Massachusetts Institute of Technology

TECH TALK

April 5, 1972
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Number 39

Six of MIT's World Tiddlywinks Champions returning from England showing the squidgers they used in the championship match. Front L to R: J. Franz Christ; Timothy D. Schiller, team captain; Craig A. Schweinhart. Back L to R: David H. Lockwood; William H. Renke; James R. Martin. --Photo by Margo Foote

Winkers Take World Title in British Tourney

MIT's eight-man tiddlywinks team returned Monday from England as world champions after defeating Southampton University, the British champions, by a score of 123 to 101.

On March 28th and 29th the MIT and Southampton teams played two rounds of the championship match and MIT won both--65-47 and 58-54--making the total score of 123-101 for their world championship victory.

After becoming the first world tiddlywinks champions, the team appeared on British television, for which they received a sum of 11 pounds. They intend to use that money to buy a team trophy.

During the rest of the week, the MIT team roamed England, defeating other teams in five of the six matches they played, including matches against the Middlesex County, Northern Irish, and English Southern Alstars teams.

The team captain, Timothy D. Schiller, Fresno, California, a civil engineering senior, believes that the Southampton team members aré actually more skilled at the game than are the MIT members. But he explains the MIT victory by noting that the MIT team members have developed better strategy--more than compensating for their lesser skills in handling the plastic disks. The MIT team, he says, was more cautious than the Southampton team, which paid off.

In case you are a little rusty about the rules, tiddlywinks is played on a three-by-six foot felt mat by four people at a time--two on each team. Each person starts with six plastic disks, called winks, which he can shoot by pressing down on their edges with another disk, called a squidger. All four

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April Holiday

The Institute will observe the Patriot's Day holiday on Monday, April 17. Holiday pay provisions will be in effect on that date. Classes will be cancelled on both Monday and Tuesday, April 17 and 18.

LINAC Facility to Be Named in Honor of William H. Bates

MIT's 400 million volt linear accelerator which is nearing completion at Middleton, Mass., will be formally named in honor of the late US Representative William H. Bates in ceremonies at the facility Friday afternoon, April 7.

Scores of officials and their wives from Middleton and surrounding towns, from Essex county, and from the state and federal government, including the Congress are expected to attend. Among Congressmen present will be Rep. F. Bradford Morse of Lowell, Rep. Louise Day Hicks of Boston, Rep. Louis C. Wyman of Manchester, N. H., Rep. Thomas P. O'Neill of Cambridge, and Rep. Michael J. Harrington of Beverly, who succeeded Congressman Bates as the representative from the Sixth Massachusetts Congressional District.

Principal speaker will be Clarence E. Larson of Washington, D.C., one of five commissioners who make up the US Atomic Energy Commission, the federal agency which sponsors and funds the project.

Howard W. Johnson, chairman of the Corporation will preside. President Jerome B. Wiesner, and Dr. Peter T. Demos, director of the Laboratory for Nuclear Science of which the accelerator is a part, also will participate in the speaking program.

The formal ceremony will conclude with remarks by Mrs. William H. Bates, widow of the congressman who died in 1969 while in office and who, as a member of the Joint House-Senate Committee on Atomic Energy, had been closely identified with the linear accelerator project from its inception. Guests will then be given guided tours of the facility.

The afternoon ceremony in Essex County will be preceded by a private luncheon honoring the

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Jerome Bruner to Give '72 Compton Lectures

Jerome S. Bruner, professor of psychology at Harvard University, will present a two-part Compton Lecture entitled "The Uses of Immaturity" on Thursday and Friday, April 6 and 7, in Kresge at 8pm.

On Thursday, Dr. Bruner will discuss "The Primate Evolution of Educability" and on Friday his topic will be "Models, Tutors and Human Pedagogy." The lectures are open to all members of the Institute community; free tickets will be available in the lobby of Building 10 today, April 5.

The Compton Lectures are named for the late Karl Taylor Compton, who was president of the Institute from 1930 to 1949 and chairman of the Corporation from 1948 until his death in 1954.

Born in New York City in 1915, Dr. Bruner received the B.A. degree from Duke University in 1937 and the Ph. D. degree from Harvard in 1941. He returned to Harvard in 1945 as Lecturer on Psychology and was appointed Associate Professor in 1948 and Professor in 1952.

From 1956 onward, his interest in the cognitive processes extended increasingly to the study of development in children, and with that has grown a parallel interest in the nature of the educational process. In 1964-65, Professor Bruner was engaged in the construction of an elementary school curriculum in social studies, based on concepts set forth in some of his earlier studies. In the last few years, his research has been concerned with the study of perception, attention, learning, memory, early language acquisition, and problem solving in infants during the first two years of life.

Dr. Bruner delivered the 1972 Haynes Lectures at the California Institute of Technology. Both the Haynes and Compton Lectures are being prepared as a volume entitled *The Uses of Immaturity.*

In September, Professor Bruner will become Watts Professor of Psychology, a newly-created chair, at Oxford University. He will also be a Fellow of Wolfson College.

Hold your breath, pop a balloon, and snap a stroboscopic picture -- that's what kids will be doing April 15 at the MIT Open House. One of the highlights of this year's Open House, which will feature over 50 exhibits and tours on the campus, will be a display and demonstration at MIT's famed Strobe Lab, where visitors can see and photograph everything from a speeding bullet to Professor Harold E. Edgerton's "Remarkable Single Piddler Hydraulic Happiness Machine." The balloon pictures are made with a strobe light that freezes motion at 50 millionths of a second and is triggered by the sound of the bursting balloon picked up by an acoustic device. Pictured here is Charlie Todd Miller, son of Charles E. Miller of Acton, Mass. Mr. Miller, who has just been appointed lecturer in electrical engineering at MIT, is Professer Edgerton's assistant in the Strobe Lab and a specialist in the design and use of stroboscopic lighting equipment. --Photo by C.E. Miller

Landscape Paintings Exhibited

The public is invited to the opening of "To Look on Nature," an exhibition of 19th Century European and American landscape painting, on Thursday, April 6, at 8pm in Hayden Gallery.

Sponsored by the Committee on the Visual Arts, the exhibit brings together a cross-section of more than 50 landscape paintings from the 19th Century. "To Look on Nature" is composed of works by

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Batavia 200

At 1:08 p.m. on March 1 there flashed with all but literally the speed of light from the four-mile Main Ring of the National Acceleratory Laboratory near Batavia, Illinois, a proton beam of singular energy, 200 billion electron volts in point of fact. Understandable cheers greeted this happy event, for 200 BeV is the design energy the elaborate and costly NAL machine was built to reach, to say nothing of being a lot of BeVs in any case.

Wanting to join in the general scientific elation, albeit at a distance, and looking for someone to share a cheer or so with, we paid a visit not long ago to Jerome Friedman, professor of Physics. Professor Friedman is a member of one of two MIT research groups (the other is under Irwin Pless of the Laboratory for Nuclear Science) who will be conducting experiments on the 200 BeV machine at NAL. His particular colleagues in this venture are Henry Kendal and Lawrence Rosenson, also of the MIT Physics Department. With Professor Kendall, Professor Friedman recently performed a spectacular experiment at the Stanford Linear Accelerator Center that lent not a little support to the suspicion that the constituent particles of the atomic nucleus--protons and neutrons, which are known as nucleons in the high-energy trade--are themselves composed of still smaller, and still puzzling, entities called partons.

We found Professor Friedman's door wide open when we got to his office on the fifth floor of building 24. He is a tallish man of energetic and open countenance, and he waved us toward a battered, comfortable couch with considerable warmth. Professor Kendall, he told us, had just taken off for a new experiment they were conducting together at SLAC. "The way things are these days," he remarked cheerfully, "physicists don't stay in one place much longer than sub-atomic particles do."

We told him we thought the news from Batavia was good news indeed. "Oh, yes," said Friedman, nodding emphatically, "we're all pretty happy about it. Of course, no one thought it *wouldn't* work. It was designed to do just what it did. But any piece of equipment that's both big and new--NAL has a new type of magnet focusing system, for example--is bound to be a little tricky at first. So it's very nice to have it going in a reasonable length of time. Nobody's going to get delayed."

We asked Professor Friedman what sorts of experiments would be undertaken. "For the most part we'll just be asking what happens to a colliding proton at these extremely high energies," he replied. He consulted a list of approved NAL experiments. "There is a quark search experiment. And one experiment is going to look for magnetic monopoles. Magnetic monopoles are sort of fun to look for, although so far no one has found any. If you look at a common bar magnet microscopically, you see it's formed of tiny magnetic dipoles with plus and minus poles. But *electric* monopoles appear in nature all the time. You see particles with only minus charge, like the electron, or just with positive charge, like the proton. Why, then, shouldn't there be extremely small magnets with just one pole? They could exist near high energy sources, if they exist at all, and what you do is simply scoop them up with a strong magnetic field, just suck them up in a magnetic vacuum cleaner so to speak. If they're there.

But mostly, we'll just be investigating very high energy regions," Professor Friedman went on. "We're going right out to the frontier, and in this circumstance experiment guides theory to a large extent." We ourself had always thought it was rather the other way around, that theorists theorized and then experimentalists experimented to see if they were right. We gave voice to this view.

"It's true enough that the world hasn't always been ready for an idea," Professor Friedman said agreeably. He told us that an experiment done in the late '20's had indicated parity was not conserved in the weak interactions, but that the idea of parity conservation was so pervasive that the experiment was thought to be wrong until Yang and Lee did the theoretical work for which they received the Nobel Prize in 1957. "But we hope this doesn't happen any more," Friedman said. "Perhaps I'm optimistic, but I think physicists are more skeptical now. We've had a long history of being fooled, and in any case so many things have broken down in recent years that few people take anything for granted any more."

