Massachusetts Institute of Technology



March 17 1976 Volume 20 Number 31

Lincoln Satellites Launched

Two experimental communications satellites designed and built for the Air Force by MIT's Lincoln Laboratory were launched Sunday (March 14) from Cape Canaveral in Florida aboard a TITAN III-C launch vehicle.

Following is a statement issued by Lincoln Laboratory:

Liftoff took place at 8:25pm (EST), and the satellites were released simultaneously into orbit at 3:10am (EST) on Monday, exactly on schedule. This was a great moment at Lincoln, eagerly awaited by the hundreds of people who have contributed to the development of the satellites over a period of more than five years. The first direct telemetry signals from the spacecraft, received from both satellites promptly after separation, were greeted with great enthusiasm, and the laboratory's experimental program got underway immediately.

The initial phase of this program includes several activities. First, the orientation and motion of the satellites had to be determined, corrections calculated, and commands sent to the spacecraft to stabilize them with communication antennas pointed at the earth. Second, the orbital positions and velocities of the satellites must be determined very precisely so that they can be directed to start moving slowly away from one

(Continued on page 8)

The appointment of Professor

Frank E. Perkins as head of the De-

partment of Civil Engineering has

been announced by Dr. Alfred A.H.

Keil, dean of the School of Engineer-

Professor Perkins, who has been

acting head of the department since

July 1975, succeeds Professor Peter

S. Eagleson, who asked to be re-

ing

March 1.

Perkins Named Head

Of Civil Engineering



COMET WEST streaks behind the MIT George R. Wallace, Jr., Astrophysical Observatory in Westford, Mass. The photograph was taken shortly before dawn March 8 by physics senior Russell Chipman of Norwaldston, Conn., who spends most of his time at the observatory taking photographs of hydrogen alpha radiation from nebulae. Although the recently discovered comet is becoming fainter, it should still be seen with binoculars in the eastern sky between about 3:45 and 4:45am-weather permitting.

Future Holds Promise For Mining Asteroids

By BARBARA BURKE Staff Writer

Shortages of accessible iron and nickel on earth could be solved by turning to plentiful supplies in space, according to two astrophysicists at MIT.

The two believe that it would be possible and profitable to mine the asteroids for iron and nickel. They suggest that the metals could be made into a buoyant metal "foam," which could be shaped into a vehicle and guided by remote control to a landing site in the ocean.

Dr. Thomas B: McCord, associate professor of planetary physics in the MIT Department of Earth and Planetary Sciences, and staff scientist Dr. Michael J. Gaffey, presented a tentative scenario for extraterrestrial mining at the Seventh Lunar Science Conference in Houston, Texas, Tuesday (March 16).

They estimate that each year the venture could bring back metals worth "at least 140 billion dollars."

"We're not trying to define precisely how or what should be done, but to show that it is feasible," said Professor McCord, who is also director of MIT's George R. Wallace, Jr., Astrophysical Observatory.

"We find the prospects exciting and unexpectedly reasonable," he said. "There's no question that more serious studies will have to be made, but the basic capability is there, and the country ought to be preparing for it.'

Iron and nickel, which make up as much as 80 or 90 percent of some asteroids, are becoming increasingly difficult and expensive to extract from the earth, Professor McCord said

"Even before supplies are completely exhausted, the cost of discovery and development of low grade ores in terms of money, time and environmental impact will become prohibitive," he said.

Asteroids are tiny "planets" or fragments of planets, most of which circle the sun in a belt between Mars and Jupiter. The surface composition of many of the asteroids has been determined by the two scientists and their associates, using remote sensing techniques applied from ground-based optical telescopes

The simplest way to mine these (Continued on page 8)

Lactose Intolerance Test is Questioned

The value of supplemental milk programs for children has been questioned in recent years because of reports that many non-white children are made sick by milk, or cannot utilize milk sugar (lactose).

Two MIT nutritionists have found that those reports were based on a faulty premise: the assumption that a standard "lactose tolerance" test accurately reflects a child's capacity to tolerate milk.

