

Goldblith to Hold New Chair

Professor Samuel Goldblith, deputy head of the MIT Department of Nutrition and Food Science, has been named the first Underwood-Prescott Professor of Food Science.

President Jerome B. Wiesner, announced Professor Goldblith's appointment to the nation's first fully-endowed chair in a department of food science at the spring Board meeting of the National Canners Association at the Statler Hilton in Boston. The chair is named in honor of two pioneers in the study of food preservation, William Lyman Underwood, grandson of the William Underwood who founded in 1821 what is now the nation's oldest canning plant, and Samuel Cate Prescott, MIT's first Dean of Science.

"It is appropriate," Dr. Wiesner said in his announcement, "that the first endowed chair of food science in the nation be at MIT, for it points up the Institute's role as a pioneer in the development of technical processes involved in the manufacture and distribution of foods and the Institute's long-time collaboration with industry. I am particularly pleased that the chair is named in honor of Dean Prescott and Mr. Underwood, for it will stand as a permanent memorial to these two men who did so much to make food processing a science. The chair is all the more timely, given the current need for a more adequate scientific basis for food production and consumption".

A substantial part of the \$600,000



Professor Goldblith.

chair was contributed by the William Underwood Co., and numerous other contributions from food related companies and in-

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Faculty Concludes Annual Meeting

Members of the faculty gathered at the final session of their annual meeting last Wednesday, May 24, to complete business for the academic year 1971-72.

A highlight of last week's meeting was a report by Provost Walter A. Rosenblith on research

The faculty will hold a closed meeting today, May 31, at 4pm in Room 10-250, for the purpose of recommending candidates for degrees.

trends and outlooks. He outlined the changing trends in federal obligations for research and

1,350 Students to Receive Degrees at Commencement

A record number of women students will receive degrees from the Institute during the 106th commencement exercises Friday morning, June 2.

The exercises will begin at 10am in Rockwell Cage. All told, some 1,350 seniors and graduate students will receive degrees.

The 750 seniors who will receive bachelor degrees during the exercises will include 49 young women, who together make up the largest number of women ever in an MIT graduating class. In addition, there will be a record 35 women among the 650 students receiving advanced degrees. Nine of the women graduate students will receive doctoral degrees.

MIT has never excluded women and, in fact, admitted its first woman 101 years ago. The number

of women graduating from MIT has been increasing every year in recent years—there were 45 a year ago—primarily because broadened educational programs and expanded coed living facilities are bringing larger and larger numbers of women to seek and gain admission to the Institute. There were 125 women in the class of 1,000 freshmen admitted last fall, nearly twice as many women as were admitted four years ago in the class that is graduating this year. The reunion Class of 1922 included 25 women, two of whom will be among the class members marching in this year's procession.

Appropriately enough, the president of this year's class is a women student. She is Sandra G. Wiener of Forest Hills, New York, who has earned both a bachelor of

science degree in life sciences and a master of science degree in nutrition and food science during the four years she has been at MIT. She will enter Stanford University next fall for graduate studies in neurobiology, a reflection of the increasing numbers of MIT graduates who follow careers in biology and medicine.

This graduation will mark the first commencement for Dr. Jerome B. Wiesner since his advancement from provost to president last July. As president and in keeping with MIT custom, Dr. Wiesner this year will present the commencement address and award the degrees individually to each of the graduates.

Howard W. Johnson, who as president of the Institute fulfilled these roles for the five previous years, was elected chairman of the Corporation a year ago and will be serving his first commencement as presiding officer, the role customarily taken by the Corporation chairman.

Dr. James Rhyne Killian, Jr., who as Corporation chairman was presiding officer at commencements from 1959 until his election as honorary chairman a year ago, will march with the principals in the academic procession this year and occupy a seat of honor on the stage.

Other principals will include Luis A. Ferre, governor of Puerto Rico and a 1924 graduate of MIT; Cambridge Mayor Barbara Ackermann; Dr. Vannevar Bush,

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development to universities and colleges, and more specifically, the federally supported research on the MIT campus. He also commented on the dramatic decrease of federally-funded graduate fellowships.

The faculty voted to defeat a motion made by Professor Everett Hagen, chairman of the Committee for the Evaluation of Freshman Performance, that would change the Regulations of the Faculty to initiate a four semester trial period of a "No Record" alternative to "Fail" for freshman grades.

Under this proposal the only

grades reported to the Registrar for any freshman student in any subject would be: P, single passing grade; "No Record," subject not satisfactorily completed; or the grades of I, incomplete, O, absent, or OX, absence satisfactorily explained. A student's permanent record would exclude any reference to subjects for which the instructor reported "No Record."

Departing from the agenda briefly, President Wiesner introduced Dr. Carola Eisenberg, newly-appointed Dean for Student Affairs, to the faculty.

Professor Hartley Rogers,

(Continued on page 5)

New Shell Christened in Honor of John Ayer

Before a gathering of some 100 members of the community, MIT's newest shell, the John Ayer, was christened and launched at the Pierce Boathouse last Thursday, May 25.

The shell was named for John Ayer of Winthrop, who will retire next month after nearly 40 years as a member of the Physical Plant grounds staff, many of them as foreman of grounds.

Professor Ross H. Smith, director of athletics, presided at the ceremonies. He praised Mr. Ayer's abiding interest in the crew and his help in developing first-

class facilities for Institute oarsmen.

Professor Smith noted that Mr. Ayer's activities in behalf of the crew had extended through six crew coaches and generations of students. He presented Mr. Ayer a varsity letterman's jacket.

In further tribute to Mr. Ayer, Philip A. Stoddard, MIT vice president for operations, said the christening of the new shell marked the first time that a valuable piece of Institute property had been named for a Physical Plant employee.

William H. Combs, assistant director of Physical Plant and a crew manager as an undergraduate, spoke on behalf of crew managers over the years. He cited Mr. Ayer for his generous and individual help to generations of managers and oarsmen. Mr. Ayer christened the shell with the traditional bottle of champagne, broken over a crowbar held above the bow (breaking the bottle directly on the delicate shell would seriously damage it). Following the christening, the varsity crew took the shell for its first trip on the Charles, to the applause of the spectators.



John Ayer, center, christens the new shell at the boat house.

-Photo by Margo Foote

Holiday Notice

Vice President John Wynne has announced that in addition to observing Independence Day on Tuesday, July 4, the Institute will be closed all day on Monday, July 3.

Classes will not be held on July 3 or 4. Only those employees needed for essential operations will be required to work.

Have a good holiday.

MIT Commences

We were leafing through the many pages of what is called the Commencement bible the other day, and we became more impressed with each passing leaf at the voluminous detail with which the crowning ceremony of Institute life had been worked out. Meticulous was scarcely the word. One page we noted, for example, contained a series of "if" clauses: "If weather is questionable a meeting ... will be held in Rockwell Cage between 12:30pm and 1:00pm to reach a final decision on the location of the social Hour. ... If the Social Hour is held outdoors, six (6) foot (6') and twenty-six (26) eight foot (8') folding tables and three hundred (300) wood folding chairs are to be set up on the Mall as shown on drawing number AD72-12. ... If the Social Hour is held in the duPont Center Gymnasium, one hundred and twenty-two (122) thirty inch by forty-two inch (30" x 42") folding tables and three hundred and fifty (350) metal folding chairs ... are to be set up as shown on drawing number AD72-15.

Such attention to detail in the service of others is admirable in any case. What makes it the more remarkable in the age of the ubiquitous committee report is that this comprehensive document, while representing the experience and effort of many over the years, is written annually by one man. He is Miles Cowen, superintendent of building services, and with the thought of getting the lowdown on this high event we looked him up last week.

Mr. Cowen is a neat man. We found him in his office in Building E18 behind a tidy and ample but by no means imposing desk on the surface of which were no less than five pencil pots of various sorts. He was wearing a light blue button-down shirt and a blue striped tie. We introduced ourselves and stated our business. Mr. Cowen at once demurred with a modesty that is both becoming and genuine. "Well, I'll talk with you for a minute," he said in a pleasant and friendly voice, "but I don't see how you can write anything about Commencement and get it really right. I just don't see how ... well, I just wish it was possible to credit all the people who deserve the credit ... but I don't see how you can even begin to mention everyone who ought to be mentioned. I'm just one of a very large team, you know." Mr. Cowen broke off and began enumerating the various shops and crews and people who actually do the work of an MIT commencement. "Besides that," he continued, "as I recall *Tech Talk* already did a story on the background of commencement."

"I've got every issue of *Tech Talk* that ever came out," Mr. Cowen said. "I thought it might be interesting to keep them. And you know, it's amazing how many times someone has come in to look up something and it's been right there in *Tech Talk*." We voiced our gratification and Mr. Cowen finally came up with the issue he was looking for, dated June 3, 1964. "Nothing has really changed since that," he remarked, showing us the article. "Of course, commencement's bigger now, but the process is still the same. It is still a true team effort and a good many members of the team are the same too. Of course, the only place it's all written down is right here in the bible." Mr. Cowen held up a loose-leaf notebook better than four inches thick with thoughtful detail. "It gets pretty heavy to carry home about this time of year," he continued. "I have to take it with

me so that if something occurs to me I can make a note, or if I have a question I can just look it up and then I won't wonder the rest of the night."

We asked Mr. Cowen how many commencements he had presided over in this way. "Well, I don't really know," he replied. "Let's see. I became involved about 1947, I guess, but I didn't get into the real thing until Mr. Whiston went off to the AEC in the early fifties. Then I sort of inherited the whole thing." Mr. Cowen rummaged in a file drawer. "Here's 1951 and Mr. Whiston wrote that one. Then I wrote 1952. It was just a few pages then, of course." We pointed out that this would be Mr. Cowen's 20th commencement and he looked alarmed. "Don't talk like that," he said. "Golly be, it makes it sound like a long time."

As if to prove Commencement is indeed a team effort, Mr. Cowen led us down the hall to the office of Bill Dickson, director of Physical Plant. "If you're looking to find out about Commencement," Mr. Dickson said, "you've come to the right place. No one knows more about it than Miles." Mr. Cowen again demurred. We asked how many people were involved in putting it on. Both of our hosts reflected for a minute, Mr. Cowen doing a rough count under his breath -- electricians, painters, carpenters, building and ground crews. At last they agreed that approximately a hundred souls was about right, if you counted the preparations for Alumni Days as well as those for Commencement itself. "I suppose it's the Registrar who has the real problem," Mr. Dickson remarked. "MIT gives each and every graduate his own certificate, so if just one is off they're all off."

"You really can't have an idea of what's involved until you've seen one," Mr. Cowen said. "If you go to Commencement next Friday and then come back to the Cage about 3:30 that afternoon, you just won't believe a Commencement for better than a thousand people has just been held there. It will all be back to normal. They break it down that fast. Preparations really begin on the Tuesday after the Science Fair, although I usually start writing in January. But after the Science Fair, the floor of the Cage begins to be put in shape to transform it from an athletic facility. Later on, the stage is brought from storage. Then there's work for the metal shop, the carpenters' shop, the paint shop.

Mr. Dickson said he had to leave for an appointment, and Mr. Cowen took us into the next office, where he introduced us to Don Whiston, deputy director of Physical Plant. Mr. Whiston recalled that when he had come to MIT, the Institute's Commencement was regularly held in Symphony Hall and that no one wrote anything down. "I went through that first year making notes," he said with an air of nice nostalgia, "because that whole morning was nothing but rushing back and forth for things that had been forgotten. I guess that was the beginning of writing the procedures down, and Miles inherited the job when I left MIT for a while. Unlike many universities, we don't farm the job out to subcontractors. We do it completely ourselves."

How many chairs would be put in the Cage we wanted to know. "Three thousand nine hundred and eighty-one chairs," Mr. Cowen replied. "And three hundred twenty-eight, give or take a few, on the stage."