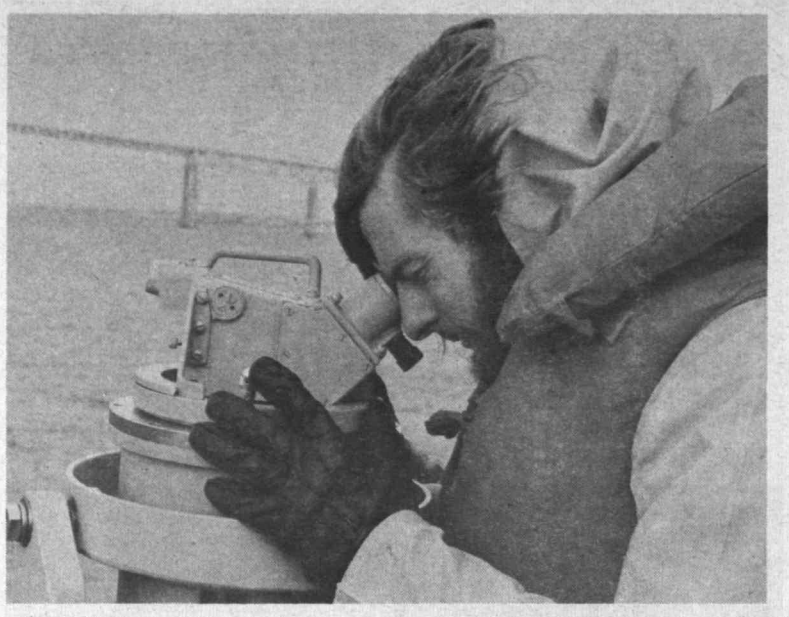
Among the breakdowns, Friedman continued, had been the conservation of time reversal. "It used to be thought that any reaction was invariant with respect to time, that if you had--" he paused, stepping to the blackboard to write the letters"--A+B C+D, for example, then if you ran the interaction backward in time you could always get D+C B+A. Now it turns out that in certain aspects of the weak interactions this is not so." Backward in Time ran particles until reeled our mind. "The lesson is that one shouldn't be too certain about one's semi-religious beliefs. For example, just about the time Henry and I were getting unexpectedly large cross-sections in the electron scattering experiment at SLAC, Bjorken at Stanford suggested we check what seemed like a very far-out idea at the time. But we did check it, and now, a few years later, everyone sees it couldn't be otherwise."

We asked Professor Friedman if his NAL experiment had a number. "Yes, it's number 96," he said. So far 155 experiments have been submitted to the board that approves experiments for the new 200 BeV machine, of which 52 have been approved to date. Since the experiments are numbered in order of their submission the approved roster has great gaps. Professor Friedman estimates that in its first years of operation, the NAL machine will accomodate not many more than a dozen experiments a year, meaning that the waiting list is already some three years long.

"There have been a few shoot-outs in the process of getting experiments approved," Friedman remarked. "We call them bad days at black rock. This happens when two groups want to do the same experiment, but with different methods. If they want to use the same methods, the NAL board usually tries to arrange a collaboration. But if there are competing methods, then everybody gets called in to decide which is the better one. It just makes sense to try to make the best decision when experiments cost as much as they do. In any case, everyone goes out of his way to make these confrontations as easy as possible."

Professor Friedman's own experiment is an example of an arranged collaboration and involves a group of some 30 people from MIT, Stanford, the University of Bari in Italy, Brown, Northeastern, NAL, Cornell, Argonne National Laboratory, and CERN, near Geneva. "The collaboration worked out just as well," Friedman said, "because when we got together we found that none of us really had the manpower to mount so large an experiment alone.

"We're building what will be the world's largest magnetic spectrometer. It will be in its own little building in the meson beam area at NAL. We put it there to get as many different kinds of particles to study as possible, because the spectrometer isn't the kind of laboratory device you can move around. It will be 450 feet long and built in place. The focussing magnets are already there. We'll be looking first at elastic scattering--proton-proton, anti-proton-proton, kaon-proton--a number of the strong interactions. We have a second experiment--not yet approved but held in abeyance until the first is done--to look at inelastic reactions. The spectrometer will allow us to get extraordinarily precise particle measurements. We hope to be tuning it next fall and be taking data by January of 1973. We'll probably be running at NAL for about a year.



Robert Haworth, a senior from Clearwater, Florida, takes alidade sightings on the deck of one of two yard patrol training boats donated by the Navy to MIT Freshman Seminar 136 for piloting drills on March 27. Eighteen students spent the day on Narragansett Bay performing coastal navigation exercises for the course. --Photo by Lt. Donald Welch

Students Pilot US Navy Patrol Training Boats

Eighteen students from Freshman Seminar 136 spent Monday, March 27, piloting two 75-foot yard patrol training boats in Narragansett Bay off Newport, Rhode Island, courtesy of the US Navy.

The day began at 4:45am when the group left MIT for Newport, where they boarded the training boats and, while the full naval crews looked on, took over their assigned duties. The students worked in shifts at each of the tasks, including helmsman, quartermaster, navigator, and communications officer. Each student got to try his hand at every job.

Seminar 136 is called "The Art and Science of Coastal Navigation," and is taught by Professor William R. Porter of ocean engineering. Lieutenant Donald Welch, of Naval ROTC, who helps teach the course and who made arrangements with the Navy for the use of the boats, explained:

"We try to teach navigational theory, but it is hard to show in the classroom that piloting is also an art. A trip like this one is a good opportunity for student to get their hands dirty, make a few mistakes, and see that running a big ship takes more than just theory."

While on board the students were in full command, although under-supervision, and took the boats through a pre-scheduled cruise around Prudence Island in the bay, plotting their own course and performing standard man-overboard and rescue exercises along the way. The cruise ended at 4pm when the group returned to MIT.

"They're not really expert pilots yet," said Lieutenant Welch, "but now they understand some of the real problems of coastal navigation."

Forrester Appointed to Germeshausen Chair

Professor Jay W. Forrester, the MIT scientist who first achieved fame by his invention of the memory device that makes digital computers possible and then turned his computer expertise to management and systems dynamics, has been appointed Germeshausen Professor beginning with the 1972-73 academic year.

Announcement of the appointment was made by President Jerome B. Wiesner.

The Germeshausen Professorship was established in 1968 by Mr. and Mrs. Kenneth Germeshausen and is intended to support MIT's interests in combining humanitarian advances with technological progress. Mr. Germeshausen is Chairman of the Board of EG&G, Inc., Bedford, and a member of the Class of 1931.

Professor Forrester's appointment is for a three year term. Professor Robert W. Mann of the Department of Mechanical Engineering, a leader in the application of modern technology to the development of aids for the blind, the deaf and the physically handicapped, has been Germeshausen Professor for 1970-72. First holder of the chair was John Gardner, former US secretary of Health, Education and Welfare and now head of Common Cause.

A native of Anselmo, Nebraska, Professor Forrester was graduated from the University of Nebraska in 1939 with high distinction and came to MIT that same year as a research assistant in electrical engineering, receiving the master's degree in electrical engineering in 1945. He was director of the MIT Digital Computer Laboratory from 1946 to 1951 and was responsible for the design and construction of Whirlwind I, one of the first high-speed digital computers.

In 1956, Professor Forrester became professor of management in the Sloan School of Management and began the application of his background in computer sciences and engineering to the development of computer modeling and systematic analysis leading to a field now known as "systems dynamics."

New Faculty Promotions Announced

Dr. Annamaria Torriani-Gorini, of Brookline, has been appointed associate professor of microbiology in the Department of Biology. She was formerly a research associate in the department.

In addition, five other appointments to faculty positions were announced recently. They are: Michael C. Archer, of Arlington, to assistant professor of food chemistry in the Department of Nutrition and Food Science; Moshe Israeli, of Brookline, to assistant professor in the Department of Mathematics; William G. Thilly, of Cambridge, to assistant professor of food toxicology in the Department of Nutrition and Food Science; Joel H. Spencer, of Santa Monica, California, to assistant professor of applied mathematics in the Department of Mathematics; and Alan Needleman, of Belmont, to assistant professor in the Department of Mathematics.

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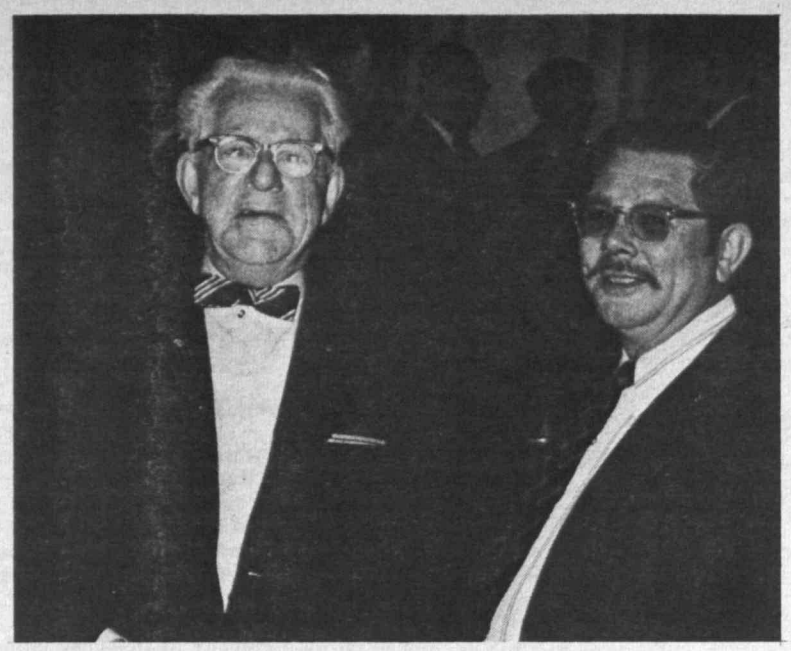


Nick Carter and his son, Frank, at the Quarter Century membership dinner. --Photo by Reg Fortier

Quarter Century Club Holds Annual Banquet

The MIT Quarter Century Club held its annual Membership Dinner on Tuesday, March 28, and paid special tribute to six members who have worked at the Institute for 50 years or more.

The banquet, held in Walker Memorial's Morse Hall, welcomed 74 new members into the club. Robert Radocchia, manager of Walker Dining Services and club president, served as master of ceremonies.

Four 50-year employees were introduced by President Jerome B. Wiesner and presented with engraved pewter pitchers in honor of their years of service at the Institute. They are: H. H. "Nick" Carter, Chemical Engineering Department, Frederick Broderick, Electrical Engineering Department, Walcott A. Hokinson, Bursar Emeritus, and William O'Connor, Physical Plant. Dr. Wiesner also cited two others, Abner Stodder of Physical Plant, and Arthur White of Laboratory Supplies, who were unable to be present.

The highlight of the evening came when Vice President Vincent A. Fulmer introduced Nick Carter, who is entering his 55th year of service at MIT. After a standing ovation, Mr. Carter introduced his son Frank, a staff member at Lincoln Laboratory and who became eligible for club membership this year. The Carters are the first known father and son team to belong simultaneously.