In a study of 69 black children and 30 white children, they found that although many of the black children were shown by that test to be "lac-tose intolerant," none of them reacted badly to an eight-ounce glass of milk

The study was conducted by Cutberto Garza, MD, who recently received his PhD at the MIT Department of Nutrition and Food Science, and noted nutritionist Dr. Nevin S. Scrimshaw, PhD, MD, head of the department. The study was reported in a recent issue of The American Journal of Clinical Nutrition; it was

lactase appears to decrease normally with age.

When a lactose-intolerant child is given test doses of lactose, gastrointestinal symptoms such as flatulence, bloating, abdominal cramps (Continued on page 8)

Blood Drive Nets 1465 Pints

A total of 1,465 pints of blood was collected during the annual MIT Spring Blood Drive which ended March 12.

"We did pretty well considering the circumstances," said Vinay Reddy, drive chairman and a sophomore in electrical engineering from Bloomfield Hills, Mich. "We had to contend with the flu, many winter colds and crazy weather, all of which reduced donations."

The drive's original goal was 2,000 pints. The winners of the fraternity and

lieved of responsibilities as head of received the SM the department and is spending in 1959 and the 1975-76 visiting the California Insti-ScD in 1966. From 1957-62 he tute of Technology. Professor Perkins' appointment was effective was a research assistant and From 1973-1975 Professor Perkins

MIT. Following

service in the

US Army Corps

of Engineers,

he returned to

MIT where he

research engineer at the Hydrodynamics Laboratory and in 1962 beFaculty to Meet

A regular meeting of the faculty will be held today (Wednesday, March 17) at 3:15pm in Rm 10-250. Agenda items include:

visory Committee

-Report by the Committee on **Educational Policy concerning** freshman experimental programs (Concourse and the Experimental Study Group) -Resolution on Non-smoking.

Postal Rate Reminder

Eveyone noticed when first class postage recently jumped from 10 to 13 cents.

But many people are not aware that the 13-cent amount applies only to the first ounce. Additional ounces up to 13 ounces total require only 11 cents postage. For example, a 2ounce letter costs 24 cents, a 3-ounce letter 35 cents, and so forth. Beyond 13 ounces postage is determined by weight and distance.

-Report by the ROTC Ad-

engineering for special education programs, participating in several studies of US engineering education. "That experience," Dean Keil said, "has made him intimately

was special assistant to the dean of

familiar with the broadening scope of the School of Engineering and the need to find a balance between engi-

came an instructor in civil engineering, winning the 1965 Goodwin Medal for conspicuously effective teaching.

neering sciences, technologies and

Professor Perkins received the SB

in civil engineering in 1955 from

systems engineering."

Appointed assistant professor of civil engineering in 1965, he was promoted to associate professor in 1966

(Continued on page 6)

The Office of Laboratory Supplies now stocks both 13-cent and 11-cent stamps in Rm 4-070.

funded in part by The National Dairy Council.

Primary lactose intolerance-the most common form-occurs when a person lacks adequate amounts of lactase, the intestinal enzyme that breaks down the sugar (lactose) in milk. In some people, the amount of

dormitory living group beer contests will be announced shortly after MIT's spring vacation which ends March 28.

During the two-day Lincoln Laboratory Blood Drive a total of 251 pints of blood were donated by Lincoln people.

ream for Physical Vlechanic most a lant on at

John MacKinnon, the father of five and an air-conditioning mechanic in Physical Plant, started life in a family of Nova Scotia coal miners, never dreaming that one day he would send a son to MIT.

Today his oldest child, Richard, 20, is a sophomore in biology with plans to attend medical school. The first generation-college aspect of Richard's success is enhanced, Mr. Mac-Kinnon says, by the fact that as the child of an MIT employee, Richard attends MIT tuition free.

'We would have managed to send him somehow, I'm sure," the ruddyfaced maintenance mechanic said.

"But it still would have been difficult with tuition at \$3700 a year and an increase scheduled for next year. Now Richard simply pays for as much of his room and board as he can from summer job money.

Other MacKinnon children who might follow their brother's example are Wayne, 18; Theresa, 14; Brian, 11; and Judy, 10.

According to their mother, Mrs. Sadie MacKinnon, the possibility of acceptance at MIT has had a positive effect on homework habits.