Students Turn Obsolete Missile Computer into Peacetime Machine

Since before men fought with swords and tilled with plows, it has been man's hope to turn the implements of warfare into the fair tools of peaceful enterprise. But how do you beat a missile, or more to the point, what do you beat it into? Now a group of undergraduates in the Education Research Center at MIT are turning an obsolete missile guidance computer into a general purpose computer that may make these valuable machines accessible to civilian researchers in universities, schools, and businesses.

The computer, originally designed to guide the Minuteman I missile, is obsolete in these days of Minuteman III, and nearly a thousand of the intricate \$250,000 machines are government surplus, available to researchers working with National Science Foundation funding. In what is surely one of the greatest bargains going, the Education Research Center obtained one of the computers for \$40, actually only shipping charges.

When it used to sit just behind the warhead in the nose cone of Minuteman I, the computer was programmed to receive information from sensors aboard the missile. These would transmit the missile's speed and direction, so the computer could direct any changes in flight required to hit a predetermined target. But because military specifications called for a guidance computer that would be flexible, the computer is versatile in the programming it will accept. Nothing says, for example, that the computer has to direct a missile.

At the Education Research Center, Pat Peterson, 23, of San Carlos, California, a senior in computer science working on his thesis, has developed and built the intricate peripheral circuitry needed to communicate with the computer via a conventional teletypewriter. "Many researchers who have teletypewriters could use the computer," Peterson says, "if they knew how to link the

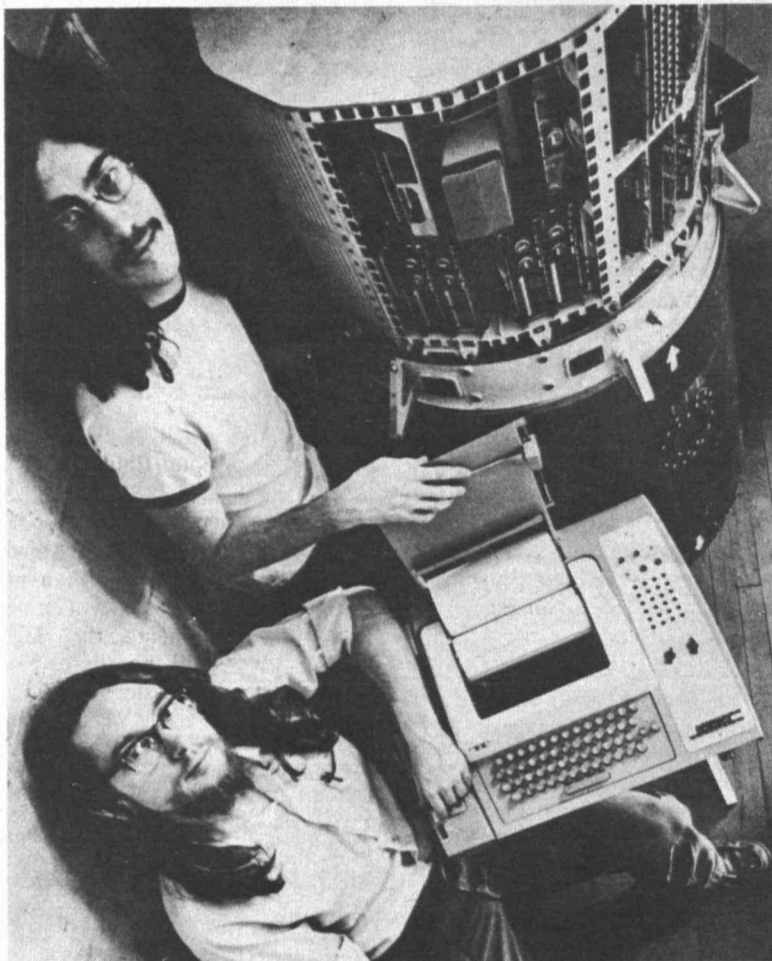
two." Peterson is therefore developing circuit diagrams and a book of instructions to help potential users convert the computers by investing some time and a few hundred dollars worth of additional electronic components.

Other students, under the direction of James Williams of the ERC staff, are writing the programs required for the computer's operation and to allow them to test the computer to make certain that all the components are functioning correctly. Jawaid Ghani, 20, a freshman from Karachi, Pakistan, knew nothing about computers before he started taking courses at MIT. He is writing programs in a basic computer language that will allow the computer to test its own components. Ghani is extremely enthusiastic about the opportunity to learn by working at such a basic level, which would be impossible if he were using a conventional computer.

The major programs are being written by George Miller, 22, of Phoenixville, Pennsylvania, a junior in computer science, and Stephen Tepper, 22, of Wheaton, Maryland, a senior, also in computer science. They are writing programs that will allow future users of the computer to punch their own programs on paper tape with the teletypewriter, and then read them into the computer. Miller's programs will also allow the computer to control other machines.

Although compact - a cylinder roughly three feet tall and three feet in diameter - the computer is sophisticated enough to perform many of the same operations as huge computers, but at much slower speeds. It is ideal, therefore, for control application, such as monitoring a sophisticated crystal-growing oven that maintains a constant temperature over many days, where there is no sense in using a computer that is faster than the activity it is controlling.

The Education Research Center, from which an increasing flow of educational innovation is affecting the lives of students at MIT and elsewhere, now has a computer project right on target.



Pat Peterson, left, and Stephen Tepper with the converted computer.
-Photo by Marc PoKempner

MIT Neighborhood Is Exhibit Subject

A new exhibit, showing the physical development of this part of Cambridge over the past century, has been mounted in the corridor of Building 8.

The exhibit focuses on two complementary themes: topographical changes of Cambridge from 1873 to 1972, and the physical growth of MIT in this area of Cambridge from 1916 to 1972. The illustrative material does not attempt to provide a complete presentation of these themes. It does, however, provide a visual overview of these subjects.

The seven maps from 1873 to 1971 were made by Lance Laver as part of a study of the morphology, history, and physical characteristics of Massachusetts Avenue, and of the implications towards a projective built landscape along a main street. The original maps were drawn with pen and black ink on transparent mylar sheets (30" x 52") and may be overlaid for a graphic representation of the physical

changes over time along the street. The writings are all taken from primary material of the particular time of each map and may be read separately when all the maps (or any combination of maps) are overlaid. The study of Massachusetts Avenue was made for his Bachelor of Architecture thesis in 1971.

The aerial photographs are a representative sampling that portrays the development of the Institute along the north bank of the Charles River on land that was essentially man made.

The exhibit was prepared under the auspices of the MIT Planning Office. The photographs were reproduced from the collection of the Committee for Institute Memorabilia. John Cooke is responsible for the photographic work, and Nora Roghman, the design for the exhibition. This exhibit compliments the "Retrospect II" exhibition in Hayden Gallery.

TECH TALK

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

University Forum to Study Future Materials Policy

Scientists, engineers, economists, ecologists and health experts will assemble at MIT May 30-June 2 for a four-day University Forum sponsored by the National Commission on Materials Policy.

The MIT University Forum, with representatives from the New England and New York State area, is one of eight such forums being held at universities nationwide to help the Commission establish a materials policy for the future. The policy will be aimed at insuring that this country will have the necessary manpower educated in materials science, and that it will be able to obtain sufficient materials and fuels at minimum cost to the environment.

One of the main purposes of the

Magneplane Promises Jet Speeds on Ground

Zippering along in pollution-free silence at jetliner speeds, tomorrow's travelers may find themselves in a revolutionary new surface vehicle that combines the all-weather, spacious stability of a train with the speed and amenities of first-class flight.

These features are among the characteristics of the Magneplane, as proposed in concert by MIT, AVCO Corporation and Raytheon.

The Magneplane is essentially a cylindrical vehicle operating in a semi-circular guideway. It is lifted and held away from the guideway walls, and propelled at very high speed, by magnetic force.

At slow speeds, the vehicle rides on retractable wheels, but it achieves electro-magnetic lift at 25 mph, and from then on until it is slowed again, it rides about one foot above the guideway. In the open, the Magneplane can easily sustain speeds of 333 mph, and if the guideway is enclosed and partially evacuated of air, the Magneplane can operate at more than 555 mph.

The Magneplane study team, headed by Dr. Henry H. Kolm and Professor Richard D. Thornton at MIT's Francis Bitter National Magnet Laboratory, approached the problem of fast surface transportation from the standpoint of achieving guided flight at ground level, rather than of achieving rail travel at aircraft speeds. Instead of carrying its propulsion power aboard, the Magneplane is powered by electromagnetic coils in the guideway over which it is traveling. This configuration lends

MIT University Forum will be to help the Commission establish a policy on advanced materials. These are high-strength, highly alloyed, critical materials associated with, among other things, jet aviation, high-speed ground transportation, power generation and transmission, and electronic devices.

Although the majority of speakers will be from universities, representatives of industry and government have also been invited to the Forum, so that the Commission will obtain a balance of information.

Among the representatives from government will be Dr. Earl Hayes, Chief Scientist, US Department of Interior, Bureau of Mines.

itself well to a centralized control system for maintaining positive vehicle separation and for managing traffic flow.

A two-lane guideway should cost no more than a conventional six-lane highway of comparable length, but of course there's no comparison between the relative speeds and traffic capacity of the two media.

Both the initial and maintenance costs of the guideway should be very much lower than those associated with train tracks, because the weight of the vehicle is distributed uniformly over the entire guideway instead of being concentrated at a few points at a time.

Magneplane vehicles, which can be designed for either passengers or cargo, are free to roll about their longitudinal axis to assume the correct bank angle for turns, so the guideway need only be banked approximately right. Guideway alignment is not critical, either; another important economy.

Preliminary comparisons show that the Magneplane concept has several significant advantages, not only over air transportation and wheeled high-speed trains, but over such other innovative concepts as tracked air cushion vehicles with either turbine or linear induction motor power. Magnetically levitated trains are already under intensive study in Japan and in Germany, and the MIT/AVCO/Raytheon team is convinced that the Magneplane may hold the key to future U.S. leadership in ground transportation.

Hodgins Scholarship Awarded to Baerman

The first Eric Hodgins Memorial Scholarship at MIT has been awarded to Jeffrey M. Baerman of Skokie, Illinois, who will enter the Institute as a freshman next fall.

The Hodgins Scholarship Fund was established by Time Inc., as a tribute to Eric Hodgins, MIT Class of 1922, and former publisher of FORTUNE magazine. Mr. Hodgins died last year at the age of 71.

The announcement of Mr. Baerman's selection as the Hodgins Scholarship's first recipient comes at the occasion of the 50th reunion of Mr. Hodgins' class, which will be held during MIT's annual alumni weekend, June 3-5.

A former managing editor of MIT's *Technology Review*, Mr. Hodgins joined Time, Inc. in 1933, became managing editor of *Fortune* in 1935, publisher in 1937 and a vice president in 1938. He was most widely known for his 1948 book "Mr. Blandings Builds His Dream House," which later became a successful film comedy.

Mr. Baerman, the son of Mr. and Mrs. Henry Baerman, is a graduate of Niles Township High School North in Skokie, where, in addition to compiling an outstanding academic record, he was active on the school newspaper and in varsity track. Mr. Baerman plans to major in chemistry.

On May 30 at 10:00am Dr. Hayes will speak on the "Long Term Supply Outlook for Specialty Metals."

At the afternoon session on May 30, at 1:30, Professor Jack B. Howard of MIT's Department of Chemical Engineering will talk on "Coal Conversion to Clean Fuels." At 2:15, immediately following Professor Howard, a paper will be presented by Professor Arden Bement of MIT's Departments of Metallurgy and Materials Science, and Nuclear Engineering, on "Materials Problems in Advanced Energy Conversion."