After another standing ovation, Albert F. Sise, associate director of Personnel Relations and a member of the club's Board of Directors, introduced the other new members. They are:

Charles J. Bella - R.L.E.; George T. Bernard - Draper Lab; John M. Biggs - Civil Eng.; Kenneth Bradway - Physical Plant; Henry Brainerd - Draper Lab; E. Cary Brown - Economics; Edward Brown - Dorms; Wilfred Burke - Dorms.

Carl T. Carey, Jr. - Bursar's Office; Frank B. Carter - Lincoln Lab; Theodore Clough - Lincoln Lab; Lewis Coonrod - Lincoln Lab; Elmer Condon - Physical Plant.

Norman Darling - E.S.L.; Wilbur B. Davenport, Jr. - Elec. Eng.; Edward Dimond - Physical Plant; Arthur C. Donovan - Draper Lab; Antone Duarte - Physical Plant.

Charles R. Emerson - Physical Plant; David J. Epstein - Elec. Eng.

Anthony Gedraitis - Phusical Plant; Charles A. Gedraitis - Draper Lab; Leopaul Giguere - Bursar's Office; Leonard J. Gordon - Lincoln Lab; Joseph Greene - Dorms.

Robert L. Halfman - Aero; Robert J. Hansen - Civil Eng; Francis Harrow - Aerophysics; David G. Hoag - Draper Lab; M. John Hudson - Lincoln Lab; Frederick Hopewell - Draper Lab; Paul F. Hughes - Metallurgy; Patrick M. Hurley - Earth & Planetary Sciences; John Huska - Metallurgy.

Arthur E. Johnson - Lincoln Lab.

John A. Kessler - Lincoln Lab; John Kierstead - R.L.E.; Malcolm G. Kispert - Institute.

Ralph Lewis - L.N.S.; Yao T. Li - Aero; Chia-Chiao Lin - Mathematics; Edward F. Lordan - Draper; Harold A. Lundquist - Physics.

John McKenzie - R.L.E.; Felix Migliozzi - Physical Plant; William Maytum - Physical Plant.

G. Edward Nealand - Purchasing; George C. Newton, Jr. - Elec. Eng.

Lawrence Paglierani - Physical Plant; George Pesaturo, Sr. - Physical Plant; Francis Powers - Lincoln Lab; George Prince - Chemsitry; Chester Pynn - Draper Lab.

Sigmund Romaszkiewicz - Bursar's Office.

Nicholas Saia - L.N.S; Robert Shaw - Housing; C. Bruce Shannon - Draper Lab; Joseph Stanowicz - L.N.S.; Phillip A. Stoddard - Institute; C. Gardiner Swain - Chemistry; Ferdinand Sullivan - Dorms; HJohn E. Sullivan - D.S.R. Guards; James J. Sweeney - E.S.L.

Robert G. Toher - Draper Lab.

John Vitt - D.S.R. Hdqtrs.

Kenneth R. Wadleigh - Institute; Frederick Wattriss - Asst. Treasurer & Recording Secretary; David C. Whipple - Draper Lab; Philip Whitaker - Draper Lab; Robert Wilde - Lincoln Lab; Robert R. Williams - Draper Lab; Joseph Woods - Draper Lab.

Patrick Youtz - Lincoln Lab; Henry C. Zufelt - L.N.S.

Visser to Give Guitar Recital

Dik Visser, a noted guitarist and composer from the Netherlands, will present a concert of classical and flamenco guitar music, starting at 8:30pm, April 12, in Kresge.

The concert, sponsored by the music faculty, will be free to the public. It is the seventh concert in the 1971-72 Chamber Music Series.

Mr. Visser will perform *Expressieve Musiek*, one of his own compositions. Also included in the program will be several contemporary pieces, a 19th Century minuet, and *Fantasia X*, a Spanish work composed by Alonso Mudarra in 1534.

Mr. Visser, a resident of Amsterdam, Holland, is spending this semester at Thiel College, Greenville, Pennsylvania, as artist-in-residence. A professor of music at the Conservatory of Music in Amsterdam, he also appears on his-own weekly radio and television programs. Mr. Visser composes and arranges guitar and lute music. His arrangements combine old folk music, originally written for lute, with contemporary flamenco works.

Mr. Visser began studying music and the guitar when he was 11 years old at the Music Lyceum in Amsterdam. He later studied at the Conservatorio de Musica in Madrid, where he specialized in Andalusian folk music.

MIT Offers 139 Housing Units in Cambridge to CHA

Responding to an invitation for proposals from the Cambridge Housing Authority, MIT last Thursday offered to sell 139 existing Cambridge dwelling units in nine scattered properties to the CHA which the Authority could acquire with federal funds and use as additional public housing for low-income Cambridge families.

In a sealed proposal opened at CHA offices Thursday afternoon, MIT offered the 139 units at an average price of $15,500 each, which is half or less of the cost of newly constructed public housing units. Total sale price would be $2,156,000.

In a separate proposal submitted and opened Thursday, the Institute offered to build an additional 16 townhouse family units of three bedrooms or more for CHA "Turnkey" acquisition on Erie Street in Cambridgeport. MIT's proposal for those units, all new construction, was $39,000 each.

The two proposals are part of the Institute's effort to help ease the Cambridge housing shortage.

Under a Turnkey project approved earlier, MIT is already building 684 new units of housing for the elderly on three sites in east, central and north Cambridge which the CHA will acquire and operate as public housing for the elderly. This is the largest Turnkey project in the country.

Under the federal Turnkey program, a local housing authority contracts with a private developer to buy upon completion housing they have built or rehabilitated. The developer then "turns over the key" to the local authority.

In addition, in an effort to ease student demand for private housing, MIT has within the past several years added dormitory space on campus. The new Westgate II project on Memorial Drive will be ready for occupancy this fall, providing space for more than 400 students.

In submitting the proposal for sale of existing properties, Antony Herrey, Director of the Real Estate Office, said: "We hope that this idea of acquiring existing units under the tunrkey program receives serious consideration both at the local and federal level. It seems to us to be a wise and convenient way for local housing authorities to achieve desired objectives for public housing--for example, scattered sites, proximity to community services, schools, churches and shopping. This will provide real instant housing with eligible low-income families being able to move in by this fall."

Institute Files Preliminary HEW Reply

Based on the present rate of progress, the Institute will submit a brief preliminary report on its Affirmative Action plan to the Department of Health, Education and Welfare by the end of this week, according to James C. Allison, Jr., assistant to the president and chancellor for minority affairs.

A more detailed reply, addressed to the actual contents and recommendations of HEW's letter of findings will not be completed before the first of May, Mr. Allison said. Further meetings between Institute officials and members of the HEW review team will be held before submission of the final report.

Winksmen Take World Championship

(Continued from page 1)

players in turn take shots for 25 minutes. After the time is up, each player is allowed five additional shots.

A player can either shoot to get his wink in a pot at the center of the playing area or try to cover his opponent's wink, which prevents his opponent from shooting the covered wink. A player gets three points for each wink he has in the pot and one point for each additional wink that has not been covered. Covering another player's wink with a flick of the squidger produces a squop.

Other members of the team, besides the captain are: J. Franz Christ, Atlanta, Ga., mathematics junior; William H. Renke, Newton, Mass., also a mathematics junior; Michael S. Schwartz, St. Louis Park, Minn., a physics senior; James R. Marlin, Troy, Mich., mathematics junior; W. Peter Copper, Waynesboro, Va., a freshman; Craig A. Schweinhart, Marlow Heights, Md., an electrical engineering junior; and David H. Lockwood, a sophomore from Durand, Ill.

Duke Will Be 4th MIT Grad to Walk on Moon

When astronaut Charles M. Duke Jr., above, steps down from Apollo 16's lunar module at approximately 9:30 p.m. EST on April 20, he will be the tenth man to walk on the moon - and the fourth of these to possess a degree from MIT.

Duke received a bachelor of science degree from the US Naval Academy in 1957 and, as an Air Force officer, did graduate work at the Draper Laboratory. His thesis, produced under the supervision of James L. Nevins and Professor Laurence R. Young, was titled "Human Performance During a Simulated Apollo Mid-Course Navigation Sighting," and earned him an S.M. from MIT in 1964.

Duke was one of the 19 astronauts selected by NASA in April of 1966.

The first MIT graduate to walk the lunar surface was Col. Edwin E. (Buzz) Aldrin, Sc.D. '63, who was pilot on Gemini 12 in November, 1966, and lunar module pilot on the historic landing of Apollo 11. He was followed by Commander Edgar D. Mitchell, Sc.D. '64, lunar module pilot on Apollo 14 in January, 1971, and the much-travelled Col. David R. Scott, S.M. '62, Eng. '62, who was pilot on Gemini 8 in March 1966, command module pilot on Apollo 9 in March, 1969, and Commander of the Apollo 15 mission in July of 1971. These astronauts, along with Russell L. Schweikart, S.B. '56, S.M. '63, who flew as lunar module pilot on Apollo 9, earned their degrees in the Department of Aeronautics and Astronautics.

Three other MIT men - Dr. William B. Lenoir, S.B. '62, S.M. '62, Ph. D. '65, of the Research Laboratory of Electronics, Anthony W. England, S.B. '65, S.M. '65, of the Department of Earth and Planetary Sciences, and Dr. Philip K. Chapman, S.M. '64, Sc.D. '67, of the Measurement Systems Laboratory - are among the 11 scientist-astronauts selected in 1967.

MIT's eight alumni among the astronaut corps hold a total of 14 graduate and undergraduate degrees. This compares with the Naval Academy which leads all educational institutions with nine astronaut graduates.

Family Day Care Is Available

Members of the community are reminded that child care facilities are available at the Institute.

Through the MIT Family Day Care Program, parents are offered inexpensive day care for their children in the private homes of other parents nearby. Hours, fees, meals and other arrangements--made between the parents of each child and the day care parent--are very flexible.

Started by the Planning Office last year, the Program offers medical care, educational materials, homes licensed for safety, and monthly meetings for parents. The Student Financial Aid Office coordinates the program now and a family coordinator works with the day care parents in their homes.

All students, staff, faculty and employees are eligible to take part in the Family Day Care Program. For more information call Kathi Mahoney, Ext. 4973.

THE INSTITUTE CALENDAR

April 5 through April 14

Events of Special Interest

China Week*
Schedule includes a concert, films, slides, a dance and gift shop through Saturday, April 8. For more information, visit the Chinese Students Club booth in the lobby of Bldg 10.