"While they may not have been particularly bent on college before, now they think about shooting for a goal like MIT. They see their brother earning A's and B's in an effort to get into medical school, and it makes an impression.'

Richard, a member of MIT's hockey team and still a participant in family ski weekends, actually came to MIT by a strange stroke of luck. In the spring term of his senior year at Sharon High School he received letters of 'acceptance from Colby College, the University of Massachusetts at Amherst, and McGill University.

With his name on the waiting list at MIT, Richard decided to send an affirmative reply to McGill in Montreal-only to have it returned because of the 1974 Canadian mail strike. As postal problems blocked his plans to attend McGill though, an MIT admissions officer phoned to say that a space had become available and would he attend?

"I accepted without hesitation," recalls Richard, who said the combination of an MIT degree and a full tuition grant was too much to resist. Under the present MIT benefits plan, children of bi-weekly, hourly and exempt employees who are admitted to MIT while their parents are employed at the Institute are entitled to a full tuition grant during

their undergraduate years. The grant does not apply to employee's children attending colleges other than MIT.

"I was lucky enough to get summer jobs right here at MIT-in the Carpentry Shop, on the buildings and grounds crew, and last January, in the Heat, Vent, and Air-Conditioning Department, where I had the fire extinguisher detail," says Richard, who cuts down on board costs by cooking his own meals in MIT's Baker House. Last semester he volunteered as an orderly in the

(Continued on page 7)

Music Notes Earls' Bicentennial Opera To Premiere March 26

A work by MIT composer Paul Earls will receive its world premiere when it and another native American opera are presented by the New England Chamber Opera Group in March and April performances.

The Death of King Philip by Paul Earls, research fellow at the MIT Center for Advanced Visual Studies, will be staged in the sanctuary of All Saint's Church (1773 Beacon St.), Brookline, at 8pm on Friday, March 26, Saturday, March 27, and Thursday, April 1.

Sharing the billing with Paul Earls' work will be Chocorua by Robert Selig of the New England Conservatory of Music. Both one-act operas are based on the early history of New England and portray the struggle between colonists and Indians for control of the land.

The Death of King Philip is derived from King Philip's War which raged in New England between the Wampanoag Tribe and the English colonists from June, 1675, to the death of King Philip, the Wampanoag chief,

Musical Society **Elects Hallmark**

Rufus Hallmark, assistant professor of music at MIT, has been elected president of the New England Chapter of the American Musicological Society, a national professional organization of music scholars.

As president, Professor Hallmark has organized the program for the Chapter's spring meeting on April 10 at Vale University.

Professor Hallmark, also active as a performer, will be heard March 25 and 27 with the Boston Camerata, with which he is tenor soloist, in performances of early music of Provence. He will also be a featured singer in performances of Mozart's C Minor Mass and Vesperae Solennes de Confessore to be given March 28 in Sanders Theatre as part of the 1976 Mozart Festival.

Professor Hallmark has received an Old Dominion grant from MIT for work on a book on the songs of Robert Schumann.

in the spring of 1676.

The libretto by Romulus Linney and Paul Earls is based on six eyewitness accounts of King Philip's War and the Narrative of the Captivity of Mrs. Rowlandson, 1682.

Musically, the opera is an avantgarde work incorporating tapes, electronic devices and visual effects with lyrical music. Instrumentation includes an accordion, organ and autoharp as well as a chamber ensemble.

CAVS is designing the costumes, visual effects and sets under a grant from the National Endowment for the Arts which also supported the composition of the work.

Chocorua, the other opera on the double bill, was first performed at Tanglewood in 1972 to much critical acclaim. The libretto by Richard Moore is based on a story by Leo Bonfanti, an authority on New England Indians.

This story is derived from the Legend of Chocorua, a young Pequawket hunter and warrior, who stayed in what is now New Hampshire when the rest of his tribe emigrated to Canada to escape war with the English. He becomes friendly with a white couple who settle in his valley, and this friendship develops into a star-crossed love affair between Abigail, the white woman, and Chocorua, the Indian brave.

Both operas are being staged by Rafael de Acha of the Manhattan Music Theater, and conducted by Philip Morehead, artistic director of the New England Chamber Opera Group

Tickets will be available at the door or by mail to 517 Commonwealth Ave., Newton Centre, Mass. 02159. Donations are \$6, \$5 and \$4. For reservations and ticket information, call 739-1257.