In an evening session at 7:00 on May 30, a panel of 11 distinguished scientists, chaired by Dr. J. Herbert Hollomon, Director of the Institute's Center for Policy Alternatives, will discuss the basic issues and implications of a national materials policy.

On May 31, at 2:30pm Dr. Robert Mann, Germehausen Professor in the Department of Mechanical Engineering at MIT and Principal Investigator on the joint Harvard-MIT Biomaterials Science Program, will speak on "Interdisciplinary Biomaterials Research."

The following day, June 1, at 9:00am, Dr. Franklin D. Aldrich of the Environmental Medical Service at MIT will speak on "Human Ecology and Compatible Technology." After a brief discussion lasting until 10:00, Professor David G. Wilson of the Department of Mechanical Engineering will speak on "Recycling of Solid Refuse."

On June 2, the final day of the conference, there will be an open forum, to which groups concerned with the quality of the environment have been invited. There will be no formal papers presented that day, instead there will be three important panel discussions.

The first panel discussion will begin at 9:00 and will cover the "National Policy on Resources." At 10:45, the second panel will discuss a "National Policy on Waste Recycling." The afternoon discussion, starting at 1:30, will cover a "National Policy on Education."

The National Commission on Materials Policy, chaired by Jerome L. Klaff, a leader in the recycling industry, was established by Congress and its members were appointed by the President in September, 1971.

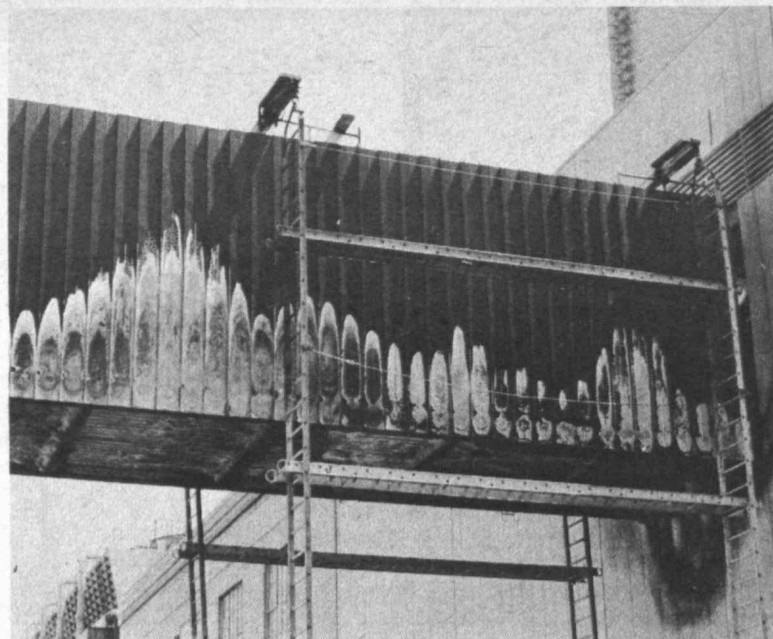
Concert to Highlight Alumni Days

Pianist John Buttrick, a member of the MIT music faculty, will be guest soloist at "Tech Night at the Pops," on Sunday, June 4.

The Symphony Hall concert, beginning at 8:30pm, is one of the special events planned for returning alumni who will be on campus June 4 and 5 for the annual Alumni Days program. Professor Buttrick will play Schumann's *Piano Concerto in A Minor*, Op. 54.

Other works on the program include Debussy's *Clair de lune*, a suite from Bizet's *Carmen* and a medley of Burt Bacharach tunes, all to be conducted by Arthur Fiedler. Tickets for the concert are on sale in the Maclaren Lobby daily from 10am to 3pm.

The concert follows the Alumni Days opening buffet dinner in the Sala de Puerto Rico. More than 3,000 alumni are expected to return to Cambridge for the two-day program.



The damaged bridge over the railroad tracks.

—Photo by Margo Foote

Fire Sweeps Bridge Behind Power Plant

A flash fire broke out on a connecting bridge over the railroad tracks behind the MIT power plant on Vassar Street Friday morning, May 26, and billowed clouds of smoke and ashes for several minutes before it was extinguished by the Cambridge Fire Department.

The fire erupted shortly after 9am Friday morning in a newly constructed bridge carrying pipes and conduits from the power plant in Building 42 across the railroad tracks to a partially completed cooling tower on Albany Street. The blaze quickly enveloped the structure, but Cambridge firemen arrived immediately and prevented the flames from

spreading to either the power plant or the cooling tower. The fire was extinguished within minutes.

The fire apparently started when sparks from welders' torches caught on the primer surface covering insulation on the underside of the bridge. According to Paul Barrett, Supervisor for Design and Construction in the Department of Physical Plant, initial indications are that the damage was limited to outer surfaces and insulation, with little harm done to the underlying structures. However, the full extent of the damage will not be known until after a complete investigation by Physical Plant and the Safety Office.

Class of '72 Schedules Commemorative Events

The senior class has planned several activities to commemorate their graduation from the Institute on Friday.

On Thursday, June 1, Chancellor Paul E. Gray will address graduating students and their parents at the Senior Class Convocation in Kresge Auditorium.

A Commencement Eve Celebration is planned for Thursday evening from 8:30pm until midnight in the Student Center. Several favorite entertainers from the Pot Luck Coffee House, including Alan Chapman, Vo Ta Han, Gaytha Heilman and Ray Magliozzi, will provide music. A

quartet called the Gran Faloon will also perform and short movies will be shown.

According to Sandra Wiener, president of the Class of 1972, the evening celebration has become a traditional commencement event. "We hope many faculty members will join us and our parents for the evening," she said.

Commencement exercises begin Friday, June 2, at 10:30am in Rockwell Cage, followed by the President's Luncheon for the graduates and alumni in the Great Court. As is customary, President Jerome B. Wiesner will deliver the Commencement address.

Monday, June 5, will be an all-day seminar under the general title "Moving toward the Year 2000," which will explore technological breakthroughs and their implications on future needs and goals. Chancellor Paul E. Gray will serve as moderator for the seminar.

The seminar is open to all members of the MIT community.

The morning session includes talks by astronaut David R. Scott and Secor D. Browne. Mr. Scott will narrate a film of the Apollo 15 moon mission and discuss the future of space exploration. Mr. Scott received both the master of science and engineer degrees from MIT in 1962.

The future of commercial aviation will be the subject of Mr. Browne's address. Mr. Browne is chairman of the federal Civil Aeronautics Board and a former

professor of air transportation at MIT.

In the afternoon Professor Philip Morrison of physics will discuss "The Nature of the Universe," followed by Professor Jay W. Forrester of management, whose address will be "A World Model." At 3:45pm, Professor Robert W. Mann, Germehausen Professor of mechanical engineering will speak on "A Contemporary View of Technology and Medicine." The closing speaker will be Institute Professor Paul A. Samuelson on "Change in Society."

President Jerome B. Wiesner will address a noon luncheon for alumni in the Great Court. Also at the luncheon the returning classes will present their reunion gifts.

Alumni Days will conclude with a party in DuPont Center beginning at 5pm. Chairman for the 1972 Alumni Days program is Marvin Grossman of the Class of 1961.

THE INSTITUTE CALENDAR

May 31
through
June 9

Seminars and Lectures

Thursday, June 1

Stepwise Disassembly of Free Ribosomes and Rough Ribosomes
Dr. Gunter K. Blobel, Biochemistry Dept, Rockefeller University. Nutrition and Food Science Seminar. 4pm, Rm 16-134.

Monday, June 6

Separation of Dynamical Mechanisms in High Energy Hadron Collisions*
Dr. Leon Van Hove, CERN. Special High Energy Seminar. 4pm, Rm 26-414. Tea, 3:30pm.

Women's Forum

Women's Forum**
Beginning Monday, June 5, all subcommittees will meet on Mondays at 12n in Rm 10-105.

Student Meetings

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

Thursday Staff Meeting**
Every Thursday, 8pm, 2nd floor, Walker.

Technique Staff Meeting
Every Saturday, 11am, Student Center Rm 457.

ERGO Staff Meeting
Every Sunday, 6pm, Student Center Rm 443.

MIT Club Notes

Classical Guitar Society**
Concert guitarist **Hugh Geoghegan** is available for private instruction for intermediate and advanced students. Call Vo Ta Han, 661-0297.

Baker House SPAZ Jogging Club**
Daily, 10:45pm, Baker 2nd Floor West.

Hobby Shop**
Open weekdays, 10am-4:30pm, duPont Gym basement. Fee: students, \$6/term or \$10/year; community, \$15/year. Call X4343.

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

Soaring Association**
First and third Mondays every month. 7:30pm, Student Center Rm 473.

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

Events of Special Interest

Commencement 1972

Thursday, June 1

11am
Kresge
Commissioning Exercises
Address by Brigadier General Charles D. Daniel, nuclear physicist, director of Army research in Washington, D.C.

2pm
Kresge
Convocation
Address by Chancellor Paul E. Gray

8:30pm
Student Center
Commencement Eve Celebration
Entertainment and refreshments for the Class of 1972, their families, and faculty members

Friday, June 2

Rockwell Cage
Commencement Exercises
Commencement address by President Jerome B. Wiesner

9:30am
10am
Doors open
Musical Prelude
Academic Procession

10:30am
12n
Great Court
President's Luncheon
Donald F. Carpenter, '22, will speak on behalf of the 50-year reunion class, and Sandra Wiener, '72, will respond for the Class of 1972.

Alumni Days--Toward the Year 2000

Sunday, June 4

5pm
Sala de Puerto Rico
Buffet dinner

8:30pm
Tech Night at the Pops
Arthur Fiedler conducting at Boston Symphony Hall

Monday, June 5

9:15am
Kresge
Astronaut David R. Scott will narrate a film on the Apollo 15 flight and discuss the future of space exploration

10:45am
Kresge
Secor D. Browne, chairman of the federal Civil Aeronautics Board and former MIT professor, will discuss the future of commercial aviation

12n
Rockwell Cage
Alumni Days Luncheon
Address by President Jerome B. Wiesner and gift reports from reunion classes

2:15pm
Kresge
Professor Philip Morrison of physics will discuss the nature of the universe

3pm
Kresge
Professor Jay Forrester of management will discuss world dynamics

3:45pm
Kresge
Dr. Robert W. Mann, Germeshausen Professor in mechanical engineering, will discuss technology and medicine

4:15pm
Kresge
Institute Professor Paul A. Samuelson will speak on the mechanisms of social change

5pm
duPont Center
Alumni Days Party

Goldblith Named to Food-Science Chair

Fulbright-Hays Awards Available

(Continued from page 1)

dividuals were secured jointly by efforts of the Underwood Company, MIT and a national sponsoring committee. George C. Seybolt, President and Trustee of the Wm. Underwood Co., which is commemorating its 150th anniversary, also spoke on the occasion of the chair's announcement. Mr. Seybolt is a member of the national sponsoring committee.

"I am enormously pleased to have played a part in the establishment of this important Professorship," Mr. Seybolt said. "It repays, in some measure, the debt that we all owe, both to the two men for whom the chair is named, and to the Massachusetts Institute of Technology for laying the scientific foundation upon which our industry stands. We are proud of our long and productive association with MIT."

Working together, Underwood and Prescott proved that bacteria were the cause of spoilage in certain canned foods. They identified the bacteria, and

developed time and temperature relationships that could be used to destroy the bacteria.

Dr. Samuel A. Goldblith, first incumbent of the Underwood-Prescott Professorship of Food Science, received his Ph.D. degree from MIT in 1949. In his undergraduate days he studied under Dr. Prescott. Starting as a research assistant in 1949, he rose to professor of food science and executive officer of the department at MIT by 1961. In 1967 he was appointed deputy department head.