Reassessment of Electoral Politics
Prof. Walter Dean Burnham, political science. Technology Matrons Seminar. Wednesday, April 5, 11:30am, Rm 10-105.

Advisory Committee on Shareholder Responsibility**
Open Meeting, Wednesday, April 5, 5pm, Maclaurin Room, Rm 10-300.

The Uses of Immaturity**
Prof. Jerome Bruner, psychology, Harvard. Compton Lecture Series. "The Primate Evolution of Educability" on Thursday, April 6, 8pm; "Models, Tutors and Human Pedagogy" on Friday, April 7, 8pm; Kresge. Free tickets available in Bldg 10 lobby on Wednesday, April 5.

Family Day Care Program*
Frances Ackerly will discuss toys at the monthly forum. Thursday, April 6, 7:30pm, Student Center West Lounge.

Overpopulation–Birth Control and Abortion*
William R. Baird, LSC and ZPG lecture, Friday, April 7, 4pm, Kresge. Tickets available in the Environmental Information Office in the basement of the Student Center.

Concepts of Rationality*
Henry David Aiken, Brandeis University. Respondents: **Prof. Arthur Kaledin** of humanities and **Prof. Victor Weisskopf** of physics. Technology and Culture Seminar. Tuesday, April 11, 5:15pm, Rm 9-150. Buffet dinner, 6:30pm, Student Center Mezzanine Lounge. Respondents and discussion, 7-9pm.

Disarmament and World Peace*
Herbert York, physicist, specialist in the application of atomic energy to national defense, and Acting Chancellor of University of California at San Diego. Lecture Series on World Peace. Thursday, April 13, 8pm, Lobdell. Broadcast live on WTBS (88.1 FM).

Earth and Planetary Sciences Open House for Freshmen†
Informal discussions with faculty about careers and upperclass programs in Course XII, including the new program in Environmental Earth Science. Tours of facilities and refreshments. Friday, April 14, 3-4:30pm, Rm 54-915.

New England Dinosaur Dance Company*
Modern character dance performances sponsored by MIT Dramashop. Friday and Saturday, April 14-15, 8:30pm, and Sunday, April 16, 2:30pm, Kresge. Tickets: students $1.50, general $2.50; for reservations, call X4720.

Seminars and Lectures

Wednesday, April 5

Carcinogenesis and Protein Synthesis
Prof. Gerald N. Wogan, nutrition and food science. Oral Science Seminar. 3-5pm, Rm E18-301.

Design of Counterproductive Systems
E. S. Savis, First Deputy City Administrator of New York. ORC and Urban Studies Seminar. 3pm, Rm 39-500.

Planned Research and Development in Transportation Models at UMTA*
Dr. Robert Dial, Urban Mass Transportation Agency. Civil Engineering Transportation Division Seminar. 3pm, Rm 1-146, coffee at 4:30pm.

The Present Status of Molten-Salt Reactor Development*
Dr. M. W. Rosenthal, Oak Ridge National Laboratory. Nuclear Engineering Seminar. 3:30pm, Rm NW12-222. Coffee, 3pm.

Naive Pessimism and Reactions against Reason*
Visiting Institute Prof. Arthur R. Kantrowitz, mechanical engineering. History of Technology Seminar. 4pm, Rm 14E-304.

Safety and Reliability of Structures
Prof. N. C. Lind, Dept of Civil Engineering, Waterloo University. Civil Engineering Structures Division Seminar. 4-5pm, Rm 1-353. Coffee, 3:30pm.

Pacific Type Orogeny Viewed from Island Arcs of Japan*
Prof. Seiya Uyeda, University of Tokyo. Earth and Planetary Sciences Colloquium. 4pm, Rm 54-100.

Thursday, April 6

Community Noise Measurements*
Captain J. E. Wesler, DOT Transportation Systems Center. Interdepartmental Acoustics Seminar. 4pm, Rm 5-134. Coffee at 3:30pm in the Miller Room.

What is Thermodynamics*
Dr. George Hatsopoulos, mechanical engineering senior lecturer, Mechanical Engineering Thermodynamics Seminar, 4pm, Rm 3-343.

Colliding Proton Beams at CERN
Prof. Carlo Rubbia, Harvard University. Physics Colloquium, 4:30pm, Rm 26-100; tea at 4pm, Rm 26-110.

Friday, April 7

Deaf Education: Charge and Challenge*
Carol L. Proctor, director, Oral Education Center of Southern California. ERC Colloquium. 12n, Rm 10-105.

Politics of Namibia/Southwest Africa*
Bishop Colin Winter, Anglican Bishop of Damarland. Center for International Studies Discussion Seminar, 12:15-2pm, Shell Room, Rm 52-461. Those attending are invited to bring their lunches.

Materials Limitations in Tomorrow's Energy Technologies
Dr. Richard E. Balzhiser, Assistant Director, Natural Resources Group, Office of Science and Technology, Washington. Metallurgy and Materials Science Spring Seminar Series. 2-3pm, Rm 4-370.

Informal Seminar**
Dr. Jerome Bruner, Professor of Psychology, Harvard University. Compton Lecture Series Committee. 2-4pm, Rm 37-252. Coffee will be served.

Chemical Engineering Seminars*
R. Langer, Enzymatic Regeneration of ATP, 2pm; **V. Vilker,** Ultrafiltration of Biological Macromolecules, 3pm; Rm 10-105.

Low Temperature Machines
Prof. Joseph L. Smith, mechanical engineering. Mechanical Engineering Seminar. 3pm, Rm 3-270. Coffee, 4pm, Rm 1-114.

Surface and Bulk Acoustic Waves in Piezoelectric Semiconductors*
Prof. Esther Conwell, Abbe Rockefeller Mauze Visiting Professor. Center for Materials Science and Engineering Colloquium. 4pm, Rm 9-150. Refreshments, 3:30pm.

Recent Results in the ST Tokamak
Dr. J. Hosea, Princeton Plasma Physics Laboratory. RLE Plasma Dynamics Seminar. 4pm, Rm 26-214.

Monday, April 10

Nuclear Engineering Doctoral Seminars
G. Pine, Radio-Frequency Stabilization of the Kelvin-Helmholtz Instability; **A. Wright,** Toroidal Superconducting Plasma-Machine Design; **G. Brown,** High-Albedo Reflectors in LMFBRs. 3-5pm, Rm NW12-222.

Some Legal and Regulatory Aspects of Water Quality (Inland and Coastal)
Prof. Michael Baram, civil engineering. Water Resources and Hydrodynamics Seminar. 4-5pm, Rm 48-316. Coffee, 3:30pm, Rm 48-410.

Resonant Stellar Orbits in Spiral Galaxies*
Prof. Peter Vandervoort, Univeristy of Chicago, Applied Mathematics Colloquium. 4pm, Rm 2-390. Tea, 3:30pm.

The Capacity of Cascaded Broadcast Channels
Patrick Bergmans, Stanford University. Electrical Engineering Communication Theory Group. 4pm, Rm 26-210.

The Politics of Cultural Oppression and Colonial Rule in the Portuguese Territories*
Rev. Gladstone Mxolisi Ntlabati. Political Science Series on "Black African Liberation Movements in Southern Africa." 7pm, Student Center Mezzanine Lounge.

Tuesday, April 11

Video/Strobe Techniques for Viewing and Analysis*
Prof. Charles E. Miller, electrical engineering. Electrical Engineering Seminar. 10-11am, Rm 4-231.

Choice of Hull and Rig Parameters for Optimum Yachts*
Halsey C. Herreshoff, naval architect. Ocean Engineering Seminar. 4-5pm, Rm 3-270. Coffee, 3:30pm, Rm 5-314.

Late Stages of Stellar Evolution*
Prof. J. Craig Wheeler, Harvard College Observatory. Astrophysics Seminar. 4:15pm, Rm 37-212. Coffee, 4pm.

Airline Marketing in the 70s*
Robert E. Johnson, Executive Vice President, United Airlines. Aeronautical Flight Transportation Seminar. 4pm, Rm 2-390.

Was the Destruction of European Jewry Inevitable?
Prof. David Neiman, Boston College. Israeli Club. 8pm, Student Center West Lounge.

Wednesday, April 12

Aerospace Projections**
Prof. John F. McCarthy, aero and astro. Lincoln Lab Lecture. 3:30pm, Lincoln Lab Cafeteria.

Recent Studies on the Mechanics of the Lung*
Prof. Y. C. Fung, Dept of Bioengineering and Applied Mechanics, University of California at San Diego. Aero and Astro Seminar. 4pm, Rm 35-225. Coffee, 3:30pm, Rm 33-206.

Progress in Determining Lunar Surface Chemical Properties from Remotely Observed Optical Properties*
Prof. Thomas B. McCord, earth and planetary sciences. Earth and Planetary Sciences Colloquium. 4pm, Rm 54-100.

Treatment of Structure Change in the Railroad Industry: An Optimal Control Theory Approach**
Prof. James Kneafsey, civil engineering. Civil Engineering Transportation Division Seminar. 3-4:30pm, Rm 1-146. Coffee, 4:30pm.

Thursday, April 13

New Operation Theory for Electron Lenses*
Mitchell D. Brody, electrical engineering. Electron and Ion Optics Seminar. 3pm, Rm 26-217.

The Transformation of Amorphous Palladium-Silicon Alloys
Dr. R. Maddin, Director, School of Metallurgy and Mate Science, University of Pennsylvania. Metallurgy and Mate Science Special Seminar. 4pm, Rm 4-231.

Geochemistry of Saline Lakes*
Dr. Blair F. Jones, US Geological Survey. Earth and Plane Sciences Special Seminar. 4pm, Rm 54-425.

New Directions for US Policies for Science and Technology
Prof. Franklin A. Long, Cornell University. Physics Colloqui 4:30pm, Rm 26-100, Tea at 4pm, Rm 26-110.

Friday, April 14

Teaching a Core of Behavior (Why Teaching a Core of Knowled Wrong)*
Lawrence L. Weed, M.D., Department of Medicine, University Vermont. ERC Colloquium. 12n, Rm 10-105.

The Nature of Materials Science and Engineering
Prof. Morris Cohen, metallurgy and materials science. Metallu and Materials Science Spring Seminars Series. 2-3pm, Rm 4-370.

Chemical Engineering Doctoral Seminars
B. Aghazu, "Studies on the Feasibility of Obtaining Protein-R Extracts from Tropical Palm Kernels," 2pm; **B. Wersborg,** "E trical Aspects of Carbon Formation," 3pm; Rm 10-105.

