

400 Alumni Officers, Guests Here for AOC

The annual MIT Officers Conference will bring some 400 graduates of the Institute and their guests back to the campus this weekend.

Early registration will begin at 4pm Friday in the Faculty Club. Cocktails and a buffet will be served there from 5 to 8:30pm.

Dr. Howard W. Johnson, chairman of the MIT Corporation, will open the conference at 9am Saturday in Kresge Auditorium.

Following that, brief statements touching on the Institute's plans for its immediate and long-range future will be made by President Jerome B. Wiesner, Chancellor Paul E. Gray and Provost Walter A. Rosenblith.

From 11am to 12:45pm four simultaneous discussion groups will be under way at the Stratton Student Center. The groups will consist of representatives from the

administration, the financial division, the faculty, the Admissions Office and the Alumni Association.

The awards luncheon will begin at 1pm in the Sala de Puerto Rico. William S. Edgerly, president of the Alumni Association, will preside.

A two-hour program, "New Dimensions in Liveliness," will begin at 3pm in Kresge Auditorium. Moderator will be Dr. Rosenblith. The program will detail new teaching and research programs under way at the Institute.

A reception at 5:30 pm in Walker Memorial will be followed at 6:30pm by the annual conference dinner, also at Walker. Dr. Gray will be keynote speaker.

The conference will conclude with informal discussions and refreshments from 9pm to midnight at the MIT Faculty Club.

MIT-BU Group To Develop Legal Guide for Sea Mining

An MIT-Boston University group, headed by Associate Professor Michael S. Baram, has received a \$61,000 grant from the National Science Foundation's RANN (Research Applied to National Needs) program to develop the legal and regulatory framework for marine mining and resource extraction in the coastal zone.

A lawyer and a member of the Department of Civil Engineering, Professor Baram will head the project team which includes co-principal investigator Professor David A. Rice of the Boston University School of Law, a law student and William W. Lee, an MIT graduate student in civil engineering from Claremont, Calif.

The study will focus on hard mineral resources which have been determined to lie in the US coastal zone, the growing industrial demand and technological capability for extraction, and the environmental and social impacts which are expected to accompany extraction.

The project team will review the principal substantive laws of the coastal states covering mineral extraction activities and the federal regulations and authorities

which affect state, local and private actions within the coastal zone.

The objective of the project is to determine methods of regulation and the appropriate legal framework to ensure proper social management for the application of new mineral extraction techniques.

Factors to be considered in subsequent stages of the project include citizen participation and essential monitoring and enforcement methods.

"Conflicts between public and private interests, and between federal, state and local authorities are expected to be significant features of the study," Professor Baram said.

"In most states there is no coherent regulatory program for resource management in the coastal zone. Furthermore, the principle of harmonization of differing state approaches must be developed to ensure regional and national interests."

Both Professors Baram and Rice have been active in environmental law developments, and have served in several advisory capacities on technology assessment, coastal zone problems and other environmental issues.

Courses and Degrees Catalogue Out, General Catalogue Due Soon

The *General Catalogue* issue of the 1973-1974 MIT Bulletin is expected to be available late this month.

The 300-page *General Catalogue* is the second of the five issues that make up the MIT Bulletin. The 360-page *Courses and Degree Programs* issue for 1973-74 was published and delivered in the first week of August.

Other issues of the Bulletin are the *Report of the President and the Chancellor*, which is published in October; the *Report of the Treasurer*, published in November, and the *Summer Session Cat-*

logue, published in March.

There have been a number of significant revisions incorporated into the 1973-1974 issues of the Institute's catalogues.

The *Courses and Degree Programs* issue, copies of which were mailed to faculty and staff members and to registering students, is now designed primarily to serve an internal audience.

The issue includes General Institute Requirements for undergraduates, general requirements for graduate degrees, detailed course descriptions, descriptions

of interdisciplinary programs and facilities and detailed descriptions of all Institute subjects. The *Courses and Degree Programs* issue does not include a faculty listing.

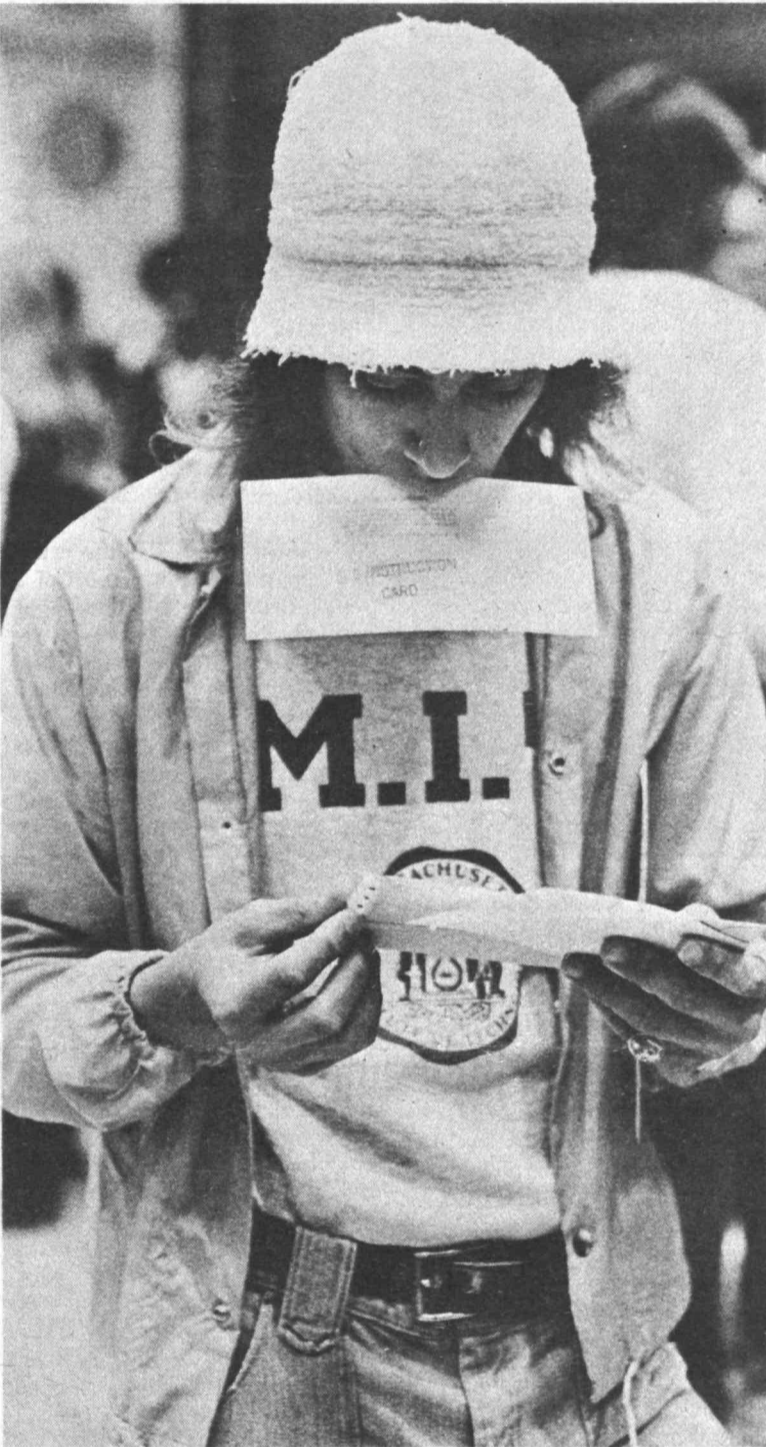
The upcoming *General Catalogue* issue, in contrast, is designed primarily to serve as a document useful to an external audience—prospective students, alumni and the public.

It will include a broad description of the Institute covering admission, financial aid, housing, campus activities and other sub-

jects in addition to detailed descriptions of all courses, interdisciplinary programs and facilities, and General Institute Requirements.

The detailed description of all subjects will not appear in the *General Catalogue* issue. Rather, a list of subjects by titles only will accompany each course description. Faculty lists will also accompany each departmental writeup. Administrative listings will appear in the back of the catalogue.

Miss Susan C. Knight, editorial



ONE OF THE estimated 6,000 students who registered this week at duPont Gymnasium pauses momentarily to check his class schedule.

Fall Term Underway For MIT

The single step that begins even the longest of journeys was taken collectively this week by thousands of MIT students as classes—the Institute's *raison d'être*—began again.

And with that beginning came a quickening in every corner of the Institute community of 15,000.

More than 6,000 students registered Monday at duPont Gymnasium, but the exact number attending classes won't be known until later this week when tallies are made.

When the doors to the gymnasium opened at 9am about 60 students were waiting to begin the registration process. An equal—if not greater—number of people were poised for action at the several registration desks arranged on the gymnasium floor.

Takayoshi Ito, a sophomore student in electrical engineering from Caracas, Venezuela, moved quickly from desk to desk, giving last minute instructions. From time to time he conferred with Registrar Warren D. Wells, the administration official in charge of registration.

Ito, a member of Alpha Phi Omega, the national service fraternity, was that organization's registration project chairman. He said about 50 Alpha Phi members were on hand to help register students.

As the first students rushed to their initial stops along the registration trail, Peter Buttner, associate dean for student affairs and executive officer of the Freshman Advisory Council, turned up an amplifier, sending music from radio station WCAS in Cambridge through the gymnasium.

"I think this is one of the things that makes this whole process more civilized," Mr. Buttner said, adjusting a reel of tape-recorded music that formed his back-up system. One of the first students to complete the registration process was Thomas F. Klimowicz, 18, of Hazlet, N.J. What did he think of it?

"I thought it was well organized, but it would have been helpful if we had been told how things were set up inside while we were waiting outside."

manager of the MIT Bulletin, said the press run for each of the two catalogue issues is about 35,000.

The current organization of catalogue information has decreased from 29 million to 23 million the number of total pages that must be printed, Miss Knight said.

Over the next year further tightening, content revision, and redesign will be accomplished under the auspices of the Committee on Educational Policy which has formal responsibility for presentation of the Institute's academic program.

Increasing MIT Graduates Finding Their Way into Newspaper Reporting, Writing

When gremlins get into the computer at the Associated Press office in Boston somebody's sure to shout: "Get Thornton. She'll fix it."

Mary Thornton is the AP's State House reporter in Boston. Her reputation as a fixer of computers—although never tested in practice—is unshakable among her colleagues because she's a graduate of MIT.

She is illustrative of a growing number of MIT alumni and students finding their way into the newspaper business.

Lee Giguere, an engineer, covers local news for the weekly Warwick, R.I., *Beacon*. He was graduated last June from MIT.

Reid Ashe, a general assignment reporter for the Jackson, Tenn., *Sun*, also is an MIT grad. He received his degree in electrical engineering.

Although Thornton, Giguere and Ashe aren't the first MIT graduates to make careers of news reporting, they are the vanguard of what may be a growing trend.

(Other Institute grads in newspaper work include W.H. James, Class of 1940, publisher of the *New York Daily News*; Generoso P. Pope, Class of 1946, publisher of the *National Enquirer*, and Robert C. Cowen, Class of 1949, features editor of the *Christian Science Monitor*. The late Eric F. Hodgins, Class of 1922, was editor of *Fortune* magazine as well as the author of *Mr. Blanding Builds His Dream House*, and Gjon Mili, Class of 1927, was a pioneer photojournalist for *Life* magazine.)

If present plans remain firm, Paul E. Schindler Jr., Class of 1974; Norman D. Sandler, Class of 1975; David M. Tenenbaum, Class of 1974, and Neal C. Vitale, Class of 1975, will go into reporting.

Two May Enter
Schindler, editor-in-chief of *The Tech*, the MIT student newspaper, worked this past summer for his home town paper, the *Portland, Ore., Journal*. Sandler, *The Tech* news editor from Fairfield, Ia., spent the summer as a reporter in the Des Moines United Press International bureau. Tenenbaum, chairman of *The Tech*, was a summer photographer for the *Newark Star-Ledger*. He's from New York City.

Vitale, *The Tech* arts editor, has been a correspondent for the *Boston Globe* for some time. He's from Reading.

Two other *The Tech* staffers, Michael D. McNamee of Frankton, Ind., and Barbara L. Moore of Dayton, O., both associate news editors, may wind up in newspaper



MARY THORNTON, Associated Press State House reporter in Boston and a member of the Class of 1970, calls her work "exciting."

work, but it's a little early for a decision. Both are sophomores.

Karen Wattel Arenson, a 1970 graduate of the Institute, also aiming at a newspaper career, is now a student at Northwestern University's Medill School of Journalism in Evanston, Ill. She is majoring in broadcast journalism—"to get some background in that medium"—but her goal is a post on a Washington newspaper, specializing in economics, her major at MIT.

After getting her masters in public policy at Harvard, Mrs. Arenson won a Russell Sage Foundation fellowship that put her on the staff of the *Miami Herald* in 1972—the year of the Republican National Convention. Her chief project was a series of articles about convention delegates based on a mail survey she helped organize.

Counter-culture

Plans for non-technical careers by MIT students are surprising

only to those whose conception of MIT hasn't kept pace with the changes in its curriculum, changes that have greatly broadened offerings in the humanities, for example.

But why newspaper work? And why the growing interest now?

There is no definitive answer. A generalized explanation goes like this:

Even in the backwaters of the business, newspaper publishers know they need specialists to explain a complex world to readers. MIT grads have the special skills newspapers need these days.

In addition, reporting, although it pays more now than it did a few years ago, has a patina of privation sufficient to qualify it as a counter-culture activity.

Besides, it's exciting.

Questions Reflect

Mary Thornton, 24, a self-described Army brat who calls South Carolina "as much home as any place," has found her engineering background useful on many stories.

The most recent was the crash last month at Logan Airport of a Delta Airlines jet. Eighty-eight people were killed. Dozens of reporters were at the scene. Most concentrated on finding out which plane crashed, how many died, the identities of the victims. Miss Thornton asked those questions too, but in addition she kept after officials for an explanation of why the crash occurred. Her questions reflected such a grasp of the technology of flight and traffic control that one federal investigator asked if she had a pilot's license. She hasn't.

More Exciting

Miss Thornton enrolled at MIT in 1966 as an electrical engineering student. She had decided at 14 that she wanted to study at MIT. But after two years she realized that she loved engineering courses but hated engineering work. She switched to political science, concentrating on Sino-Soviet relations. After graduation in 1970 came a year at the *Chelsea, Mass. Record*, a stint as a free-lancer for some North Shore newspapers and a job with AP in 1972. She's been at the State House six months.

Why did she change career directions? Miss Thornton says she finds news reporting "an exciting thing to do." She also acknowledges having viewed reporting "as sort of counter-cultish." Her immediate goal is far beyond Beacon Hill. She'd like to be sent to China where she can use her knowledge of the language and her grasp of Asian politics. That would be more exciting than even Massachusetts politics.

1969 Turmoil

Lee Giguere, 22, graduated last

June in humanities and engineering with a concentration in history, but he was no stranger to newspapering. Editor his senior year of the Bishop Hendricken High School newspaper in his native Warwick, R.I., Giguere's first stop at MIT during orientation week was *The Tech* office.

"From the first week of classes I worked for *The Tech* as a reporter," he said. "It gave me a sense of belonging to the MIT community that I couldn't have gotten any other way. I met people I never would have met otherwise, I learned things I'd have missed as an average student."

It wasn't long before Giguere decided he wanted to view the world outside MIT from the vantage point of a reporter.

Reid Ashe, 24, who received his electrical engineering degree from MIT in 1971, was managing editor of *The Tech* during what he calls "the 1969 turmoil."

Editorial Writing
"It was an exciting time for a student journalist," Ashe recalls. "That's when it dawned on me that although I enjoyed studying electrical engineering I would probably like doing newspaper work more."

Ashe, from Charlotte, N.C., was assistant editor of MIT's *Technology Review* from September 1971 to July 1972, went to work in October of last year on the *Washington, N.C., Daily News*, a paper of 8,000 circulation, as a reporter.

From there it was only a short hop to the *Jackson, Tenn., Sun*, an afternoon daily of 32,000, where his general assignments have dealt mostly with business, finance and industry stories.

Ashe soon will be assigned to editorial writing for six months. After that it will be a different assignment.

Skid Road Stories

Schindler credits graduates like Ashe and Miss Thornton with influencing many of the current student journalists toward making news reporting their careers.

"One other factor influenced me," Schindler says, "and that was the appearance of Ed Diamond on campus."

Edwin Diamond, lecturer in the MIT Department of Political Science and co-director of the MIT Network Study Group, is a veteran newsman and serves, in addition to his MIT work, as media critic for the *Washington Post-Newsweek* broadcasting stations.

Schindler, whose Portland assignments ranged from covering the police station to a five-part series on Portland's *Skid Road* ("It's road, not row, named for the place where lumbermen skidded logs," he says) sums up his love of reporting this way:

Rewarding Pay

"To perform a journalistic function one must observe an event, collect facts, synthesize them, write a lead. Those are challenging mental processes. It is an ordering of reality, and that process is intriguing."

The future will find more and more MIT students in reporting slots, Diamond believes, because publishers, increasingly, are seeking specialists.