Professor Goldblith is one of the outstanding food scientists in the United States and has been working primarily on new methods of food preservation. He is a consultant to firms in the food industry and an advisor to numerous agencies of government, including the Atomic Energy Commission, National Institutes of Health, US Army Quartermaster Corps and presidential advisory committees. He has served for many years as a member and chairman of several committees of the National Academy of Sciences.

Among the honors he has received are the Babcock-Hart Award, and the Distinguished Food Scientist Award of the New York Section of the Institute of Food Technologists, both of which were presented to him in 1969. In 1970, Professor Goldblith received the Nicholas Appert Award of the Institute of Food Technologists for preeminence in the contributions to the field of food technology.

From 1958 to 1959 Professor Goldblith served as president of Phi Tau Sigma, the National Honorary Food Science Society. He also was president of the New Century Club from 1962 to 1963.

Professor Goldblith is a member of numerous scientific societies, including the Institute of Food Technologists, the American Institute of Nutrition, and the International Institute of Refrigeration. He is author or co-author of over 170 articles in scientific journals and the editor or co-editor of "Milestones in Nutrition," "Exploration in Future Food Processing Techniques," and "Introduction to Thermal Processing of Foods." He has

served extensively as scientific editor and as a member of editorial advisory boards of a number of scientific and technical journals in food related fields.

Compton Lecture Speakers Sought

The Compton Lecture Committee is seeking suggestions and ideas from the community to aid in the selection of Compton Lecturers for the 1972-73 academic year.

Each year the Committee tries to present distinguished men and women whose fields of expertise are of interest to the MIT community. Generally an attempt is made to involve the lecturer in classes, informal seminars and living group dinners, as well as formal lectures, to encourage greater interaction within the community. Panel discussion rather than single lectures are also possible.

Members of the community are invited to send their suggestions to the Compton Lecture Committee, Room 7-202.

The Committee on International Exchange of Persons is now accepting applications for senior Fulbright-Hays awards for foreign university lecturing and advanced research during 1973-74.

A booklet describing the program is available in the Foreign Study Office, Room 10-303.

Application requirements include: US Citizenship; college or university teaching experience for lectureship applicants; a doctorate or recognized professional standing for research awards.

Senior Fulbright-Hays awards generally consist of a maintenance allowance in local currency to cover normal living costs of the grantee and family while abroad, and roundtrip travel for the grantee (transportation is not provided for dependents). For lecturers going to most non-European countries, the award includes a dollar supplement, or carries a stipend in dollars and foreign currency--the amount depends on the assignment, the lecturer's qualifications, salary and other factors.

Massachusetts Institute
of Technology

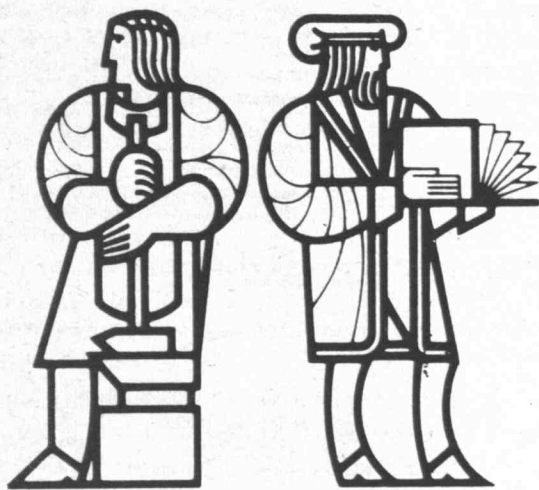
Remarks to the Faculty on Budgetary Prospects for the Next Three Years

by Paul E. Gray, Chancellor

Remarks to the Faculty on Research Trends and Outlook

by Walter A. Rosenblith, Provost

Special Supplement



The two reports contained in this supplement were presented to the 1972 annual meeting of the MIT faculty. Dr. Gray's report was given on May 17 during the first session of the meeting. Dr. Rosenblith's report was delivered during the second session of the meeting on May 24.

Budgetary Prospects For The Next Three Years

Introduction

At the December 1971 meeting of this faculty I reported on the efforts in which the President and I were engaged with respect to the operating budget of the Institute. As part of that presentation I described three principal objectives which we had set for these efforts. They were:

1. To reduce the operating budget gap.
2. To reduce the total need for unrestricted funds in operations to levels within the limits of anticipated unrestricted gift income.
3. To reverse, or at least moderate, the growth of indirect cost rates.

I also indicated that we hoped to develop our understanding and control of these matters to such degree that it would be possible for us, in future years, to devote a smaller fraction of our energies to budgetary matters than has been necessary during this first year.

My purpose today is to report to the faculty once again on these matters, putting particular emphasis on the now firm budgetary outlook for the 1973 fiscal year.

The MIT Operating Budget

The annual over-all operating budget of the Institute has, in recent years, been in the range of \$220 million. This includes the cost of the academic programs, the direct costs of sponsored research activities on the campus, at the Lincoln Laboratory, and in the independent division—the Charles Stark Draper Laboratory—as well as the cost of administrative services and plant operations which support all of these activities. If one sets aside the direct expenses and associated revenues of sponsored research on campus, at Lincoln, and at Draper, the remaining expense and income factors comprise the *Educational and General Operating Budget*. It is this budget, which amounts to about \$73 million in the current (1972) fiscal year, that I wish to emphasize.

On the *expense* side, the Educational and Operating Budget has five principal components, as shown in *Figure 1*. In comparing the relative sizes of these components it is important to recognize that the General and Administrative and Physical Plant Expenses support not only the academic program but the sponsored research activities, the direct costs of which do *not* appear in this budget.

FIGURE 1

EDUCATIONAL AND GENERAL OPERATING BUDGET FY '72 (as of April '72)	
Expense Components	
Academic Programs (five schools plus libraries)	\$31.5 million
General and Administrative Expenses	17.1
Student-Related G & A Expenses	3.9
Physical Plant	13.3
Auxiliary Services (MIT Press, Housing and Dining)	7.2
Total Expenses	\$73.1

The five principal components of *income* are shown in *Figure 2*.

It is clear from the two tables just presented that the Educational and General Operating Budget is not in balance. The imbalance in FY72 is, at present, about \$4.8 million. This imbalance is subject to adjustments of two kinds:

1. *Increases* associated with one-time or irregular operating costs (such as the Centrex installation now under way, the MIT Commission, Upward Bound), or with foregone income, such as the tuition income loss associated with Federal fellows.
2. *Reductions* associated with budgeted but unexpended salaries and expenses, use of facilities charges,

and investment income from special or separately-invested funds.

For FY72 the net effect of these adjustments is to reduce the over-all operating imbalance to \$3.7 million.

FIGURE 2

EDUCATIONAL AND GENERAL OPERATING BUDGET FY '72 (as of April '72)	
Income Components	
Tuition	\$22.3 million
Endowment Income (General)	6.0
Other Investment Income and Funds	10.6
Contract Allowances for Indirect Costs	22.3
Auxiliary Services	7.2
Total Revenues and Funds	\$68.3

Finally, it is necessary to recognize two other quasi-operating recurring expenses. These are the supplementation of undergraduate scholarship funds and the subsidization of interest foregone in connection with advances for the construction of academic facilities and the use of investment real estate for academic purposes. In FY72 these items amount to \$150 thousand and \$780 thousand respectively.

Consequently, the total imbalance in MIT operations is for the current fiscal year projected at the present time to be approximately \$4.6 million. This imbalance, which I will refer to as the *total demand for unrestricted funds required in operations*, is shown in comparison with the actual FY71 imbalance and the presently projected FY73 imbalance in *Figure 3*. The changes during FY72 and from FY72 to FY73 represent the results of our budget reduction efforts this year, and I must say more about the nature and causes of these decreases.

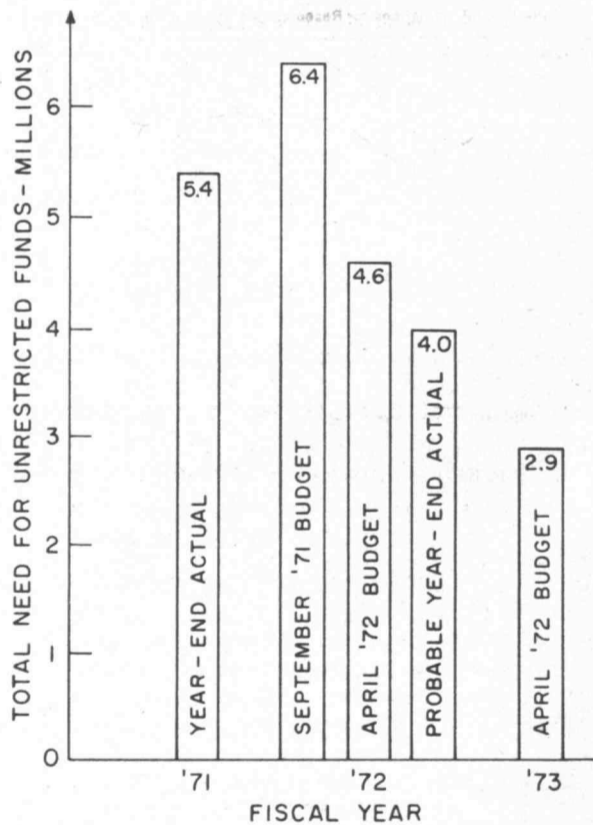


FIGURE 3

First, however, some comment on the way in which the imbalances shown in *Figure 3* are covered is necessary. Each year the Institute receives through patent royalties, through contract allowances for use of facilities, and through gifts from individuals a substantial amount of unrestricted income. Although these receipts are subject to large fluctuations and are difficult to predict with accuracy, we are using a figure of \$3.5 to \$4.0 million for budget purposes. Thus, if these unrestricted revenues and gifts are used primarily for operational purposes it now appears that there will be a small excess need in FY72 and no such unfavorable

imbalance in FY73. The fact that unrestricted revenues and gift income suffice to cover the operating deficit is not, in itself, cause for rejoicing. Such funds, which are the most difficult to raise, have in the past been used to complete the funding of capital projects, to renovate dormitories, to start new academic enterprises, to increase the endowment funds of the Institute, and for other non-operational purposes. It seems to me to be essential for us to keep these important needs in mind and to strive to bring the operating budget more nearly into balance so that these unrestricted resources need not be committed overwhelmingly to operational needs, as they are during the current year.

Changes During the 1971-1972 Year

I turn now to the principal budgetary changes that have occurred during the year, focusing first on the changes that influence the FY72 budget. You will recall from *Figure 3* that the total need for unrestricted funds dropped from \$6.4 to \$4.6 million during the budget year. The principal causes of this reduction of \$1.8 million are shown in *Figure 4*.

FIGURE 4

FACTORS INFLUENCING THE TOTAL NEED FOR UNRESTRICTED FUNDS: SEPT. '71 TO APRIL '72 (millions)

Net increase in operating expenses (Increases in employee benefits, IPC deficit, miscellaneous offset by impact in '72 of budget reductions for '73.)	+ \$ 0.2
Increases in Revenues (25% increase in investment income distribution, smaller drop in enrollment than forecast)	- 1.1
Increases in Contract Allowances (Recovery on increased costs, research volume increase, and improvements in recovery formulas as a result of 1970 negotiations)	- 0.9
Net reductions in total need for unrestricted funds	- \$ 1.8

Changes From FY72 to FY73

The total demand for unrestricted funds in operations is presently projected to decrease in FY73 by about \$1.7 million which is in addition to the \$1.8 million decrease described in the previous section (see *Figure 3*). The principal components of this change are shown in *Figure 5*.

