



OFFICE OF THE PRESIDENT

October 20, 1971

To Members of the Community:

I am pleased to announce the appointment of Dr. Edwin R. Gilliland, Warren K. Lewis Professor of Chemical Engineering, as Institute Professor. Dr. Gilliland, who was named to the Lewis Professorship upon its establishment in 1969, will continue to hold that chair as well as his distinguished new rank.

Professor Gilliland is a leading authority on fractional distillation of petroleum, a production of synthetic rubber, purification of water and other processes. He was graduated from the University of Illinois in 1930, received the M.S. degree from Pennsylvania State University in 1931 and the Sc.D. from MIT in 1933.

After serving as a research fellow and instructor, Dr. Gilliland was appointed to the MIT faculty in 1936 and was promoted to Professor in 1944. He was Deputy Dean of the School of Engineering during 1945-46 and was appointed Head of the Department of Chemical Engineering in 1961, a post he held until 1969.

In addition to his service at MIT, Professor Gilliland was Assistant Rubber Director in charge of research and development for the War Production Board during World War II. He has given extensive and distinguished service as a member of a number of government committees, including the President's Science Advisory Committee, on which he served for four years.

Dr. Gilliland holds an honorary doctorate from Northeastern University and is a member of the National Academy of Sciences and the National Academy of Engineering. He has received numerous honors, including the Walker and Lewis awards of the American Institute of Chemical Engineers, of which he is former director. Professor Gilliland is the author of more than ninety professional articles and is the holder of several patents.

Jerome B. Wiesner



Professor Gilliland

## MIT Resumes Extra Security Precautions

Identity checks have been re-instituted for persons entering the Hermann Building (Building E53) after 6pm in the aftermath of an explosion there early last Friday morning.

John M. Wynne, vice president for administration and personnel, has also reissued a statement originally made a year ago when MIT had received a number of bomb threats.

"The Campus Patrol has full responsibility and power to act during any bomb threat," Mr. Wynne said. "Any such threat to the Institute should immediately be reported to them by dialing 100 and identifying yourself and the threatened building. Campus Patrol will then take steps to alert the occupants of the building and those in adjoining buildings if necessary. It is important that everyone be aware of these procedures and take the necessary action when called upon to evacuate a building in case of a bomb threat or other emergency.

"The cooperation and tolerance of the entire community is needed. All employees are urged to report to the Campus Patrol any unusual packages, parcels, or containers and any unusual behavior in their areas. As a further precaution, everyone should make periodic checks in his area through the day and especially before going home at night. If you should find anything suspicious, don't touch it. Instead, call the Campus Patrol."

No one was in the Hermann Building when the explosion occurred, sometime after midnight on Friday. The explosion took place in the ladies' room in the

## Wallace Observatory Dedicated Last Week

The most thoroughly automated telescope system in the world was dedicated last Thursday as the George R. Wallace, Jr. Astrophysical Observatory became the Institute's newest astronomical facility.

Although the observatory was formally dedicated only last week, researchers have been conducting work on a number of projects at the Westford site since mid-June. The 24-inch cassegrain-coude reflecting telescope and the 16-inch cassegrain telescope have examined several infrared galaxies, photographed Mars, studied the mineralogy of the moon and

measured the brightness of variable stars.

"The idea for the observatory started about three years ago," recalls Professor Thomas McCord, chairman of the observatory steering committee. "We broke ground for it last year. The bulk of the \$500,000 cost was a gift of Mr. Wallace, a member of the Class of 1913.

"This will become a benchmark of future observatory design," Professor McCord predicted. "No other observatory uses computers so extensively." The 24-inch telescope can be controlled completely by computer instructions. Grant Snellen, the chief engineer, has designed on-line computer techniques that permit an observer to point the telescope at a particular celestial object, keep it on target and store data merely by giving a series of commands. If the weather is cold or the observer has other things to do, he can leave the telescope for an entire night by setting the

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## Committee to Analyze Preprofessional Needs

President Jerome B. Wiesner has announced the formation of a Committee on Preprofessional Advising and Education to reflect the increasing interest of MIT students in careers in high school education, medicine and law.

The committee, composed of members of the faculty, administration and students will have three main objectives: to coordi-

### Faculty Meeting to Be Held Today

A regular meeting of the faculty will be held this afternoon (October 20) at 3:15 in Room 10-250.

Items on the agenda include: first presentation of a report of the Committee on Educational Policy concerning changes in the Rules of the Faculty; a report from the Committee on Nominations; action on a proposal for an interdisciplinary S.B. program in the School of Science; discussion of the Privacy Report; and remarks by the Dean of the School of Architecture and Planning and the President.

nate and extend preprofessional counseling for students; to keep the faculty informed of trends in student interest; and to promote closer ties with the professional schools to which MIT students apply.

Professor Alan Hein of psychology is chairman of the Committee. Other members are Stanley M. Jacks, Senior Lecturer in the Sloan School; Professor Bernard S. Gould of biology; Professor Stephen D. Senturia of electrical engineering; Robert K. Weatherall, Director of Career Planning and Placement Office; Professor Wal-

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## Inside This Week's Issue

The Institute Calendar for Wednesday, October 20, through Friday, October 29 will be found on pages 4 and 5. The ads this week are on page 7.

A report on the Keller Plan Conference held at the Institute last weekend and the use of the Keller Plan in subjects taught here was written by Edwin B. Taylor of The Education Research Center. See page 6.

More and more MIT students are showing an interest in high school education, medicine, and law as careers. See page 3.



OFFICE OF THE PRESIDENT

October 20, 1971

To Members of the MIT Community:

I am happy to announce the beginning of the combined 1971 Massachusetts Bay United Fund-United Black Appeal at MIT. Professor Frederick J. McGarry of the Department of Civil Engineering has accepted my appointment as Chairman of this year's drive. He has already recruited a supporting group of solicitors, one of whom will be in contact with you shortly.

As you know, we undertook last year an experiment in which we added the United Black Appeal to our traditional United Fund Drive. We felt at the time that this was an appropriate course of action since there were so many questions and uncertainties concerning the ability of the United Fund-United Community Services to reach the needs of the inner city.

Both the United Fund-United Community Services and the United Black Appeal-United Front Foundation have been conducting extensive reevaluations of their policies and several innovations have been made. An ad hoc faculty-staff group from the Institute has been in close touch with representatives of these groups. As a result of these efforts, we have decided to continue the experiment which we began last year—to support the United Fund and to include the opportunity, for those who so desire, to add to their United Fund pledges or gifts in support of those inner city needs served through the United Black Appeal. The method of doing so will be explained in the campaign materials.

We also intend to continue to monitor and reevaluate the means by which our annual Institute-wide solicitations can be most effective in the future.

I hope that each of us, in the midst of our own concerns about the state of the economy, will consider the needs of the many others around us who look to voluntarily supported agencies for help. We at MIT devote much time and resources to programs aimed at improving the quality of life for the future, but we cannot let ourselves forget those who have immediate needs; their needs are greater than ever this year.

I ask each of you to assist Professor McGarry and your department solicitor, in the task of carrying on this campaign. I hope that each of us will find it possible to respond most generously this year.

Jerome B. Wiesner



# Haystack Observations Reveal Mars Surface

Radar observations conducted by MIT scientists at the Haystack Observatory have traced out with new precision topographic features along an East-West path that girdles the planet Mars.

The radar probes, showing the vertical dimensions of mountains, valleys, and craters with unprecedented accuracy of less than 100 yards, have found a gorge that is two-and-a-half miles deep and a crater more than a mile deep and some 1200 miles across, neither of which was previously known to exist. The degree of accuracy of the studies is comparable to distinguishing the height of a marble from a distance of ten thousand miles.

The observations were conducted by Dr. Gordon H. Pettengill and Dr. Irwin I. Shapiro, professors of earth and planetary sciences, and by A.E.E. Rogers, of the Haystack Observatory. The Observatory, which houses the world's largest fully steerable radio telescope, is operated under agreement with MIT by the Northeast Radio Observatory Corporation, a consortium of universities of which MIT is a member.

Three times a week since mid-July the scientists have been using Haystack's 120-foot radio/radar antenna to sweep a zone on the Martian surface about 16 degrees south of the Martian equator. Since Mars rotates only slightly, less rapidly than Earth, taking 37 minutes longer to complete its "day," the region changes only slowly from night to night. After 36 days, however, the two planetary rotations have lapped each other, allowing full observational coverage around the planet. In this manner the scientists assembled data for two-and-one-half

## Noonhour Music Series to Begin

The Cambridge Symphonic Brass Ensemble and Institute Organist John Cook will open this year's Thursday noon-hour concerts tomorrow (October 21) with a program of Trumpet Tunes and Ayres.

The concerts, which include both instrumental and vocal programs, are usually performed by members of the Institute community. The five members of the Brass Ensemble, which recently performed in the Building 7 Lobby, are also members of the MIT Concert Band.

April Showers, flutist with the MIT Symphony Orchestra, will be featured in next week's concert on October 28. Other performers will be Mark Lutz, violin, Alan Grodzinsky, viola, Bruce Coppock, cello, and John Cook, harpsichord, in a program of works by Debussy, Handel, Heiss, Hindemith and Mozart.

Founded six years ago by Mr. Cook, the noon-hour concerts are held weekly from 12:10 until 12:50pm in the Chapel. The concerts are free and open to the public.

months measuring the dimensions of topographic features in a belt roughly 100 miles from north to south and stretching continuously around the planet.