Singer to Lecture

Irving Singer, MIT professor of philosophy, will give a lecture on film aesthetics, entitled "Film and the Aesthetics of the Visual," on March 22 at the Humanities Center, Johns Hopkins University, Baltimore, Md.



Announcements

Freshman Evaluation Forms-Forms due in Fri, Mar 19, Instructor turn-in deadline is Mon. Mar 29

Preparation for Marriage Seminar-Conducted by married couples of MIT community, with assistance of associate chaplain Rev. Basil De Pinto. An exploration of questions and concerns of engaged couples. Afternoons, Sat, Mar 27 & Sun, Mar 28, W-2A, 312 Memorial Dr. Fee: \$10. Preregistration required, x3-2981.

Nominations-Award nominations are being accepted for Compton, Stewart, Murphy and Baker awards. Deadline is Wed, Apr 7. Information: Dean Robert Holden, Rm 7-101, x3-6774.

Discount Tickets-Discount tickets for Wed, Mar 24 BSO open rehearsal are on sale now at TCA office, Stu Ctr Rm 450, x3-4885, 11am-3pm.

Annual Kresge Scheduling Meeting-Fri Mar 19: Evaluation, consensus-establishment, and room reservation for Little Theatre. 2pm, Stu Ctr Rm 407.

Student Furniture Exchange-Open Tues & Thurs, 10am-2pm, Buy and sell to students. tax-free donations gratefully accepted. 25 Windsor St. x3-4293.

IPC March Courses-Debugging Techniques & Tools, Mar 22, 24, 26; Intro to the QEDX Editor on Multics, Mar 23 & 25; Introduction to Terminal Use, Mar 22: Elementary Fortran, Mar 23-26. Preregister with Lynne Penney, Rm 39-427, x3-6320

Guatemalan Relief Fund-Bring contributions to the Foreign Student office, Rm 3-107. Cash, or checks payable to "CARE-Guatemalan Relief Fund.

Placement

The following companies will be interviewing during the time period covered by the current Institute Calendar. Those interested may sign up in the Career Planning and Placement Office, Mon-Fri, 9am-3pm, Rm 10-140, x3-4733.

Wednesday, March 17-Farrel Co Div of USM Corp: Hendrix Electronics, Inc: Kollmorgen Corp: Mountain Fuel Supply Co; BF Goodrich Cem Co; Los Alamos Scientific Lab. Thursday, March 18-Colonial Penn Grp, Inc; General Electric Co; Hutchinson Industrial Corp. Friday, March 19-General Electric Co.

New UROP Listings

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

Chemical Engineering Department

Undergraduates are invited to participate in the following projects: 1.) Novel Chroma-tography Techniques—Methods for preparing flat glass surfaces with "pellicular" type stationary phase coatings are to be investigated. 2.) The Pumping of a Thixotropic Liquid by unconventional means is to be investigated. The ultimate aim of this research is the devel-opment of an electrophoresis apparatus that will operate continuously and at low voltage. Contact Professor M.V. Sussman, Rm 66-569, x3-6517.

participate in a study of automobile transmission design and its effect on auto performance and fuel economy. Work will be done on a digital simulation model to simplify an existing program. Pay available

Boston Bar Association Committee on Criminal Law

Roston Ma The Bar Association's Committee on Criminal Law would like to work with a student to monitor the Massachusetts legislation affecting the criminal law system in the Commonwealth. A student would prepare background papers and present a regular update of pending legislation to the Committee. College Work Study funding available.

Children's Hospital Boston, Ma. Numerical Differentiation of Film Data

To investigate the means of calculating the first and second derivatives of a data file which exists only as discrete points. To insure that the derivatives produced have not altered the properties of the data, the computed values will be compared with a pendulum whose velocity and acceleration are known from an analytical solution. This project will allow the student to become familiar with Fourier series, fast Fourier transforms, and digital filtering as well as a possible literature survey in the area of numerical analysis. Implementation of these methods will involve computer programming in FORTRAN or

Children's Hospital Boston, Ma. High Frequency Calibration of the Force Plate

In order to make accurate and reliable measurements from the force plate it is necessary to characterize the dynamic response of the plate and then have a means for checking the plate behavior periodically. A possible method is to construct a device which consists of two counter rotating eccentrically weighted discs. This project will involve the design and construction of this device as well as the solution of the dynamics to predict the forces exerted on the plate as a function of

Club Notes

MIT Auto Club**-Meetings third Sun of each month, 7:30pm, Stu Ctr Rm 491.