FIGURE 5

FACTORS INFLUENCING THE TOTAL NEED FOR UNRESTRICTED FUNDS: FY '72 TO FY '73 (millions)

Increases in operating expenses	
Salary and wage increases	\$ 1.3
New academic programs	0.4
Increased plant costs	0.3
Increased employee benefits	0.2
Loss of fund support	0.4
	+ \$ 2.6
Budget reductions	
Gross reductions	3.4
Less I. C. Recovery	1.3
	- \$ 2.1
Increases in Revenues and Allowances	
Tuition increase (\$2900)	1.5
Contract allowances	0.3
Reduction in cost sharing, etc.	0.4
	- \$ 2.2
Net reduction in total need for unrestricted funds	- \$ 1.7

A major factor in the changes for FY73 is the impact of budget reductions. Since almost every one of you committed effort and anguish, if not some blood, to making those reductions, some further comment is appropriate. The details for FY73, with the last two years for comparison purposes, are shown in *Figure 6*. Two points should be noted.

FIGURE 6

BUDGET REDUCTIONS
FY '71, '72, '73
(thousands)

Year and Area	Actual Reduction	Non-controllable Increases	Effective Reduction
FY '71			
Academic	610	—	610
G & A	1,290	660	630
Plant	350	110	240
	2,250	770	1,480
FY '72			
Academic	620	—	620
G & A	640	380	260
Plant	300	570	(270)
	1,560	950	610
FY '73			
Academic	830	—	830
G & A	1,860	30	1,830
Plant	730	—	730
	3,420	30	3,390

1. The budget reductions for next year are larger, by about a factor of two, than the reductions achieved in either of the previous years (there were no efforts at budget cutting prior to FY71).
2. For next year the impact of the reductions is largest in the G & A (10%) and plant areas (6%). In the academic area the reduction is about 4%. However, the addition of nearly \$400 thousand in new program money to the academic budgets reduces the net impact, in over-all terms, to about 2%.

Although it is not apparent in these figures, the budget reduction efforts have had an important effect on indirect cost rates as well. The \$1.3 million saving in costs allocable to recovery via overhead amounts to an offset of about 6% in contract allowances. This is equivalent to about 2 points on the indirect cost rate for on-campus sponsored research. Of course, this effect is obscured somewhat by the increase in research volume which is now occurring.

The Outlook for the Future

Even though the three objectives of which I spoke at the outset of these remarks have been achieved, there remain several areas of budgetary concern for the years just ahead.

The most significant future concern relates to the fiscal impact of the divestment of the Draper Laboratory. Although the timing of the delicate and detailed discussions that must precede that event is such that divestment is almost certainly not possible in FY73, it now appears probable for the following year. Furthermore, divestment is likely to have an impact on the total need for unrestricted funds in operations of at least \$1.0 to \$1.5 million as a consequence of both a reduction in the share of G & A and Plant costs covered by contract allowances and a transient underrecovery of indirect costs

from other research sponsors—an under-recovery caused by the discontinuity in on-campus indirect cost rates.

A second factor of significance for the future relates to the apparent need for continued budget reduction efforts if the imbalance in the operating budget is to be kept within reasonable bounds. The hard fact is that salary and wage increases, even at the modest level of 4% to 5% per year, other inflationary cost increases, the inevitable losses of fund support, and small allocations for new programs put an upward pressure on the operating budget of about \$2.5 million per year. Annual tuition increases, even at the 4% or 5% level, foreseeable growth in endowment income, and in contract allowances develop an offset of only about \$1.4 million per year. The difference, amounting to more than \$1 million per year must be made up either by continued annual budget reduction efforts or by developing new sources and forms of income.

As a consequence of these two considerations and other related uncertainties, it seems likely that budgetary matters will continue to occupy a significant fraction of our time and energy in the next year or two. Hopefully, however, that fraction will certainly be less than in the current year.

Research Trends and Outlook

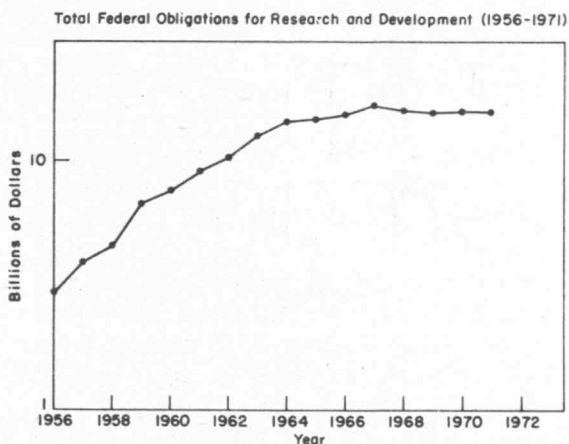
I would like to give you a look at the data on research trends that have been accumulated by our Division of Sponsored Research, the Office of the Comptroller, and Vice President for Fiscal and Governmental Relations. I will have to limit myself in view of both time and presentation opportunities mainly to a quantitative discussion. There are many qualitative aspects of the trends that I shall report that deserve further discussion. I stand ready to discuss these matters in faculty meetings or with a specifically interested subset of the faculty.

Let me start out by showing a few figures which depict the way in which the federal obligations for R&D have evolved over the last 20 years. These figures provide a context in which we can look at what happened at MIT during the last two decades; we shall focus mainly on the last three years and the kind of projections we can make for the current year and for even next year.

Finally I would like to talk very briefly to you about the question of federal support for graduate fellowships because that is one of the major crisis situations that we face at this time.

I must warn you that the dollar figures that you will see are "nominal" dollars. There are many "deflating" formulas none of which seems particularly appropriate for R&D; thus it is important that each of you use your own private "deflater" since we must not take these nominal dollars at face value.

Figure 1 shows total federal obligations for R&D for the 15 years from 1956 to 1971. It is important to realize that these obligations flattened out in the middle '60s and the slope in nominal dollars was flat if not a little negative in the late '60s. If you further "normalize" these numbers, then you realize that we have actu-



ally been in a situation (as everyone in the country knew) in which the dollars actually available for research for increasing numbers of scientists have been less and not more from year to year.



Figure 2, in contrast to the last one, deals with Research only; Development has been left out. Obligations for research exhibit an upturn in the current period.

Figures 3 and 4 show the amount of research funded by each of the federal agencies over the same period. Figure 3 shows DOD, NASA, and AEC; Figure 4, HEW, NSF, and all other federal agencies.

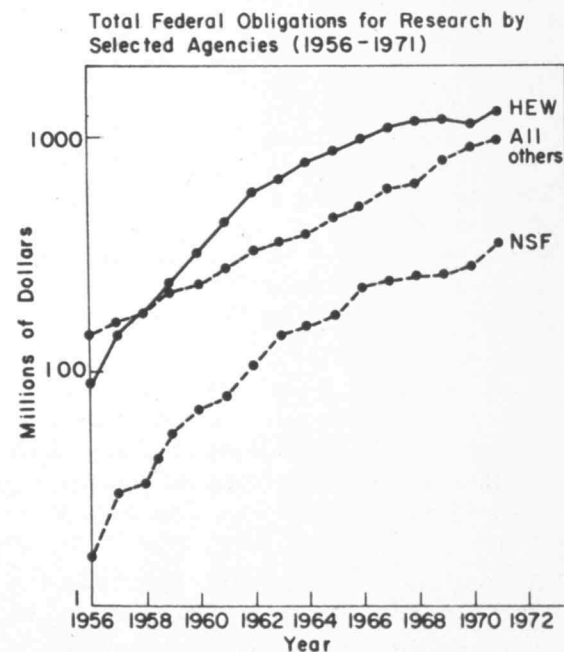
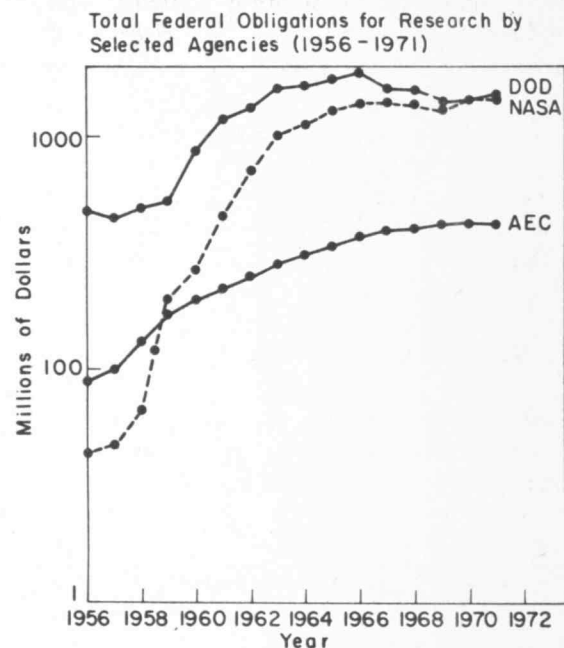
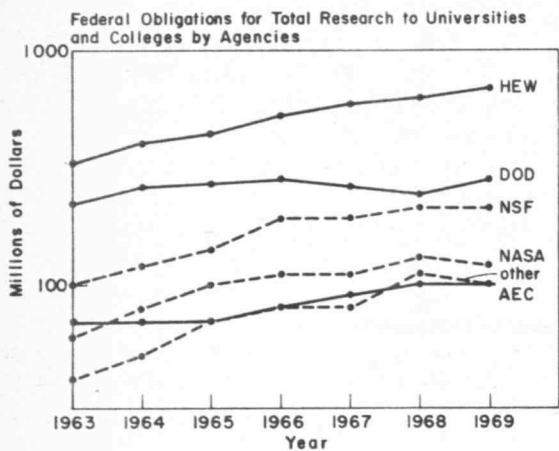
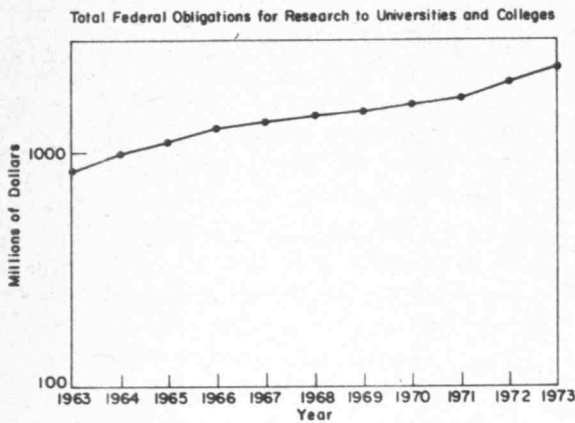
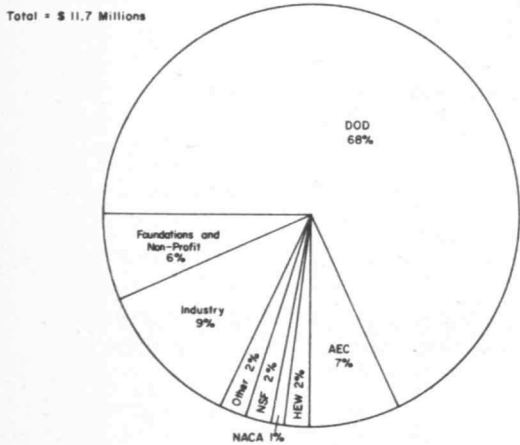


Figure 5 shows how much of the federal research budget goes to universities and colleges. Again, you will notice the positive change to a positive slope in the early '70s. Figure 6 shows the part of the total federal research budget for universities that is contributed by the major federal agencies.