"The field as a whole wants more specialized people and it's paying better to get them. These are the kinds of special skills that MIT students have."

"It's always seemed to be an exciting field, and lately it's gotten to be rewarding in pay and professional standing."

Metallurgist Will Present ASM Lecture

Dr. Walter A. Backofen, MIT professor of metallurgy and materials science, has been chosen to present the 1973 Edward DeMille Campbell Memorial Lecture in Chicago during the American Society for Metals' 1973 Metal Show and Materials Engineering Congress, Oct. 1-4.

The Campbell Lecture, a signal honor among metallurgists, is regarded as metalworking's most honored technical presentation of the year. The Lectureship was established in 1926 in memory of the distinguished Edward DeMille Campbell.

Dr. Backofen's Campbell Lecture—at 8pm Monday, Oct. 1, the opening day of the Congress—will deal with deformation processing, a field which Dr. Backofen helped bring to professional recognition.

Dr. Backofen's professional interests are the strength, plasticity, and fracture of solids, especially in regard to materials processing. He has published on such subjects as texture, transformations, mechanical testing, friction, deformation mechanisms, fatigue, brittle and ductile fracture, and a variety of other metallurgical topics.

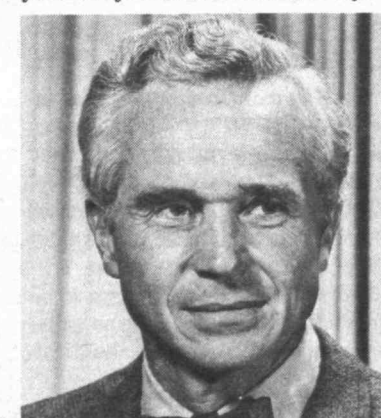
A paper Dr. Backofen published in 1964—recognized with the ASM Henry Marion Howe Medal—is the basis of the new metalworking technology that is growing up around superplasticity. More recently, work on the problem of failure under biaxial loading led to the so-called forming limit diagrams now finding widespread use in the sheet-metal stamping industry. His work is covered in 90 technical papers.

In this period and under the stimulus of that work, the field of deformation processing as a blend of science and engineering, and of metallurgy and mechanics, came to be recognized. The words themselves—"deformation processing"—as they are now understood were first introduced in titling a conference which Dr. Backofen planned for the Army Materials Research Agency in 1964. Most recently he has had a text book published on the subject.

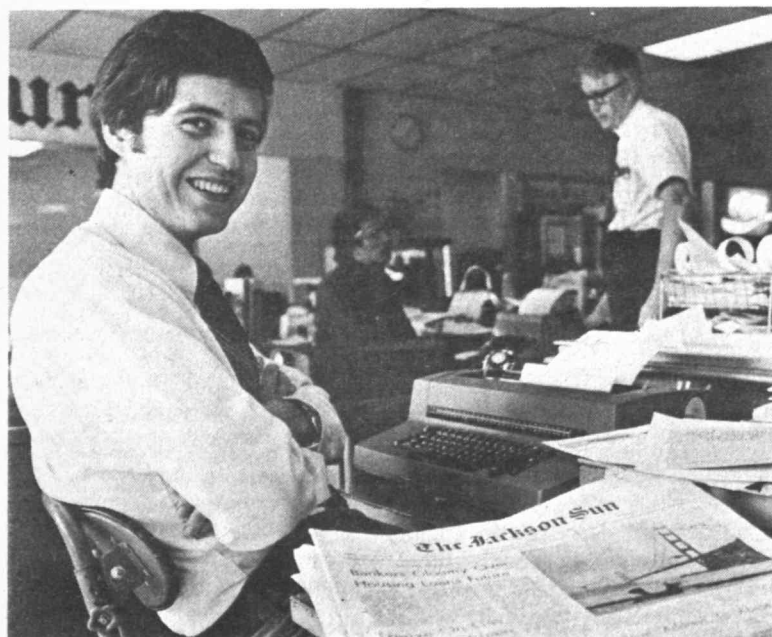
Dr. Backofen has lectured widely to professional groups in the US and abroad. He has presented the Burgess Memorial Lecture to the ASM Washington, D.C. Chapter and the Rockwell Memorial Lecture to the ASM Hartford Chapter.

In 1959 ASM recognized him with the Bradley Stoughton Award for Young Teachers of Metallurgy. He is a member of Tau Beta Pi, Sigma Xi, the American Institute of Mining, Metallurgical, and Petroleum Engineers, and ASM, of which he is a Fellow.

A 1946 graduate of MIT, Dr. Backofen received the ScD degree from the Institute in 1950, the same year he joined the MIT faculty.



Professor Backofen



REID ASHE, a 1971 graduate of MIT, in the city room of the *Jackson, Tenn., Sun* where he's worked as a reporter since February.

"Lightworks" Opening at Hayden

Light as a creative medium is the central theme of an exhibition of experimental design projects to be displayed at MIT's Hayden Gallery Sept. 14 through Oct. 5.

The exhibit, entitled *Lightworks*, was designed, constructed and installed by 14 MIT students and comprises large works that employ advanced light and optical technologies.

Works on view include: a dichroic (pure color) wall painting; a linear structure with laser-generated patterns projected on it; a relief polyurethane foam wall; a smoke chamber penetrated by light rays; a sound-modulated laser pattern transformed with contorted optical media; and plasma filled line sculptures.

A majority of the works have been designed to react to the

presence of gallery visitors. For instance, light intensities and colors change according to the number of visitors and to the movement inside the gallery. Together, the works form a highly technical light-oriented environment.

Lightworks was conceived nearly a year ago by students in a visual design course taught by Robert Preusser, Professor of Visual Design at MIT. In the course, which was established in 1957, science and engineering students explore the design possibilities inherent in their own specialized fields.

The students began experimentation on individual pieces last winter during the January Independent Activities and continued last spring, under theegis of the MIT Undergraduate Research

Opportunities Program. The installation of the exhibit began in August, when the students poured the foam wall which surrounds the other pieces.

Lightworks is sponsored by the MIT Committee on the Visual Arts and has received financial assistance from the Council for the Arts at MIT, the Massachusetts Council on the Arts and Humanities, the MIT Department of Architecture and the MIT Undergraduate Research Opportunities Program.

Lightworks occupies one half of Hayden Gallery's space. An exhibit of sculpture and etchings of an elephant's skull by Henry Moore will be displayed simultaneously in the other half. There will be a public opening of both shows on Friday, Sept. 14 from 8 until 10pm. The gallery is open from 10am until 4pm Mondays through Saturdays.

Students who have worked on the exhibit under the direction of Professor Preusser are: William P. Parker of Waterbury, Vt., a senior in architecture and physics, design coordinator for the show; James Wood of Muncy, Pa., an MIT graduate in architecture, layout coordinator for the show; Donald J. Hunt of Fitchburg, Mass., a senior in architecture, construction coordinator for the show; John S. Roberts of Wichita, Kan., a junior in architecture, installation coordinator for the show.

Also participating were: Douglas G. Bailey of Upper St. Clair, Pa., a graduate student in mechanical engineering; Paul A. Balian of DeWitt, N.Y., an MIT graduate in management; Jeffrey P. Bosel of Somerville, Mass., a senior in electrical engineering; Alan A. Griswold of Largo, Fla., a junior in electrical engineering; Roger D. Kamm of Superior, Wis., a graduate student in mechanical engineering; James N. Kirksey of Boston, Mass., a senior in management; Gina R. Kritchevsky of Michigan City, Ind., a senior in chemistry; Martin K. Mason of Winoski, Vt., a senior in physics; Andres Scholnik, a junior in architecture; and Victor Tom of Mountainside, N.J., a graduate student in electrical engineering.



A PURE COLOR light painting, one of several student works on view at MIT's Hayden Gallery in an exhibit called *Lightworks*, was created by William P. Parker, a senior from Waterbury, Vt. Parker is design coordinator of the exhibit.



ROBERT O. PREUSSER, right, professor of visual design at MIT, helps Andres Scholnik of Argentina adjust his projection diffraction exhibit which utilizes mylar plastic.

Weekly Meetings of Women's Forum Are Resumed

The Women's Forum began its regular weekly meeting Monday at noon in the Bush Room (10-105).

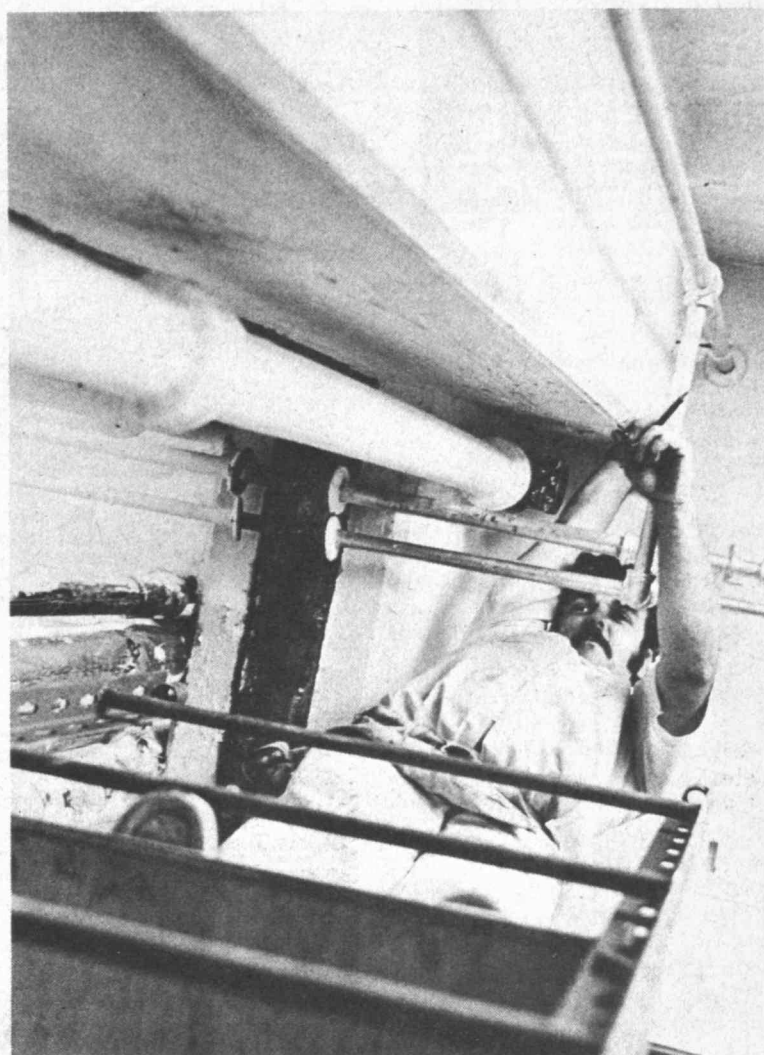
The meeting Monday, Sept. 17 will be an open discussion on plans for the coming year. Mary Rowe, special assistant to the president and chancellor for women and

work, will discuss her Centennial Convocation paper and research at the meeting Sept. 24. Affirmative Action is the topic for the Oct. 1 meeting, at which John M. Wynne, vice president for administration and personnel and equal employment opportunity officer,

will speak.

The Forum is an unstructured women's organization guided by a steering committee composed of interested faculty, staff and employees. It is open to all women—and men—who are interested in women's issues.

Remodeled 10, 4 Space To House Student Services



RENOVATION WORK in Building 10 surrounds Paul "Skip" McIver of Pembroke, an employe of Polins Construction Co. of Boston.

Construction will be completed later this fall on the first two floors of Bldg. 10 and a portion of Bldg. 4 that will provide for the centralization of several major student services at MIT in a location convenient for students.

The areas being remodeled became available with completion of the new Sherman Fairchild Bldg. on Vassar St. for the Department of Electrical Engineering and the Research Laboratory of Electronics. The Bldg. 10 and Bldg. 4 space formerly was occupied by Department of Electrical Engineering laboratories which have been relocated in the Fairchild Bldg. and, on the second floor, by the old Institute telephone system.

Remodeled space in Bldg. 10 and Bldg. 4 will house the Career Planning and Placement Office, now located in the Horace Ford Bldg. at Ames and Main Sts., the Committee on Academic Performance, now in Bldg. 26, and the Preprofessional Advising and Education Office—all on the first floor—and

office space for Dr. Mary Rowe, special assistant to the president and the chancellor for women and work on the second floor.

Second floor space also is being renovated for two research groups—one from the Department of Architecture and the other from the Department of Urban Studies and Planning—and for the Office of Resource Operations and Resource Planning.

The Career Planning and Placement Office—which serves students and alumni—will have its main entrance from the Bldg. 10 elevator lobby. The space will include interview and conference rooms.

The Preprofessional Advising and Education Office will have its entrance across the main corridor from the Bursar's Office. It will include a reference library and browsing room.

The engineering and construction group of Physical Plant has served as renewal architect. L.H. McIssac of Allston is general contractor.

Subjects Listed By New Division

Describing itself as "a new academic venture," the MIT Division for Study and Research in Education has officially opened for business effective this fall.

Among its activities, the Division will offer four subjects this fall and five during spring term. The undergraduate subject this fall is "Intuitive Methods in Mathematical Sciences" (SRE 101) taught by Harold Abelson.

Graduate subjects this fall are

"Foundations of Education" (SRE 201) and "Seminar in Education" (SRE 203) both taught by Professor Seymour A. Papert, and "Analysis and Evaluation of Teaching and Learning Processes" (SRE 205) taught by Professor Malcolm R. Parlett.

Information on admission to the Division's programs is available in the office of Professor W. T. Martin, director of the Division, Rm. 20C-125.

New Pages Due For Office Book

Revised pages of the MIT *Secretarial Handbook* will be distributed the week of Sept. 17 to those who received the original book when it was issued a year ago.

In addition, 100 additional copies will be available by late October for laboratories and departments needing them for new office employees. Requests should be made

to James E. Grayson's office at Ext. 3-7138.

The book was compiled a year ago under the direction of Mr. Grayson, now administrative officer for the Department of Ocean Engineering, and members of the Personnel Office and Institute office staffs. It acquaints new secretarial employees with administrative offices and procedures.

G. L. Wilson Named to Sporn Chair

Professor Gerald L. Wilson, a member of the faculty of the Department of Electrical Engineering and director of the School of Engineering's Electric Power Systems Engineering Laboratory, has been appointed Philip Sporn Associate Professor of Energy Processing.

The announcement was made by Alfred H. Keil, dean of the School of Engineering, and Louis D. Smullin, head of the Department of Electrical Engineering.

The Sporn professorship is funded by gifts and pledges from electric utility and power companies throughout the country in honor of Mr. Sporn, a pioneer in the industry and a leader in the advancement of nuclear power.

Mr. Sporn said of the appointment:

"Gerry Wilson's coming on the scene is a piece of good fortune for the student body of MIT, for MIT, for the power industry and for the country."

Mr. Sporn, who was graduated from Columbia University in 1917, joined the American Gas and Electric Company in 1920 and served as its President from 1947 to 1961, during which time it was renamed the American Electric Power Company. On his retirement, the directors established a System Development Committee, with Mr. Sporn as chairman, to study the company's engineering and technological activities, including research on new methods of generating energy. In 1967, Mr. Sporn gave a series of four lectures at MIT on *Technology, Engineering and Economics* under the sponsorship of the Schools of Humanities and Social Science, Engineering, and Management.

The Electric Power Systems Engineering Laboratory was established in 1970 as an interdisciplinary laboratory in the School of Engineering.

The Laboratory's purpose is to provide educational research opportunities for students and faculty in power systems technology—the primary objective being to educate and motivate students for careers in the power area.

The research performed in the laboratory brings to bear on power system problems the unique technical resources of the Institute in such a way that both the power industry and MIT can benefit. The laboratory is currently conducting major projects in the areas of power systems simulation, digital computer solutions to electrostatic problems, automatic load shedding and restoration, cryogenic generators and high voltage transmission.

Dr. Wilson, 34, a native of Springfield, received the SB and SM degrees in Electrical Engineering in 1961 and 1963 respectively and the ScD in Mechanical Engineering in 1965, all from MIT. He was appointed Assistant Professor of Electrical Engineering and Ford Postdoctoral Fellow in Engineering in 1965 and was promoted to Associate Professor of Electrical Engineering in 1970. During the 1966-67 academic year, Professor Wilson was on a leave of absence at the American Electric Power Service Corporation. In 1971 he succeeded Professor Herbert H. Woodson as Director of the School's Electric Power Systems Engineering Laboratory.

Professor Wilson is widely recognized for his work in power systems simulation, an area in



A MAN-POWERED AIRPLANE, The BURD (for Bi-plane Ultra-light Research Vehicle) is being readied by MIT students for additional taxi tests in preparation for its first attempt at flight. The craft, shown here during a successful taxi test this summer at Hanscom Field in Bedford, had a minor mishap on a subsequent test when a wind gust caused the rear wheel to buckle. A new bicycle wheel has been obtained that is stronger than the

original in order to take larger side loads. The BURD, powered by two men in a bicycle-for-two arrangement, reached a speed of 14 miles per hour in the summer tests, about four miles per hour below takeoff speed. The ultimate goal of the MIT group is a \$128,000 prize offered by a British industrialist, Henry Kremer, for the first man-powered plane to fly a one mile, figure eight course.