The data show an altitude profile varying by slightly less than ten miles from the highest peak to the lowest valley in the belt studies. This variation is similar to that obtained earlier at northern Martian latitudes, and is roughly equivalent to that of Earth with its oceans drained.

Of particular interest to the MIT scientists were measurements of the Martian craters. A large crater in the Deucalionis Regio was shown by the radar study to be nearly a half mile deep, with a flat bottom indicating that it had been modified by an erosive process. The crater had been photographed by an earlier Mariner probe, but its exact vertical dimensions and shape could not be deduced from the aerial picture. In this way the radar results are expected to aid in the interpretation of the orbital photographs that Mariner 9 will make and televise back to Earth next month when it reaches Mars.

The craters of Mars came as something of a surprise to astronomers when they were discovered by Mariner 4 back in 1965.

"The 19th century notion of 'canals' and animate 'life on Mars' probably were based on expectations of an Earth-like surface," says Professor Pettengill, "If we scientists had done our homework we would have realized what we know in retrospect: that since the gravity of Mars is about one-third that of Earth its atmosphere has gradually leaked away into space and is now too thin to weather down craters that were probably formed by meteor impacts within the last several hundred million years. There is more erosion on Mars than on the Moon, however, and that is why the lunar craters are comparatively more numerous and clear-cut."

The series of radar observations, supported by the National Aeronautics and Space Administration, is continuing and will conclude next month. It will be some time before detailed analysis of the radar findings are available for comparison with the photographs expected from the current Mariner flight.

## Campus Patrol Captures Thief

Stanley Kubiak, an MIT junior and resident of Senior House, was held up and robbed behind his dormitory shortly after midnight on Wednesday, Oct. 13. The scissors-wielding thief, who forced Kubiak to surrender his wallet, was chased on foot by MIT campus patrolman Leonard McNeil, who captured the suspect.

Cambridge police identified the suspect as Michael Cassie, of Newtowne Court, Cambridge. He was arraigned in East Cambridge District Court on an armed robbery charge.



The crew in action (left to right): coxswain Eric Schaffer, '75 (back to camera), Jan Sharpless, Jan Hanze, Jane Ward, '73, Janice Benson, '74, Susan Ashworth, '75 (face hidden), Elaine Kant, '73, Barbara Small, '72 (face hidden), and Judy Fairchild, '75.

--Photo by Margo Foote

## Women's Crew to Race in Historic Regatta

At 7 o'clock every morning, while most of their friends are still in bed, a dozen MIT coeds are rowing crew shells over the tranquil waters of the Charles.

Women's crew was started at MIT in 1963. In the past, interest was very limited and the team seldom raced against other schools. This year, however, women's crew has a new coach, Don Saer, and a small but dedicated group of oarswomen.

"The girls are really looking

forward to racing against other teams," says Coach Saer. "But they are also out for the exercise and the fun of rowing. The river is beautiful early in the morning, and there's something about taking an oar in a boat that's going well that makes all the hard work worth while."

The team's first race of the fall is next Sunday in the Head of the Charles Regatta, an annual event featuring more than 1200 oarsmen from throughout North

America. "We'll have an eight-oared shell entered in the intermediate division," Saer explained. "Radcliffe plans to enter two boats, but the rest of the division will be male crews from small clubs and groups in the area. Our boat should be very competitive in that field."

In addition to the upcoming Regatta, Saer hopes to schedule several more races for the fall and spring seasons, perhaps with stiffer competition as the team improves.

"After the first boat--similar to the first string in football--crew is an informal sport. What other boats and crews will compete is decided by the coaches. Since the girls aren't in the first boat, they can compete any time the opposition will race against them."

Saer is optimistic about the future of women's crew at MIT. "I'm very pleased with this year's group, he says. The team has worked hard and I think we will have even better turnouts in the spring and next year."

## Ex-NASA Employees Must Submit Employment Report

Any MIT employee formerly employed by the National Aeronautics and Space Administration must submit an employment report in compliance with section 6 of Public Law 91-119, as amended by section 7 of PL 91-303. Reports must be filed on a NASA form 1480 by November 15 following the close of each fiscal year. These forms are available in the Personnel Office of the NASA installation where last employed.

In brief, the following categories of former NASA personnel are exempt from reporting requirements:

--No former or present employ-

ee is required to file a report for any year before fiscal 1971 (July 1, 1970 - June 30, 1971).

--No former employee shall be required to report for any fiscal year during which he was employed by or served as a consultant or otherwise to an aerospace contractor at a salary rate of less than \$15,000 per year.

If you have any questions about your status, please call either Richard Hughes in the Institute Personnel Office, Ext. 4274, or the Personnel Office of your former NASA installation. It is important that you file a report because there are legal sanctions for failure to do so.

## Regulations Outlined for Use of Railway Express Service

New procedures affecting Railway Express Agency shipments to and from the Institute will go into effect on November 1.

The Building 3 and Building 20 Shipping Rooms will be the only authorized places where outgoing shipments will be handled. Neither outgoing nor incoming personal shipments will be accepted.

To make an outgoing shipment, these are the steps to be followed:

--Pack and address material to be shipped. No packaging or ad-

ressing will be done by the Shipping Clerks.

--Prepare a requisition showing the account number to be charged for shipping costs, the number of packages, and the name and complete address of the destination. No material will be accepted for shipment without a requisition unless it is being sent collect.

--Deliver the material and requisition to the Shipping Room in Building 3 or Building 20.

These new procedures will not apply to shipping activities at the Draper Lab.

### Tech Talk

Volume 16, Number 16  
October 20, 1971

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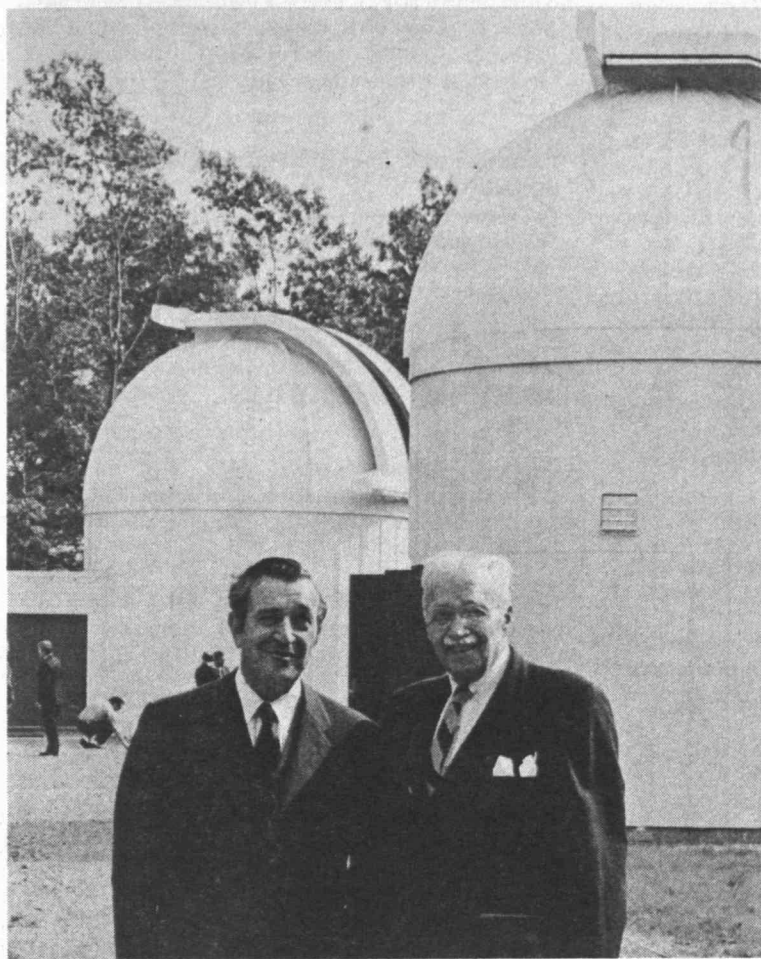
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Mail subscriptions are \$7.50 per year. Checks should be made payable to Bursar, MIT, and mailed to the Editor, Room 5-111, MIT, Cambridge, Mass. 02139.

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





Dr. Wiesner and Mr. Wallace pose in front of MIT's new Wallace Observatory in Westford.

—Photo by Bob Lyon

## Observatory Offers Many New Features

(Continued from page 1)  
program.

Several other features facilitate work at the observatory. Because astronomers often stay up all night in their work, the observatory has a kitchen for midnight snacks. There is also a bedroom where one or two observers can sleep when their attention is not required at the telescope. A lounge, library and darkroom are also included at the facility.

"The new observatory will give the Institute's astronomy programs a real lift," Professor McCord says. Interest in astronomy has increased greatly in recent years. Over the past three years the number of undergraduates enrolled in astronomy subjects has risen from 8 to 500.

The Wallace Observatory will be useful to students in research and thesis work as well as classes. "It will also serve as a test site for new instrument development,"

## Guidance Officers to Meet

Some 90 high school guidance counselors from throughout the country will gather at the Institute tomorrow for a two-day conference designed to acquaint them with MIT.

MIT originated the Annual Guidance Officers Conference 16 years ago as a means of "presenting a balanced picture of what the Institute is like and clearing up misconceptions many people have," according to M. Bryce Leggett, associate director of Admissions.

During their stay here, the guidance counselors will hear from faculty, students and administrators about the academic pro-

grams, student life and activities and services such as financial aid and counselling support. In addition, they will be given a tour of the Institute, will have an opportunity to talk with students informally and meet with representative members of the faculty.