Light Scattering from Solid Helium*
Dr. R. E. Slusher, Bell Telephone Laboratories. Center for Mate Science and Engineering Colloquium. 4pm, Rm 9-150.

Fluid-like Turbulence in a Fully Ionized Plasma
Prof. T. H. Dupree, nuclear engineering and physics. Pla Dynamics Seminar. 4pm, Rm 26-214.

Student Meetings

Premedical Students**
Dr. Eugene Horn, chairman of the committee on admissions of Albany Medical College of Union University, will speak Thurs April 6, 5pm, Rm 2-139.

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

White Water Club**
Movie and spring meeting; the movie is of last year's kayaking wo championships. Wednesday, April 5, 7:45pm, Student Center 473.

Nautical Association**
1972 season sailing memberships now available in E19-215, stud $6, faculty and staff $15. For information, call Ext. 4884.

Nautical Association**
Basic Sailing Shore School, repeated every Monday and Thurs throughout the spring, 5:15pm, Sailing Pavilion, non-mem welcome.

MIT Community Players
Monthly meeting followed by auditions for a workshop product of two one-act plays, Monday, April 10, Faculty Club Penthou Meeting at 7:30pm, auditions, 8pm.

MIT Students for McGovern
Canvassing and leafleting every Saturday. Meet at 11am, Good 103, East Campus.

Scuba Club
Pool Session. Wednesday, April 5, 8pm, Alumni Pool.

Diving in Jamaica and Other Places*
Dr. Steven Allen, Draper Lab. Scuba Club talk and slide sh Wednesday, April 12, 8pm, Rm 20E-017.

Classical Guitar Society**
Concert guitarist **Hugh Geoghegan** is available for private inst tions for intermediate and advanced students. Call Vo Ta H 661-0297.

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

Hobby Shop**
Open weekdays, 10am-4:30pm, duPont Gym basement. F students, $6/term or $10/year; community, $15/year. Call X43

MIT/DL Duplicate Bridge Club**
Every Sunday, 2:30pm, Walker Blue Rm. Every Tuesday, 6 Lobdell.

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

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

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

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

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.

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

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

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

Society of Sigma Xi**
Informal coffee hour. Thursday, April 6, 4-5pm, Student Center Rm 491. Cohost is Prof. E. Brown, economics.

African Night*
African Students Association sponsors evening of exhibits, music and food. Saturday, April 8, 7pm, Student Center Sala de Puerto Rico and West Lounge.

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. Featuring folk singer Rich Holloway. Every Friday, 5:30pm, Ashdown basement Games Rm. Admission: men $1, women 50 cents. Must be over 21.

Movies

Low Reynolds Number Flow and **An Interview with G. I. Taylor**
Fluid Mechanics Film Series. Thursday, April 6, and Monday, April 10, 4-5pm, Rm 3-270.

Battle of Algiers
Humanities Film Series. Thursday, April 6, 6pm, Rm 26-100.

Masculine-Feminine
Humanities Film Series. Friday, April 7, 2pm, Rm 14N-0615.

Bananas**
LSC. Friday, April 7, 7pm and 9:30pm, Rm 26-100. Tickets 50 cents. Must show ID.

The Little Shop of Horrors**
Student Center Committee. Friday (Saturday morning) April 7, 12:30am, Sala de Puerto Rico.

Pursuit of Happiness**
LSC. Saturday, April 8, 7pm and 9:30pm, Rm 26-100. Tickets 50 cents. Must show ID.

The Lavendar Hill Mob*
LSC. Sunday, April 9, 8pm, Rm 10-250. Tickets 50 cents.

Executive Suite
Humanities Film Series. Tuesday, April 11, 6pm, Rm 2-190.

Bridge on the River Kwai
Humanities Film Series. Wednesday, April 12, 6pm, Rm 10-250.

Channel Flow of A Compressible Fluid*
Fluid Mechanics Films. Thursday, April 13, 4-5pm, Rm 3-270.

La Sangre del Condor
Humanities Film Series. Thursday, April 13, 8pm, Rm 26-100.

Walkabout**
LSC. Friday, April 14, 7pm and 9:30pm, Rm 26-100. Tickets 50 cents. Must show ID.

Music

Chinese Opera*
New York Peiping Opera Company and the **Chinese Intercollegiate Choral Society.** Chinese Students Club. Saturday, April 8, 8pm, Kresge. Tickets: $2, $3 and $5, available at the door, or reservations made at X4720.

Chamber Music*
Flamenco and classical guitar pieces, featuring **Dik Visser,** professor at Music Lyceum and Conservatory of Music in Amsterdam. Wednesday, April 12, 8:30pm, Kresge. Free.

Zamir Chorale of Boston*
Program includes "Sacred Service" by Ernest Bloch. Thursday, April 13, 8pm, Sanders Theatre, Harvard. Tickets: $2. Call Robert Rosenschein, dorm X8564.

Dance

Dance Workshop**
Meeting with **Athena Halkiotis** on stage makeup. Organizational meeting with election of officers to preceed demonstration. Thursday, April 6, 7:30pm, McCormick West Tower Penthouse.

Folk Dance Club*
Folk dance workshop. Wednesday, April 15, 2-5pm, Sala de Puerto Rico.

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.

Exhibitions

To Look on Nature*
Exhibition of 19th Century landscape painting of France, England, America, Germany, Holland, Italy and Spain. Hayden Gallery, April 7 through May 8.

Photography Exhibit*
Photographs by MIT students **Peter Sramek** and **Baldwin Lee.** Hayden Corridor Gallery through April.

French Undersea Research*
Hart Nautical Museum, Bldg 5, first floor.

The Art of Rigging and Buoy System for Air-Sea Studies*
Hart Nautical Museum, Bldg 5, 1st floor.

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

Athletics

Varsity Outdoor Track*
University of New Hampshire. Friday, April 7, 3pm, Briggs Field.

JV/V Baseball*
Bowdoin. Saturday, April 8, 2pm, Briggs Field.

Varsity Tennis*
Bowdoin. Saturday, April 8, 2pm, duPont Tennis Courts

Varsity Lacrosse*
Williams. Saturday, April 8, 3pm, Briggs Field.

Varsity Sailing*
Boston Dinghy Cup. Saturday and Sunday, April 8-9, Sailing Pavilion.

JV Baseball*
St. Sebastian's Monday, April 10, 3pm, Briggs Field.

Varsity Golf*
Brown, Holy Cross. Tuesday, April 11, 12:30pm, Crystal Springs Country Club, Haverhill.

Varsity Baseball*
Boston University. Tuesday, April 11, 3pm, Briggs Field.

F/V Tennis*
Harvard. Tuesday, April 11, 3pm, duPont Tennis Courts.

Varsity Lacrosse*
Tufts. Wednesday, April 12, 3pm, Briggs Field.

F Tennis*
Governor Dummer. Wednesday, April 12, 3pm, duPont Tennis Courts.

Varsity Tennis*
Colby. Friday, April 14, 3pm, duPont Tennis Courts.

Religious Services and Activities

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

Hillel Passover Services*
Wednesday, April 5, 9:30am and 8pm; Thursday, April 6, 9:30am (Yizkor at 11am). Chapel. (Note time changes).

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

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

Christian Discussion Group*
Bible study and discussion of Christianity today. Every Sunday, 9:30-11am, McCormick Seminar Rm A. Call Ron Gamble, X6712 or 547-4279.

Hillel Religious Services*
Monday-Friday, 8am, Rm 7-102; Fridays, 7:30pm, Chapel; Saturdays, 9:30am, Chapel.

Tech Catholic Community Bible Study Program*
Weekly series of informal Bible discussions. Every Monday, 7:30pm, Student Center Rm 441.

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.

College Life Campus Crusade for Christ*
Brothers and sisters for fellowship and a time of teaching from the Open Book. Every Friday, 7-9pm, Rm 1-132.

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.

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

Send notices for April 12 through April 21 to the Calendar Editor, Room 5-111, Ext. 3279, by noon Friday, April 7.

People find imaginative ways for decorating their cars. For example Adam L. Bless, a sophomore in mathematics from Philadelphia, has emblazoned Maxwell's equations across the side of his Volkswagen. --Photo by Margo Foote

Vidicon Photometer Gives Telescopes Keener Vision

A new television-like eye is giving large telescopes ten times keener vision in some important observations and is expected to replace the familiar photographic plate in many astronomical tasks.

The extremely sensitive device, which includes a vidicon tube similar to those in TV cameras, already has been used to distinguish overlapping images of stars in the center of dense stellar clusters--something very difficult to do with photography--and to map the methane gas distribution on Jupiter.

The instrument, called a vidicon photometer and described in the March issue of "Applied Optics," was developed by Thomas B. McCord, associate professor of earth and planetary sciences and director of MIT's Wallace Astrophysical Observatory at Westford, and James A. Westphal, associate professor of planetary science at the California Institute of Technology.

"The vidicon photometer not only has several advantages over the photographic plate, it also does more observational tasks better than other electro-optical devices used with telescopes," Professor McCord says.

"Because the photometer is much more sensitive to light than a photo emulsion, it will record more of the photons, providing a more precise, accurate picture. This kind of precision makes it possible to separate overlapping stars in dense clusters, providing, for the first time, distinct measurements of the individual stars."

The photometer has a wider range of vision than photo emulsion, since it can observe well into the near infrared where the photographic plate is "blind." The infrared sensitivity enabled McCord and Westphal to map the methane abundance in Jupiter's atmosphere. Methane absorbs infrared, which showed up as dark areas in the photometer map.

Another advantage of the photometer, Professor McCord explained, is that it records incoming photons--individual "packets of light"--from objects on a one-to-one basis over the entire exposure of up to several hours. On the other hand, in photo plates the initial photons make a heavier impression on the plate than later ones, compiling a less accurate picture. The photometer permits observations during such poor seeing conditions as haziness that makes traditional optical observations impossible.

Another major advantage of the vidicon photometer is the elimination of delays in translating photo images into numerical form. "With the photometer," Professor McCord said, "the data are already in digital form and ready for use at once. Storage of information is on magnetic tape, ready for computer analysis. You can even use the tape to make a conventional photograph if you wish."

The heart of the photometer system is a small, low-cost, silicon diode vidicon tube originally developed by Bell Labs for a video-telephone. Incoming photons from the light source are collected by the telescope and focused onto the tube's wafer of silicon, which is two-fifths of an inch square. The silicon wafer can be compared to an eye's retina, with an array of a million microscopic diodes being analogous to the rod and cone nerve endings in the retina.