—Photo by Calvin Campbell



Professor G.L. Wilson

which his techniques are widely utilized in industry. He is also known for his work on automatic load shedding and restoration during electric power system emergencies and for his contributions to teaching in electric power systems engineering. In 1971 he was awarded the Hickernell Award by IEEE Power Education Committee.

He has been a graduate counselor in the Department of Electrical Engineering since 1967, an advisor to Course VI-A students since 1971, a member of Electrical Engineering Committee on Graduate Admissions and Fellowships since 1970, and a member of the department's Advisory Committee since its formation in 1971. He is a member of Sigma Xi and the IEEE and serves as a member of IEEE's Committee on Education, its Committee on Nuclear Engineering and Power Science and its Synchronous Machine Subcommittee. He is also chairman of the IEEE Working Group on Class F Insulation for Synchronous Machines.

Bangladesh Bound

Colin MacAndrews, Toronto, Canada, free lance writer and MIT political science graduate student who filed stories last year from India as a guest of the government there, will spend several weeks this winter in Bangladesh at Bangladesh invitation filing news articles and commentaries for the Canadian Broadcasting Corp. He recently covered the 31-nation prime ministers conference in Ottawa for several newspapers, including the *Boston Globe*.

New Drawing And Painting Workshop Set

An open drawing and painting workshop will be offered by the MIT Student Art Association (SAA) for the first time this fall.

The workshop—Tuesdays at 7:30pm—will provide a space and time for SAA members to work in unstructured sessions conducive to drawing and painting in an individual way. Boston painter Dick Stroud will participate. There will be no fee.

The SAA's regular program of noncredit studio art classes includes life drawing, photography, pottery, etching and stained glass. Fees range from \$15 to \$40 for students—\$5 more for non-students.

Registration will be 1 to 5pm Sept. 10-14 in the Student Center, Rm. 429, and 7:30 to 9:00pm Sept. 13 when Mimi Luft, SAA director, and the instructors will be there to answer questions. Classes are open to anyone associated with the Institute. MIT students are given first priority.



Mimi Luft, left, and Dick Stroud.

MIT Legs

An organization meeting for the MIT Legislative Service Program / (MIT Legs)—in which students work with state legislators on research projects—will be held Monday, Sept. 17, at 7:30pm in the Bush Room (10-105).

Environment Art

Students under Professor Gyorgy Kepes at the MIT Center for Advanced Visual Studies will use New York's Times Square, Boston Harbor and the Charles River between Boston and Cambridge as the subjects for studies in environmental art projects.

Students will survey physical, visual, acoustical and human conditions in Times Square and design proposals that aim at the artistic orchestration of night lighting. The harbor project will seek to further development, growth and chance effects of nature. The Charles River project will be an inquiry into the changing role of the boundary between the river and the city.

The first class meeting will be at 10am Sept. 21 in Building W-11.

Collins at Suffolk

John F. Collins, former mayor of Boston and now a consulting professor of urban affairs at MIT, will be Suffolk University's commencement speaker next Sunday.

TECH TALK

Volume 18, Number 10
September 12, 1973

Tech Talk is published 50 times a year by the News Office, Massachusetts Institute of Technology. Director: Robert M. Byers; Managing Director, News Office Publications: William T. Struble; Assistant Directors: Joanne Miller, Margo Foote (Photojournalist); Charles H. Ball, Dennis L. Meredith, Robert C. DiIorio; Susan Pogany (Photojournalist); Business Manager: Paul E. Johnson; Reporters: Sally M. Hamilton; Damon P. Wright; Calendar of Events: Want Ads: Susan E. Walker.

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Mail subscriptions are \$5 per year. Checks should be made payable to MIT and mailed to Business Manager, Room 5-122, MIT, Cambridge. Telephone Ext. 3-3676.

Tech Talk is distributed free to all members of the MIT community. Additional copies are available in the Information Center (Room 7-111) or the News Office (Room 5-111). Large numbers of additional copies should be requested within two weeks of the issue date.

MIT Science Information Center Begun

MIT has received a sub-contract from the New England Board of Higher Education to assist in the development of a Northeast Academic Science Information Center (NASIC).

NASIC, when fully operational, will be a regional agency providing research institutions in the northeastern US rapid and effective access to machine-readable information sources. Coverage will include the six New England states, New York, New Jersey, Pennsylvania and Delaware.

Through aggregation of user demand, it is hoped to achieve volume operation economies and provide academic communities with a selection of information sources and services that match their needs. A major objective is to develop workable arrangements among university research groups, libraries and existing computerized information resources and centers.

Plans call for initiating a NASIC information service on an experimental basis at MIT this fall. During the experiment, ways will be sought to place the various specialized services on a self-sustaining basis. NASIC services will be available for purchase at the five major MIT divisional libraries.

Census Tapes

The possibility of bringing services directly to the researcher's office through use of portable terminals will also be evaluated. While ultimately all major digital data bases will be accessible, it is expected that, even in the pilot operation, large bibliographic data bases will be available in such fields as chemistry, physics, engineering, medical and biological sciences, education, psychology, and business. Types of documents covered will include journal articles, reports of US government-sponsored research programs, books, and monographs. In addition, it is planned to provide searching capability for information of a numerical or data type, such as US census tapes.

Achieve Goal

Bibliographic services will include current awareness and retrospective searches. NASIC customers will be given a choice of online or offline access, and an option for self-use or specialist-assisted access. Various methods of document delivery will also be evaluated.

The NASIC project is being supported under a three-year grant from the National Science Foundation to the New England Board of Higher Education. The goal is to establish NASIC as a durable and self-sustaining agency beyond the three-year period through appropriate charges to users for services rendered. The experimental MIT NASIC operation will be a vehicle for devising how best to achieve this goal.

MIT Phase

The NASIC project at MIT is being carried out by staff members from the Libraries, the Information Processing Center and the Electronic Systems Laboratory under the joint direction of Natalie N. Nicholson, director of the Libraries, Robert H. Scott, director of Information Processing Services; Professor J. F. Reintjes, director of the Electronic Systems Laboratory, and Richard S. Marcus, a member of the laboratory staff and technical director for the MIT phase of the project.

If You Were Away This Summer, Here's What Happened at MIT

(Editor's Note: It was a busy summer at MIT. Now that most of the community has returned for the fall term, here is a digest of some of the news from June through August, compiled by Joanne Miller, assistant director of the MIT News Office.)

Alumni Days

Special was the word for the 1973 Alumni Days.

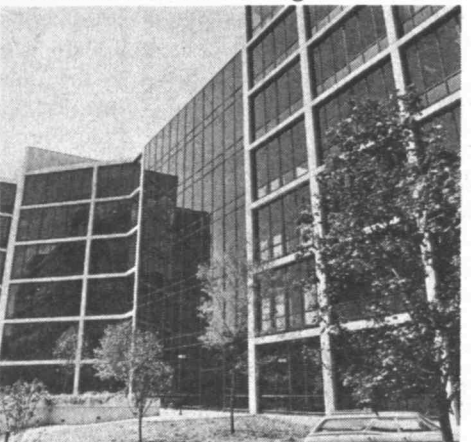
A two-day convocation marked the 100th anniversary of the graduation of Ellen Swallow Richards, MIT's first woman student. President Jerome B. Wiesner opened the convocation by announcing establishment of the Ellen Swallow Richards Professorship which, when fully funded, will be held by a distinguished woman member of the faculty.

When gifts from the 50th, 40th and 25th reunion classes were announced, the Class of 1923 reported a record total of nearly \$8.1 million and planned future gifts with a value now estimated at \$9.5 million. Altogether the class gifts totaled \$9.5 million.

Also during this period, the new residence hall on west campus was named for the late Pin Yuan Tang, '23, an Asian industrialist who had contributed to its development.

Fairchild Building

In mid-June the Department of Electrical Engineering began moving into the Sherman Fairchild Building on Vassar St. The \$17.5 million building was completed nearly three months ahead of schedule and now houses the Research Laboratory of Electronics as well as EE. Dedication ceremonies for the building are scheduled



The Sherman Fairchild Building.

for Oct. 4 and 5. All six former US presidential science advisors will take part in a symposium on "High Technology for a Livable World," and Dr. H. Guyford Stever, director of the National Science Foundation, will address a special corporation luncheon prior to the formal dedication Friday afternoon.

Minority Conference

Some 220 outstanding minority high school students from as far away as Alabama and Texas came to MIT for a three-day career conference in mid-June. In addition to formal meetings, the students dined with professionals in various fields and visited academic departments and laboratories in fields of their career interests.

Doherty Grant

The Henry L. and Grace Doherty Charitable Foundation made a \$750,000 grant to MIT to support promising junior faculty members in interdisciplinary areas of ocean use. A second, \$250,000 grant will support marine studies and research. The first Doherty Professorships will be awarded in the 1974-75 academic year.

Harris Named

Professor James W. Harris, a specialist in Spanish linguistics and Spanish and Portuguese phonology, became head of the Department of Foreign Literatures and Linguistics July 1. He is the author of *Spanish Phonology*, the standard reference work in its field.

Health Plan

Some 800 subscribers and their families were enrolled when the new MIT Health Plan began operation in July. The plan differs from present Blue Cross-Blue Shield coverage in prepayment and comprehensive care features. Services include periodic physical examinations, medical visits, diagnostic service and hospitalization.

Draper Separation

A convocation for Draper Laboratory employees June 29 capped three years of planning and preparation for separation of the Laboratory from MIT. July 1 the Laboratory officially became the Charles Stark Draper Laboratory, Inc., but relationships with MIT remain close.

Effective with divestment Robert A. Duffy succeeded founder Dr. C.S. Draper as the Laboratory's president and John E. Kirk, formerly assistant to the president became vice president.

Thomson Chair

Dr. Hermann A. Haus was selected as the first Elihu Thomson Professor of Electrical Engineering. The professorship was established to honor the distinguished scientist whose work made major contributions to the development of the electrical industry and who served as a member of the MIT Corporation and Acting President of the Institute in 1920-21. Professor Haus, a distinguished scientist and teacher, has made significant contributions in electromagnetic phenomena.

MacDonald Appointed

Bruce MacDonald, who has an extensive background in art history and museum work, became assistant director of exhibitions at MIT. He will succeed Professor Wayne Andersen as director of exhibitions in 1974.

Lottery Launched

The MIT Quarter Century Club and the Community Service Fund joined forces to sponsor MIT's first Institute-wide lottery, The Trip. The winner, was Lloyd W. David, son-in-law of Draper guard James E. Bromilow, who received a pair of tickets and spending money for a trip to Greece in late September. The Trip raised nearly \$2,000 for the MIT Community Service Fund.

Blackmer Appointed

Dr. Donald L.M. Blackmer, professor and formerly executive officer of the Department of Political Science was appointed associate dean of the School of Humanities and Social Science. Professor Blackmer, who will continue to teach in his department, will work closely with Dean Harold J. Hanham in development of new programs and building closer relations between the School of Humanities and Social Sciences and the other MIT Schools.

Utility Costs Rise

A serious rise of about 25 percent, or \$800,000, is predicted in utility costs this year, according to Thomas E. Shepherd, superintendent of utilities. Costs for fuel oil have gone from 10 to 13 cents per gallon and a similar rise in electric rates was expected.

Jackson Professor

Louis D. Smullin, professor and head of the Department of Electrical Engineering was named to the Dugald C. Jackson Professorship, succeeding Institute Professor Emeritus Gordon S. Brown. The chair honors the late Professor Jackson, who headed the department from 1907-1935. Professor Smullin is an authority on microwave tubes and electronics.

Music Industry

Poor management in the American pop music industry and a new form of payola were two findings in a study of the recording industry completed by two MIT

students this summer. Mark L. Radtke of New Canaan, Ct., a senior in management, and Frank B. Harris of Pittsburgh, Pa., who graduated in June, plan to organize their findings for a book.

Nixon Cuts

Within the past two years the Nixon administration apparently considered cutting federal research funds to MIT as a reprisal against President Wiesner, *Science* magazine reported July 20.

The magazine article said "the plan apparently came to nothing; MIT's federal research funds have increased steadily over the past three years."

Affirmative Action

In late July MIT's affirmative action plan was found "acceptable and in substantial compliance" with federal regulations. The Department of Health, Education and Welfare wrote that the MIT plan "evidences a sincere and demonstrable good faith on the part of the Institute." The letter said that MIT, which included 87 departmental plans in its over-all program "was the first school of higher education in the New England states to develop a completely departmentalized program." HEW has since begun using the MIT plan as a model for other colleges and universities.

Energy Crisis

Professor Carroll L. Wilson, writing in the quarterly review *Foreign Affairs*, said the energy problem is a present national emergency and not just a future threat. He proposed a plan to meet the emergency by 1985 through heavy use of coal, construction of underground nuclear power plants and reduction in the growth rate of energy consumption. "Miracle" sources of energy—nuclear fusion, hydrogen broken down by nuclear methods, solar energy and others—he said "will contribute nothing by 1985 nor be substantially operative before roughly the year 2000, if then."

Housing Completion

The first of three apartment houses for the elderly MIT is building in Cambridge was completed in July. An open house in early August was attended by some 2,000



Mary Castriotta, chairman of the Cambridge Housing Authority and Chancellor Paul E. Gray buried time capsule at new apartment house.

Cambridge residents and members of the MIT community. The event was the latest milestone in MIT's four-year, \$17.1 million Housing Program in Cambridge which will provide 684 units of new housing for the elderly when completed this fall.

Arts Council

The Council for the Arts at MIT became fully operational this summer with the appointments of Peter M. Spackman as di-



The Arts Council's Peter Spackman and Ellen Burbank.

rector and Ellen C. Burbank as associate director. The Council is a support and advisory body of about 60 alumni and friends of the Institute across the country who are concerned with the arts in general and their application to a university based on science and engineering in particular.

Kistiakowsky Visiting

Dr. George B. Kistiakowsky, former science advisor to President Eisenhower and renowned for research on the nature of chemical reactions, has been appointed a visiting scholar at the Center for International Studies. Dr. Kistiakowsky, a professor emeritus of chemistry at Harvard, will work with Center director Dr. Eugene B. Skolnikoff on problems relating to the international policy implications of technological control, particularly arms control issues.

Cell Center

MIT received a \$403,200 grant from the National Science Foundation to establish a major facility to grow and supply virus and mammalian cell cultures to biomedical researchers throughout the Boston area. The facility is expected to become a prototype for similar regional cell culture centers elsewhere in the country. Principal investigator for the MIT project is Professor Phillips W. Robbins of the Department of Biology.

Women Appointed

During the summer two women became new "firsts" for MIT—Mary-Lou Sayles was appointed assistant professor of athletics, becoming the first woman of professorial rank in the Department of Athletics, and Maureen Sullivan became the first Campus Patrolwoman.

Gene Synthesized

Synthesis of the first artificial gene with the potential of functioning detectably within a living cell was announced in August by a team of MIT scientists headed by Nobel Prize-winning chemist Dr. Har Gobind Khorana. The same team earlier synthesized the first artificial gene which could not function detectably within a cell because it did not include signals necessary for its utilization by cell machinery. The new gene is complete except for a small end segment left off to allow for further elongation later.

Waugh Named

Dr. John S. Waugh, an authority in chemical physics and specialist in the powerful spectroscopic method known as nuclear magnetic resonance, became the first Arthur Amos Noyes Professor in the Department of Chemistry. The chair was established in memory of the founder of the Research Laboratory of Physical Chemistry and Acting President of the Institute from 1907 to 1909.

Browne Returns

Secor D. Browne, formerly a faculty member in the Department of Aeronautics and Astronautics and the Department of Modern Languages, is returning to the Institute this fall after four years as chairman of the Civil Aeronautics Board.

Sports Praised

Joe Garagiola had praise for the MIT athletic program on his NBC "Monitor" weekend program. After noting MIT has more sanctioned sports than any other college in the country, he lauded the recreational attitude to athletics here.

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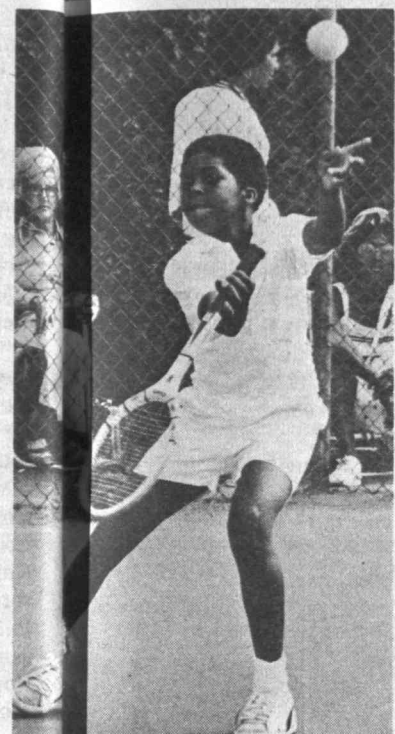
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Honor, Leacock

Teachers who have been visiting professors—Herbert Hollomon, director of the Center for Policy Alternatives, and Richard Leacock, pioneer film maker—have been named permanent faculty appointments. Professor Hollomon is professor in the School of Engineering and Professor Leacock is professor in the Department of Architecture.