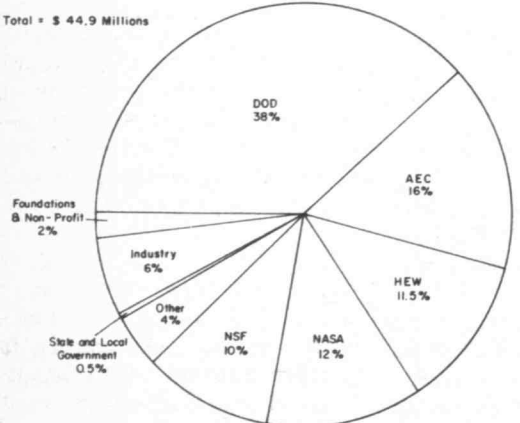
If we now turn to the MIT campus in the year 1956, the total amount of research funds was \$11.7 million. In 1956, 68 percent of these funds came from DOD, seven percent from AEC, two percent from HEW, one percent from NACA (as it was called at the time), two percent from NSF, two percent from other agencies, nine percent from industry and six percent from foundations and non-profit organizations.

M.I.T. Sponsored Research (1956)



The pie-slice labeled "industry" represents only a small part of the support which industry extends to MIT; in addition there is the Industrial Liaison Program, annual gifts, etc. This aspect of research funding deserves a thorough discussion which we should be able to undertake in the fall.

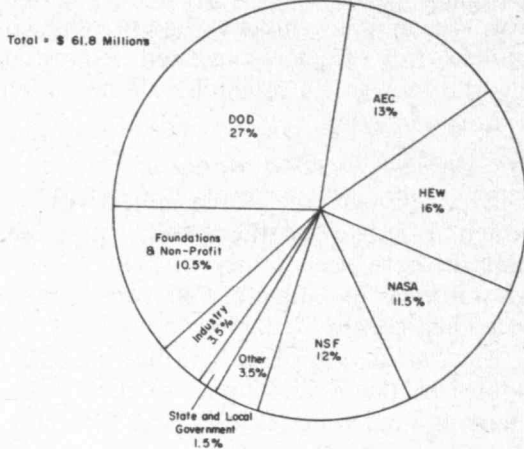
M.I.T. Sponsored Research (1966)



Turning to the year 1966, MIT's total research on campus (Figure 8) amounted to about \$45 million, with DOD at 38

percent, AEC at 16 percent, HEW at 11.5 percent, NASA at 12 percent, NSF at ten percent, all other federal agencies at four percent, state and local government at .5 percent, industry at six percent, foundations and non-profit organizations at two percent.

M.I.T. Sponsored Research (1971)



In 1971 the over-all amount was about \$62 million of nominal dollars (Figure 9). Twenty-seven percent of these dollars came from DOD, 13 percent from AEC, 16 percent from HEW, 11.5 percent from NASA, 12 percent from NSF, 3.5 percent from all other agencies, 1.5 percent from state and local government, 3.5 percent from industry and 10.5 percent from foundations and non-profit organizations.

M.I.T. Sponsored Research (1973)

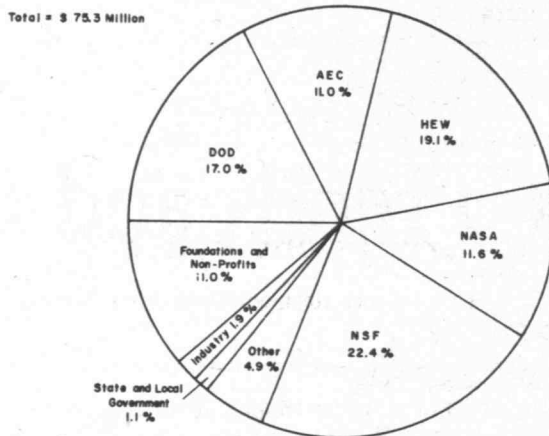


Figure 10 illustrates the best forecast extant for the fiscal year 1973. The total volume of research on the campus is estimated to be \$75 million. Of that 17 percent will come from DOD, 11 percent from AEC, 19.1 percent from HEW, 11.6 percent from NASA, 22.4 percent from NSF, 4.9 percent from all other federal agencies, 1.1 percent from state and local governments, 1.9 percent from industry and 11 percent from foundations and non-profit organizations.

Over the recent years (from 1968-69 to 1972-73) there has been considerable interest in the percentage of support which DOD and other federal agencies have provided for the MIT campus. These percentages are shown in Figure 11.

PERCENT OF TOTAL RESEARCH FUNDING

Source	1969	1970	1971	1972	1973
DOD	30	28	27	22	17
AEC	17	15	13	10	11
NASA	11	11	13	16	12
Other Federal	30	31	31	36	46
OTHER	12	15	16	16	14
Total	100%	100%	100%	100%	100%

The total nominal dollars for these years are respectively \$56 million, \$58 million, \$61.7 million, \$70 million and \$75.3 million forecast for next year, that is 1972-73.

These are the facts about support for research. Some questions which arise are "Where does this money go?" and "What does it pay for?"

The total research volume of the campus is roughly half of the total campus budget. Ten percent of that money during fiscal '71 went for faculty support, ten percent for graduate student support, 30 percent for other salaries, five percent for employee benefits, 30 percent for operational expenses and 20 percent for overhead (as a percentage of the total research support).

If we examine the distribution of research support among schools and laboratories, the forecast for the next year shows the following: for the School of Architecture and Planning, \$1.2 million out of a total of \$75.3 million; for the School of Engineering, \$15 million; for the School of Humanities and Social Sciences, \$1.8 million; for the School of Science, \$18 million; finally the interdepartmental laboratories are supported to the extent of \$38 million. In other words, the interdepartmental laboratories bring in more than 50 percent of all the campus research volume.

We have not discussed the qualitative implications of these trends. It is very difficult right now to get figures that help us understand how much of our research is related to urban affairs, the environment, life and health sciences, etc.; there is a great deal of definitional overlap.

However, there is one area where the figures do not allow us to be optimistic and that is in the area of federal awards to MIT graduate students. In 1956 the total number of graduate student awards was 64. In 1961 it was 195. In 1966 it was 488. In 1968-69, it reached its peak with 600 of which 396 came from NSF, 137 from NDEA, seven from HUD, 36 from AEC. In 1969-70, the number fell to 533; in 1971-72 to 436. For 1972-73 the estimate is roughly 300, despite the fact that more first year NSF Fellowship holders have chosen MIT—more than 14 percent—than any other institution in the country; and in spite of the fact that one department, the Department of Economics, has attracted 50 percent of all the first year NSF Fellowship students in economics. Out of the total of about 300, there are some 200-odd from NSF, 56 from NDEA, none from NASA, none from HUD, 14 from AEC; the 227 NIH traineeships are reported in the research volume figure rather than here.

In order to keep this presentation brief, I have not discussed support for post-doctoral students, or many other aspects of research funding. I hope there will be enough interest to pursue this discussion at a later date.



Outing Club*
Every Monday, Thursday, 5pm, Student Center Rm 473.

MIT/DL Duplicate Bridge Club**
Every Tuesday, 6pm, Lobdell.

Fencing Club**
Every Tuesday, 6-9pm, duPont Fencing Rm.

Glee Club**
Every Tuesday, Wednesday, Thursday, 5-6:30pm, Kresge. New members, especially tenors, welcome. Call Cyril Draffin, 247-8691.

Classical Guitar Society**
Classical guitar classes, group or private. Every Tuesday and Thursday, 5-8pm, Rms 1-132, 1-134, 1-136. Anyone interested in lessons, call Vo Ta Han, 661-0297.

Rugby Club
Practice. Every Tuesday and Thursday, 5pm, Briggs Field.

Urban Vehicle Design Competition
Volunteer meetings. Every Wednesday, 3pm, Rm E40-250.

Nautical Association**
Basic Sailing Shore School, repeated every Wednesday throughout the summer, 5:15pm, Sailing Pavilion. Non-members welcome.

Table Tennis Club***
Practice session, every Wednesday, 7:30-10:30pm, T-Club Lounge, duPont.

Science Fiction Society*
Every Friday, 5pm, Student Center Rm 421.

Student Homophile League*
Meeting and mixer meets Fridays 7:30pm, Mission Church, 33 Bowdoin St., Boston. For gay help (anonymous) at MIT, call the student gay tutor, 492-7871 anytime.

ACBL Duplicate Bridge*†
Bridge Club. Every Saturday, 1:30pm, Student Center Rm 473. Members, free; non-members, 75 cents.

Chess Club**
Every Saturday and Sunday, 1:30-5:30pm, Student Center Rm 491.

Social Events

Muddy Charles Pub**
Join your friends at the Muddy Charles Pub, 110 Walker, daily 11:30am-7:30pm. Call X2158.

Friday Afternoon Club**
Music, conversation and all the cold draft Budweiser you can drink. Every Friday, 5:30pm, Ashdown basement Games Rm. Admission: men \$1, women 50 cents. Must be over 21.

Movies

An American Tragedy*
Film Society. Monday, June 5, 8pm, Rm 10-250. Tickets 1.

Dance

Folk Dance Club*
International folk dancing. Every Sunday, 7:30-11pm, Sala de Puerto Rico (exceptions to be posted).

Modern Dance Technique Class**
Elementary/Intermediate. Every Monday, Wednesday, Friday, 5:15pm. Every Sunday, 1pm. McCormick Gym.

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

Tech Squares*
Every Tuesday, 8-11pm, Rm 10-105. Call dorm X0888 or 492-5453.

Folk Dance Club*
Israeli folk dancing. Every Thursday, 7:30-10pm, duPont Gym T-Club Lounge.

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

Exhibitions

Creative Photography Gallery*
Special exhibit of work done by undergraduate students who took photography courses this year. Daily, 10am-7pm, through June 2.

Retrospect II--from William Barton Rogers to Karl Taylor Compton*
Collection of historical portraits, busts and photographs depicting the first 11 presidents of MIT, early scientific and engineering achievements as well as portrayals of everyday life from 1861-1941. Sponsored by the Committee for Institute Memorabilia. Hayden Gallery.

Faculty Club Exhibit
Exhibition of paintings, drawings, etchings by Ruth Boyce, Faculty Club through June 1.

Autographed Music Scores
Exhibition of autographed musical scores in honor of Klaus Liepmann and the Choral Society. Music Library (Rm 14E-109) through the summer.

Hart Nautical Museum*
Exhibits include "Naval Undersea Research and Development Center," and "The Art of Rigging." Bldg 5, first floor.

Religious Services and Activities

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

Roman Catholic Mass*
Sunday, June 4, 9:15am and 12:15pm only, Chapel. (Note: beginning Sunday, June 11, only one mass will be held, at 10:30am, in the Chapel.)

Christian Worship Service*
Every Sunday, 11am, Chapel.

Hillel Religious Services*
Monday-Friday, 8am, Rm 7-102; Fridays, 7:30pm, Chapel;

Saturdays, 9:30am, Chapel.

Divine Light Mission*
Discourses on the direct experience of Truth given by Guru Maharaj Ji. Every Monday, Wednesday, Friday, 7:30pm, Rm 4-145. Call 369-1603 (Concord).

Ananda Marga Yoga Society*
Group meditations. Every Tuesday, 5pm, Rm 14E-303. For information, call X3664.

Christian Science Organization*
Meeting includes testimony of healings. Every Tuesday, 7:15pm, Rm 8-314.

Latter Day Saints Student Association**
Religious seminars. Every Tuesday, 8am, Student Center Rm 473.

Christian Bible Discussion Groups*
Every Wednesday, 12:30pm, Rm 4-343; every Thursday, 12:30pm, Rm 20B-222. Call Prof. Schimmel, X6739, or Ralph Burgess, X2415.

Christians for Dinner*
United Christian Fellowship. Every Thursday, 6-7pm, Walker Dining Hall (under sign of the fish).

Praying, Singing, Sharing Meeting*
United Christian Fellowship. Every Thursday, 7-8pm, East Campus Lounge.

Islamic Society Prayers*
Every Friday, 1pm, Kresge Rehearsal Rm B.

Vedanta Services*
Every Friday, 5:15pm, Chapel; discussion hour, 6pm, Ashdown Dining Hall.