The diodes are electrically isolated from each other, which allows them to register photons from different parts of the image, just as rods and cones register different parts of the image as seen by the eye.

In the diodes the photons are transformed into electrical charges that are accumulated and stored. A microscopic electron beam scans the wafer target in 3.3 seconds and extracts all the stored information, placing it on magnetic tape in digital form. The scanning resets the wafer of diodes for the next observation.

The vidicon tube is mounted in an insulated box of dry ice to avoid heating during long exposures.

The photometer, which already has been successfully tested at the Inter-American Observatory at Cerro Tololo, Chile, will be used by Professors McCord and Westphal on the 84-inch telescope at the Kitt Peak National Observatory in Tucson, Ariz., to observe the recently discovered neighboring galaxies, Maffei I and II. These two galaxies are difficult to see optically from the earth because they lie on the other side of the disk of the Milky Way Galaxy with much interstellar dust intervening. The photometer will be used to observe them in the infrared, which penetrates dust.

At the end of this month the photometer will be used on the 100-inch Mt. Wilson telescope of the Hale Observatories for taking spectra of cosmic objects. In spectra, the light from objects is separated into its spectral colors and analyzed to determine the objects' chemical composition and motions. The photometer can do this ten times faster and with more definition than conventional photographic instruments, the researchers said.

Development and testing of the instrument were funded by MIT, Caltech and the National Science Foundation.

New Companies Join EE Co-op Program

Three new organizations have joined the Department of Electrical Engineering's Cooperative Course and two continuing participants have expanded the number of their industrial sites where MIT co-op students may be assigned for work.

The course is one of the oldest work-study programs in the nation and is valued by the Institute not only because of the opportunities it gives students to earn money but also because of the enriched educational experiences students derive from work assignments. Many are able to do thesis research while working.

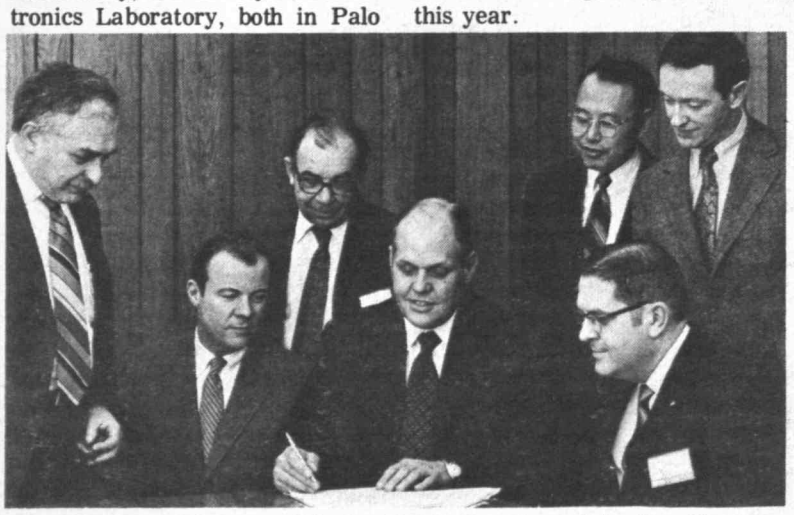
The three new participating organizations where selected students in electrical engineering may be assigned for two or three terms of learning-while-earning are Digital Equipment Corporation, Maynard, the Medical Engineering Laboratory at Massachusetts General Hospital, Boston, and the Naval Underwater Systems Center, New London, Connecticut.

In addition, the General Electric Company, the charter member of the program dating back to 1917, recently added its Transportation Systems Division, Erie, Pennsylvania, and Hewlett-Packard Company, a participant since 1971, has added its Electronics Research Laboratory, and its Physical Electronics Laboratory, both in Palo Alto, California, as company locations where MIT co-op students may be employed.

John A. Tucker, director of the program for MIT, said the new members and the new work sites reflect a growing interest on the part of students and sponsoring organizations to extend co-op experiences to such fields as computer sciences, biomedical engineering and engineering related to the environment and the oceans.

The MIT co-op program, allows electrical engineering students to gain research and industrial experience while attending college and, at the same time, earn money to defray college costs. MIT professors coordinate all job assignments and students receive academic credit for their work experiences. Student salaries while on work assignments average more than $575 a month.

Popularity of the work-study program, Mr. Tucker said, is reflected in growing applications from students. This year, 41 per cent of eligible sophomores applied for the program starting with their junior year, compared to 30 per cent a year ago and 18 per cent in 1970. Participating organizations conducted two days of interviewing 82 students who are applicants for an estimated 43 openings that will be available beginning in June of this year.



Seated, left to right, are Winston Hindle Jr., Group Vice President for Personnel and Product Lines and Kenneth H. Olsen, '50, President of Digital Equipment Corporation with John A. Tucker, Director of Course VI-A at the formal signing of the contract between DEC and MIT for participation in Course VI-A. Looking on are (left to right): Professor Louis D. Smullin, head of electrical engineering, Professor Robert M. Fano, associate head of the department, Professor F.F. Lee and James J. Fleming, of the DEC Personnel Office.

After being decorated, the women's kiosk gets boosted into position by L to R: Paul Johnson and Robert Byers of Institute Information Services, Jackie Casey and Liz Ferry of Publications, while Mary Morrissey of the Information Center watches. --Photo by Bob Lyon

Women's Forum Kiosk Brightens Bldg. 7 Lobby

What's black and white and curvy all over?

It's the new kiosk in the lobby of Building 7, sponsored by the Women's Forum. Set up last week, the kiosk is covered with an impressive black and white repeating logo -- WOMEN. It was designed by Jacqueline Casey of Publications Office.

Interest in the Women's Forum is growing and the kiosk will be used to inform the community of the Forum's activities as well as other information of general interest. Posters announcing weekly Forum meetings, "Write On" forms and job openings from the Personnel Office, sign-up sheets for an internal bi-weekly telephone directory, newspaper and magazine articles, and lecture notices are among items posted on the kiosk.

Anyone wishing to post material on the kiosk should see Mary Morrissey in the Information Center, Room 7-111.

Bates to Be Honored in LINAC Ceremony

(Continued from page 1)

Bates family in Cambridge. Among remarks and messages which will be presented at the luncheon will be a written tribute sent by US Senator John O. Pastore of Rhode Island, chairman of the Joint Committee on Atomic Energy, and remarks by Institute Professor Victor Weisskopf, head of the Physics Department and a world-renowned physicist.

MIT decided to name the accelerator for Congressman Bates as a memorial to his long legislative leadership in support of higher education and scientific research, particularly atomic and nuclear research. The memorial received endorsement from numerous quarters, including the selectmen of the Town of Middleton acting for the host community.

The accelerator, which will be used by physicists to probe the structure and other properties of the atomic nucleus, is being built on a 77-acre portion of the grounds of the former Essex County Sanatorium in Middleton at a total estimated cost of $7 million. Congress authorized LINAC construction in 1965 and work began the following year.

Last December, scientists and engineers assembling the accelerator achieved their first beam of electrons, a major development milestone. The first beam was of an intensity of only about 20 million electron volts, which is a fraction of the intensity that will be achieved when the machine is completed and put into operation later this year. But it demonstrated design and component feasibility.

Congressman Bates, as a member of the Joint Committee on Atomic Energy, looked very favorably upon and gave strong support to the legislation leading to congressional authorization and funding of the facility. His colleagues on the joint committee frequently referred to the LINAC as the "Bates Accelerator."

Congressman Bates, who also was a ranking member of the House Committee on Armed Services, was a champion of the uses of atomic energy for nuclear propulsion and a wide variety of other industrial and scientific applications. He served on the Joint Committee on Atomic Energy for more than 10 of his 19 years in Congress and was a US adviser to the International Conference on Atomic Energy, concerned with advancing and protecting the peaceful uses of nuclear energy.

Sports

Sailing Pavilion Opens

Spring officially arrived on the Charles Monday with the launching of MIT's fleet of sailboats at the Sailing Pavilion.

"This is the 37th season of the MIT Nautical Association," points out Hatch Brown, varsity sailing coach. "With 1,255 members, it is the largest club on campus."

"The Sailing Pavilion was the first facility of its kind at a university, and despite the rapid growth of college sailing, MIT's program remains foremost.

"In addition to its instructional and recreational programs, MIT fields intercollegiate teams for women, varsity and freshmen. The Women's Team won the recently instituted Women's Nationals last spring, and the Varsity has won more North American College Championships than any other school in the US or Canada," Hatch notes with pride.

Left to right: Student commodore Maria Bozzuto, '73, sailing team manager Richard Zippel, '74 and Fujio Hayashi inaugurate the 1972 sailing season on the Charles.

–Photo by Bob Lyon

The Varsity Team competed against Tufts and the Coast Guard Academy last weekend. MIT won the Tufts race but placed fourth at Coast Guard. On April 8 and 9, MIT will host the Boston Dinghy Cup Regatta, the oldest dinghy competition in the country.

Membership in the Nautical Association is open to anyone in the community and to alumni. Cards are on sale in the Cashier's Office in E19-215 (students, $6 per year; faculty and employees, $15; and alumni $25). All members must pass the small boats swimming test in Alumni Pool.

Sailing classes for beginners are held at the Pavilion every Monday and Thursday at 5:15pm through May. Three classes are given each of these days. The first class is a lecture on how to sail; the second, a demonstration of rigging and care of the boats; and the third is practice on the River where beginners solo under the watchful eye of the instructor following in the launch. This system permits the novice to become a competent sailor in very little time. Once he has passed the sailing checkoff list, he may use the boats as often as he likes.

The Sailing Pavilion is open from 9am to sunset, seven days a week, from April through mid-November. In addition to Tech Dinghies, the fleet includes CCT (keelboats) Olympic Finns and International 505s. This spring the Nautical Association is adding Larks, a 13 1/ 2-foot fiberglass sloop imported from England, to the fleet. The varied fleet offers a challenge to even the most experienced sailor.

Slalom Champion Nadler Comes from Skiing Family

Steve Nadler, MIT's eastern intercollegiate ski champ in the slalom, is the product of a skiing family.

The Nadlers, residents of St. Laurent, a suburb of Montreal, ignored the hockey mania of the area by escaping to the nearby Laurential ski zone. Steve's father, Martin Nadler, fitted his son with his first pair of skis at the tender age of two. Every winter weekend, the Nadlers would head for the hills. By five, Steve was already a proficient skier.