Tennis Tournament

For the second year in a row the American Tennis Assn.'s national championships were held at MIT. The week-long tournament in August drew some 400 competitors throughout the nation. Many



ATA member Marc Jones of New York City.

were in the West Campus residence halls. BH-TV (Ch. 2) broadcast the finals, 18 with commentary by Bud Collins and assisted by former tennis great Althea Simon.

Drug Identification

A computerized drug analysis system announced which helps area physicians identify drugs ingested by patients may be suffering overdoses. The



Dr. Gene Costello with drug detecting apparatus.

system was developed by Dr. Klaus Biemann of the Department of Chemistry to separate organic compounds in lunar soil received by the Apollo moon missions.

Noteworthy Items

In the Network News Study Group of the Department of Political Science noted Watergate coverage during the preceding month has escalated to the point where the civil rights of the "highest executives" were "no safer than the civil rights of the lowest street criminal"...71 members of the Class of '73 were inducted into the Massachusetts Xi Chapter of Phi Beta Kappa at a dinner in May...MIT's Varsity heavyweight crew rowed in three international regattas in Europe—the Henley Regatta in Nottingham, and the Lucerne Regatta. MIT joined with the retail food industry in an effort to find a Universal Product Code (UPC) to speed checkout lines in supermarkets.

Robert Large Head of Iris and Bourgeois Tragic Mask of Beethoven, two renowned bronze sculptures joined the MIT collection this summer...Lincoln Lab's Large Earthquake Seismic Array (LASA) in Montana and reported to monitors in Cambridge an earth tremor near Montreal June 10. Professors Thomas B. Sheridan

and Ernest G. Cravalho, both of mechanical engineering, have become chairmen of the Freshman Advisory Council and the Undergraduate Seminar Program, respectively.

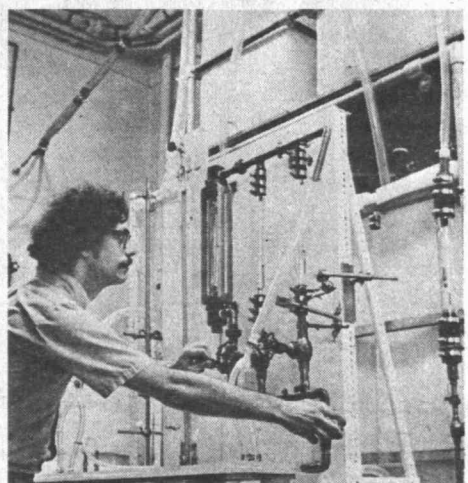
Walter A. Mercer, vice president of the National Canners Association and director of the association's Western Research Laboratory, was selected as the 11th annual Underwood-Prescott Award recipient to present his lecture at MIT Sept. 25...Dennis L. Meredith, former science editor at the University of Rhode Island, and Robert C. Di Iorio, a veteran newsman from the *Boston Herald American* and *Boston Herald Traveler* have become assistant directors of the MIT News Office...the Administrative Development Program, first offered last spring to 22 MIT staff members has been a success—according to its participants—and will be continued with a new program to begin this fall.

A survey conducted by alumnae as part of the Centennial of Women showed that more than half of MIT alumnae aged 25-65 are employed full time as opposed to a national figure of 42 percent for women... Jack W. Christensen, former secretary of the MIT Development Foundation, Inc., has become director of university relations at Carnegie Mellon University... James C. Allison, Jr., assistant for minority affairs in the Office of the President and Chancellor, has been granted leave from MIT to pursue advanced study at the Harvard Graduate School of Education.

Norman A. Claxton whose deft touch in repairing balky IBM typewriters made him the savior of MIT secretaries for 15 years, has been reassigned to another IBM facility... Dr. Jorge Mendiguren, an earth scientist, has found a way to detect many new modes of the earth's vibrations which may add considerably to knowledge about the earth's interior... Jack H. Frailey has taken leave as varsity lightweight rowing coach to devote more time as the new chairman of the US Olympic Rowing Committee.

engineering, writing in *Ripon Forum* said that special toll charges on highways, expressways and city streets would be a more effective and equitable way of reducing automobile traffic than an outright ban on travel... MIT's Center for Transportation Studies has received a \$105,500 grant from the National Science Foundation to help guide the NSF and other federal agencies in identifying needs for basic transportation research.

Institute Professor Emeritus Harold E. Edgerton went on an August expedition in search of the *USS Monitor*, using a side-scan sonar he developed... Mark B. Falber of Terre Haute, Ind., a junior in physics, was the first person to reach the site of the Delta Airlines crash at Logan Airport in August and helped to rescue the lone survivor, Leopold Chouinard... Professor Ronald F. Probst of mechanical engineering



Morton Isaacson adjusts electro dialysis unit for removing salt from water.

advocates applying desalting techniques to brackish surface and ground waters which can be done at reasonable cost rather than continuing to focus on desalting sea water.

The Admissions Office mailed 10,000 copies of a new booklet, "MIT—A Place for Women," to women high school juniors who scored well on Preliminary Scholastic Aptitude Tests... Dr. Egon Orowan, professor emeritus in the Department of Mechanical Engineering and an authority in the physics of metals, received the Paul Bergsøe Medal from the Danish Metallurgical Society Sept. 4.

Polymer Expert Among Five Named in Chem. Engineering

Five persons have been appointed to the visiting and permanent faculty of the MIT Department of Chemical Engineering—among them an internationally known chemist and a woman whose husband also is on the MIT faculty.

Dr. Raymond F. Baddour, head of the department, announced the appointments. They are:

Professor Paul J. Flory of Stanford University, a world authority on polymer chemistry, visiting professor for the fall term, 1973.

Dr. Elizabeth M. Drake, visiting associate professor for the 1973-74 year.

Dr. C. Michael Mohr, visiting associate professor for the 1973-74 year.

Dr. Robert C. Armstrong, assistant professor.

Dr. Robert E. Cohen, assistant professor.

In July, Professor Flory was chosen to receive the 1974 Priestly Medal of the American Chemical Society, the ACS's most prestigious prize. Formerly professor of chemistry at Cornell and later executive director of research at



Dr. Flory

the Mellon Institute, Professor Flory has been on the Stanford faculty since 1961. He was named J.G. Jackson-C.J. Wood Professor there in 1965. He was chairman of the Stanford Department of Chemistry from 1967 to 1969. He was a member of the Visiting Committee for the MIT Department of Chemical Engineering from 1965 to 1967.

Professor Flory is the author of more than 240 papers. His textbook, *Principles of Polymer Chemistry*, published in 1953, has been the leading work in the field

for 20 years. Polymer chemistry is the chemistry of long-chain molecules. In 1969, Professor Flory completed a second book, *Statistical Mechanics of Chain Molecules*.

During his term at MIT, Professor Flory will present a special subject in collaboration with Professor E.W. Merrill on physical chemistry of polymers. He also will consult with students and faculty.

Dr. Drake, wife of Professor Alvin W. Drake of the MIT Department of Electrical Engineering, received the SB in 1958 and the ScD in 1966 in chemical engineering from MIT. She has been associated with Arthur D. Little, Inc., Cambridge, since 1958 and is an expert on cryogenics with special emphasis on heat and mass transfer. During the year at MIT, she will be concerned with growing departmental work on storage and transport of liquefied natural gas.

Professor Mohr received the SB in 1955, SM in 1956 and ScD in 1961, all in chemical engineering from MIT, and was assistant professor of chemical engineering from 1958 to 1967, during which time he was director of the MIT School of Chemical Engineering Practice's Oak Ridge, Tenn., Station. While on the faculty, he developed new curriculum materials in heat and mass transfer and fluid mechanics. He has been with Arthur D. Little, Inc., since 1967 working on problems ranging from operations research to manufacturing processes and waste management with increasing concern for environmental problems.

Dr. Cohen, a graduate of Cornell, received the SM in 1970 and the PhD in 1972, both in chemical engineering at the California Institute of Technology. He spent last year as a research fellow in the Department of Engi-



Dr. Cohen



Dr. Mohr

neering Science at Oxford University, England, working with Professor N.D. McCrum on the mechanical behavior and biological significance of collagen. His

Reserved Indoor Tennis Courts To be Available

Applications for the 1973-74 indoor tennis season will be accepted on a first-come, first-served basis beginning Monday, Sept. 17, Room W32-109.

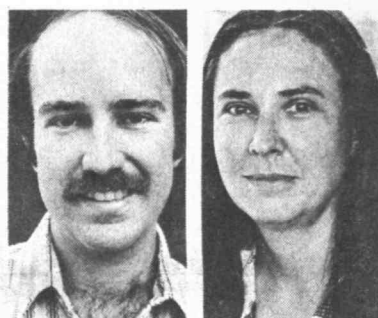
The indoor tennis season runs 22 weeks, Oct. 28, 1973-Mar. 30, 1974. Daily hours are 8am to 2pm and 6 to 11pm. Rates are \$132 per court per season for one hour each week; \$198 per court per season for one and a half hours each week.

An athletic card or an indoor tennis membership card is required in addition to hourly fees. Applications for reserved time are available at the du Pont outdoor tennis courts and the du Pont equipment windows.

Foreign Policy

A new undergraduate seminar, "Foreign Policy: America and the World" (17 S03), is being given this term by Dr. Lincoln P. Bloomfield, professor of political science. A weekly, two-hour discussion will consider a variety of subjects such as ethics and foreign policy, games diplomats play and changing the international system. For information, contact Prof. Bloomfield at Room E53-435, Ext. 3-3146.

research interests include the physics and chemistry of polymers, particularly elastomers,



Dr. Armstrong and Dr. Drake viscoelastic theory, as well as collagen and elastin and one activity he will pursue at MIT will be the establishment of an undergraduate laboratory subject in polymer instruction.

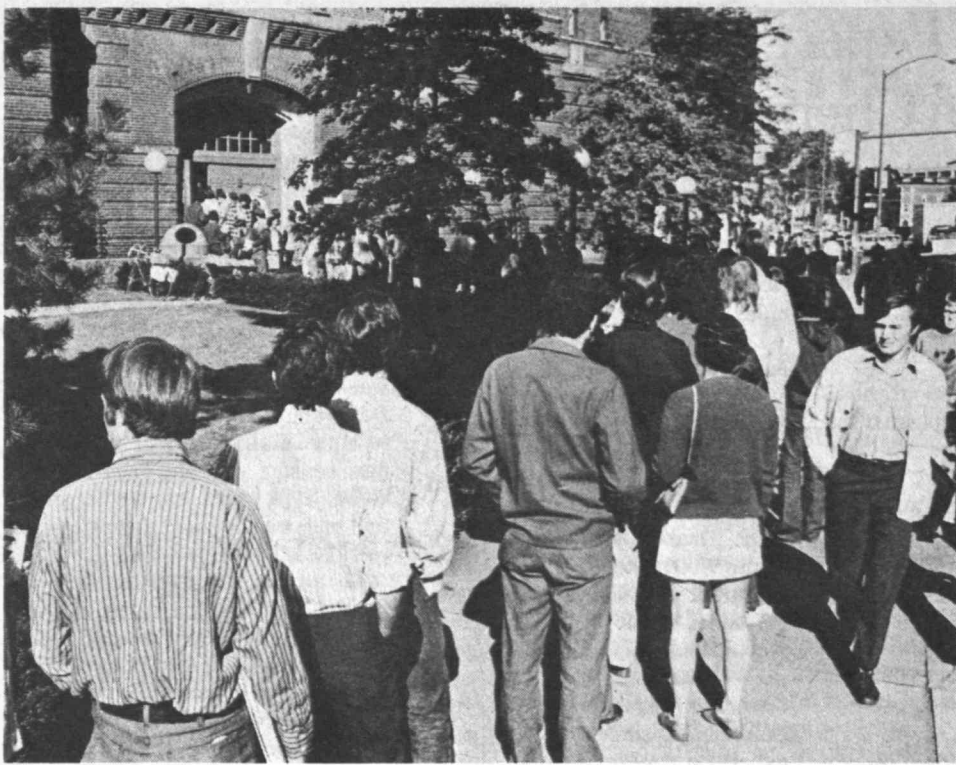
Dr. Armstrong is a 1970 graduate of George Institute of Technology who received the PhD from the University of Wisconsin in chemical engineering earlier this year. His principal research interests are in the field of transport phenomena, chemical kinetics, and fluid dynamics. He is at work as co-author on a textbook on macromolecular hydrodynamics.



CELEBRATING the first beer at the Twenty Chimneys are, left to right, Timothy Kiorpes of Bratenahl, Ohio, a graduate student in nutrition and food science, Norman Sandler of Fairfield, Iowa, a junior in

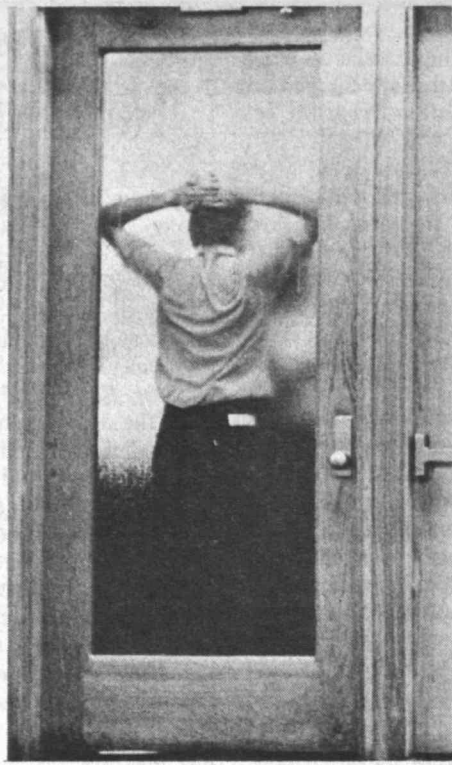
political science, and John Kavazanjian of Long Beach, N.Y., a graduate student in the Sloan School. All are present or former staff members of The Tech.

—Photo by Calvin Campbell

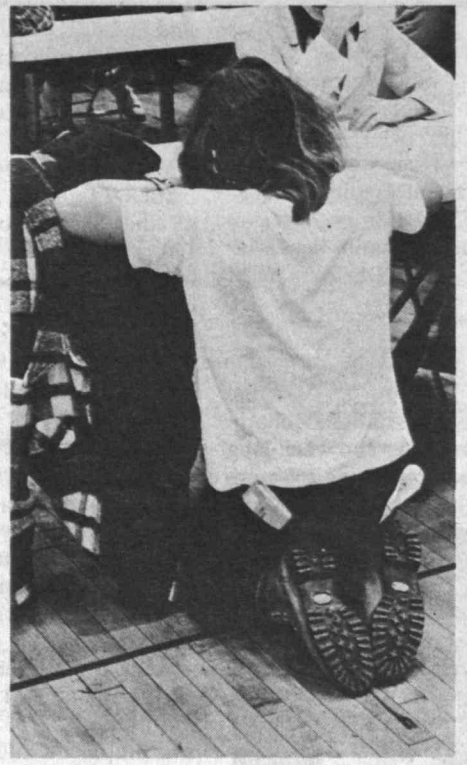


PATIENTLY WAITING, some of the estimated 6,000 students who registered this week at MIT form a line down the stairs of duPont Gymnasium and along Massachu-

setts Avenue. Doors opened at 9am but the day began earlier for the Registrar's staff and members of Alpha Phi Omega, who assisted at registration.



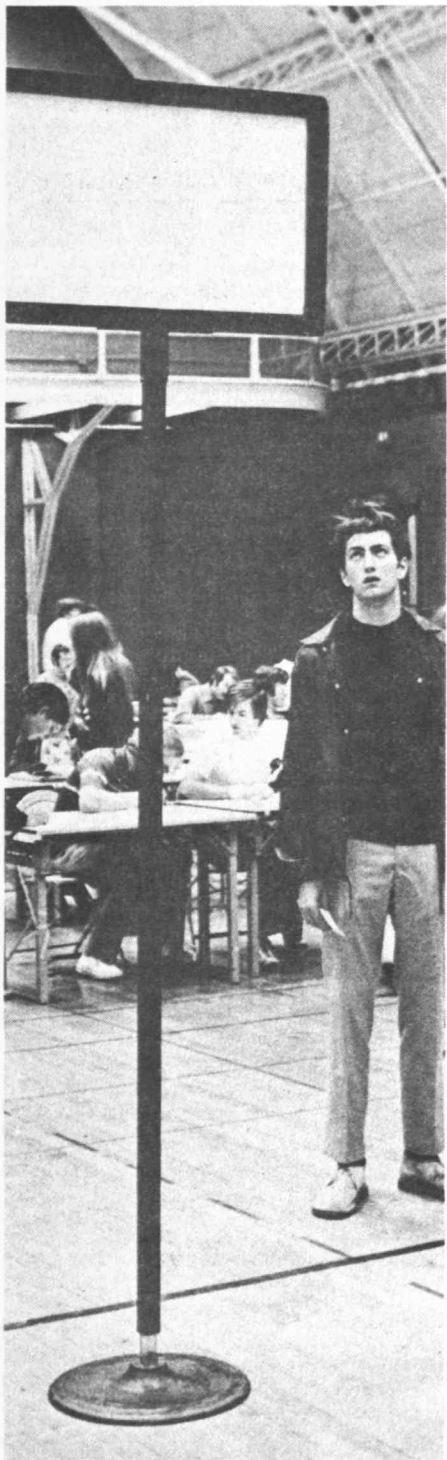
An insider's view of a student waiting for registration to begin is framed in the glass door leading to the gymnasium floor.