Islamic Society Discussion*
Isha prayers followed by discussion of various aspects of the Islamic way of life. Every Friday, 7:30pm, Student Center Rm 473. Coffee and doughnuts served.

Free Draft Counselling*
Hillel, 312 Memorial Drive, X2982. Call or visit 10am-5pm.

Announcements

KLH Day Care Center Fair*
Food, games, craft tables. Sunday, June 4, 12n-6pm, Cambridge Common.

Society of Sigma Xi
Membership certificates for those initiated this year have arrived. Please pick up your certificate from Professor Garg, Rm 3-453, X6234.

MIT Employees for Peace and the MIT Strike Information Center are moving to Room 7-106, Ext. 1984, for the summer.

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

Send notices for June 7 through June 16 to the Calendar Editor, Room 5-111, Ext. 3279, by noon Friday, June 2.

Faculty Hears Reports as Annual Meeting Ends

(Continued from page 1)
chairman of the Committee on Educational Policy, announced that the CEP has unanimously concluded that it should authorize continuation of three experimental programs in undergraduate education for the coming year. They are the Experimental Study Group and the Unified Science Study Program, now in the third year of three-year terms and Concourse now in the first year of a two-year term.

In a statement on experimental programs, the CEP said: "The programs have accomplished the following; (a) They have provided information of great value concerning a variety of experimental modes of undergraduate education. (b) They have provided freshmen with alternatives to the regular program; these alternatives have been valuable as options in their own right, quite apart from experimental purposes. (c) They have provided foci of interest, activity, and support for members of the community. We also believe that MIT owes a deep debt of gratitude to those who have initiated them and participated in them."

A report on the Harvard-MIT Joint Program in Health Sciences followed. Professor Vernon Ingram, chairman of the program's committee, summarized the progress that has been made during the period 1971-72. First, it has been proposed that MIT establish a "Division" of health sciences, technology and management, etc., and that in the future the Joint Harvard-MIT Program at MIT be a subset of the activities of such a Division.

With regard to academic programs, the principal achievement in 1971-72 has been the development of a curriculum leading to the M.D. degree. In addition, subject offerings of the program now include some 15 in bioengineering, 18 in the new M.D. degree program, and three new subjects in the related area of health care planning and management.

Provost Walter A. Rosenblith commented, "Two years ago when this faculty voted on a joint program in Harvard-MIT health sciences and technology, we talked about a joint program with a future orientation toward a joint school. At that time the program was

composed of education, research, development and health care. The intellectual vision that we had in mind two years ago is today very much truncated. But on the other hand, there is a great deal of development possible."

Dr. Irving London, director of the Joint Program, presented a status report on the program and discussed some of the problems facing it. He said, "Trying to bring new sciences and new disciplines to medical education creates very real intellectual problems, quite apart from any institutional problems. One can best judge this kind of process by realizing that it must be evolutionary in character and that it's going to take time."

President Wiesner commented on the question of how to integrate people with interests in medicine and people with interests in engineering or physical sciences. He said, "This represents one of the most serious questions of how you get collaborative work going in areas where working styles, educational backgrounds and philosophies are quite different and where you have to develop common language and respect for each other."

The faculty also heard a report of the Faculty Committee on High Accuracy MIRV by Professor George Rathjens, who succeeded Professor Solowas, chairman of the committee. Professor Rathjens reviewed the three questions that the committee has been asked to consider: (1) Can a case be made that high accuracy MIRVs are destabilizing or not? (2) Are there other weapons systems foreseeable in the near future which present a similar hazard? (3) Are there actions which the faculty should take in this matter in the national interest?

Professor Rathjens said that the committee plans to report back to the faculty in October and that "We are going to present the most complete statement we can, but I do not think it will be entirely responsive to what was hoped for."

Following Dr. Rosenblith's report on research trends and outlook, President Wiesner ended the meeting with year-end remarks which he had to shorten substantially because of the late hour. His principal comment to the faculty was about the "tenure problem." Following two decades of continuous growth in numbers of

faculty -- some years as high as eight percent -- the recent budget stringencies have led to a decrease in the total number by about 40 (out of a total of 900). This lack of growth, or decrease, has resulted in attrition at the junior levels. Dr. Wiesner said he was very much concerned about this trend. At the present time, the faculty is 58% tenured. If we continue at the present level of total faculty, and if promotions to tenure are made at the level of 25 (following the pattern of the past three years) then with the present age-profile of the faculty the fraction of tenured faculty will go up to 70% in six years. This will further accentuate the problem of adequate room for junior faculty. President Wiesner said that the problem has not been resolved but that serious efforts are being made now to find ways to expand the Institute's summer program, to raise new endowment funds, and to find support for younger members of the faculty. These efforts, if successful, would permit a continued modest growth of the faculty. Dr. Wiesner concluded by asking for the faculty's understanding and support for these efforts and inviting new ideas.

Thirteen Named to Faculty

Thirteen new appointments to the faculty have been announced recently, including one full professor, three associate professors and nine assistant professors.

Dr. John Fisher Kennedy has been appointed professor in the Department of Civil Engineering beginning July 1, 1973. He is returning to the Institute, where he was assistant professor and later associate professor from 1961 to 1966. He left MIT in 1966 to become director of the Institute of Hydraulic Research at the University of Iowa. Professor Kennedy will succeed Institute Professor Arthur T. Ippen as director of the Ralph M. Parsons Laboratory for Water Resources and Hydrodynamics.

Dr. Ignacio Rodriguez-Iturbe of (188 Barbara Road) Waltham, a visiting associate professor at the Institute, has been appointed associate professor in the Depart-

ment of Civil Engineering.

Dr. Lotte Bailyn of (3 Hurlburt Street) Cambridge, a research associate and senior lecturer in management since 1969, has been appointed associate professor in the Sloan School of Management.

Dr. Karen R. Polenske of (84 Prescott Street) Cambridge, a research associate in the Department of Economics at Harvard University since 1966, has been appointed associate professor in the Department of Urban Studies and Planning.

Martin N. Baily, presently in Nairobi conducting research at the Institute of Development Studies, is completing requirements for the Ph.D. degree at the Institute and has been appointed assistant professor in the Department of Economics.

Dr. Susan C. Block of (64 Lenaeon Street) Cambridge, a 1971 graduate of Harvard and an instructor at MIT during 1971, has

been appointed assistant professor in the Department of Psychology.

Dr. Barbara H. Liskov of (111 Lincoln Street) Waltham, a member of the technical staff of MITRE Corporation, has been appointed assistant professor in the Department of Electrical Engineering.

Dr. Vaughn R. Pratt of (919 Clara Drive) Palo Alto, California, received the Ph.D. degree in computer science from Stanford University in 1971 and has been appointed assistant professor in the Department of Electrical Engineering.

Dr. David W. Smith, a member of the philosophy department at Indiana University in Bloomington, has been appointed assistant professor in the Department of Philosophy.

Dr. Christopher Boehm of (94 Tremont Street) Cambridge has been promoted from instructor to assistant professor in the Department of Humanities.

Paul L. Joskow, presently completing requirements for the Ph.D. degree at Yale University, has been appointed assistant professor in the Department of Economics.

William C. Wheaton, who is completing doctoral study in planning at the University of Pennsylvania, has been appointed assistant professor in the Department of Economics and the Department of Urban Studies and Planning.

The above appointments, with the exception of Professor Kennedy, will begin on July 1.

In addition, Dr. Richard G. Donnelly of (60 Wadsworth Street) Cambridge, was appointed assistant professor of chemical engineering effective April 5. He received the Sc.D. degree and was appointed a research associate at the Institute in March of this year.

Apollo Still Satisfying for Unused Astronaut

(The following story, written by Don Kirkman of Scripps-Howard, appeared May 8 in the Washington, D.C., Daily News.)

His second year was spent adding 400 hours of flight time and helping NASA test the scientific stations the Apollo astronauts deploy on the moon.

Tony finally got to participate in an Apollo moon flight in 1969 and 1970 as the science advisor to the ill-starred Apollo 13 flight, the mission that barely escaped disaster when the spaceship's oxygen tanks exploded.

So the hundreds of hours Tony devoted to coaching the Apollo 13 astronauts on their geological tasks on the lunar surface was wasted when the crippled spaceship was unable to land.

"I didn't care about that," he said. "The fact that the guys got back safely was the important thing. We got to be very close during the training and I sweated out every minute until they got down safely."

The biggest shock of Tony's career in NASA came shortly after the 1970 Apollo 13 flight. Rumors that NASA was planning to cancel the last three Apollo flights—Apollos 18, 19 and 20—turned out to be true. And Tony's hopes of walking on the moon went up in smoke.

MIT's Dopfel Named Greater Boston MVP

Al Dopfel, the fireballing right-hander who pitched the first no-hitter in MIT history earlier this spring, was named the most valuable player of the Greater Boston Collegiate Baseball League last week.

Dopfel, a 6-0, 175-pound native of Brockton, won two and lost two in GBL play this season, while posting a 0.40 earned run average and striking out 71 batters in 45 innings.

"I'm really thrilled," the pitcher-outfielder told local reporters following the awards dinner at Boston University on May 25. "It means even more because the competition in the league was very keen. Every team in the league had some outstanding players. I'm just very honored."

Dopfel's overall season statistics were even more impressive than his GBL record. In 99 innings he struck out 146 with an earned run average of 0.64 in winning six games. In addition to his no-hitter

Travel News

A recent list of US hotels and motels offering an educational discount has been distributed to department administrative officers. Any member of the MIT community, traveling on Institute business, is eligible for these rates and should contact their administrative officer for further information.

against Brandeis, Dopfel hurled a one-hitter against Bates in which he set an MIT record with 19 strikeouts, and a two-hitter against Tufts.

When not on the pitcher's mound, Al played the outfield and devastated enemy hurlers. In 20 games this season he hit four home runs and drove in 26 while batting .308.

After playing every position except catcher in Little League, Dopfel gave up baseball until his senior year at Brockton High School, when he settled down to pitching and playing the outfield. His renewed enthusiasm continued at MIT, where he set four career records.

Dopfel, a management major, hopes to play professional baseball after his graduation on June 2, and has already spoken to 15 major league teams. "I think it will be easier to get a job in baseball than the business world," he said. "Jobs are scarce and I want to take a fling at baseball."



BEFORE AND AFTER: One campus beautification program is running into trouble because of light-fingered posy-pinchers. Flower tubs in the Great Court were first stocked this year for the Awards Convocation earlier this month. Within a very few days, only a few plants were left. The planters were replenished last week and virtually stripped again within two days. No one knows who is taking the flowers, but funds for replacements, and additional plantings, are limited. Unless the flower filching stops soon we may find ourselves wondering "Where have all the flowers gone?"

—Photos by Margo Foote



Group Recommends Smoking Limitations

A group of MIT administrators has recommended to President Jerome B. Wiesner that smoking be forbidden in classrooms and that restricted areas be set up for non-smokers in Lobdell and Walker Memorial dining rooms.

The recommendations came in response to a letter to President Wiesner from a group called ASH (for Action on Smoking and Health) which was accompanied by the signatures of some 300 members of the MIT community.

The letter requested Dr. Wiesner to ban smoking in classrooms, corridors and lobbies, and to provide restricted areas for smokers in other public areas such as faculty meeting sites, examination rooms and dining areas. It also asked that students in dormitories be given the choice of not rooming with smokers and that office workers be encouraged to minimize smoking when in the presence of non-smokers.

The administrative group was called together by Dean for Institute Relations Benson E. Snyder and included Associate Dean for Student Affairs William Speer, Medical Director Albert O. Seeler, and Vice Presidents Philip A. Stoddard and John M. Wynne.

In recommending that ASH's request for a ban on smoking in classrooms be implemented, the group pointed out that in large lecture halls and auditoriums such as Kresge, smoking is already prohibited by Massachusetts state law. The group recommended, however, that the ban be imposed in large classrooms where the Massachusetts law is not in effect, but that small classes be given the choice of voting on the matter during their first session.