Steve's decision to come to MIT was not determined by an athletic scholarship--MIT has none--but competing on Tech's ski team was a factor. Nadler's collegiate career at MIT was not an instant success. As a sophomore, Nadler missed qualifying for the eastern intercollegiate skiing championships (Middlebury Carnival), when he missed placing the necessary fifth in the slalom by 1-100 of a second.

This winter, although a consistent medalist in the EISA division II carnivals, Steve had never taken a first place. At the New England College Carnival, the eastern division II championships, Nadler's luck changed for the better. Winning the draw out of a hat, Steve was seeded number one, earning him the chance to ski first. After his first run, he was in first place, but both his Tech teammates had fallen, putting the pressure on Nadler for team points.

Nadler's second run was second best of all the entries, but his combined time on both was good for first place by more than a full second. To go along with his gold medal in the slalom, Nadler placed 13th in the giant slalom which got him a second place in Alpine Combined.

Steve's effort was the best MIT ski performance in six years, when the present assistant ski coach, Helge Bjaaland, won the EISA Division II Cross Country Title in 1966.

Erik Erikson to Be Godkin 1972 Lecturer

Erik H. Erikson, a former visiting professor at the Institute and a pre-eminent explorer of the human life cycle, will be the Godkin Lecturer at Harvard University for 1972.

The two lectures, open to the public without charge, will be at 8pm on Tuesday and Wednesday, April 11 and 12, in the Ames Courtroom of Austin Hall at the Harvard Law School. The Godkin Lectures, given under the auspices of the John F. Kennedy School of Government, honor the memory of the late British-American journalist E.L. Godkin.

Professor Erikson was appointed visiting professor of communications at the Institute in 1958 and worked at the Center for International Studies from 1959 to 1960. He was professor of human development and lecturer in psychiatry at Harvard from 1960 until his retirement in 1970.

Humanities Youthgrant Program Established

The National Endowment for the Humanities (NEH) has established a new grant program, Youthgrants in the Humanities, for the support of humanities projects initiated and conducted by young people.

NEH is a federal agency established by an Act of Congress in 1965 to encourage and support educational, research and public activity in the humanities. Projects eligible for support may concern: education; study or research of a specific problem; or activities aimed at disseminating humanistic knowledge and materials, or applying them to the understanding of ethical, social or political problems.

The humanities include, but are not limited to, the following fields: history, philosophy, languages, linguistics, literature, archeology, jurisprudence, history and criticism of the arts, ethics, comparative religion, and those aspects of the social sciences employing an historical or philosophical approach to problems.

However, eligible projects need not focus on a specific field. The NEH is particularly interested in receiving interdisciplinary proposals and will give priority to those dealing with human values as they bear on urbanization, minority problems, war, peace, foreign policy, problems of government decision, civil liberties, student and youth problems, and "the wider application of humanistic knowledge and insights to the general public interest."

Because the Endowment is charged with developing the humanities as sources of insight into contemporary human problems, it is sometimes thought to be concerned with "social action." In the very immediate sense it is not. Social action and humanities disciplines such as philosophy, jurisprudence or ethics may investigate the same situation, but they do so with different motives–the humanities seek initially to understand; social action, to change. Endowment-supported projects, therefore, are directed at comprehension rather than change.

The Youthgrants program does not provide scholarships, fellowships, loans or other student financial aid for general study at any educational level. Because of limited funds, NEH generally does not support one-man research or publication projects--e.g. seminar papers, master's theses or doctoral dissertations. However, academic work which promises to have broad appeal and is already assured of wide dissemination is eligible, and acceptance of the project for academic credit does not preclude Endowment support.

Because institutions, such as the Institute, are experienced in administering grant funds, applicants are encouraged to apply through a non-profit institution, especially one with which they are presently affiliated as a student, employee or member. Applicants are required to apply through an institution if their proposed project involves the granting of academic credit to the project's participants, extensive use of an institution's facilities and equipment, or designing of a program for the institution.

Preference will be given to proposals for short-term projects--summer projects or those of less than six months' duration. The maximum grant period is 15 months. Applications may be submitted at any time, but the deadline for projects beginning after September 1 is May 22.

For more information of the Youthgrant program, call Dr. Louis Menand, Room 7-141, Ext. 7752, or write Youthgrants in the Humanities, National Endowment for the Humanities, Washington, D.C. 20506.

Health Sciences Win Commonwealth Grant

The Harvard-MIT Program in Health Sciences and Technology, recently established to concentrate contemporary science on human health needs, has received a one-year grant of $600,000 from The Commonwealth Fund.

The Harvard-MIT Program combines the complementary strengths of the two universities in the education of physicians, biomedical engineers and health scientists and in research on major health problems. The Program, which was formed by vote of the corporations of both institutions in the spring of 1970, was developed with the aid of a planning grant from The Commonwealth Fund. The Fund is located in New York City.

According to Irving M. London, M.D., director of the Program, the new grant will support a significant part of the Program's direct costs in the current academic year.

MIT President Jerome B. Wiesner, responding the The Commonwealth Fund on behalf of Harvard President Derek C. Bok and himself, said that both universities "deeply appreciate your encouragement and your generous support which will permit us to move ahead rapidly in developing new and exciting programs having national impact."

"We regard this as a most important effort in the education of new kinds of physicians and bioengineers who will be able to use advanced science and technology in meeting major health and medical needs," Robert H. Ebert, M.D., dean of the Harvard Medical School, said.

The Program has three broad aspects: education, research and development. In the educational part of the Program, many new courses in human biology and bioengineering have been developed and presented for the first time.

"The educational programs are designed to bring to bear on biology and medicine the scientific disciplines on which they are more and more dependent," Dr. London said. "Increasingly, biology derives its intellectual support not only from chemistry but from the mathematical, physical and engineering sciences. The Program aims to promote the productive interaction of these disciplines with biology and medicine. At the same time it seeks to develop informed understanding and evaluation of the social and human consequences of applying modern science and technology to health needs."

The Program's research and development activities have focussed at the outset on an interdisciplinary program in biomaterials science.

"In addition, we shall concentrate on programs of basic and applied research in areas of great need. These include the improvement of vision and hearing, the development of techniques and prosthetic devices for the rehabilitation of patients with neuromuscular handicaps, and the development of technology for the improvement of cardiac, respiratory and other bodily functions," Dr. London said. "The opportunities for making major contributions to the improvement of health care are great."

Moore Wins NSF Grant

Professor Stephen F. Moore of civil engineering has been awarded a $16,000 grant by the National Science Foundation to conduct research on the design of new methods of water quality monitoring.

Dr. Moore will be working in conjunction with the New England Aquarium and using an existing computer simulation model to analyze and predict water quality in the Boston Harbor. The principal aim of the project is to combine computer simulation and data analysis techniques to provide a more accurate estimate of water quality.

"Up until now the two methods--simulation and data analysis--have been used separately in water quality monitoring," Professor Moore explained. "We hope that by combining computer modeling with the new techniques of dynamic estimation developed by the aerospace industry that we can develop a water quality monitoring program which is more accurate than either method by itself."

The grant was one of 73 Engineering Research Initiation grants awarded by NSF on a nationwide competitive basis. The grants, which totaled almost two million dollars, were provided to young engineering faculty members for research on problems relevant to society's needs.

CLASSIFIED ADS

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

For Sale, Etc.

Genet oboe. Jim Kates, X4174.

Golf clubs, 1,3,4,5 woods, First Flite alum shafts, 2 yrs old, $50. X3694.

Beaut $150 wedding gown, chantilly lace w/cathedral train, bodice pearl embroid, 12, $50 or best. Steve, X1857 before noon.

Tbl saw, homemade w/8" blade, 3 phase 1hp Emerson motor, $15. X2750.

Hifi comp, old but good: KLH-4 spkr, ugly but gd sound, $55; Sherwood 36 mono amp, $25; old Lafayette AM-FM mono tuner, best offer. Klaus, X4892.

Hsehold furn incl dishwshr, refrig, piano, office equip, oriental rugs. X6621.

RCA 21" b/w TV, maple colonial console, exc cond, $75. X7155 Linc.

Olds trumpet, perf cond, like new, $75. Sharon, X6233.

Alumni Day mugs, '41, '42, '44, '46, '52, $3 ea. Bill, X4956.

MGB new parts, fuel pump, $25; gulp valve, $10; shop manual, $5. George, X4207.

Console TV, old but still works, $25. X1537.

Foldable cot, brand new, was $32, now $24. Doan, X3831.

Pr Delta 7.35x14 tires, used 1K, $25 for both. Joe, X117 Haystack.

Olds student mod trumpet, new, $150 or best; 12' alum boat, Sea Nymph, 4hp Merc motor, few yrs old, $300 or best. Dick, X5469 Linc.

GE phono, gd cond, extras optional, $35 or best, must sell. Charles Bruno, X3161.

Norge elec stove, 3 top brnrs + deep well, exc oven, enamel perf, $25. Ed, X7371.

Hella fog lamp, new, $11. Bill, X7571.

Car seats, 2, $7 & $3; 2 playpens, $8 & $5, carriage, $5. Chung, X3781.

Hammond M3 organ, gd cond; cedar wardrobe 40x66"; Admiral 25" color TV, pic tube going down hill; stereo console, Motorola, gd cond. Tony, X7571 Linc.

Upright freez, 12 cu ft, $75 or best; wash & dryer, $25 each; player piano, nds repr, $50. X5331.

Acoustic suspension spkrs, 24x19x12", $100 for pair. X2270.

New Uniroyal fast track glass belt tire, H78-14, $35. X6464.

Sofa-bed, gd cond, $75 or best over $50; couch, gd cond, $30; lawn chrs, $2.50 each; lg fan w/stand, $15. X4930.

Assorted electronic & electro-mechanical things, $20; partial non-typing remote console, $25. Ron, X5364.

Wd, 3-drw desk, $5; Lg new wicker picnic basket, $3.50; new Rem elec knife, $8; sm Japanese binoculars, $7. X6680.

Coffee tbl, brown oak, w/2 shelves & middle drawer, $125 new, now $25. Call 396-6419.

White bath rm sinks, 2, each w/H & C faucets, 1 w/trap, $5 and $7. Conrod, X4101.

Sears sngl bed w/frame, exc cond, $20. Christine Anderson, X5641.

Patrolman Pro 2B high & low band receiver w/crystal control capability, was $100, now $75; 2 Realistic walkie-talkies, 2w, were $80, now $40. X3740.