Chancellor Paul E. Gray will present the keynote address to the high school officials at a dinner on Thursday evening, and President Jerome B. Wiesner will greet them at the first conference session Friday morning. Provost Walter A. Rosenblith will be the speaker at the second dinner. The conference will close with a feedback session on Saturday morning.

Professor McCord says. "Our program in astrophysics has always been rated high," he continued. "As President Wiesner noted at the dedication, 'the only thing we didn't have was a telescope.'"

At the dedication, Mr. Wallace expressed his great satisfaction with the observatory, pointing out that his contribution was not significant when compared with the efforts of the staff to make the observatory a going concern.

## Committee Formed to Guide Preprofessional Education

(Continued from page 1)

ter A. Rosenblith, Provost; Dr. Louis Menand, Assistant to the Provost; Professor J. Daniel Nyhart, Dean for Student Affairs; and Miss Susan Haigh, who has been appointed Assistant to the

Dean and staff coordinator to the Committee. Nominations for student members are being sought from the Undergraduate Association and the Graduate Student Council.

The Committee will seek to increase the participation of faculty in preprofessional counseling, most immediately in the area of medicine. By doing this, the advisory system will achieve a broader base and more members of the faculty will become aware of the evolution of student thought about careers.

## Preprofessional Education Sought by Increasing Number of Students

"The need for preprofessional counselling is growing rapidly," according to J. Daniel Nyhart, Dean for Student Affairs.

"There are 170 students applying to medical school this fall as contrasted to only 47 four years ago," he said. "And we have seen a similar jump in law and education. Last fall 175 students took the Law School Admissions Test and some 50 sought counselling toward a career in high school education.

"An undergraduate education at MIT is a good stepping stone into these fields," he continued, "and more and more students are looking for careers which they consider socially relevant."

"This increasing student interest is the major reason we propose to establish the Committee on Preprofessional Education," added Professor Alan Hein of psychology, chairman of the new group.

"The advisory systems that have existed for several years are performing heroically under an overwhelming load," he continued. "We think the committee can help ease their strains in several ways, but primarily by increasing the number of advisors, bringing coherence to the programs, and providing staff support to the advisors.

"The existing advisory structure is continuing to function as it always has while the new committee is beginning its operation," Professor Hein said. "We want to work with that system and help it to become more effective. As we encourage more faculty members to serve as preprofessional counselors, we hope to increase the potential for one-to-one student-faculty associations.

"Beyond that, we want to build stronger ties with the profes-

sional schools," Professor Hein continued. "One good way to improve the preprofessional program is to get feedback from MIT alumni who are attending these schools. They can suggest to us where our strengths and weaknesses lie. Members of the Committee also plan to visit professional schools for these purposes.

"The increased interest in medicine was the first trend toward areas other than the Institute's traditional fields we noted," Dean Nyhart said. "Just serving the seniors who are applying to medical school has become a tremendous job," he observed, "and there are more juniors, sophomores and freshmen who want advice in preparing themselves to enter medical school.

"To help improve the medical advisory system, we have set up a Premedical Advisory Council under the chairmanship of Professor Bernard Gould of biology. The Council is composed of members of the faculty, medical staff and administration who advise students interested in medical careers."



Susan Haigh and Alan Hein stand before Room 10-186 which soon will open as the Office of Preprofessional Advising and Education.

—Photo by Margo Foote

tasks by serving as a clearinghouse for the paperwork involved in applications to graduate schools."

Susan Haigh, who will be responsible for the new office, has had experience in helping students make career plans during her three years in the Career Planning and Placement Office. She will be available to anyone who has questions concerning preprofessional education. While the students themselves will be responsible for getting needed letters of recommendation from faculty members, Miss Haigh will see that they are conveyed to the appropriate places.

Shuttle Schedule to Lincoln Lab

The shuttle service schedule between the MIT campus and Lincoln Laboratory will continue to operate indefinitely on the schedule announced this summer.

Leave Lincoln	Leave MIT
8:05am	9:05am
9:05am	10:05am
11:05am	12:05pm
1:05pm	2:05pm
3:05pm	4:05pm

Vehicles leave from the main entrance, Building A, Lincoln, and the Vassar Street entrance, MIT. The ride takes about 45 minutes.

## Students Urged to Register Immediately for Fall Term

The official deadline for fall registration was earlier this week, but the Registrar's Office reports that students may still register if they act immediately. Students who fail to do so will lose their student status and, therefore, will have to reapply for admission through the Dean's Office.

The Registrar also reminds students who have not yet turned in roll cards or made arrangements to pay tuition to do so immediately. Roll cards can be picked up in the Registrar's Office (E19-335) and must be submitted to the instructors of each subject for which the student has registered. This must be done before the

ninth week of the term or the student will be automatically cancelled from the class.

Failure to submit a roll card does not eliminate the student's obligation to pay tuition for a subject. The Bursar's Office bills students according to their original registration unless the Registrar's Office has been notified of a change. When a student fails to turn in a roll card, he is obligated to pay tuition up to the date he is automatically cancelled from the subject.

The Registrar's Office also has a reminder for fourth year students—Friday, October 29, is the deadline for changing elective subjects graded on a pass/fail basis.



# THE INSTITUTE CALENDAR

October 20  
through  
October 29

## Events of Special Interest

### International Conference on Nutrition, National Development and Planning \*

Sponsored by the National Institutes of Health and the U.S. Agency for International Development. Wednesday-Thursday, October 20-21, 8am-5pm, Kresge. Registration fee, \$35. For additional information call Ext. 5707.

### Science Library Tour \*

Wednesday, October 20, 12n-1pm; Thursday, October 21, 5-6pm. Rm 14S-100.

### Family Day Care \*\*

Orientation meeting, discussion of the program and its problems. All interested parents urged to attend. Thursday, October 28, 7:30pm, Rm 473, Student Center.

## Seminars and Lectures

### Wednesday, October 20

#### Crystal Growth as a Business

Dr. G.A. Kieg, Union Carbide, Metallurgy and Materials Science Ceramic Seminar. 11am, Rm 10-105.

#### The NBER Land Use Model \*

Dr. Gregory Ingram, Harvard University. Transportation Division, Civil Engineering. 1:30pm, Rm 1-350.

#### Minerals and Cariogenesis

Dr. Juan M. Navia, Institute of Dental Research, U of Alabama. Oral Science Seminar Series. 3-5pm, Rm E18-301.

#### A Deterministic Terminal Air Traffic Control System

Alecco Sarris, graduate student, Electrical Engineering. Decision and Control Sciences Group Seminar. 4pm, Rm 39-500.

#### Experiments Concerning Electron Spins in Superconductors

Dr. Robert Meservey, Francis Bitter Magnet Laboratory. 4:15pm, Conference Rm, 2nd floor, Francis Bitter Magnet Laboratory. Coffee and tea, 4pm.

#### Poetry Reading \*

Adrian Mitchell, British poet who adapted Peter Weiss's *Marat-Sade* for movies and Broadway. 8pm, Student Center, Mezzanine Lounge.

### Thursday, October 21

#### Regional Planning and Planning Research in Sweden

A. Karlqvist, Urban Studies and Planning. Spur Seminar. 1-3pm, Rm 9-351.

#### Fantastic Foods—A Case History in the Implementation of Operations Research to Long Range Planning \*

Dr. Martin Stankman, Operations Research, Arthur D. Little, Inc. Operations Research Center Seminar. 4pm, Rm 24-307.

#### Vorticity \*\*

Fluid Mechanics Film. 4-5pm, Rm 3-270.

#### The Problem of Solving Hard Problems

Dr. Bradford Dunham, research staff member, Thomas J. Watson Research Center, IBM Corporation. Videotape playback of October 5 Distinguished Lecture Series at Harvard. University Information Technology Corporation. 4pm, Rm 4-231. For more information call UNITEL Ext. 7781.

#### Transonic Rocket-Sled Study of Fluctuating Surface-pressures and Panel Responses \*

Eric E. Ungar, Bolt Beranek and Newman, Inc. Interdepartmental Acoustics Seminar. 4pm, Rm 5-134. Coffee, 3:30pm, Rm 1-114.

#### Homocysteine Metabolism in Growth and Arteriosclerosis \*†

Dr. Kilmer S. McCully, Dept of Pathology, Massachusetts General Hospital. Nutrition and Food Science Seminar. 4:30pm, Rm 16-134. Coffee, 4:15pm.

#### Solar Wind and Alfvén Wave Pressure

Dr. Stanislaw Olbert. Physics Colloquium. 4:30pm, Rm 26-100. Tea, 4pm, Rm 26-110.

#### Goethe and Leibniz: Myth in the Age of Reason \*

Professor Helmut Rehder, Dept of Foreign Literatures and Linguistics, U of Texas. 8pm, Student Center, Rm 491.

### Friday, October 22

#### The Problem of Solving Hard Problems

Dr. Bradford Dunham, research staff member, Thomas J. Watson Research Center, IBM Corporation. Videotape playback of October 5 Distinguished Lecture Series at Harvard. University Information Technology Corporation. 12:30-2pm, Conference Rm 5th floor, 545 Tech Square. For more information call UNITEL Ext. 7781.

#### Fabric Flammability and Burn Injury Studies \*

A. Mehta, graduate student, Chemical Engineering. 2pm, Rm 10-275.

#### Some Thoughts on Equation Solving for Finite Element Problems \*

Bruce M. Irons, senior lecturer, University College of Swansea, Wales. Aeronautics and Astronautics, Special seminar in structural mechanics. 2-3pm, Rm 37-252. Coffee served after seminar.