GETTING A GOOD grip on registration is James Davis of Suffern, N.Y. whose cleated hiking shoes present a pristine appearance.

Registration and the Start of A New School Year

Signs, paperwork, forms, ID pictures, schedules, more signs and paperwork and forms. And students. The ingredients of registration mixed well this week at duPont Gymnasium as more than 6,000 students went through the necessary process. Here are some glimpses of what it all looked like.

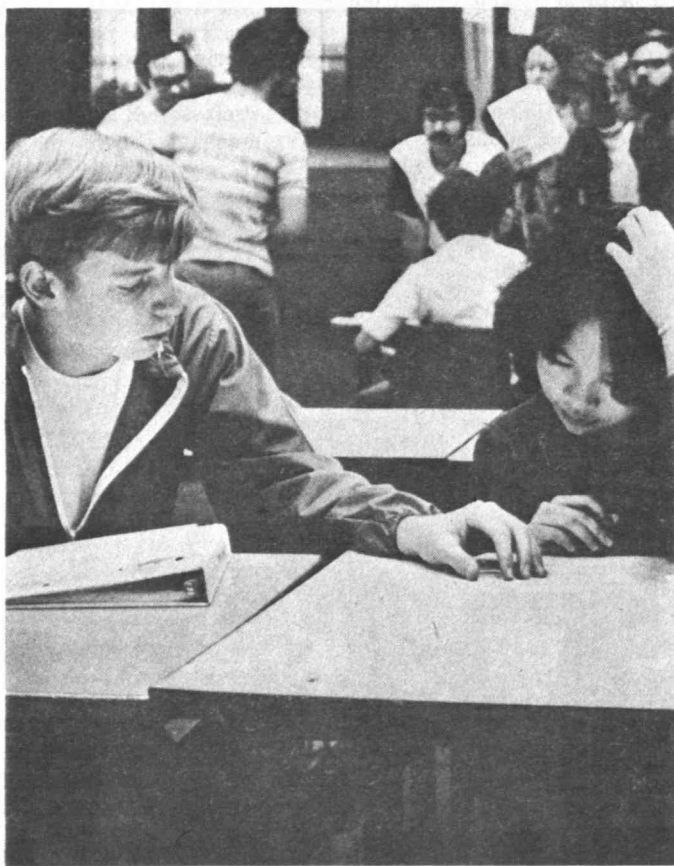


WHERE NEXT? That's what this student seems to be wondering as he checks one of the several signs that guided people through the registration process.

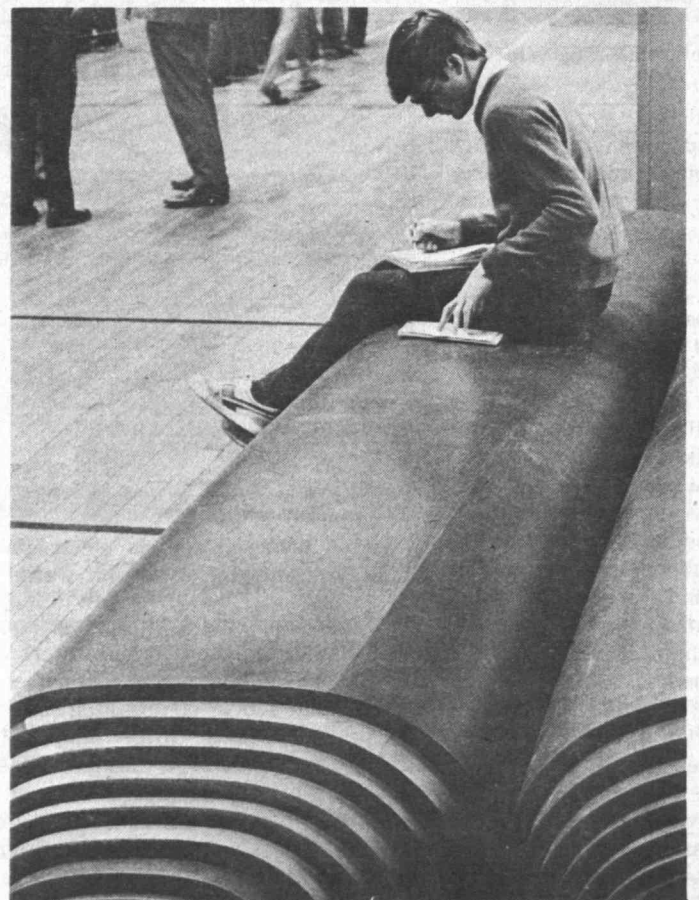


MIT REGISTRAR Warren D. Wells, center, talks with Takayoshi Ito, right, and Charles Rosenblatt just seconds before the day-long registration process began Monday at duPont Gymnasium. Ito and Rosenblatt are members of Alpha Phi Omega,

the national service fraternity. Alpha Phi Omega members have staffed the registration desks for the last several years. Ito, a sophomore, is studying electrical engineering. He is from Caracas, Venezuela. Rosenblatt, from Huntington, N.Y., is a senior in physics.



THEY WERE FIRST. William Baum of Brentwood, N.Y., and Denny Leung of New York City were the first students to register this week at duPont Gymnasium. Miss Leung is a pre-medical student. Mr. Baum will study mechanical engineering. Both are first-year students. Did they have to arrive early to be first? "No, I was just lucky," said Miss Leung.



TIM COCHRAN of Severna Park, Maryland, a freshman, uses a rolled gymnasium mat as a seat while he checks his class schedule. The registration process continued until 5pm. An estimated 6,000 students were registered.

MIT Sailors Win North American Title



VICTORIOUS are, left to right, Paul Erb, John Avallon and Steve Cucchiaro.

The Prince of Wales Trophy has returned to MIT for the second time in two years, thanks to superior sailing by three students in the recent North American Yacht Racing Union championships.

The MIT Nautical Assn. is the only club ever to win the cup twice and the only college club to win it ever.

The MIT team was composed of Stephen J.

Cucchiaro, a senior from Oceanside, N.Y., skipper, Paul R. Erb, a sophomore from Corpus Christi, Tex., and John C. Avallon, Jr., '73, from Beverly, Mass. The races took place at the Long Beach, Cal., Yacht Club the last week in August.

In order to qualify for the North American, the team earlier had won the Massachusetts Bay title and the New England title in races held a year ago.

CLASSIFIED ADS

Ads are limited to one per person per issue and may not be repeated in successive issues. All ads must be accompanied by full name and Institute extension. Only Institute extensions may be listed. Members of the community who have no extensions may submit ads by coming in person to the Tech Talk office, Room 5-111, and presenting Institute identification. Ads may be telephoned to Ext. 3-3270 or mailed to room 5-105. Please submit all ads before noon, Friday, Sept. 14.

For Sale, Etc.

Moving, must sell LK, DR furn, bike, desk, assorted goodies, reas. Debbie, x3-4765.

Bike, m, 3spd, w/chn, bskt, \$30. Call, x3-7538.

VW 1300 eng, misc parts, wrkbnch, cheap. Call, 494-8143, keep trying.

Shure M75-CS mag cartridge-tracks 3-5 grams, unused, \$13. Rick, x0238 Dorm.

Poker tbl, full sz, felt, w/lf, exc cond, \$35; Sango china, serv 12, wh w/slvr, xtra serv pces, lk n, \$60; Community slvr pl flatware, serv 12, all pces, mod floral, lk n, \$50. Dave, x5591 Linc.

Glassware, crystal, dishes, blknts, Kware. Call, x3-3208.

DR tbl, 40", rd, chrome w/wh formica top, 4chrs, orig \$275, now \$125. Chip, x3-1558.

Grundig Majestic stereo, console, am/fm, 2bands sw, \$100. Call, x8-3531 Draper.

Box spr, Sears, x-firm, nrly nw, dbl sz, was \$125, now \$100; iron bed, sgl, brass, refinshd, \$12; child's tapshoes, sz 13, wh, \$3. John, x8-4095 Draper.

Sectional LR set, w/coffee tbl, end tbl, 2lamps. Call, x3-3727.

Barn sale to settle estate, Sept 9-23, daily except Sat, Woodman Rd, Southampton, NH. Directions, Don Leslie, x8-3431 Draper.

Panasonic stereo, cassette tape rcdr, rcd changer, & tuner (RS-257DS): incl am/fm/afc; mike; jacks; sep bass, treble, bal, vol cntrls; monitor; 2 VU meters; pause, fast frwd, rewind; digital tape counter; \$200. Steve, x3-5848.

Couches, 2, foam, w/blstrs, orig, ask \$50. Jane, x8-3386 Draper.

Sgl bed, w/matt, fr, box spr, exc cond. Chuck, x3-6876.

Wstghse washer, old but gd, \$25. Kathy, x8-1584 Draper.

Sears, port washer, yr old, exc cond, \$90. Call, 494-8483.

Apt sz Hoover washer & Maytag drier, \$125/both, may sell sep; couch, convert, \$10. Call, x3-5557 lve msg.

Rug, 9x12, shag, purple, nylon, exc cond, orig \$150, ask \$90. Jenny, x8-1185 Draper.

Encyc Brit "Great Books of Western World," all exc cond, most nvr opened, ask \$325. David Reed, x3-6389.

Bed, carpet sweeper, collfe tbl, Linda, 492-2291 aft 5:30pm.

Hiking boots, Dunham Continental Tyroleans, must sell, wrong sz, m, sz 8½, just bought Coop \$34, worn once, \$24 or best. Margaret, x3-3745 kp try.

Cassette port Hitachi TRQ2220, \$35. Call, 491-6543 evgs.

Bike, boys, 24", 3spd, coaster br, acces, \$35. Allen, x8-2687 Draper.

Radio, Regency WT.4, am/sw/amm/mil/cit bands, intl sh/w band, 550-1600kc, 1.6-30mc, exc cond, \$40; Tonneau cover, Spitfire or MG midget, '65, Mark III, nvr used, \$30. Call, 646-3157 evgs.

Linens, qn sz: Bates turq woven bdsprd, pink wnter blknt, sheet sets - mostly patterns, gd-exc cond, gd buy. Call, 731-6327.

Skis, mtl, w/sz 9 boots & poles, \$65; slide proj & screen, \$25; nw snows, 6.50-13, \$20; drapes, \$10, \$5. Ted, x3-4945.

Snows, 2 pr: Frstin, 7.35-13, 4K, \$30; Gen, 6.85-15, stud, 8K, 122 Volvo mtd, \$40; stu bed, ideal sm rm & pers 6' or less, w/fitted cvr, \$30; pr gold insltd drapes, flr lgth, 120" w, w/rods, \$25; other drapes, nego. AI, x3-5095.

Army style raincoat, \$5. Mark, 868-4890 evgs.

Bike, 3spd, nds n trans & other minor /wk, \$5 or best. David D, x3-7787.

Scott 387 amfm stereo rcvr, 55w RMS/channel, less 2yrs, not used since Jan, recent wrnty serv, \$200. Ken, x8649 Dorm.

Matterhorn ski boots, m, sz 10½N, exc cond, \$10. Alice, x376 Linc.

John Letters golf clubs, nvr used, 9 irons, 3 wds, snad iron, PGA approved, \$200. Marcy, x3-2406.

Violin, ¾ sz, \$60; Hyde skates, f, fig, 7½, \$18; hockey skts, boys, 4½, \$15; hockey skts, m, 9, \$18. Call, x5778 Linc.

Yamaha folk guitar w/case, \$50. Donna, x3-4271.

Broiler oven, sm, \$12; typwrtr, German, man, \$25. Peter, x3-3161.

Sherwood S7600A rcvr, Dual 1209 trntbl w/base & crtrdg, Allied 3way bkshlv spkrs, exc cond, \$350 or best. Bob, x3-2420.

Rug, 9x10, r & blk tweed, beaut, lk nw, \$35; hotplate, 2brnr, 3temp, \$15; tensor lamp, \$5; 2slice toaster, \$5; elec music box ("muse"), \$149. Richard, x3-6028 aft.

Bike, f, Phillips, yr old, 5spd, 19½", bskts, gd cond, \$60. Leonie, x224 Linc.

Admiral refrig, prac nw, must sell, changing jobs. Joyce, x3-3834.

Sgl bed w/matt, box spr, hdbd, \$20; desk lamp w/2 florscnt bulbs, \$15. Dave, x3-2413.

TV, 17", \$18; console stereo phono, exc tone, \$35; frplc screen, \$5. Bob, x3-2575.

Elec broom vac, duplicate Wed pres used twice, \$17. Jack, x3-6978.

TV, 23", b&w, Sylvania, w/stand, \$90. Liz, x3-6162.

Desk, wl deliver to Camb, \$15. Garrett, 646-7552 evgs.

Sew mach, deluxe zig-zag, nw '71 model, orig \$220, \$75 or best. Diana, x3-6150.

Twinn matt, 2, "Lady Gray" (Jordans), ctn, exc cond, \$45ea. Call, x3-2255.

Couch & buffet, old but funky, reas cond, \$25 ea or best. Ed, x3-2270.

Bed, dbl, nrly nw, \$60; red rug, \$25; dresser, \$20; closet, \$20. Don, x3-6369.

Couch, bl, 6½', sturdy, \$20. Corey, x3-5641.

Small upright piano, \$450. Peter, 354-4116.

Sofa, nice, \$20; K tbl, \$6; cushions, 2, \$2. Gabriella, 496-8890.

DR tbl w/2 lves, 6chrs covered w/cut vlvt, \$80; buffet, Jim, x3-1926.

Flash attach, bulb-type, batt, bulbs, all nw, \$11; flash shoe attach, model 2, for Nikkormat, n, \$11. Steve, x3-7950.

DR tbl, rd, wd, formica cvr, w/4 chrs, cush, swivel, tbl lowers to cocktail ht, \$60 or best. Call, 536-2495, 5-10pm.

Sony port r/cass rcdr, powerful, \$40; Telefunken port rcdr, 4trk, \$30; '68 Fiat 124, sport cpe, 56K, many n parts, v gd cond, \$800 or best. Herman, x3-1545.

Cstm made drapes, burg, antique satin, 88"l, 18" w (2sgl, 2dbl pnls), brly used, was \$90, now \$50; 9x11 rugs, brnt org, deep olive, exc cond, best; wnt fin bkce, 43"h, 32" w, \$20; sm contemp lamp, \$3.50. Jeannie, x8-2577 Draper.

Snows, 2, G78-15, mtd on Chevy rims, \$10ea. Jerry, x3-6291.

Maytag, elec wringer washer, old but gd cond, best. Michelle, x3-7054.

Minolta lens, 58mm, f/1.4, exc cond, \$60. Paul, x8-4596 Draper.

Vehicles

'65 Ford Fairlane, 6cyl, gd tires, runs well, \$250. Daniel, x3-3880.

'65 Chevle malibu, wgn, wh, 8cyl, nw tires, gd cond, \$250 or best. Frank, x3-2795 or 2769.

'65 VW, sed, nw rebilt eng, \$425. Walt, x3-6148.

'65 Corvair manza, brnz, 54K, fall sticker, auto, lks gd, handles well, eng dns some wk, n tires & snows, ac, r, ask \$300. Marie, x7250 Linc.

'65 MG 1100, Austin America, 47K, exc car for city, nids trans wk, rest reliable, best over \$150; also Blaupunkt car r, am, gd buy, \$25. Charlie, 738-5449 aft 6.

'65 Mustang, gd transp, \$150 or best. Call, x3-2638.

'66 Ford, cntry sed sta wgn, 289 eng, runs well, ctn, \$400 or best. William, x444 Linc.

'66 VW, 80K, \$375. Bob Miller, x8-3387 Draper.

'66 Rambler classic, sta wgn, 6cyl, reas cond, \$250. Vic, x3-7815.

'66 Renault 8, n clutch, n batt, 5n tires, cheap on gas, exc cond, \$300 or best; GE refrig; bge rug, 9x12; big rockinghorse. Gerard, x3-4724.

'66 Merc Monterey, auto, p st & br, gd tires, vinyl top, gd cond, \$425. Call, x3-6971.

'66 Ply valiant, gd run cond, body nds some wk, \$150 or best. Said, x3-6231.

'69 Dodge, 4dr sed, 37K, p st, ac, auto, r, ww, grn, nds some fender wk, ask \$800. Call, x8-4455 Draper.

'70 Austin America, 43K, std, n snows. Michael, x3-6035 lve msg.

'70 VW sqbk, auto, r, gd tires, \$1,195. Bill, 472-4105.

'71 Ford LTD, conv, ac, p st & br, p wndw & st, amfm stereo, \$1,925 or best. Joan, x7002 Linc.