Schwinn man's 3-spd bike, nds gear adj, $30. Sumner, X5674.

Zenith 18" port TV, VHF, $25. Mike, X5567.

Baby furniture, best offers. Gaston, X6750.

LWE neg feedback controlled spkrs, all mods, avail unfin nr dealer cost. Phil, Dorm X8617.

Tech Aero Flying Club membership, $75. Dave, X286 Draper 7.

Hair dryers, port tbl mod, $10, fl mod, $15. X1555.

Singer fl mod sew mach, beaut cab, exc cond, $75. Marjorie, X1826.

Brass frpl set, $50; 12 lb Whirpool auto washer, exc cond, $50; 2 lg Grass-hopper suitcases, $10; brown sofa w/ orange seat covers, $50. Mary, X2518.

Vehicles

'65 Buick sport wgn, 65K, gd cond. X3531.

'65 Galaxy 500, gd run cond, exc body, pwr st, orig owner, $500. Alan, X4935.

'67 Triumph TR4A, 50K, exc cond, overdrive, snows, new shocks & clutch, asking $1400. John, X4713.

Tech dinghys, $500 ea, 4 left. Sailing Pavilion, X4884.

'64 Dodge Dart 6, nds work, $75. Earl, X322 Draper 11.

'70 VW bug snrf, yel, opening rear windows, AM-FM, snows, exc cond, $1750. Andy, X2213.

'69 Opal Cadet, sports coupe, 25K, $900. Mike Walsh, X595 Draper.

Row boat w/flotation chambers, 12', gd cond, $65. Edwin Alexander, X5584 or X5589.

Woman's bicycle, 26" mid weight, 1-spd, gd cond, $25. Leo, X5418.

Man's 10-spd racing bike, exc cond, w/lugg rack, odometer, stirrups, light, lock & chain, $75. Len, X5058.

'68 Pontiac GTO convert, 4-spd posi-trac, high perf eng, tach, nds paint, $1000 firm. Gunnar, X3213 after 4pm.

Penguin 11'6" sailboat, fiberglass, w/trlr. Simon, X5053.

'69 Chevy Kingswd wgn, 4 new tires, all pwr, stereo, exc run cond, $1850 firm. X3316.

Pintail 14' sailboat, fiberglass, planing hull, sloop rigged, dacron sails w/alum trlr, exc cond, $950. X7381.

'65 Chevy Bel Air 4-dr, 53K, wh w/blue int, $250. Don, X3172.

'71 Vega sta wag, 5 mos old, lk new, radio. X3220 or X1760.

'68 Firebird, forest green, 3-spd, overhd cam 6, chrome reverse whls, wide ovals, gd cond, $1400 or best. Rick, X5845 Linc.

'64 Corvair, convert, auto, gd cond, $300. David, X7652.

'64 Dart, gd trans, best offer. Dave, X1824.

'67 Mustang GTA, 392 eng, 8 cyl, auto, 6 gd wide ovals incl 2 new studded snows, tape deck, new batt, exc cond, $1300. Ruth, X108 Linc.

'59 Mercedes 220S, 4-dr, body v gd, eng nds major work, $200. X1439.

'71 Yamaha DT1-E, 250cc enduro, 1,650 miles, $700. X5548 Linc.

Housing

Bridgeton, Me, lg chalet on 14 acres overlking Moose Pond, comp privacy, quiet, all conven, slps 12, sundeck, 2B, 4BR, all util, summer rental by wk, mo or season. Hoenig, X2418 CEA

Arl, spacious 5-rm 1st floor apt, w/ garage, walk to Center, avail 4/15, $185. X430 Linc.

Eastgate, furn apt to sublet for summer. Terry Rieck, X4218.

Somrvl, 2BR apt, lg K, 12 min from MIT, $155 unheated, avail immed. Bob, X5109.

Watertown, 2BR apt, 2 blocks from MTA, organic garden, lease 5/23; for sale: 2 prs man's Kestinger mountain boots, used once, $17.50 per pr. Dennis Meadows, X1573.

Concord Ctr, Victorian hse w/mod facilities, 4-BR, 1½B, high $50s. Reed, X491 Linc.

N Vt, nr Canadian border, sum hse, ski lodge, lakeside, sleeps 11, $135/wk w/boat. Denny, X2430.

Lk Winnepasaukee, N.H. chalet, priv pool, beach, sauna, sports, $125-$155/wk. X6415.

Lovell, Me, priv sum hse, Kezar Lake, sleeps 6 + 4 bunks, crib, canoe, 18hp boat, view of Wh Mtns, $170/week. Rachel, X2285.

Northgate, mod 2-BR apt, w-w carpet, dish & disp, air cond, sun porch, nr Inman Sq, avail May-Aug, $250/mo incl ht. Shirley, X7236.

Kingston, newly dec, bright rm in home w/2 working adults, 45 min to MIT, use of rest of hse avail to right person, reas. Marjorie, X1572.

Chestnut Hl, 2BR mod apt, ww carpet, pking, pool avail, avail 5/1 or 6/1, $225. Call 323-5143 evgs.

Bcn Hl, sum sublet, 2-BR, LR, K, furn optional, avail 6/1, $205/mo. Al or Fred, X5630.

Camb sublet w/opt, 1-BR furn apt, all utils incl, avail 4/21, $185/mo. Mark, X1978 or Pat, X5392.

Camb, 4-rm newly renov apt, married cpls only, no pets, $175/mo htd. X3319.

Som, cl, mod 1-BR apt, avail 4/15, $205/mo. X4519.

Animals

Dalmatian puppies, AKC, exc blood line, champion-sired, grdfather top US dalmatian, 6 wks, shots, gd temperament, exc w/children, $125-$200. X2289.

Free, 2 male kittens, 3 mos old, must give away because of allergy. Jerry, X6203.

Young mannerly affec tom cat, b&w, nds home in less competitive area, free. Marcia, X343 Linc.

Free kittens, grey tiger, b&w fluffy. Margaret, X7053.

Free kittens. Dan, X5749.

Calico kitten, 5 mos. Roberta, X7001.

Lost and Found

Lost: gold ring w/initials M. D. Mike, X6762.

Wanted

Barbells, dumbbells, weights. Randy, X7273.

Woman's 3 spd 26" bike. Kathy, dorm X0954.

Student Information Processing Board nds student 10hrs/wk for filing, typing, gen secretarial work. SIPB Office, Rm 39-200, X7788; or Chris Tavares, 354-4024.

Fem rmmate to share rm in mod 2BR apt, ww carpet, air con, dish/disp, as soon as possible, Camb-Som line. X3913.

Fem rmmate for 6-rm, 3-BR apt w/2 others, own rm, nr Radcliffe, $64/mo. Sue, X3724; Barbara, X6710; Joanna, X1538.

Fem rmmte for Wollaston 3BR sublet apt, furn rm, gd neighborhood, nr beach, $57, avail 4/15. Margaret Larsen, X2519.

Fem rmmate to share 4-rm mod, 3rd fl apt w/fem grad student, nr Medford Sq, air cond, w-w carpet, dish, avail now, $115 + util, own rm; $60 + util, shared rm. Karen, X161 Linc.

Member for car pool, from E. Billerica or W. Wilmington, nr Rt 129, 9-5. Grant, X6275.

Summer rmmte for furn 2BR luxury apt, air cond, Somrvl, ½ mile from Harv Sq, pking avail, $125 + elec. Phil, 547-4631.

Miscellaneous

Mother wl babysit in her Camb home, full or part time. Call 661-1992.

Wl do typing, manuscripts, term papers, theses, etc. Linda, X7024.

Wl do reg and tech typing. Marsha, X2342.

Wl do typing. Susan, X1786.

French student wife, honor grad in Fr & Ger, wl give public or priv lessons. Barbara or Pierre, X6997.

Positions Available

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

Part-time Secretary III to type stencils for class material in Russian, French and possibly German. Some clerical and library duties for headquarters office.

Technical Assistant IV will engage in behavioral studies and assist in surgery to examine space perception and perceptual-motor coordination in kittens. Care for animals, order lab supplies, keep records. Interest in research; education in experimental psychology or biology preferred.

Secretary IV to work for Head and five staff members of research laboratory. Typing technical and non-technical reports and correspondence requires experience. Other duties include making travel arrangements and maintaining project and personnel files.

Biweekly, Ext. 4251

Sr. Tech (El'c): Extensive microwave background required. This position is with our facility in Middleton.

Tech B (E-M): Electrical and Electronic wiring from circuit diagrams. Experience with hand and simple machine tools is essential. Experience with vacuum systems and similar laboratory devices is desirable but not necessary.

Hourly, Ext. 4268

CSF Seeks Proposals

The MIT Community Service Fund is soliciting new proposals for funding during the summer or for the 1972-73 academic year.

The CSF provides financial assistance to Institute people who participate in community service and action projects. The CSF review panel focuses particularly on proposals in which grants for equipment, supervision, administration and service can give special leverage to the efforts of MIT volunteers. The fund also provides seed money for innovative proposals.

Proposals should be sent to the CSF in Room 10-205 by Monday, May 1. For more information, call Joseph Collins, Exts. 1988 or 5278.

Landscape Show Opens

(Continued from page 1)

major French, English and American artists including Corot, Courbet, Monet, Constable, Turner and Whistler, as well as lesser known painters from Germany, Spain, Italy and Holland. The inclusion of often overlooked German, Dutch, Spanish and Italian landscapes makes the show one of the most comprehensive of its kind to be exhibited recently.

"To Look on Nature" was organized by art history graduate students at Brown University and has been exhibited at the Museum of Art of the Rhode Island School of Design.

The works have been lent to MIT by museums as well as individuals. Among the 16 works on loan from the Museum of Art of the Rhode Island School of Design are *Fishin'* by Winslow Homer and *Autumn* by George Inness. An Italian work, *Roman Compagnaca* by Giovanni Costa, and *Landscape, Tomb in North Africa* by the Spanish painter Mariano Fortuny are among eight works loaned by the Boston Museum of Fine Arts. The Metropolitan Museum of Art in New York City has sent three paintings including *Landscape, Lake Mononk* by Hendrik van Elten of the Netherlands. Colleges and universities including Harvard, Yale, Vassar and Smith have also lent works.

Hayden Gallery is open from 10am until 5pm on Mondays, Wednesdays, Thursdays and Fridays, from 10am until 9pm on Tuesdays, and from 1pm until 5pm on Saturdays, Sundays and holidays.