#### Development of a Radio-fluorinated Lecithin Aerosol for Diagnosis of Pulmonary Diseases \*

J. Bunnell, graduate student, Chemical Engineering. 3pm, Rm 10-275.

#### Biomechanics for Reproductive Biology

Professor Thomas J. Lardner, Mechanical Engineering. 3pm, Rm 3-270. Coffee, 4pm, Rm 1-114.

#### Light Scattering Studies of Structural Phase Transitions \*

Dr. J.F. Scott, Bell Labs. Center for Materials Science and Engineering. 4pm, Rm 10-105. Refreshments, 3:30pm.

### Tuesday, October 26

#### Experiments with High-speed Photography \*\*

Professor H.E. Edgerton, Electrical Engineering. Lincoln Lecture. 3:30pm, Lincoln Lab Cafeteria.

### Wednesday, October 27

#### Defects in Optical Crystals

Dr. R.C. Linares, Allied Chemical. Metallurgy and Materials Science Ceramic Seminar. 11am, Rm 10-105.

#### Solar Energy—Option for Power Generation \*

Dr. Peter E. Glaser, Arthur D. Little, Inc. Electric Power Systems Engineering Laboratory Seminar. 3pm, Rm 10-105.

#### Feeding Frequency and Lipid Metabolism

Dr. Gilbert A. Leveille, chairman, Dept of Food Science and Human Nutrition, Michigan State University. Oral Science Seminar Series. 3-5pm, Rm E18-301.

### Thursday, October 28

#### Problems for Today's Airport Planner \*

John Wiley, Director of Aviation, New York Port Authority. Flight Transportation Laboratory. 4pm, Rm 35-225. Coffee, 3:30pm, Rm 33-411.

#### Secondary Flow and Surface Tension \*\*

Fluid Mechanics Film. 4-5pm, Rm 3-270.

#### Program-Based Management System for the Massachusetts State Government \*

Michael Cahn, vice president, Haskel Brown Associates, Inc., Consultants. Operations Research Center Seminar. 4pm, Rm 24-307. Refreshments after seminar, Rm 24-219.

#### COUNT RUMFORD—Physicist, Philologist, Philanthropist and Spy

Professor Sanborn C. Brown. Physics Colloquium. 4:30pm, Rm 26-100. Tea, 4pm, Rm 26-110.

#### Substrates in Acute Metabolic Rate Changes in vivo \*†

Dr. William E. Huckabee, Professor of Medicine, Boston University School of Medicine. Nutrition and Food Science Seminar. 4:30pm, Rm 16-134. Coffee, 4:15pm.

### Friday, October 29

#### Waterborne Vehicle Design at the Naval Ship Engineering Center

Renven Leopold, technical director, Ship Concept Design Division, Naval Ship Engineering Center. Ocean Engineering. 10am, Rm 5-218.

#### Absorption and Filtration of Trace Contaminants in Aqueous Effluents \*

D.B. Anthony, graduate student, Chemical Engineering. 2pm, Rm 10-275.

#### Carbide Precipitation during the Gamma/Alpha Transformation in Alloy Steels

Professor R.W.K. Honeycombe, Goldsmiths' Professor of Metallurgy, U of Cambridge. Metallurgy and Materials Science Special Seminar. 3pm, Rm 39-400. Coffee, 4pm.

#### Medical Applications of Silicone Elastomers \*

M. Morgan, graduate student, Chemical Engineering. 3pm, Rm 10-275.

#### Noise and Hearing—A New Engineering Challenge

Allen L. Cudworth, assistant vice president, director of Research Center, Liberty Mutual Insurance Company. Mechanical Engineering. 3pm, Rm 3-270. Coffee, 4pm, Rm 1-114.

#### Photoemission Energy Level Measurements of Solids Surfaces \*

Dr. Dean Eastman, IBM Watson Research Center. Materials Science and Engineering Colloquium. 4pm, Rm 10-105.

## Student Meetings

#### Freshman Council Meeting

All freshman representatives and interested class members urged to attend. Wednesday, October 20, 8:30pm, Student Center, Rm 400.

#### Sophomore Class Meeting

Sophomore representatives and interested class members urged to attend. Wednesday, October 20, 8pm, Student Center, Rm 400.

#### Technique Staff Meeting

Every Saturday. 11am, Student Center, Rm 457.

#### Tech Engineering News \*

Staff meeting. Every Sunday, 5pm, TEN office, Student Center, Rm 453.

#### ERGO Staff Meeting

Every Sunday, 6pm, Student Center, Rm 443.

## MIT Club Notes

#### Hillel \*

Yiddish classes, Wednesday, October 20 (advanced 6:30pm; intermediate, 7:30pm; elementary, 8:30pm), 3 Memorial Dr.

#### Baha'i Discussion Group \*

Open meeting with speaker. Wednesday, October 20, 7:30pm, Rm 473, Student Center. For additional information call 547-9253.

#### Scuba Club Pool Session \*\*

Wednesday, October 20, 8pm, Alumni Pool.

#### Corporation Joint Advisory Committee (CJAC) \* Meeting

Thursday, October 21, 7:30pm, Rm 10-105.

#### College Life/Campus Crusade for Christ

Joint Action meeting. Come and hear what Jesus is doing at MIT and see how you can be involved. Friday, October 21, 7-8pm, Rm 1-132. For additional information call Bob Williams, 536-6868.

#### Book of the Week \*

Informal discussion over dinner of *Reveille for Radicals* by Saul Alinsky. Tuesday, October 26, 5:15-7:15pm. As down Dining Hall (table near the door). Anyone who has read the book is welcome. James Snell, Ext. 4922.

#### Scuba Club \*

"Artificial Respiration" by Joe Kuchta, MIT Safety Office. Also lecture and film "The Pulse of Life." Wednesday, October 27, 8pm, Rm 20E-017.

#### Baker House SPAZ Jogging Club \*\*

Daily, 10:45pm, Baker House Second Floor West.

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

Every Sunday, 7pm, Blue Rm, Walker. Every Tuesday, 6pm, Student Center, Rm 491.

#### Tiddlywinks Association \*

Every Monday, 8-11:30pm, Student Center, Rm 473.

#### Judo Club \*\*

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

#### Outing Club \*

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



**Classical Guitar Society \*\***  
Classical and Flamenco guitar classes: private, Mondays, 7-9pm; group, Thursdays, 5-8pm. Rm 1-136. For reservations or more information call 661-0297.

**Nautical Association \*\***  
Basic Sailing Shore School. Repeated every Monday and Thursday, 5:15pm, Sailing Pavilion.

**Rugby Club \*\***  
Every Tuesday and Thursday, 5pm, Briggs Field. For more information call Wayne Book, Ext. 5095, or Ron Prinn, Ext. 2452.

**Fencing Club \***  
Meeting. Every Tuesday, 7-9pm, Fencing Rm, duPont Athletic Center.

**Table Tennis Club \*\*\***  
Meeting and practice session. Every Wednesday, 7:30-10pm, Tea Club Lounge, Armory.

**Bridge Club \***  
Free introductory bridge lessons. Every Wednesday, 7:30pm, Rm 2-229.

**Soaring Association \***  
Ground school, first Thursday of every month; general meetings, third Thursday of every month. 7:30pm, Student Center, Rm 473.

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

**Indian Folk Dance and Lore \*\*\***  
Sponsored by Boston Indian Council, Inc. Every Friday, 7-11pm, Student Center, Rm 407.

**Student Homophile League \***  
Regular meeting and mixer. Every Friday, 7:30pm, Mission Church, 33 Bowdoin St., Boston.

**College Life/Campus Crusade for Christ \*†**  
Leadership training classes. Five week series of lectures and seminars for all followers of Jesus interested in learning to communicate their faith. Every Friday starting October 29, 8-9:30pm. For additional information call Professor Paul Schimmel Ext. 6739 or Bob Williams 536-6868.

**Bridge Club \*\***  
Duplicate bridge. Every Saturday, 1-5pm, Student Center, Rm 473. Admission is \$2 per term or 75 cents per session.

**Chess Club \*\***  
Every Saturday and Sunday, 1:30-5:30pm, Student Center, Rm 407.

## Mixers

**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 and women free, must be over 21.

## Movies

**Cromwell \*\***  
LSC. Friday, October 22, 7 and 10pm, Rm 26-100. Admission 50 cents.

**Cotton Comes to Harlem \*\***  
LSC. Saturday, October 23, 7 and 9:30pm, Rm 26-100. Admission 50 cents.

**The Steel Helmet \***  
Film Society. Monday, October 25, 8 and 10pm, Rm 10-250. Admission \$1.

## Dance

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

**Dance Workshop \*\***  
Modern dance classes. Elementary, Tuesdays and Thursdays, 10am and 2pm. Intermediate, Tuesdays and Thursdays, 12noon. General classes open to the community, Thursdays, 7pm. Admission: \$2 for the community, free for students. McCormick Gym. For more information, call Cha-Rie Tang, dormline 0908.

**Tech Squares \***  
Square dancing every Tuesday, 8-11pm, Rm 10-105. For more information call dormline 0888 or 492-5453.

**Friday Afternoon Dance Break \***  
Folk Dance Club. International folk dancing on the oval lawn in front of Kresge. Every Friday, 12:30-1:30pm.

**Folk Dance Club \***  
International folk dancing. Every Sunday, 7:30-11pm, Sala de Puerto Rico.

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

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

## Music

**Thursday Noon Hour Concerts \***  
Opening concert featuring the Cambridge Symphonic Brass Ensemble playing trumpet tunes and ayres by Henry Purcell and others. Thursday, October 21, 12:10pm, Chapel.