'71 ½ Honda CB450, exc machine, disk br, xtras, must sell, nd \$, \$595; also Sanyo cass stereo deck, \$70. Henrique, 494-8868.

Lambretta 175 TV mtr scooter, ca '66, lo miles, exc cond, \$115. Jeff, x3-5900.

Housing

Back Bay, Bay St Rd, BR, renovated, mod K&B, sunny, frplc, avail 10/1, pking avail, \$200 incl util. David Johnston, x3-6389.

Bos, S End, Rm in fac home, gd walk, easy bus to MIT, congenial, many amenities, \$20; also Vt wnter rental, nd sev grps or fams to share old farmhse, Oct-May, crosscntry on premises, 25 mi Killngtn. Call, 266-4194 evgs.

Swamscott, 7Rm hse, beaut ocean view, frplc, garage, \$400/mo. Call, x3-1977.

Wtrtwn, rm to rent, nr T, \$80 plus. Call, x3-1932.

Ski chalet, mi Gunstock, use indoor pool, sauna, etc, \$200/wk. Call, x8-4415 Draper.

Animals

Kittens, 5 dif varieties, 10 wks, trained, frndly, free. Barbara, x8-3687 Draper.

Great dane pups, blk, AKC, 6wks, show & champ blood line, wormed, shots. Jones, 427-2840.

Baby guinea pigs, cute, supply limited, free to gd home. Alan, x8391 Dorm, aft 6.

Pekinese dog, m, 2yrs, exc hse pet, \$50. Shey, x5763 Linc.

Dog, part lab, pointer, yr old, urgently nd gd home for hunter, pls help. Michelle, x3-7753.

Kittens, 2, m, f, blk & wh, (1 w/spots), cute, nd gd homes. Mary, x3-6736.

Kittens, 4, yel & wh, dbl paws, 1 calico, free. Call, x8-4201 Draper.

Kitten, m, 8wks, org & wh, active. Call, 864-2163 aft 6pm.

Labrador retriever, m, 2yrs, spayed, v gd w/childrn, too big urban life, free. Call, x3-4923.

Lost and Found

Found: Man's ring, Sloan Bldg, 6th fl, about week ago. Larry, x3-6352.

Wanted

Ride wanted daily, rd trip, Manchester-By-The-Sea/MIT, will share exp. Sally, x3-3270.

Used 2nd stage of sgl hose scuba regulator, for octopus rig. Call, x3-5900.

Japanese cpl, interesting, congenial, mid 20's, seeks living accommodations w/Amer fam, Sept-Dec, spk fluent Eng, nego. Holly, 262-2010 x255 or 313.

Stu Info Processing Brd nds sec, wklys, 3-5pm (nego), typing, filing, gen office wk, \$2.50/hr. Joe Dehn or Jeff Broughton, Rm 39-200, x3-7788 or x8335 Dorm.

Reliable person to care for 2childrn, (2mos, 2½ yrs) in Lex home, 5dys/wk, beg Oct. Call, 862-7730.

Clock r, gd cond. Nancy, x5309 Linc.

Rmmate, MIT stu, share 4BR Bri apt, pking, \$95 incl util. Cort, x3-1691.

Ride, W Medford area to MIT, work 8-4:30. Jean, x3-3727.

Members for ski hse, White Mts, ski 93 area, great hse, gd people, long seas. Arnie, 547-6022.

Stereo sys, under \$200. Mark, 868-4890 evgs.

Tutoring Plus, 183 Harv St, Camb, nds work-study stus to work w/inner city kids, ages 5-12, 2-5pm, Mon-Fri (flex). For interview, Audrey Jacobs, 547-4681 or 547-7670.

Rmmate, 6th person, our lg hse Cambport has empty BR. Call, 547-8929 anytime.

Aikido practice partner for personal training sessions, pref-3 or more yrs exp. Call, 267-2199.

Elec typwrtr, power ret, gd cond. Sharon, x3-5656.

Gas stove, 4brnr, reas cond & price. Dick, x3-5806.

Outboard motor, 5½ hp, Johnson. Irv Levin, x8-3584 Draper.

Rmmate, f, pref non-smk, lg spac furn apt, 2nd fl hse off H Sq, LR, DR, frplc, own sm rm, \$160 incl util & h. Joan, x3-5268.

Rmmate, f, 19-24, share beaut apt, 5 min Ashmont, 2BR, mod, n K, appl, disp, ac, \$92.50. Monica, x3-4021.

Twinn or sgl beds, 2, same sz. Ueno, x9571 Dorm, bef 8:30am, aft 8pm.

Riders, Newtonville/MIT, daily, hrs 3:45-4:45. Barbara, x3-5259.

Riders to Phila, S Jersey area via priv lane, lve Fri, 9/21, rtn Sun, 9/23, hare exp. Tom Parr, 489-3213.

Baskets for back whl, 26" bike. Janet Holtz, x3-5961.

olunteer tutors for 8.014 (Physics I emi-tutorial format), grad or under, credit for 8.299 may be obtained, 2hr or more/wk. Earle Lomon, Rm 6-304, x3-4877.

Apt or hse for law sch grad w/2 lg dogs, bsmnt or attach garage, space & permission to have blt 20'x6' dog run required. Barbara, 494-8316.

Rmmate, f or m, straight, no MIT stereotypes, share lg Belmont apt w/3, 20min H Sq by bus, own rm, no pets, \$67.50. Call, 489-0395 evgs.

Rmmate, m or f, Bri, 2nd fl, own BR in 3 BR hse, LR, DR, K, unfurn, \$100 incl util. Steve, x3-7730.

Miscellaneous

Eastgate wife wl babysit wkdays in her apt. Call, x3-5305.

Exper violin tcher & performer offers patient, organized instruction, esp gd w/childrn & beginners. Drew, x3-5874.

Parents in Eastgate, etc who can care for childrn: Family Day Care can help you find those who nd child care. Rosemary Ralph, x3-1592.

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.

Wl swap Albany for East sticker. Cathy, x3-7237.

Wl swap Windsor and \$5 for East or West sticker. Leonard, x3-7233.

Wl swap Windsor sticker for West. Gail, x3-4295.

Wl swap West sticker for Windsor. Roy, x3-6105.

Positions Available

Employees at the Institute should call their Personnel Officer for further information.

Virginia Bishop 3-1591
Mike Parr 3-4266
Philip Knight 3-4267
(Secretary - Joy Dukowicz)

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

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

New applicants should call the Personnel Office on extension 3-4251 to make appointments and confirm openings.

The following positions are on HOLD pending final decisions:
73-646-R Admin Staff
73-803-R Sen Sec/Adm Ass't
73-830-A Sec III Part-Time

The following positions have been filled since the last Tech Talk and are no longer available:

73-859-R Computer Operator
73-798-R DSR Staff
73-691-R DSR Staff
73-778-R Secretary IV
73-858-R Secretary IV
73-674-R Secretary IV
73-857-R Secretary III
73-774-R Secretary III
73-580-R Secretary III
73-822-R Jr. Animal Caretaker
73-833-R Secretary III
73-479-R Adm Staff
73-831-A DSR Staff
73-664-R Secretary III
73-613-R Secretary III
73-854-R Lib Gen Ass't III
73-806-R Secretary IV
73-735-R Secretary III-IV
73-397-R Technical Typist III
73-837-R Secretary III-IV
73-841-R Technical Typist III
73-843-R Infirmary Diet Aide
73-802-R Secretary IV

While all jobs will continue to be posted in Tech Talk, during the peak employment season, Personnel interviewers will refer any qualified applicants on Secretary III and IV openings as soon as possible after their receipt in Personnel. Employees at the Institute should continue to make their interests known to their Personnel Officers.

Staff Recruiter (Admin. Staff) will report to the Employment Officer; will be responsible for coordination of search for well-qualified persons to fill non-academic staff positions. Particular emphasis will be given to assisting laboratories, centers, and departments in fulfilling Affirmative Action Plans with respect to research staff openings. Person will work closely with Personnel Officers and departments in defining description of positions and qualifications required. Frequent travel will be expected; experience in Personnel and/or recruiting required. Technical background with degree in Engineering or Science preferred. Please submit resume. 73-643-A (7/18).

Administrative Staff member will work in the area of resource development dealing with individual contributors. Develop strategies and programs, prepare reports, provide advice and counsel of a legal nature for resource development activity. Some travel required to represent MIT. Must have legal training and preferably some experience as a counselor in practice or a job situation utilizing legal training. Writing and organizational ability, motivation, enthusiasm, required. 73-480 (5/30).

DSR Technical Staff - in the Center for Advanced Engineering Study Video Operations group will plan, produce, shoot, and edit motion picture films. This individual will head an initially small film unit. Extensive knowledge of all aspects of film production is expected, including the ability to shoot "Cinema Verite" and industrial films, record sync sound, edit film and tracks, conform originals to work prints, and supervise laboratory procedures. The small size of the video operations group will also require initially that occasionally the individual will operate a professional TV camera. 73-799-A (8/15).

DSR Staff member will plan, manage, and execute high-quality research projects having a strongly experimental orientation. Familiarity and experience with low-speed flight and wind tunnel testing methods and advanced piloting qualification for particularly general aviation type aircraft; Ph.D. in Aerodynamics and five years applicable research and development experience required. 73-488-A (6/20).

Biochemist - DSR Staff member will participate in lipoprotein studies, and will supervise the activities of several technicians in a clinical research setting. Ph.D. or M.D. in Biochemistry required, as well as experience with lipoprotein and supervising. 73-515-R.

DSR Staff member at NEROC Haystack Observatory will guide and participate in the development of electronic instrumentation and recording equipment for very long baseline interferometer experiments. Develop needed computer software; assist in the design and conduct experiments; analyze and interpret the data from observations. Strong background in EE and physics, Ph.D. preferred. Research experience in radio astronomy, and specifically in interferometric techniques is required. High level of analytical capability and the ability to utilize large-scale computers is needed. 73-901-A (9/12).

Technical Assistant - Academic Staff in Biology will prepare and test tissue culture mediums, grow and harvest cells, inoculate tissue cultures with virus and virus preparation. Previous training or experience in a tissue culture laboratory required. 73-909-A (9/12).

Technical Assistant - Academic Staff in Biology will assist in biomedical research on the embryonic development of chick red blood cells. Analyze proteins and nucleic acids, using radioactive labelling, electrophoresis and other techniques. Knowledge and some experience of chemistry essential; biology and biochemistry desirable. 73-908-R (9/12).

Manager of Subsystem Development - Administrative Staff in the Programming Development Office will provide technical direction of the design, development, and maintenance of software subsystems under the OS/360, OS/VS2, and Multics Operating Systems. Minimum of 7 years professional experience, and 2 years experience in technical management. 73-912-R (9/12).

DSR Staff member at Project MAC will do research on the implementation of new ideas about English language grammar and semantics. The implementation will be done in a LISP environment. Familiarity with LISP; ability to learn theories of English language; skills in system building required. 73-916-R (9/12).

Systems Analyst - DSR Staff at the Cambridge Project will adapt Time Series processor programs for use within the Consistent System on Multics. Knowledge of calculus, econometrics, statistics, and linear algebra; extensive PL/I programming experience on Time Sharing Systems; familiarity with TSP-Csp required. Position is temporary until 6/74. 73-845-R (8/29).

Environmental Engineer - (Administrative Staff) in Physical Plant will organize and direct an Institute-wide energy conservation program. Survey campus buildings to determine areas of possible energy economy; plan procedures; maintain the Institute's compliance with environmental requirements. BS in Electrical Engineering with a basic knowledge of building Mechanical Systems for heating, ventilating and air conditioning. Experience in engineering design or operation of academic industrial or commercial buildings. Experience in energy conservation helpful. 73-875-R (9/5).

Administrative Staff - Assistant Director in an administrative office dealing in resource development will handle specific tasks of educational fund-raising; extensive writing of letters, memoranda, statements on priorities, some proposals and informational studies. Must have a minimum of three years active, consecutive experience in fund-raising, preferably in a university environment. Effective writing skills, ability to communicate verbally, professionalism and career motivation important. Exposure to data processing systems useful, BA required; advanced degrees are welcome. 73-479-R (9/5).

Architect/Programmers - (Administrative Staff) in the Planning Office will work on the development of architectural programs for Institute buildings. Research and conduct pre-programming investigation of existing spaces and develop design Criteria and Standards for new facilities. Degree in Architecture; background in research methods; experience in design and general architectural procedures required. 73-879-R (9/5).

Planner/Architect - (Administrative Staff) in the Planning Office will concentrate on long-range planning for the Institute. Survey and analyze existing environmental conditions, define problems, develop plans and design concepts. Degree in Architecture required; Degree in Planning preferred. Minimum of 5 yrs. experience and the ability to work independently important. 73-880-R (9/5).

Systems Programmer - Administrative Staff in the Programming Development Office will design, code, debug, and document programs or set of programs which will interact with the operation system. Will work on Multics. Knowledge of PL/I operation systems and time-sharing; ability to design, code, and document required. 73-848-R (8/29).

Mechanical Engineer - DSR Staff in the Electrical Engineering, Electronic Systems Laboratory will participate in a research project involving the application of modern technologies to selected service industries; design automatic materials-handling equipment. B.S. degree; experience in mechanical design of automation equipment is required. Familiarity with computer control of mechanical systems and digital-to-analog conversion techniques also desirable. 40 hr. work week. 73-849-R (8/29).

Micro Automation Systems Programmer - DSR Staff member will develop a PDP-10/PDP-11 operating system for the project; design and implement a computer operating system. Experience on the PDP-10 and PDP-11, as well as a background in automata theory is required. 73-512 (6/20).

Administrative Staff - Associate in the Analytical Studies and Planning Group which provides staff support to the senior officers and to the Academic and administrative programs, plans, and organization. The ASPG is a part of the Office of the President and the Chancellor and reports to the Vice President C.B. Simonides. Candidates for this position should have an educational background equivalent to graduate study, and/or working experience in areas such as management, program planning, analysis and evaluation. Systems analysis and computational background and skills would be especially helpful. Superior communication and writing skills are essential. This position offers very useful career preparation for senior responsibility in universities and other complex organizations. 73-461-R (5/30).

Administrative Staff Planner will direct long-range physical planning for the Institute; monitor and coordinate the various efforts of the planning team; develop budgets and schedule of events. Will act as liaison between government agencies and community groups. Must have a Masters degree in Planning and a minimum of 5 years experience. 73-535-R (6/13).

Administrative Staff - Systems Programmer will work full time in the Programming Development Office on the 370/165. The job will consist of systems programming and maintenance, systems assurance, and user interface functions. Applicant should have some project management experience, an understanding of operating systems, and a good working knowledge of assembler language. 73-795-R (8/15).

Administrative Staff - Applications Programmer in the Office of Administrative Information Systems will take program specifications and translate them into an efficient computer program. The process includes the evaluation of specifications, flowcharting, coding, testing, debugging, and final program documentation. Knowledge of IBM DOS, ANS, COBOL and/or PL/I and 360 Assembler Language desirable; experience with university accounting or teleprocessing applications helpful. 73-776-R (8/15).

Administrative Staff Programmer for the MIT Information Processing Center must have experience and thorough knowledge of large-scale time-sharing computer system. PL/I language, documentation and communication skills are necessary qualifications. The Users Services Group requires an individual who understands and is responsive to the needs of the Center's users. This person will be challenged in entering a new area of time-operation for this group which includes the following:

User Assistance - assisting users by providing programming information and debugging help and tracking down special problems.

User Information - instructional documentation and conducting seminars, workshops, and other courses. 73-640-A (7/11).

DSR Staff member in the Energy Laboratory will assist in the construction of a mathematical energy model for US supply and demand. Gather data, participate in econometric model building and analysis of various energy sectors. S.B. degree in economics with econometrics and mathematics background desired. Experience in FOR-RAN programming and use of Econometric Software Package necessary. Ability to interact and communicate with a large interdisciplinary group working on the project important. 73-752-A (8/8).

DSR Staff member will perform chemical assays for enzyme and neurotransmitters. SM or MS degree in Chemistry required. 73-590-R (6/27).

DSR Staff - Systems Analyst at Cambridge Project will adapt Time Series Processor programs for use within the Consistent System on Multics. Knowledge of calculus, econometrics, statistics, and linear algebra; extensive PL/I programming experience on Time Sharing Systems; familiarity with TSP-CSP required. This position is temporary until 7/1/74. 73-749-R (8/8).

DSR Staff in Metallurgy will carry out original research on single crystal growth of semiconductor materials from the heat employing advanced techniques of Peltier cooling and heating at the interface. Will use scanning electron microscopy, Hall measurements, and other instrumentation. Degree in chemistry or Metallurgy. Several years experience with semi-conductor crystal growth and characterization. 73-870-R (9/5).

DSR Staff at the Operations Research Center will assist principal investigator with a project on urban public safety systems by conducting literature search and nation-wide telephone interviews on police performance measures; write project press release; assist with symposium planning; perform some office duties, such as large mailings etc. B.A. required; previous experience in information transfer and research in the area of public systems required. Excellent typing and previous secretarial experience preferred; as well as experience in areas of health care systems and criminal justice systems. 73-866-R (9/5).