The group also decided to try setting up restricted areas for smokers and non-smokers in dining areas by placing "no smoking" signs in sections of Lobdell and Walker dining rooms. If the restrictions prove to be effective they can be implemented in other dining halls on campus.

With regard to other ASH requests, the group decided that it would be impractical and unenforceable to prohibit smoking in corridors and lobbies, and Dean Speer pointed out that students already have a flexible procedure for changing rooms if they are unhappy with their environment.

IPC Offers 3 Courses

The Information Processing Center (IPC) will offer three computer courses during June, including one for persons with no familiarity with computers.

"Introduction to Computer Programming Techniques," a series of ten lectures with reading assignments and programming exercises will run from June 5-16, 2-3pm daily. The course is intended to introduce general principles and techniques of programming using the FORTRAN language. Persons with no familiarity with computers will be required to do some reading in the assigned text before the course begins.

A second course, "Job Control Language Tutorial," will provide users with a working knowledge of Job Control Language applied at IPC. It is directed at present and potential users who want to use the batch system more efficiently. The tutorial will run from 1-2pm daily, June 12-16.

The "OS Time-Sharing Option Course" will meet from 1-2pm daily, June 19-30, covering aspects of TSO, and on-line workshops held later each meeting day. This course will also be repeated in July and September.

Preregistration for the introductory course is now open. Preregistration for the Job Control and TSO courses will open on June 5. There is a \$5 fee for each course which covers computer costs for the exercises. Interested persons may preregister with Mrs. Susan Litten in Room 39-427.



Left to right: Howard Webber, director of the MIT Press, discusses the new book with Professor Weisskopf and Dr. Walter A. Rosenblith, Provost. —Photo by Russ Clark

New Books Published By Weisskopf, Lettvin

Two new books made news at the Institute last week.

One, *Physics in the Twentieth Century: Selected Essays*, by Institute Professor Victor F. Weisskopf of physics, was formally introduced at a celebration in honor of its publication by the MIT Press.

The party at the Press was attended by a number of Professor Weisskopf's faculty colleagues including Institute Provost Walter A. Rosenblith and Dr. Robert A. Albery, dean of the School of Science. Professor Weisskopf autographed copies of his book for several people present. He also expressed gratitude to Barbara Anekny and Tom McCorkle of the MIT Press, who edited the manuscript and to Muriel Cooper who designed the book.

Also recently issued is *The Beautiful Machine*, a guide for exercise by Maggie Lettvin, whose exercise lessons here have become a popular noon-hour recreation for many members of the Community.

In beginning a nation-wide promotion, Maggie spent one day last week autographing copies of her book at the Coop. She will leave

this week for a series of interviews and appearances across the country.

The Beautiful Machine was published by Alfred A. Knopf, Inc., and is available at the Coop.



Maggie Lettvin, signing autographs. —Photo by Margo Foote

Who's New in the News...

Professor Raymond L. Bisplinghoff, who is on leave from the Institute serving as deputy director of the National Science Foundation, will receive the 20th annual Godfrey L. Cabot Award of the Aero Club of New England for outstanding contribution to the development of aviation and aerospace science at a luncheon June 9 at the Faculty Club.

Lowry Burgess, a Fellow at the Center for Advanced Visual Studies, recently received a \$3,000 prize from the American Academy of Arts and Letters and the National Institute of Arts and Letters for a series of eight drawings entitled "Star Pits."

Dr. Roy Lamson, Class of 1922 Professor in the Department of Humanities, received the Doctor of Humane Letters honoris causa from Oklahoma City University at its commencement ceremonies on May 20.

At a recent reception and dinner honoring Professor Klaus Liepmann on his retirement, past and present members of the Choral Society gathered together and presented him with a spectrum

clock and the complete scores and recordings of Verdi's operas, *Falstaff* and *Othello*.

A report on environmental control prepared under the direction of Professor Dennis Meadows of management has become a best seller in the Netherlands, selling more than 150,000 copies in two months.

Miss Margaret Otto, Assistant Director of Reader Services in the MIT Libraries, has been awarded a fellowship by the Council on Library Resources to study selected cooperative library programs on the local, regional and national level in an effort to determine the appropriate role for each with respect to each other and to research and academic libraries.

Robin A. Remington, a staff member at the Center for International Studies, has been awarded a postdoctoral research grant by the American Council of Learned Societies and the Social Science Research Council to study constitutional amendments and the nationality question in Yugoslavia.

Retirement Dinner

The Institute-wide annual retirement dinner will be held on Tuesday, June 6, in Walker Memorial, with cocktails at 5:30 pm and dinner at 6:30. Chancellor Paul E. Gray will be master of ceremonies and President Jerome B. Wiesner will present certificates to the retiring personnel.

Course 10 Announces Annual Prizes

The Department of Chemical Engineering held its annual awards presentation recently.

In a special presentation, graduate and undergraduate students in the department presented the Outstanding Faculty Award to Professor Edward W. Merrill for excellence in teaching and research. A new award this year, students plan to present it annually to a member of the chemical engineering faculty.

Professor Raymond F. Baddour, head of the department, presented several awards to students who have made significant contributions to the Department of Chemical Engineering.

Nadir B. Godrej, a senior from Bombay, India, received the Haslam Cup, awarded annually to a senior for outstanding professional promise in chemical engineering.

Kenneth R. Weisshaar, a senior from Cincinnati, Ohio, received the Hunneman Prize, the oldest department award established by William Hunneman in 1927 in honor of his son.

Ronald P. Leemhuis, a senior from Erie, Pennsylvania, received the Alpha Chi Sigma Prize, in recognition of distinguished scholastic achievement, originality and breadth of interest in chemistry and closely related fields.

Raymond M. Mayer, a senior from Attleboro, received the American Institute of Chemists Award for displaying outstanding promise through demonstrated scholarship and leadership for advancing the professional aspect of the scientific community.

Charles T. Johnson, Jr., a junior from Allston, received the Standard Oil Company of California Undergraduate Scholarship in Chemical Engineering, an annual award established in 1955.

Student Teachers Receive Awards

Five graduate instructors in the Department of Electrical Engineering received Supervised Investor's Services, Inc. Awards for excellence in teaching at a departmental party held at Endicott House on Sunday.

Professor Louis D. Smullin, head of the Department of Electrical Engineering, announced the recipients. They are: Charles W. Lynn, of Boston; Norman D. Punsky, of Cambridge; James M. Tien, of Cambridge; Hoo-Min D. Toong, of Livingston, New Jersey; and Ernest D. Vincent, of Haverhill.

The awards, cash prizes given to graduate students on the teaching staff of electrical engineering, honor those who have demonstrated an interest and proficiency in the field of teaching and to help defray the expenses of graduate study for advanced degrees.

106th Commencement to Be Held Friday

(Continued from page 1)

former chairman and later honorary chairman of the Corporation and one of the nation's leading science statesmen; Dr. Paul E. Gray, who was elected chancellor a year ago and who will be taking part in his first commencement as a principal; and Rabbi Herman Pollack, who retires this year after 20 years as director of the Institute's B'nai Brith Hillel Foundation and who was asked to give the commencement invocation.

Chief marshal will be, by custom, the president of the MIT Alumni Association. He is Paul V. Keyser of New York City, a 1929 graduate of the Institute and retired executive vice president of Mobil Oil Co. He is completing his second term as alumni president and this will be his second consecutive year as commencement chief marshal.

Also marching in the academic procession will be more than 100 representatives from the 50-year reunion Class of 1922. This will be the largest number of 50-year class members ever to return for commencement at MIT. Marshal for the class will be its president, Parke D. Appel of Dover, Massachusetts.

Other class officers participating in commencement will be Albion R. Fletcher, Jr., of Braintree, Massachusetts, secretary; John C. Scalea of Rochester, New York, treasurer; and Riccardo J. DiCapua of Bogota, Columbia, executive committee member.

Of the 650 graduate students who will be receiving advanced degrees at this commencement, some 230 will be receiving doctor of science or doctor of philosophy degrees and the academic hoods emblematic of doctoral achievement. Included among the advanced degrees will be six advanced degrees being awarded jointly by MIT and Woods Hole Oceanographic Institution under a cooperative program offered by the two institutions. Taking part in the conferring of the joint degrees will be Dr. Paul M. Fye, Woods Hole president.

Commencement week activities will begin at 11am Thursday, June 1, with the annual commissioning of officers from MIT's Army, Navy and Air Force ROTC units. Principal speaker will be Brig. Gen. Charles D. Daniel, a nuclear physicist and director of Army research in Washington. Eighteen graduating students will be commissioned in the Army, 14 in the Air Force and four in the Navy.

At 2pm Thursday, also at Kresge Auditorium, Chancellor Gray will present the principal address at the senior class convocation. Convocation speakers are selected by the seniors themselves.

Babysitting Exchange

The Technology Dames will continue their Babysitting Exchange throughout the summer. Members who will not be using the service should notify the appropriate secretary to avoid being charged monthly dues. Secretaries for the summer are: May, Rosemary Hinteregger, 924-1997; June, Virginia Renich, 489-0173; July, Paula Suvanto, 266-1154; August, Anne Johnson, 396-5786; and September, Dorothy Kroll, 646-4499.

Friday's graduation will be preceded Thursday evening by the annual graduation eve party at the Stratton Student Center attended by seniors, their families and guests, faculty and staff.

The graduation exercises will be followed by the commencement luncheon in the Great Court. Selected by his classmates to speak for the 50-year reunion Class of 1922 will be Donald Fell Carpenter of Mendenhall, Pennsylvania, a life member of the Corporation and a retired senior executive with E.I. duPont de Nemours. He was president of the student body when he was a senior. Miss Wiener, the president 50 years later, will speak for her graduating Class of 1972.

Over the weekend and on Monday, June 5, the focus of attention will shift from graduates to alumni. Alumni classes spaced at five-year intervals will hold reunions on campus and at New England resorts, then join other alumni on campus Sunday evening for the start of MIT's annual Alumni Days. The Alumni Days Committee planning these events is headed by Marvin C. Grossman, '51, of Waban and Bradford Bates, '59, of Framingham.

Peace Picnic Raises \$110

More than 100 persons gathered in the Great Court last Friday noon for a picnic sponsored by the MIT Employees for Peace.

The picnic was held to raise funds for medical aid for Indochina. Altogether \$110 was collected, which will be sent to various Red Cross agencies by the American organization Medical Aid to Indochina.

Speakers included Dr. Peter Wolff, a Harvard psychiatrist who worked with Medical Aid to Indochina in Vietnam, and Nguyen Hoi-Chan, a Vietnamese who is studying at Harvard.

Dr. Wolff discussed various medical problems of the area which have been aggravated by the war. Miss Hoi-Chan spoke about US intervention in Vietnam.

Obituary

Dr. Stephen Nagy

Dr. Stephen M. Nagy, 61, of Belmont, a staff member of the Institute's Division of Sponsored Research since 1945 and a microanalyst who made numerous contributions in the field of atomic energy, died at his summer home in Hampstead, New Hampshire, on Monday, May 29.

Dr. Nagy joined the DSR staff in 1945 as director of the Micro-Chemical Laboratory. Since 1969 he has been associated with the Center for Materials Science and Engineering.

He was a member of the New York Academy of Sciences and the American Chemists Society, a charter member of the MIT Faculty Club and the Quarter Century Club.

He leaves his wife, Olga (Zaboruik); a son, Dr. Stephen Jr. of Woodland, California; a daughter, Mrs. Bryan Johnson of Birmingham, Alabama; two brothers and a sister.

Funeral services will be held at 1pm tomorrow, June 1, in Plymouth Congregational Church, Belmont.