**Thursday Noon Hour Concerts \***  
Featuring April Showers, MIT Symphony flautist, and John Cook, Institute organist, on the harpsichord. Thursday, October 28, 12:10pm, Chapel.

## Theater and Shows

**Dramashop \***  
Evening of one-act plays: *The Brut* by A. Chekhov, *The Labyrinth* by Arrabal. Friday and Saturday, October 22-23, 8:30pm, Little Theatre. Critic and coffee after performance.

## Exhibitions

**Creative Photography Gallery \***  
Exhibit of photo-silkscreens by Paul Wigger and Sam Wang. Daily through October 29, 12n-7pm, Creative Photography Gallery, W31. Third floor.

**Alfred Lesli, Philip Pearlstein, Wayne Thiebaud: Contemporary Views of Man \***  
Collection of paintings portraying the human figure in a representational manner. Sponsored by Committee on the Visual Arts. Hayden Gallery. Monday-Thursday, 10am-5pm; Friday, 10am-9pm; Saturday, Sunday, holidays, 1pm-5pm.

**The Art of Rigging and Buoy System for Air-Sea Studies \***  
Hart Nautical Museum. Bldg 5, first floor.

**Main Corridor Exhibitions \***  
Presented by students and departments. Bldgs 7, 3, 4, 8.

## Athletics

**Water Polo Invitational \***  
Friday and Saturday, October 22-23. Alumni Pool.

**Rugby Club Match \***  
Harvard Business School, first and second teams. Saturday, October 23, 1:30 and 3:30pm, Briggs Field, west end. Followed by After Game Beer Blast.

**Varsity Sailing \***  
Fowle Trophy. Saturday and Sunday, October 23-24, 9:30am, Charles River Lower Basin.

**Freshmen Sailing \***  
Invitational. Sunday, October 24, 9:30am, Charles River Lower Basin.

**Cross Country \***  
GBCAA. Tuesday, October 26. Freshmen/Junior varsity at 12n; varsity at 12:30pm. Franklin Park.

**Varsity Soccer \***  
Boston College. Wednesday, October 27, 3pm, Briggs Field.

**Junior Varsity/Freshmen Soccer \***  
Bryant & Stratton. Friday, October 29, 3:30pm, Briggs Field.

**Varsity Sailing \***  
Open regatta. Saturday, October 30, 10am, Charles River Lower Basin.

## Religious Services and Activities

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

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

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

**Christian Bible Discussion Group \***  
Every Thursday, 12:15pm, Rm 20B-031. For information, call Professor Schimmel, Ext. 6739.

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

**Vedana Service \***  
Every Friday, 5:15pm, Chapel. Discussion hour, 6pm, Ashdown Dining Hall.

**Hillel Religious Services \***  
Every Friday, 7:30pm, and every Saturday, 9am, Chapel.

**Roman Catholic Mass \***  
Every Sunday, 9:15am, 12:15pm and 5:15pm, Chapel.

**Christian Discussion Group \***  
Bible study and discussion of Christianity today. Every Sunday, 9:30-11am, McCormick Seminar Rm A. For more information call Ron Gamble, Ext. 6712 or 547-4279.

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

**Free Draft Counselling \***  
Hillel, 312 Memorial Drive, Ext. 2982. Call or visit 10am-5pm.

**Hillel Religious Services \***  
Monday-Friday, 8am, Rm 7-102.

## Coming Events

**Phi Kappa Sigma \*\***  
Biannual open bid free beer blast skuffle. Band for entertainment. Couples only. 530 Beacon St., Boston on the evening of October 30.

## Don't Forget

**Harvard Medical School-MIT Program in Health Sciences and Technology**  
Important meeting to discuss opportunities for current seniors and juniors interested in applying for the Harvard-MIT M.D. Program for class entering September 1972 will be held on Thursday, October 21, 1971 at 5pm, Rm 10-250.

Application may be made to the **Activities Development Board** to obtain funds for capital expenditures and for minor space renovation. Recognized MIT community activities are eligible. Application forms may be obtained in Rm 7-101. Application submitted by November 1 will be acted upon by November 15.

**Muddy Charles Pub \*\***  
Join your friends at the Muddy Charles Pub, 110 Walker, 10:30am-7:30pm daily. Ext. 2158.

**\*Open to the Public**  
**\*\*Open to the MIT Community Only**  
**\*\*\*Open to Members Only**  
†Freshmen interested in departmental program encouraged to attend.

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



# ERC Conference Studies Innovative Keller Plan

The Keller Plan method of teaching college courses was the subject of a conference sponsored by the MIT Education Research Center (ERC) and held at MIT over the past weekend.

Approximately 350 college faculty members from all parts of the country attended sessions that presented the background and details of the method, reported on its use in courses in many disciplines and gave advice about how to introduce the method into a college or university. In attendance at the conference were Fred Keller and Gilmour Sherman who originated the plan in collaboration with others. The conference director was Dr. Ben A. Green, Jr., staff physicist at ERC, who introduced the method to MIT where it is in use in approximately a dozen classes.

The Keller Plan, often called self-paced study or the personalized system of instruction, is now in use at some 150 to 200 colleges and universities in the United States and Canada. Self-paced study demands student mastery of course material while giving him close personal attention and the chance to succeed progressively in one portion of the course after another. The faculty member divides a semester's material into a series of units, typically 15 to 20 in number. For each unit he prepares a brief study guide for the student, that describes specifically what the student must be able to do in order to pass the unit and suggests some ways the student can prepare himself. The student may be asked to read portions of a standard text, often supplemented by study questions or comments contained in the study guide, and solve exercises. In parts of some courses he may also view a film or film loop, carry out a take-home or demonstration experiment or run a computer program.

Whenever the student has a question on the material he comes to course headquarters and talks to his tutor. Tutors are typically undergraduate or graduate students who have had the course before — although they may be faculty members or students in the course who are ahead of the others. Each tutor supervises the work of only ten students so he becomes well acquainted with each of them.

When the student feels he is ready to demonstrate his mastery of the material in the unit his tutor administers a brief written quiz which he grades immediately in the presence of the student. Unit tests are marked "pass" or "no pass." If the student passes he may go on to the next unit of study. If he fails, he restudies the material until he can pass a similar test on the same unit. The student is judged on his final performance, not on the number of times it takes him to achieve it. In this way the student progresses at his own pace.

The instructor, besides writing study guides and unit tests, super-

vises the tutors and reviews each student's folder of completed tests. The instructor also gives an occasional lecture, whose purpose is not to impart basic course material, but to entertain and motivate students and provide an example of professionals at work. In the original Keller plan students have to "earn" the right to attend each lecture by completing a specified number of units.

The conference this past weekend heard a description of the Keller Plan by Ben Green, and a description of its application to an introductory astronomy course by Alex Dessler of Rice University. Jerrold R. Zacharias, director of

Although the Keller Plan has proved beneficial in improving initially poor performance of students in low grade-point averages, he finds it is just these students that tend to withdraw from a Keller Plan course. Experiments are now underway to determine whether these students withdraw because their study is inefficient or because they do not study enough.

Joel Greenspoon reported on the use of the Keller Plan in many courses at Temple Buell College in Denver and voiced his belief that an entire college curriculum should be offered as an option to the regular method.

new users of the Keller Plan succeed.

Dr. Edwin F. Taylor invited the conference participants and others to make use of the resources of the Education Research Center both to learn about the Keller Plan and for advice and help in making use of it in their own departments. Stanley Hirschi (Rm. 20C-223, extension 6396) will act as coordinator in this dissemination effort.

The introduction and spread of the Keller Plan in the department of physics at MIT makes an interesting case study of how change can come about. All local threads of this story run back to Dr.

listed to act as a tutor in this effort. He was so pleased with the increased contact with students that resulted from this way of teaching that he adapted the method to his physics course 8.021 in the spring term of 1971, while retaining regular lectures.

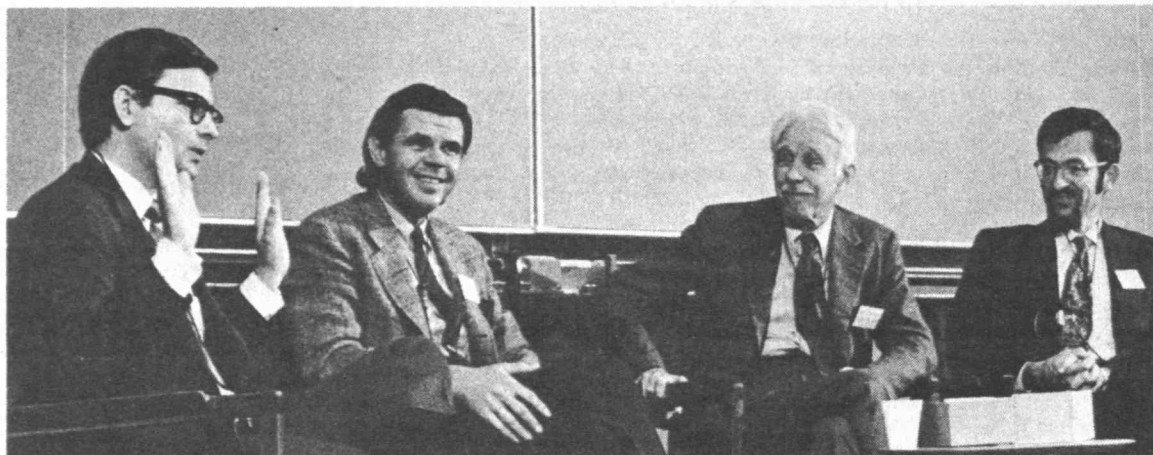
During the summer Dr. Hulsizer prepared material for self-paced the entire 8.01 course, which has a present enrollment of 560 students. Regular lectures principally given by Professor French are available for students who choose to attend.