Research Assistant - DSR Staff at the Energy Lab will participate in and coordinate an ongoing research and development program in thermal systems and heat transfer. Work includes heat transfer equipment design, test instrumentation, testing, analysis, optimization studies and direction of related efforts by graduate students and engineers. Candidate must be familiar with power plant engineering, heat transfer instrumentation, detailed analysis of fluidized bed heat transfer phenomena and convective heat transfer. Experience in directing work by graduate students and graduate engineers. 73-801-A (8/22).

Infirmary Nurse - (Exempt Staff) will do bedside nursing in the Infirmary. Assist surgeons in the operating room, administer first aid and emergency treatment after clinic hours. Mass. Registered Nurses license required, as is previous nursing experience, preferably emergency room or industrial nursing. This position is on permanent night shift (11pm-7am) with weekend rotation. 73-731-R (8/8).

Infirmary Staff Nurse Part-Time - (Exempt) will work in the MIT Infirmary on the day shift Sat, and Sun, and one day during the week. Administer first aid and emergency treatment; assist physicians with minor surgery. Individual must be a Mass. Registered Nurse with previous emergency room or industrial nursing experience. 73-744-R (4/29).

Infirmary Nurse - Part-time (Exempt) in the Medical Department will do bedside nursing, assist the surgeons in the operating room and administer first aid and emergency treatment after clinic hours. Individual must be a Massachusetts Registered Nurse with previous nursing experience. Rotating shifts (4 days per week). 73-890-R (9/12).

Industrial Hygienist - (Academic Staff) will work in the Environmental Medical Service to study and control occupational disease and other environmental factors such as noise, heat, pressure and toxic materials that may be physically or chemically hazardous to employee health. Will work closely with physicians, depts, supervisors. BS in Chemical Engineering is required. 73-336-A (4/29)

Applications Programmer - (Exempt) in the Office of Administrative Information Systems will translate program specifications into efficient computer programs; evaluate specifications, perform coding, testing, debugging, flowcharting, and final program documentation. Knowledge of IBM DOS PL/I and/or COBOL required. Knowledge of 360 Assembler Language and/or 1401 Autocoder desired. Experience with university, accounting, or teleprocessing applications helpful. 73-821-R (8/22).

EDP Coordinator - (DSR Staff) will maintain the software systems and expand the operating systems for a computer facility; assist users; determine loads and aid in scheduling. Will work with students and faculty in developing and maintaining systems for academic computer usage. Individual must have experience in machine language programming and operating systems; detailed knowledge about compilers, interpreters, schedulers, priority processors, and basic knowledge of computer hardware. Degree in computer science required. 73-537-R (6/6).

Systems Programmer DSR Staff will work in the Program Development Office as a full-time Multics Systems Programmer. Two or three years experience with Multics system and PL/I is required. Other experience in system design and programming desirable. 73-466-R (5/23).

Administrative Assistant - (Exempt) in the Center for Transportation Studies will assist the Director and steering committee in organizing and coordinating the activities of the Center; administer short courses, advisory panel meetings, conferences; monitor accounts of research projects and programs; assist in the preparation of research proposals; maintain files on faculty, students, contracts, proposals, publications; assist with administrative procedures. Knowledge of Institute administrative procedures and practices, DSR accounting methods, organizational structure important. The initiative and ability to organize to set priorities and to pursue objectives with tact and diplomacy is essential. 73-805-A (8/22).

Computer Operators IV will operate IBM Model 135 and all peripheral equipment associated with it, including disk drives, tape units, card reader/punch, printers. Must have a good knowledge of DOS job control, multi-programming experience and be capable of understanding operating instructions. 4pm - 12:30am shift. 73-92-R (8/29)/73-859 (9/5).

Senior Keypunch Operator III will operate the IBM 029 keypunch machine. Will punch into computer input cards formatted and unformatted documents. Minimum of two years experience operating IBM 029 or comparable equipment; familiarity with the creation of program drum cards desired. 73-574-R (6/27).

Secretary IV or Senior Secretary V in the Radioactivity Center will perform general secretarial duties necessary for smooth office functions. Contact patients and invite them to come to MIT for studies; maintain all records; handle correspondence, travel arrangements and hospitality duties. Knowledge of medical terminology helpful; excellent skills and maturity important. 73-893-R (9/12).

Secretary IV in the Harvard-MIT Health Science and Technology Program will handle all general secretarial responsibilities for a professor in Biomedical Engineering, and his associates. Assist in organization of proposals and manuscripts. Knowledge of medical terminology or a good vocabulary helpful; good skills important. 73-844-R (8/29).

Secretary IV to a professor in the Research Lab of Electronics will assist with library research and provide general secretarial support. Excellent shorthand and typing are required; ability to handle technical material in text and drawings important. 73-832-R (8/29).

Secretary IV to several faculty members and one visiting professor in Economics. Provide general assistance and perform secretarial duties; type class material, memos and correspondence; maintain busy calendars. Good typing and the ability to work for several people is required. 73-785-R (8/15).

Secretary IV in the Research Laboratory of Electronics will provide secretarial support for a faculty member and research staff. Type technical manuscripts, set up material from rough data and verify footnotes and references; maintain busy calendar; independently handle other procedures. Excellent typing skills required; technical typing experience preferred. 73-780-R (8/15).

Secretary IV will perform secretarial duties for the administrative officer of an academic department. Maintain department contract and personnel records. Excellent shorthand, dictation, typing skills needed. Organizational ability, familiarity with keypunch or computers desirable. 73-390-R (5/9).

Secretary IV in Psychology will type articles and papers, schedule appointments, handle travel, maintain files, take dictation for one professor. Secretarial training or previous experience important. Maturity and good general skills required. 73-704-R (7/25).

Secretary IV to Associate Director of an Administrative group will type bulletins, correspondence, minutes of meetings; maintain committee records and files; arrange travel; monitor and process solicitation materials returned by alumni. Will also independently answer routine inquiries. Excellent typing, shorthand, and a flair for details required. Overtime sometimes necessary. 73-585-R (7/25).

Secretary IV in the Editorial Acquisitions Department at the MIT Press will handle general secretarial duties for two acquisitions editors, prepare and maintain contact lists and files, answer some correspondence, prepare requests for payment. Good typing skills, ability to work with details required. Shorthand skills desired. 73-902-R (9/12)

Secretary IV to a busy professor in Earth and Planetary Sciences will compose correspondence; manage heavy typing load; do some editing and library research; handle general administrative chores necessary in the operation of the office. Excellent typing (shorthand preferred); ability to edit; tact, good judgment and sense for priorities important. 73-613-R (7/11).

Secretary IV in Ocean Engineering will perform secretarial duties for one professor and several research assistants. Type correspondence, technical reports, some theses, notes from dictation and written drafts; handle accounting for DSR accounts; schedule appointments and travel arrangements. Excellent shorthand and technical typing skills, knowledge of accounting required. Individual must be mature, well organized and able to work under pressure and supervision. Familiarity with MIT procedures and policies is preferred. 73-812-R (8/22).

Secretary IV in the Transportation Division of Civil Engineering will handle all the secretarial duties for the office; maintain student records for Admissions Officer; may assist with the department newsletter. Good typing is required; ability to organize work with a variety of people important. 73-864-R (9/5).

Secretary IV in the Patent Section of the Office of Sponsored Programs will handle all office procedures for an attorney. Answer routine correspondence on own or from oral instructions. Maintain patent applications and case files; prepare documents for filing with patent office; transcribe dictation involving technical and legal terminology. Excellent, rapid typing and good shorthand are required for typing long patent applications, occasionally under pressure. Previous experience desirable. 73-819-R (8/22).

Secretary IV to two professors in Civil Engineering will type legal and environmental papers, course notes, exams; perform all other general secretarial duties. Good typing required; shorthand or dictaphone skills are helpful; good organizational skills important. 73-856-R (9/5).

Secretary IV in the Clinical Research Center will transcribe from dictating equipment patient records; type manuscripts and speeches. Knowledge of medical terminology and secretarial school training is preferred. 73-763-A (9/5).

Secretary IV in the Planning Office will be responsible for all general office duties for several architects. Previous secretarial experience; knowledge of light accounting; strong typing skills required. Temporary until 7/74. 73-878-R (9/5).

Secretary IV (Part-Time) - in Civil Engineering will handle all the general secretarial duties for staff members in the departmental Student Information Office. Previous experience and good typing a must. 20 hour work week. 73-882-R (9/5).

Secretary IV to two physicians in the Medical Department will transcribe medical reports and case histories, schedule appointments, handle other general secretarial duties. Experienced secretary with excellent typing and the ability to transcribe medical terminology required. 73-873-R (9/5).

Secretary IV (part-Time) in Architecture will handle all secretarial and clerical duties for the History of Art Program. Type manuscripts for publication, books, correspondence; maintain filing systems; assist in some library research. Excellent typing; fluency in reading and writing French; familiarity and/or background in art history required. Twenty-hour work week. 73-823-R (8/22).

Secretary IV will perform secretarial duties to the Director of the Artificial Intelligence Lab. Take and transcribe technical dictation; type manuscripts on a typewriter and/or a computer terminal; edit with the computer manuscripts for inclusion in reports and proposals; coordinated the work of other secretaries in the section; answer routine correspondence. Accurate, proficient typing skills required. Previous experience desired. 73-808-R (8/22).

Secretary IV will work in Center for Theoretical Physics for three-four professors. Must be able to work well in busy, pressured office; establish work priorities; type technical manuscripts, correspondence, class notes, papers. Some telephone work. Typing and

shorthand skills must be excellent. 73-630-R (7/11).

Secretary IV in Physics Department to head of the Optical Maser group will assume wide responsibilities for output of large volume of work for a very active group. Ability to work under heavy pressure; will coordinate the workload of another secretary. Experience and good shorthand and typing skills are a must. 73-632-R (7/11).

Secretary IV to two professors at Project MAC will handle general duties including preparation of course materials; assist in the coordination of a major interdisciplinary research project. Excellent organizational and secretarial skills required; ability to assist in various aspects of the research. 73-911-R (9/12).

Secretary III-IV for two professors and two research associates in Ocean Engineering. Handle all regular secretarial duties; type technical reports and correspondence from dictation. Previous secretarial experience, shorthand, technical typing and accounting knowledge required. 73-894-R (9/12).

Secretary IV to four professors in Nuclear Engineering will need good skills of shorthand, dictaphone and typing to handle technical reports and journal articles. Will maintain student records and answer requests for information associated with them. 73-232 (9/12)

Secretary IV for the Harvard-MIT Program in Health Sciences and Technology will type correspondence and proposals, handle general office duties as well as do some editing and research. Previous experience, excellent typing and good office skills important. 40 hr. work week. 73-904-R (9/12).

Secretary IV in Personnel Benefits Office will answer phones and explain benefits to employees and faculty. Excellent typing skills and shorthand or speedwriting are needed. Knowledge of insurance, pensions, or medical plans would be helpful. Previous secretarial experience required. Initiative, poise and the ability to clearly explain benefits important. 73-687-R (7/25).

Secretary IV in Ocean Engineering headquarters will handle standard office duties as well as learn to operate a data console and keypunch. Verify monthly accounting statements, assist with administrative duties. Previous experience, shorthand or speedwriting and good typing skills important. Interest in computers desirable. 73-888-R (9/12).

Secretary III-IV (Center for Space Research) to the Head of the Laboratory and four staff members will type correspondence and reports (technical and non-technical); make travel arrangements; maintain project and personnel files; handle other general office duties. Secretarial school training and/or experience desired. Technical typing skill helpful. 73-765-R (8/15).

Secretary III-IV to a professor and staff in Earth and Planetary Sciences. Handle general secretarial duties including typing technical materials. Strong skills, ability to proofread and edit required; maturity and good judgment important. 73-827-R (8/29).

Secretary III-IV to a group of faculty and instructors in Mathematics will handle general duties of making travel arrangements, typing correspondence, filing. Good typing skills are important since the bulk of the workload is typing mathematical manuscripts, quizzes, exams, notes. Willingness to learn technical typing desired. 73-783-R (8/15).

Secretary III-IV in Physical Plant will perform secretarial duties for the Support Service Group and coordinate the work for one other clerical employee. Type correspondence and reports, answer phone and handle general inquiries. Excellent typing skills required, speedwriting or shorthand desirable; ability to work independently important. 73-804-R (8/22).

Secretary III-IV in Economics will handle regular secretarial duties for two professors; type class material and research reports (some technical). Both professors teach undergraduate and graduate courses and are active with students' thesis research. Shorthand or speedwriting and good typing required. Ability to work independently important. 73-872-R (9/5).

Secretary III-IV opening in an academic department working for 2-3 professors. Good skills of shorthand and typing, organizational ability and experience required. 73-323-R.

Secretary IV in Mathematics will handle general secretarial duties for a group of professors and instructors. Type mathematical papers, oversee the department Reading Room, make travel arrangements, maintain files and records. Shorthand, experience or the ability to learn technical typing re-

quired. Organization ability will be important for working for several busy people. 73-742-R (8/8).

Secretary III in Civil Engineering will handle general secretarial duties, requests from students and faculty for information or data from records which are compiled and maintained in the departmental Student Information Office. Rapid, accurate typing skills; familiarity with general office practices required. 73-826-R (8/29).

Secretary III in Nutrition and Food Science will perform standard secretarial duties for a group of faculty members and other research personnel. Good typing and shorthand skills important; some knowledge of medical, biological and/or technical terms helpful but not necessary. 73-852-R (8/29).

Secretary III in the Office of the Dean of the Graduate School will handle reception duties; type and maintain files of fellowship awards and other records; type correspondence from dictaphone and handwritten copy. Excellent typing, shorthand; business school training or experience helpful. Ability to deal with students and visitors important. 73-836-R (8/29).

Secretary III in the Aeronautics and Astronautics Department will assist the Undergraduate Officer with student registration. Type correspondence and technical reports for two professors, as well as handle all general office duties. Shorthand skills not required but helpful. 73-850-R (8/29).

Secretary III to the Vice President for Administration and Personnel and to the Administrative Assistant in that office will handle heavy load of typing, transcribe from dictating equipment, maintain active calendar, serve as office receptionist, maintain files and answer phones. Good language skills, ability to take accurate messages are essential. Knowledge of Institute policy and resources desirable to provide assistance to a large number of callers and visitors. Will use IBM Executive typewriter. 73-737-A (8/8).

Secretary III to two Professors and the Soils Division Head in Civil Engineering. Duties will include typing, answering phones, filing. Ability to coordinate duties and recognize priorities important; strong typing skills a must. 73-789-R (8/15).

Secretary III in the Medical department will work at the MIT Infirmary and perform secretarial/receptionist duties for the Pediatric Clinic. Answer phone, schedule appointments, maintain records, process patient bills, perform typing for the clinic. Excellent typing skills and telephone manner required. Ability to relate to patients, particularly young children important. 37½ hour work week. 8:30-5pm. 73-820-R (8/22).

Secretary III in the Industrial Liaison Office will take and transcribe dictation, handle travel arrangements, perform secretarial duties for one staff member dealing with major industrial corporations. Secretarial or business school background, 1-2 years experience preferred. Shorthand, good typing, spelling and ability to master office procedures essential. 73-683-R (7/25).

Secretary III to one staff member will take and transcribe dictation; type correspondence; handle travel arrangements; handle other general office duties. Ability to organize and work independently; good secretarial skills required. Previous working experience and secretarial training preferred. 73-581-R.

Secretary III in Physics Department Theoretical Center to work for three-four busy professors. Ability to handle some pressure, decide work priorities, type technical manuscripts and papers, cover phones as needed. Typing skills must be excellent; shorthand preferred, experience necessary. 73-629-R (7/11).

Secretary III in the Sloan School of Management will work for three professors in management science, management information and control, and information systems. Correspondence, typing of class materials, distribution of them; some manuscript typing (occasionally technical); handle secretarial duties of a one-secretary office. Shorthand or speedwriting required; able to organize a variety of tasks. 73-664-R (7/18).

Secretary III to several professors at the Sloan School of Management will handle all general office duties including typing from machine dictation. Good secretarial skills required; secretarial school training preferred. 73-884-R (9/5).

Secretary III for a group of faculty members and research staff in the Research Laboratory of Electronics. Type technical manuscripts, including setting format and verifying footnotes and references; handle all other general office duties. Excellent typing experience preferred. 73-861-R (9/5).

Documentation Editor V in the Office of Administrative Information Systems will assist in the development of presentation materials. Edit and develop finished copy from draft documentation. Review submitted documentation for clarity and completeness, recommend changes. Minimum 3 years EDP experience; operations experience with programming knowledge preferred. 73-867-R (9/5).

Senior Clerk IV in the Summer Session Office will assist with the updating of mailing list; compose and type correspondence; plan and coordinate large-scale mailings; coordinate the work of several others in the office. Excellent typing essential; minimum 2 years experience required; ability to organize and work with details important. Knowledge of dictaphone helpful. 73-860-R (9/5).

