helpful.

Biweekly, Ext. 3-4251

**Technician A (ET/c)** An individual who assists in laboratory, research, or analytical work under direction or supervision of scientific personnel. Operates highly technical experimental apparatus. Has demonstrated considerable skill and good performance in the particular field of activity. Requires some supervision. To install and assemble fast electronic circuitry and related components. Graduation from a two year day technical school or its equivalent and a minimum of two years of applicable experience are required. Must be thoroughly familiar with integrated circuits. Must have familiarity and experience with techniques of fast electronics, coincidence circuits, discriminators, and pulse height analyzers. Experience in making and assembly of transmission cables is required.

Hourly, Ext. 3-4268

For Lincoln Laboratory

**Secretary for Director of newly formed Education Program:** High-level technical skills required, including shorthand. Work involved includes liaison with instructors and students, keeping educational records, assisting instructors in preparing course materials and a variety of other tasks necessary to insure smooth operation of this important new program.

**Administrative Assistant:** To assist in processing travel expense vouchers, handling refunds, and controlling petty cash expenditure and custody of funds. Accounting background required.

Jane Notaro, Ext. 7305, Lincoln

# CIS Wins \$150,000 Ford Grant

(Continued from page 1)

social policies."

The term "economic dualism" designates a situation thought to be peculiar to underdeveloped societies in which a new "modern" economy has been introduced alongside the older "traditional" economy. The modern sector of the economy is characterized by large capital-intensive enterprises with relatively high wages and job stability, while the traditional sector is composed of smaller labor-intensive businesses with lower wages and less job security. "Economic dualism typically cuts across all branches of the national economy, so that in a single country there are two agricultures, two industries, and two distribution systems," the researchers write. "This economic dualism frequently coincides with regional, cultural, class and racial divisions."

"Above all," they continue, "economic dualism has been considered a phenomenon of incomplete modernization. And where two economic sectors continue to co-exist within an advanced industrial state, the standard explanation is lag: the uneven and incomplete progress of a modernization process that will at some future point eliminate the traditional sector."

The researchers believe, however, not only that economic dualism is not limited to underdeveloped countries, but that the phenomenon may have important structural elements that will maintain it even in advanced societies. "From the work that we have already commenced," they write, "it appears that the relationships between the modern and traditional sectors may be complementary rather than competitive." Citing "a growing body of evidence that suggests the economic rationality" of economic dualism, they write that "large modern firms apparently seek to maintain the small, traditional firms. For example...the small traditional firms can produce goods at lower costs to the modern sector under subcontracting arrangements."

To elucidate the range of social, political and economic elements that combine to maintain economic dualism, the research project will be mounted in three stages. During the present year, a faculty seminar will explore the concept of economic dualism in various national settings and refine the framework within which individual research projects will be conducted.

During the second stage, the investigators will undertake specific research. Professor Peattie will specify various models of economic dualism advanced to explain developing societies and analyze their relevance to industrial countries. Professor Piore will examine the American labor market experience in the industrial economies of Western Europe. Professor Rein, with Professor Piore, will investigate the relation of economic dualism and income distribution. Professor Berger will analyze the politics of economic dualism in Western Europe.

The final stage of the project, to be completed by the end of 1975, will be the preparation of a joint publication of the project's findings.