In the meantime, a graduate student in physics, Charles P. Friedman, wrote a master's thesis on his design of the advanced quantum course 8.05X in Keller Plan format. Because this is an advanced course principally for majors, his problem was to encourage students to begin to find their own way through a wealth of different texts and resource materials. In the present semester self-paced courses are available in the physics subjects numbered 8.01, 8.03, 8.04, 8.05, and the graduate course 8.333 in Thermodynamics and Statistical Mechanics under the supervision of Prof. Eugene Stanley.

Other departments began to offer Keller Plan courses soon after its introduction in physics. A course in information systems (1.00X) was given by Jay Walton in the fall of 1969. Professor Dan Kemp of the Chemistry Department had earlier developed materials in organic chemistry 5.41 that had much of the self-pace flavor. These materials were revised and cast into the Keller Plan format by Dr. John Vournakis of ERC and, after trial with a limited number of students, was offered in the fall of 1970, mainly to students in the Unified Science Study Program. In Mathematics, Professor Arthur Mattuck adopted the method for all students in 18.01 in the fall of 1970. He modified the usual format to require the passing of only six tests per semester and offered several series of lectures that cover the material at different rates. Also in the fall of 1970 the course 12.00 in the History of the Earth was offered by Professor Richard Naylor in the self-pace format, as was one section of the 6.14 course in electronics by Irvin Englander (more recently Ernie Vincent) under Professor Stephen Senturia's direction.

Here is a list of all the courses known to the Education Research Center offered now or recently at MIT by the Keller Plan and, in parenthesis, the faculty or staff member in charge: 1.00 (Jay Walton); 5.41 (Vournakis); 6.14 (Senturia and Vincent); 8.01 (Hulsizer); 8.02 (Green); 8.03 (Green); 8.04 (Kurnit); 8.05 (Friedman and Taylor); 8.333 (Stanley and Hui); 12.00 (Naylor); 15.515 (Rockart); 18.01 and 18.02 (Mattuck); in addition a separate laboratory and computer-based calculus course is given

(Continued on page 8)



Panel at the Keller Plan Conference includes (left to right): Billy Koen, Gilmour Sherman, Fred Keller and Ben Green.

ERC, voiced his hopes and fears about the Keller Plan and suggested its additional usefulness as a "dietary supplement" for those students in free-style programs such as the Unified Science Study Program (USSP) and the Experimental Study Group (ESG) who may wish an intellectual change of pace or rapid mastery of some skills needed for their own projects.

Gilmour Sherman of Georgetown University, one of the Plan originators, emphasized the key features of the Keller Plan that make it effective. The system is based on student response rather than teacher performance and encourages students to demonstrate their skills freely. The purpose of the unit tests is not primarily to evaluate students but to identify and remedy errors. Since errors do not lead to bad grades but only to another chance at a perfect score, the teacher can demand mastery and students are willing to expose themselves for tutor comment and correction.

It is this individual attention that is central to the system. Since the instructor has specified in his study guides everything about his course that he knows how to predict, he is free to deal with unforeseen problems and to bring his unique personal and professional insights to students on an individual basis.

David Born of the University of Utah, author of a book on how to organize a Keller Plan course, reported that in his experience student performance is clearly better in a Keller Plan course than in a comparable lecture course.

Dr. Murray Sidman of Northeastern University, Massachusetts General Hospital, and the Fernald School compared the psychological insights that led to the Keller Plan with those found effective in teaching mentally retarded children. In both situations psychologists have found that punishment and testing as a process of selection ultimately turn students away from the process of education. In modern thinking the teacher has the responsibility to insure the success of the student by rewarding accomplishments that lead to the final performance expected of him. Dr. Sidman felt that teachers at every level cannot avoid the problems posed by the fact that they are controlling the behavior of their students, whether they do so effectively or ineffectively. The purpose of education, both of mentally retarded children and of college students, is to increase the options available to them, so that in the long term each one can assume control of his own life.

A large number of individual papers at the conference detailed applications of the Keller Plan to a variety of disciplines from philosophy to electrical engineering, together with modifications and new extensions of the plan.

Billy Koen, a 1968 graduate of MIT in nuclear engineering, gave a "frankly inspirational" talk on the ways by which he, as a young faculty member, helped to introduce the Keller Plan into the University of Texas. The conference concluded with panel discussions about student procrastination, recruiting tutors, and helping



# CLASSIFIED ADS

Ads are limited to one per person per issue and may not be repeated in successive issues. All ads must be accompanied by full name and extension or room number. Ads may be telephoned only to Ext. 3270, or mailed to Room 5-105. The deadline is 5pm Friday.

## For Sale, Etc.

New snows w/spikes, 7.13 fit any Falcon. X3495.

Smith-Corona port typewriter, like new. X3463. Snows 6.50x13", like new, \$14. Hector, X6310.

AR turntbl w/Shure M91E, like new, \$80 or best. Howard, 661-9480 evgs.

Smith-Corona manual typewriter, exc cond, \$45. Call 491-6781 evgs.

Reels of used BASF and Scotch recording tape, 1800, \$2.50; \$3. Chip, X1587.

Free: upright piano, you move. Ray, X4736 or X5246.

Sears tool box, 4 trays, exc cond. \$12 firm; garden border fencing, 5-25' rolls, \$2.50 ea. Warren, X3969.

Dyna stereo preamp; Heath oscilloscope; 37" electronic equip cabinet; ski equip. Call 536-9824.

Stud snows, 8.55-14, Plymouth wheels, \$40. Roy, X6105.

Wilson T2000 steel tennis racket, 4 1/2 m, \$25. Ed, X571-Draper 7.

Heavy chain & hardened steel lock, suitable for motorcycle, \$6; M plastic humanic boots, size 11, \$38. John Miller X2073.

Snows w/rims, \$30. Mead 332-6159.

Little Huffy elec lawn mower, '55. Call 862-4197.

Dynastar Equipe 190cm skis w/Salomon bindings, \$140; Presenico metal 215cm skis w/Cook bindings, gd. cond. \$50. G. Dugay X8250 or 774-6565 (Danvers).

Yashica Electro 35 GT, F1.7, 45mm, w/case, lenshood, grip-tripod, auto, exc cond, \$80; Petri 35mm color corrected super, F2.8, w/case, \$35. Frank, X3453.

Broil King broiler oven, \$20; Canadian ice skates: boy's, men's, Bauer hockey, size 10 & size lrg \$10 ea; woman's figure skates, \$15. Call 265-3493.

Rollaway bed, \$20; sm round walnut tbl w/2 chrs; bl swivel chr; reasonable. Larry, X1960.

Sears air cond 5,000 BTU, exc cond, \$60. X1901.

Sofas, arm chrs, \$50; TV tbl, \$10; K tbl, \$30; new GE refrig, \$150. Call 646-3319 evgs.

Storm windows (18); storm door; bargain price. Dr. Hagy, X2458.

Radial spiked snows, 8.25x15, best offer. X7509.

Lrg wood cabinet & typing desk, reasonable price. Call 536-6328 evgs.

Westhse elec stove, exc cond, \$50. Call 484-7970.

Sm Japanese field glasses, \$10; walnut straight chrs w/rattan seats, \$9 ea; new silver plated dishes, very cheap. Call 868-5831 after 1.

Gr Russel Wright china: 4 plates, 8 butter plates, 5 cups, 3 saucers, \$10; wall hung beaded projection screen, 50"x50", \$14. Call 862-1935.

Red suede Istanbul coat w/gold embroidery & wh wool trim, F med size, \$100. Betty B, X6888.

Picket fence, 70'L, 3'H, w/gate, exc cond, best offer; various handbags in assorted colors, best offer. X6606 or 861-0142.

New Polaroid Swinger, exc cond, best offer. Call 969-6959 evgs.

Refrig, 12' cubic, \$40; maple K set. \$35. Mike, 354-7861.

Presidential citation signed by Ulysses S. Grant, dated 1873, \$90 or best offer. Mike X6431.

VW snows stud, \$20. X4549.

Red carpet, 12'x15', \$65; Garrard Mark II turntbl, \$30; factory hdtip for Triumph Spitfire, exc cond. \$175. Bill, X1559 or 876-1695 evgs.

Head 720 skis, 203cm, W/Nevada toe & heel, used once, \$145; Rossignol Strato 210cm skis w/Nevada toe & Marker Rotomat swivel heel, \$135; w/out binds, \$105. Jack Frailey, X4974.

Fender Super Reverb amp, \$250. Dennis, X5366.

Pentax Spotmatic F1.4, like new; 135 mm Super Takumar, exc cond, best offer. Call 491-1620.

Transceiver, 6 meter, 115VAC-12VDC, 14 watts & 5 element beam, \$60. X3895 or 658-3381.

Cannon Mt shares in new ski chalet, free day & night skiing. Adrian, 498-5621 evgs.

Snows, 7.35-14, \$15 for both. X2048 or 643-3862.

Aluminum screens (10), 29.5"x31.5", \$5; 30W gas stove, 4 burners, \$20. Ed, X5778.

Dual 1219 turntbl w/cart \$100; Pentax Spotmatic F1.4, bl body, \$140. Call 547-9672.

Sofa bed & arm chr, \$55; dbl bed, \$15; baby crib w/matt, \$20; easy wash mach, \$10. X5282 or 354-7234.

Glass paneled door w/screen/storm door, \$35 for both; 2 Norwegian sweaters, new, \$20. Gunderson, X6085.