Section Head V will supervise the publications section of an administrative office. Individual will be responsible for preparation of periodic publications listings; distribution of MIT reports outside of the Institute; contacts with MIT departments and laboratories, budget management, and development of effective systems for record keeping and activity statistics. Good organization and supervisory skills and a careful attention to detail are required. Must be able to work independently, sometimes under pressure. 73-797-R (8/15).

Senior Clerk IV in the Insurance and Billing Section of the Medical Department will process insurance claims and determines charges for outpatient visits; maintain records; occasionally type correspondence. Accurate efficient office skills are essential; ability to work with details important. Insurance background is preferred. 73-915-R (9/12)

Senior Clerk IV in the Fiscal Section of the Comptroller's Accounting Office will tabulate Research Expenditures and Cash Flow by projects; assist in collecting data and typing of statistical reports. Interest and aptitude in working with figures, accounting or bookkeeping background, good typing skill required. Minimum one year experience desired. 73-889-R (9/12).

Senior Clerk III-IV in Earth and Planetary Sciences will share the workload of four professors with another secretary. Will file, arrange travel, answer phones, handle purchasing and invoicing procedures on 20 research contracts. Ability to do some typing; willingness to perform clerical and administrative chores important. 73-767-R (9/5).

Senior Clerk III in the Work Control Center of Physical Plant will receive, classify, and edit requests for service; handle other routine clerical assignments. Previous business experience; good office and clerical skills; ability to work accurately with details important. 40 hour work week. 73-863-R (9/5).

Payroll Clerk III in the Comptroller's Accounting Office will maintain and update department master file and lists. Monitor and clear charges from terminated accounts; prepare adjustment reports and maintain sickleave and vacation balances. Accurate typing skills needed; ability to deal effectively with those seeking assistance is important. 73-876-R (9/5).

Senior Clerk III at the MIT Press will apply cash to accounts receivable statements on a computerized system. Knowledge of basic bookkeeping and accounts receivable experience required. Previous experience on a computerized system is helpful. 73-865-R (9/5).

Senior Clerk III will handle reception duties for the Speciality Clinic of the Medical Department. Maintain busy appointment schedules, direct patients to offices. Mature, responsible individual with previous work experience is needed. 37½ hr. work week. 8:30am-5pm 73-914-R (9/12)

Accounting Clerk III in the Comptroller's Accounting Office will work in Grants and Contracts Billing Section. Prepare various financial and fiscal reports involving the various Department of Defense agencies. Business school graduate or individual currently attending evening business school is desired. Ability to communicate effectively over the phone important. 73-906-R (9/12)

Senior Clerk III in the Registrar's Office will type answers to student petitions; set up committee meetings, mail diplomas and assist with other office functions. Excellent typing a must. 73-898-R (9/12).

Technical Typist III in the Office of Administrative Information Systems will type technical memoranda, data processing control documents and manuals. Maintain documentation library, including filing, organization and maintenance of programmer refer-

ence library. Good typing skills, experience in a data processing environment desirable. 73-684-R (7/25).

Clerk Typist II in the Student Loan Office of the Accounting Office will maintain borrower accounts files; answer student's questions; assist the loan officers and the account representatives in the preparation of special reports. Accurate typing needed for correspondence; ability to work with details important. 73-877-R (9/5)

Clerk-Typist II (Part-Time) in Nutrition and Food Science will handle general secretarial duties for the Administrative Officer. Excellent typing skills required. 20 hour work week. 73-874-R (9/5).

Clerk-Typist II in the Student Financial Aid office will type correspondence and reports; gather data for office studies and assist with reception duties. Good typing skills are required. 73-883-R (9/5).

Clerk II (Part-Time) in Preprofessional Advising and Education will assist in mailing premedical letters of recommendation to medical schools; maintain files; answer questions from students and faculty. Accurate typing skills needed; ability to work independently important. 14 hour work week. 73-794-R (8/15).

Clerk Typist II will assist the Mechanical Engineering department headquarters secretary; type letters, maintain mailing lists, keep records. Good typing skills are important. 73-896-R (9/12).

Technical Assistant V in Nutrition and Food Science will order, house, weigh, feed and water rats. Mix diets, order components; autopsy animals; collect and weigh tissues; prepare tissues for chemical assays; wash lab glassware, including acid-washing. These responsibilities require a person with some sense of career commitment. Individual must understand the care of research animals, and have experience in conducting experiments involving animals. 73-811-R (8/22).

Library General Assistant III (Part-Time) - in the Catalogue Department of the Libraries will handle materials in the Cyrillic alphabet; perform bibliographic searching; type master catalogue entry; perform other clerical duties of reclassification and cataloguing. Experience and accuracy in typing on Cyrillic Selectric; ability to interpret complex directions important. Library experience of value but not essential. 14 hour work week. 73-885-R (9/5).

Nurse Aide III in the Out-Patient Clinic at the Medical Department will maintain adequate supplies, assist nurses in patient care; transport patients by stretcher or wheelchair; clean, sterilize equipment and instruments; prepare prepackaged medicine envelopes. Maturity important in dealing effectively with patients and staff. 37½ hr. work week; 8:30-5:00 pm 73-913 (9/12)

Senior Audio-Visual Specialist in Graphic Arts will test and maintain audio visual equipment, including TV cameras, projectors, sound systems, power supplies, etc. Keeps records of equipment repaired. Will do other related duties as assigned. Graduation from a 2-year technical day school or its equivalent and a minimum of 5 years applicable experience required. Experience in all phases of electronic repairs, knowledge of broadcast video signal specifications required. Ability to trouble shoot and repair all types of amplifiers, pre-amps, tuners, etc required. 73-559-R (8/29).

Carpenter in Physical Plant must have a minimum of 5-10 years experience in the trade with emphasis on finish carpentry. Read prints, do layouts on all types of cabinets, models, etc. A thorough knowledge of and ability to use various types of materials and wood working machinery required. 73-756-R (9/5).

Counter Person - at the Student Center will be responsible for the set up of the service area; serve from the Hot Food Counter. Food service experience helpful; ability to understand English required. Must be able to work weekends, 40 hour work week. M-F 10:30-7:30pm; weekend shift is 7am-4pm. 73-887-R (9/5).

Cook's Helper at MacGregor Hall will cook vegetables for lunch and dinner. Prepare salads and complete other assignments. Previous food service experience preferred. Must be able to read and understand English in order to follow recipes. 40 hour work week. 9:45am-6:45pm. 73-886-R (9/5).

Waitresses/Waiters Part-Time (5 openings) at the Faculty Club will set up silver and china on dining room tables. Take member orders; serve food and beverages. Clear, clean and reset tables. Experience helpful, but not necessary. Shifts: M-F 5:00pm-9:00pm, Possible weekends (1 job) 73-919 through 72-923 (9/12)

New UROP Listings

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

Dynatech R/D Co. Cambridge

Two project areas for undergraduates: (1) Biocompatible polymers—a new (ethical) drug delivery system based on polymers which are slow to release the therapeutic agent. Delivery systems for sustained release through tissue compatible hydrolyable polymer matrix in which the medicant is dispersed. For complete information check with Prof. Charles Cooney, x3-3108, 16-339. (2) Fuel gas from solid waste. Dynatech is developing a system involving municipal solid waste, separating organic and inorganic fractions and then converting the organic fraction to fuel gas. Contact UROP.

Mass. Forest and Park Assn. Boston

Almost 75 years old, the MAFP has lobbied for environmental legislation and is the only conservation organization in Massachusetts which devotes substantially all of its time to the legislative process. Some areas of interest to undergraduates are (1) Energy, conservation research and evaluation of offshore oil and onshore facilities; (2) land use planning; (3) solid waste in communities; (4) projects with the Bicentennial Commission; and (5) Opening a highway trust fund for use in mass transit.

Eli Bulba, Inc. Cambridge

A small environmental consulting firm, the company has suggested a project to focus on pollution and economic problems resulting from the use of solvents for cleaning and chemical compounding in some industrial processes. Activities might include: investigation of solubility data of solvent-absorbers; development of a computer program to obtain final design parameters; and determination of feasibility and cost data of an optimal system.

Boston University Medical Center Boston

This biomedical engineering lab is involved in information processing in living systems with basic research interests in mechanisms (in an engineering sense) of perception and locomotion. Heavily involved in sound and image signal processing, the lab is engaged in applying its work in speech and hearing to the utilization of passive sound for diagnosis of vocal tract, pulmonary and other pathology. The lab's work is focused on aiding neurophysiologists and other medical researchers in reducing microscope and histological data. The lab is also involved in applying aspects of modern technology to problems of clinical care, with a focus on information processing and intensive care data collection and information retrieval.

Boston Biomedical Research Institute Boston

Opportunity for undergraduates interested in investigating the structure and turnover of neuronal protein. Actin, microtubule protein, and neurofilament protein from mammalian brains have been identified after gel electrophoresis. Current work covers a phylogenetic comparison of these proteins, their changes in developing and aging nerves and brain, and their turnover in normal and pathological conditions.

Computer Systems Division, Bolt Beranek and Newman Cambridge

With several PDP-10s and other computers, this division has several large R&D programs underway in the following topic areas: (1) computer communications, networks; (2) computer applications in life sciences and medicine; (3) computer applications for data handling and (4) computer applications in the area of signal processing.

Office of Science and Technology, Massachusetts Department of Commerce and Development Boston

The office assists new, small high technology companies in finding a home and getting started in the Commonwealth and has a major commitment to job development particularly in urban areas. A number of topic areas have been suggested: (1) foreign trade and the state's balance of payments; (2) conversion of industries from reliance on federal funding (e.g., NASA, DOD); (3) governmental policies (taxes, zoning) towards new industries; (4) land use plans, and (5) modernization of "traditional" industries such as the shoe industry.

Teradyne, Inc. Boston

As the world's largest designer and manufacturer of automatic test equipment there are a number of project opportunities for undergraduates interested in software and digital and analog hardware.

NASA Institute for Space Studies New York City

The Goddard Institute for Space Studies is interested in formulating projects for undergraduates with interests in numerical forecasting and the dynamics of planetary atmosphere. One project suggested involves poleward transport of heat by the large scale cyclones and anti-

cyclones, which is one of the most important processes affecting the mean structure and climate of our atmosphere. Contact Prof. Peter Stone, Rm. 54-1420, x3-2443, or UROP.

Cordell Engineering, Inc. Everett

The company manufactures Automatic Modu-Lab Processors for either color film or color paper. Cordell is presently in the process of designing three devices: (1) a robot control for the Modu-Lab Processors which would allow several containers of film to be "in process" at the same time; (2) a device which will expose printing plates to the alcohol bath in such a way that the screened image on the plate will achieve maximum acuteness; and (3) a small, inexpensive machine to develop 16mm microfilm in lengths from 3 to 100 feet.

Intermedia Systems Corporation. Cambridge

A design and media production company specializing in communications, audiovisual facilities and presentations, is in the process of designing an information/orientation system for a museum of the Diaspora, in Hebrew Beth Hatfutoth, to be established at Tel Aviv, Israel. The project would investigate traditional and innovative conceptual design and technological solutions for information displays. Technology can include computer techniques, light programming, holograph, liquid crystal displays, audiovisual techniques and other formats.

Raytheon Service Co. Burlington

Raytheon and the City of Lowell are developing a recycling plant for solid waste obtained from a regional incinerator with a project grant from the Environmental Protection Agency. When completed, the plant will separate aluminum, zinc, copper, various glasses, ferrous metals, and filler materials from reuse through screening, grinding, crushing, magnetic separation, density separation and flotation procedures. Suggested background for undergraduates and faculty co-supervisors include civil engineering, mechanical, chemical engineering, metallurgy, chemistry and management.

General Electric Lynn

The Aircraft (Jet) Engine Group has proposed three instrumentation projects: (1) instrumentation miniaturization—with the advent of small, high speed compressors there is a need for miniature hyperdermic and thermocouple sensors to determine overall aerodynamic performance and interstage performance of jet engines; (2) rake and probe stress analysis and distribution—the present methods for determining performance of large jet engines require much time for the calculation of stress and vibration characteristics, an effective computer program could reduce the time to design and evaluate standard and innovative rake configurations; and (3) aerodynamic probe calibration—there is a great need to improve existing methods for jet probe calibration to eliminate potential problems and errors such as condensation shock, conduction and radiation error and free jet temperature and pressure striations.

Barnstead Corporation West Roxbury

A designer and manufacturer of water purification systems for research and medical applications—the realm of making ultrapure water though organic, colloidal, and microbiological contamination problems are not fully understood or solved. The company wants to collaborate on a study of micro organisms in sterilizing and distillation purification systems.

Stellite Division, Cabot Corp. Kokomo, Ind.

A producer of abrasion-, corrosion- and high temperature-resistant alloys, this corporation has suggested three possible areas for undergraduate collaboration: (1) an x-ray diffractometer study of a series of extrusions made from a single batch of experimental nickel, chromium and aluminum alloy; (2) a differential thermal analysis study of changes in the solidification properties of alloys influenced by the nature of their liquidus-solidus gap; and (3) a high temperature, high strain rate study of the mechanical properties of certain alloys deliberately contaminated with small quantities of deleterious elements. The project could commence at MIT possibly in the Department of Metallurgy and Materials Science—or the Center for Material Science and Engineering.

Applicon, Inc. Burlington

Applicon designs, develops, manufactures and sells mini-computer based, turnkey systems for manipulation graphics for providing graphical input of data and for displaying results of computations as graphical output. The company has suggested several project topics for undergraduates in software development as well as in the area of hardware development in electromechanical graphic devices such as digitalizers and plotters.

Foreign Study Opportunities

Fulbright-Hays Full Grants are available to US citizens who have a year or more of graduate study but will not have a doctorate degree before the beginning date of the grant. The grants offer study in 46 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 (where appropriate), tuition, books, health and accident insurance, and a maintenance allowance for one academic year in only one country, based on living costs in the host country. Apply through the Foreign Study Office, Rm. 10-303, x3-5243. Deadline: Oct. 9.

Fulbright-Hays Travel Grants provide travel expenses to supplement some other grant which provides a maintenance and tuition scholarship. Travel Grants provide round-trip transportation to the country where the student will pursue his studies for an academic year, health and accident insurance and the cost of an orientation course abroad, if applicable. Apply through the Foreign Study Office, Rm. 10-303, x3-5243. Deadline: Oct. 9.

ITT International Fellowships will be awarded to graduating seniors under 25 who are US citizens and permanent residents of the US, with preference given to single students. Applications will be considered from well-qualified students in all fields, except for the Physical and Natural Sciences. Sufficient knowledge of the appropriate language of the host country is necessary. Grantees must indicate their intention to return to the US on completion of the period of award. Approximately 33 fellowships will be granted but not more than one to a given college or university campus in any one year. The stipend will be \$3,800, including maintenance, tuition, books, local travel, health and accident insurance. Also, an additional allotment will be given for international travel. Apply through the Foreign Study Office, Rm. 10-303, x3-5243. Deadline: October 9.

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. Apply through the Foreign Study Office, Rm. 10-303, x3-5243. Deadline: Oct. 9.

Winston Churchill Foundation scholarships in Engineering, Mathematics and Science at Churchill College, Cambridge University, England. About 10 awards a year for outstanding men and women who are US citizens between the ages of 19 and 26, hold a bachelor's degree from a US college but will not have a doctorate upon taking up the scholarship. At the time of application the student must be enrolled at one of 28 participating universities. MIT nominates two candidates. Churchill Scholars have the option of spending one year at Cambridge working toward a Certificate or Diploma, or three years for a PhD. Applicants must have taken the Graduate Record Examination no later than Oct. 27, both the Aptitude Test and the Advanced Test in a field of their choosing. Apply through the Foreign Study Office, Rm. 10-303, x3-5243. Deadline: Nov. 12.

Marshall Scholarships were established in 1953 by the United Kingdom government as an expression of British gratitude for the Marshall Plan. The purpose of the programme is to enable US citizens under 26, men and women graduates of US colleges and universities, to study for a degree of a university in the UK for a period of at least two academic years. Candidates will be selected for distinction of intellect and character, as evidenced by their scholastic attainments and by their activities and achievements. Preference will be given to candidates who combine high academic ability with the capacity to play an active part in the life of the UK university to which they go. A total of 30 scholarships will be awarded. Applicants may state a preference for a particular university, but the final choice is determined by the Marshall Scholarship Committee. The award averages \$3,700 per annum. Married persons are eligible for Marshall Scholarships but as between candidates of equal merit, preference will be given to those who intend to remain unmarried. Apply through the Foreign Study Office, Rm. 10-303, x3-5243. Deadline: Oct. 9.

Rhodes Scholarships are available to unmarried male US citizens, ages 19-25, (this age limit may be extended 2 years to 27 if military service has been completed) for two years of residential study at Oxford University. See Professor Lester Thurow at the Sloan School of Management, Rm. E52-252D, x3-2932. Deadline: Early October.

DAAD (Deutscher Akademischer Austauschdienst) awards scholarships for graduate and postgraduate study in Germany. Candidates must be between the ages of 18 and 32 with a bachelor's degree at the time of the award. The award includes a \$140 per month stipend for 10 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. Apply through the Foreign Study Office, Rm. 10-303, x3-5243. Deadline: Oct. 9.