B.U. '70-s pennies; 1 roll \$1, 6 for \$5. Joe Vittek, X7572.

Yard sale of furnishings of entire home, Sat, Oct 23, 10-5pm. 27 Tower Rd, Arl. If rain, Mon, Oct 25.

Man's bl cashmere coat, size 40, \$25; luggage; dbl crochet bedspread, \$20. Call 232-2034.

Maple dbl bed w/box spring & matt, \$30. Call 245-5417.

Twin bed, \$20; extra matt, \$10; mini-bike, \$100; new 12 string guitar, \$75. All gd cond. Call 862-5041.

Yel bean bag chr, washble, mod, \$20. Carol, X2758 or 661-8054 evgs.

Antique bent wood chrs, \$20. Marilyn, X1662 or 227-3076 evgs.

Wooden desk & chr, \$15. Carol, X2758 or 661-8054 evgs.

Sew mach in hideaway cabinet, works but could use overhaul, first \$15 offer takes it. Brenda, X4873.

Smith-Corona elec port typewriter, model 210, \$150 firm. Kelly, X1871 or X1872.

Wood storm windows, 32"x59" w/hardware. Call 395-6061.

Lex receiver AM/FM multi-plex, exc cond, \$30. Dorm 9-536 evgs.

## Vehicles

'61 Chevy Belair, working order, free. X6740.

'61 Ford wgn, runs good, snows. Make offer. Fisher, X5571.

'61 Comet, snow treads, R, \$50. David, X7806 Linc.

'61 Chevy 4 dr, 6 cyl, new tires, best offer. X5402 Linc or 924-0264 evgs.

'61 VW bug, '69 paint job, '63 eng, gd cond, \$200 or best. Dorm 9-759.

'62 Ford Futura, 6 cyl, std, R&H, gd cond, \$125 or best. Bob, 266-7067 evgs.

'63 Pontiac Catalina, 4 dr, auto, 52K, \$350. Linda, X6750 or 254-6924 evgs.

'63 VW, rebuilt eng, psychedelic paint, R, \$300. Bill Worthington, X7478 Linc.

'63 Porsche coupe, exc cond, \$1500. Terry, X157 Linc.

'65 VW sqbk, snrf, exc cond, \$600 or best. Call 265-5025.

'66 GTO sedan 428 cid, '69 mtr, posi-traction tri pwr. X7189 or 452-3329.

'66 Mustang conv, \$150. Yona, 868-2079 evgs.

'66 VW sqbk, 66K, exc cond, \$950. X2921 or 861-9445.

'66 Pontiac wgn, still runs, free. Maureen, X3209.

'66 Buick, exc cond, \$900. Kathy, X5730 Linc.

'66 Ford Fairlane 2 dr club coupe, 54K, auto, R&H, orig owner, \$500 or best offer. Call 491-3680 evgs.

'67 Ford Custom 500, 4 dr, auto, pwr st, R&H, V-8, 40k, exc cond, \$1,100. Call 944-1659.

'68 Mustang conv, auto, 6 cyl. Bob, X6891.

'68 Triumph GT6, 35K. X6610 or 354-4029.

'69 Karman Ghia, exc cond, 33k, new brakes, R&H, \$1,350. Call 965-0451 9-10am.

'69 Dodge Charger, pwr st & br, 4 barrel, alarm system, \$1,750 or best. X7379.

'69 Pontiac LeMans 2-dr, vinyl top, 36k air cond, etc, \$1,700. Call 332-3293.

'69 Ford Squire wgn, 22k, air cond, \$2,200. Call 484-8042.

'69 Pontiac Tempest, hdtip V8, 27k, pwr st, new tires, exc cond, \$1,800. Call 625-1662 evgs.

'69 Cougar, air cond, auto stick shift, mtd stud snows, 15k, exc cond. X240 EDC or 729-6530.

'70 VW bug, exc cond, \$1,475. Bill, X5020 or 646-8406 evgs.

'70 Toyota Corona, exc cond, 1.6k, auto. Best offer. Diana, X7555.

'70 VW sedan, AM/FM R, 21k, \$1,500. X5888 Linc.

'67 Honda 150 cc, rebuilt eng, new parts, tools. Dave, 864-1278 evgs.

'67 Honda CB450, 15k, w/1/2" chain, \$350. X6586 or 734-6695.

'69 Garielli motorcycle, 100 cc, w/helmet, \$225. Jim, X4070.

'70 Cat mini bike, 3hp, 30mph, \$100 firm. Call 334-3820.

'70 Honda CB350, stripped of \$135 worth of parts, \$500 includ luggage rack, helmets. Dorm 8-413.

'71 Kawaski Mach III, exc cond. Baker House, Rm. 333.

'71 Ski-doo TNT440, 35hp, w/dbl trailer & extras, \$999. X7379.

'71 Shasta 17' travel trailer, sleeps 8, exc cond, \$1,950. Donna, X2575.

Sailboat, 25' sloop, half interest, \$2,700 or \$200 p/mo. X1998 or 526-4465.

## Housing

Allston: unfurn studio apt, \$110 until freeze, avail now, near T line, prkng, w/ sell some furniture. Call 566-5506 am or evgs.

Arl: sublet 1 BR apt, avail 11/1, w-w carpet, air cond, \$195. X7180 or 646-3181 evgs.

Jersey St: 1 BR apt, mod K, lease 11/1, \$180. Ed, 266-0923 evgs.

Canada, Vermont, Memphremagog Lake: spectacular mt setting, hunting, fishing, etc., 3 BR lodge w/200 acres. Daily, wkly, monthly rental. Dr. Pirotin, X2430 or 665-6220 evgs.

Mission Hill: lrg 5 rm apt, \$155 w/H, avail 11/1. Ann, X3551 or 427-4988 evgs.

NH: near N. Conway, chalet, 3 BR w/loft, sleeps 8-10, winter ski rental, prefer married couples. Sue, X3468.

S Easton: 3 BR ranch w/horse barn, corral, on landscaped 2 acres nr wetlands, wildlife. Big mod K, tile B, full bsmnt. Upper 20s. 742-2760 9am-5pm Mon-Thurs or 238-3266 (S.Easton) Fri, wknds.

Somvie: Beacon St unfurn 2 BR apt, air cond, \$230 w/H, sublet for MIT people only, avail 12/1. Albuquerque, X5959 or 492-1589.

Wells Hill: 3 BR, 1 1/2 B, full bsmnt, 2 car garage, lovely landscape, low \$40s. Harry, X2691 or 235-2410 evgs.

## Animals

Basset hound puppies, 7 wks old, \$100. Call 358-4607.

Siamese kittens, \$25 ea; 1/2 Siamese kittens, free. Rader, X5852 Linc or 369-5285.

F Tiger cat, grey & bl, 1 1/2 yr old. Sharon, 876-4602.

## Lost and Found

Slide rule in 10-250 or 4-156. X3213

## Wanted

Daily ride MIT/Newton Corner, 9-5. Christie, X5689 or 332-7743.

Daily ride between Melrose/MIT, 9-5 or 8:30-4:30. Diane, X5764.

Used gas powered plastic model air planes for needy boys. Bob, X3697 or 662-7033.

Arm chr/sgl bed; auto perculator. X2678.

People to share cooperative darkrm. Jim, 354-5989.

Someone to share rent for ski lodge 15 miles n. of Killington. Liz, X6808.

Unfurn 3-4 BR hse w/in commuting dist, \$400 or under. Kathy, 267-5507.

People to fill new ski lodge near Glen Ellyn & Sugarbush, Vt. Janet, X4872.

High quality Simmons type love seat/sofa/bed. Harrigan, X3821.

People (2) for work/study jobs working w/kids, Mon-Fri, 2-5pm. Jean, 547-7670 Urban Studies.

F rmmte for Arl apt, \$90. Call 646-2960 evgs.

Old sew mach & pr of lady's ice skates, size 7W. Missy, Dorm 8-728.

F rmmte for lg 3 BR apt betwn Central & Harv Sq, own room. X3511 or 876-8452 evgs.

## Miscellaneous

Wl do typing at home. Donna, 387-9043.

Inexpensive computer services avail, incl programming, mach time, data reduction, specialty. Call 643-2422.

Wl do thesis typing on IBM Selectric, reasonable rates. X6470 or 661-1929.

Wl do typing at home, 50 cents per page. Call 391-4995.

Wl do typing. Julie, X4203 or X2360.

Dead storage space for boat, car, etc. Leon B. Finkel, X6444.

Wl person who received Monroe sticker No.130 pls call orig owner, need your name. Rebecca, X2424.

Wl do gen/tech/thesis typing. Call 547-2163 evgs.

Wl do typing. Moira, X6219 or 547-7092.

Prof. Santa Claus, avail year-round. Jim Lopez, X443 Linc. or 372-5195 (Haverhill).

# Veterans Day Is on Monday

Next Monday, October 25, is a legal holiday marking the celebration of Veterans Day.

In the past, Veterans (or Armistice) Day has been observed on November 11, but in 1968 the federal government enacted a law, effective this year, which decreed that Veterans Day would be observed on the fourth Monday in October. Four other holidays are affected by the same law, including Washington's birthday which will be celebrated on the third Monday in February, instead of February 22.

The Institute will be closed on Monday and the usual holiday work schedule will prevail. Students, however, will have a longer holiday because no classes will be held on Monday or Tuesday. Enjoy the long weekend, but keep in mind what Veterans Day is.

On November 11, 1918, leaders of the allied nations and central powers met in Marshal Foch's railway coach near Compiègne, France, to sign an armistice ending World War I. At 11am that morning, bugles sounded "cease firing" and the hostilities of the war came to an end.

In 1926 the federal government declared November 11 a legal holiday to commemorate Armistice Day. Later, in 1954, the holiday was given a new name—Veterans Day—in tribute to veterans of all wars.

## '72 - '73 Urban Awards Offered

The New York City Urban Fellowship Program is now accepting applications for fellowships for the 1972-73 school year.

Urban Fellows hold positions in New York City's government involving policy and program planning, research and general administration. They may be assigned to any area or level of government, and often serve as assistants to agency heads or as mayoral assistants. In addition, they participate in weekly informal seminars with city officials, community representatives and experts in urban affairs.

The fellows will serve full time from September, 1972 through June, 1973. The program provides a \$4000 stipend, and academic credit will be arranged with each student's school. To be eligible, students must be registered in a graduate or undergraduate degree program while serving as Fellows, and must have completed their junior year in college before the start of the fellowship year.

Deadline for application for Urban Fellowships is January 31, 1972. Interested students should write Urban Fellowship Program, Office of the Mayor, 250 Broadway, New York, N.Y. 10007, for application materials and further information.





Vice President Vincent A. Fulmer, left, and Ralph A. Sayers of RLE, right, talk with Jerry Shahnnavaz and John Cowden, the new men at the Faculty Club.

-Photo by Margo Foote

## New Management at Faculty Club Aims to Continue Quality Service

The Faculty Club is operating under new management for the first time in nearly 20 years.

The Stouffer Management Food Systems Division of Litton Industries has been contracted to manage operation of the Club. Under this agreement, two Stouffer employees, John Cowden and Jerry Shahnnavaz, will serve as manager and assistant manager, respectively.

Working closely with the Faculty Club Executive Committee, Mr. Cowden and Mr. Shahnnavaz will oversee general operating procedures of the Club. "Our main objective," says Mr. Cowden, "is to provide members with personal, individual service, but we also want the Club to operate as economically and efficiently as possible."

He continues, "Right now we're going through a period of adjustment. We're learning how the Club runs and what we can do to improve the operating system. At the same time, the employees are getting used to the new management and some of the changes we've made in their working procedures. It will take time, but we think the transition will run smoothly."

Faculty Club members will notice some changes in Club services. Menus are different and new reci-

## Health Sciences to Hold Program

Students who are now juniors or seniors are invited to attend a meeting to discuss opportunities in the Harvard Medical School-MIT Program in Health Sciences and Technology. The meeting is at 5pm tomorrow (October 21) in Room 10-250. Students interested in applying for admission to the class entering in September 1972 are urged to attend.

pes are being used in food preparation. President of the Faculty Club, Professor Elias Gyftopoulos, says, "It is our hope and expectation that the new management will maintain and, wherever possible, improve the Club's image and the quality of services that members have enjoyed in the past. We also hope that after an initial transition period the menus will reflect the preferences of the members."

Both of the new managers have

been with Stouffers for several years. Mr. Cowden previously managed a restaurant in Pittsburgh, and Mr. Shahnnavaz worked in a Stouffer's motor inn near Cleveland. They assumed their new positions at the Faculty Club on September 13, following the retirement of Club Manager William B. Morrison. After opening the Club 19 years ago, Mr. Morrison stayed on as manager and has run the Club ever since. (See *Tech Talk*, October 6, 1971.)

## Family Day Care Program to Hold Orientation Meeting

The Family Day Care Program is sponsoring an orientation meeting next Thursday, October 28, to discuss the program and its problems. All parents interested in the informal day care service are urged to attend the meeting, to be held at 7:30pm in the Student

Center, Room 473.

The program began last August, but response has been light. Community members, willing to take care of children in their homes, are still needed to serve as day care parents. In addition, program organizers are looking for working parents interested in enrolling their children in the day care service.

Anyone interested in using the program, being a day care parent or volunteer, or donating equipment, should attend the meeting or call Kathi Mahoney in the Student Employment Office, Ext. 4973.

## Students Needed for IAP Project

Electrical engineering students, particularly those with a background in computer science, are needed for a project to develop a computer data base for the EE Independent Activities Period.

Work will be done using the facilities of Project INTREX. Research credit for this semester and during IAP can be arranged. Interested students should get in touch with Dr. C. W. Therrien, Ext. 7262 or Richard S. Marcus, Ext. 2359.

According to Professor Michael Athans, IAP coordinator for the department, "the project is a fine opportunity to help the department provide cross-indexed subject information on minicourses, seminars and research projects during IAP."

## MIT Netmen Win Brandeis Matches

MIT sophomore William Young won the singles title in straight sets, then teamed with classmate Kevin Struhl for the doubles crown in last Sunday's eighth annual Brandeis Invitational Tennis Tournament.

Young swept Harvard's Charlie Krusen, 6-2, 6-1, then he and Struhl defeated Krusen and Hugh Hyde, 6-2, 6-4. Seventeen New England colleges participated in the weekend event.

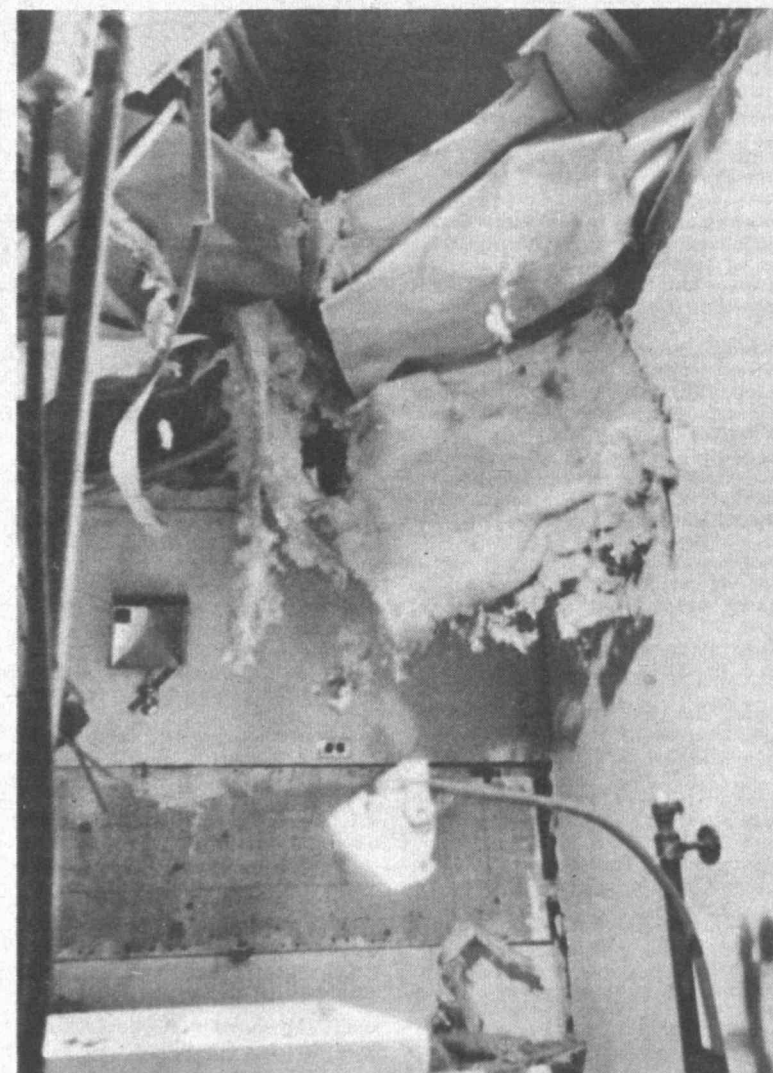
## Self-Paced Study Discussed at Keller Plan Conference

(Continued from page 6)

by Harry Schey and William Walton of ERC.

The inception of the Keller Plan dates from March 29, 1963. Fred Keller and Gilmour Sherman, both then at Columbia University, and others were given the task of founding a department of psychology at the planned University of Brazilia in Brazil. They were given free hand to determine not only the content of the curriculum, but also the method by which it was to be taught. A trip around the eastern seaboard of the United States revealed almost universal dissatisfaction with present methods of university teaching. On March 29, 1963 they gathered

around the fireplace at Fred Keller's home to combine what they had learned on their trip with their own insights as behavioral psychologists. Out of that session came the rudiments of the Keller Plan which were applied first in Brazil and later, when a military coup forced them to leave the country (the coup had nothing to do with the new teaching method!) Keller and Sherman used the Plan and developed it further at Arizona State University. Fred Keller, now Professor Emeritus at Western Michigan University in Kalamazoo, spends much of his time responding to invitations to speak on the teaching method that carries his name.



Damage was extensive in the ladies' room where the explosion occurred. At the lower left is a wash basin. Ceiling material is dangling and the mirror was torn from the wall in the background.

## Radical Organization Claims Credit for Explosion Friday

(Continued from page 1)

of physical plant, estimates that repairs to the area will cost \$35,000.

The FBI is investigating under a law enacted last year, requiring federal investigation of explosions at institutions which receive federal funding. State Fire Marshall Ralph Garrett said that the explosive device appeared similar to one used a year ago at an explosion at the Center for Inter-

national Affairs at Harvard.

In a letter to *The Boston Globe* an organization calling itself the Proud Eagle Tribe took credit for the explosion and said the target had been the office of William P. Bundy, a senior research associate at the Pentagon. Mr. Bundy, whose office was near those damaged, is not at the Institute this semester. The Proud Eagle Tribe also claimed credit for the explosion at Harvard.