MIT Ballroom Dance Club*-We will be very active this term. For info on workshops & dances call Carl Sharon or Doug King, 536-1300

MIT/DL Bridge Club**-ACBL Duplicate Bridge. Tues, 6pm, Stu Ctr Rm 407.

MIT Chess Club*-Meetings Sat, 12n-7pm, Stu

MIT Goju Karate Club**-Mon, Wed & Fri, 7-9pm, Stu Ctr Rm 407. Info: 536-1830.

Hobby Shop**-Mon-Fri, 10am-6pm, Rm W31-031. Fees: \$10/term for students, \$15/term for community. Info, x3-4343.

MIT Juggling Club*-Juggling for beginner thru expert. Sun, 12n-2pm, Walker Gym.

Math Club-Meetings Sun, 4pm, Rm 4-182.

MIT Science Fiction Society*-The Society insists that you visit its incredible library (Stu Ctr Rm 421, x5-9144 Dorm) and attend its unusual non-business meetings Fri, 5pm, Rm 1-236

MIT Shim Gum Do Club-Instruction by 10th degree black belt in zen swordsmanship, karate and stick fighting techniques. Beginners always welcome. Mon-Fri, 5-7pm, Stu Ctr 4th fl or Sala. Jeff. x3-5934.

MIT Soaring Association*-General meeting Thurs, Mar 18, 7:30pm, Stu Ctr Rm 491. Coffee & donuts; movie & speaker.

Shotokan Karate Club**-Rigorous training for intercollegiate competition & self-defense. given by 6th degree black belt. Mon & Wed,



8pm, Fri, 6pm, duPont T Club lge.

MIT Space Habitat Study Group*-Meetings Thurs, 7pm, Rm 37-252. Interdisciplinary studies on space colonization. Everyone interested is invited. Office: Rm 24-415. Info: B. Hazelton, x3-6625.

Student Homophile League*-Gay Lounge, Rm 50-306, open daily for lunch & random other hours, x5-6745 Dorm. Tom, Contact Line, x3-5440, provides info, referrals, counseling or just talking to gay persons. Meetings 1st & 3rd Sun every month, Gay Lge. Consult bulletin board, Bldg 3, for info

MIT Tae Kwon Do**-Workouts Mon & Thurs, 5-7pm, Stu Ctr West Lge.

Tiddlywinks Association*-Wed, 8pm, Stu Ctr Rm 473.

MIT White Water Club**-Pool sessions every 2 weeks, next session Mar. 23. All 8pm, Alumni Pool.

Religious Activities

The Chapel is open for private meditation 7am-11pm daily.

Campus Crusade for Christ*-Family Time Fri, 7:45pm, Rm 37-252.

Celebration of Holy Communion**-MIT Lutheran & Episcopal Ministry. Wed, 5:05pm, Chapel. Supper following, 312 Memorial Dr.

Christian Worship Service*-Sun, 10:45am, Chapel. Refreshments following service.

Hillel*-Traditional services Fri, 5:30pm, Kosher Kitchen & Sat, 9am, Chapel

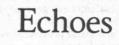
Islamic Society,**-Prayers Fri, 12n, Kresge rehearsal Rm B.

Prayer Time**-Lunch hour Bible classes led by Miriam R. Eccles. Fri, 1-2pm, Rm 20E-226. All are welcome

The Society of Friends (Quakers)*-Luncheon meeting Thurs, 12n, Walker. For those interested in the Society of Friends and possible formation of worship group on campus

Tech Catholic Community*-Weekday masses: Tues & Thurs, 5:05pm; Fri, 12:05pm, Chapel. Sun masses: 9:15am, 12:15pm, 5:15pm, Chapel.

Vedanta Society*-Meditation and Gita led by Swami Sarvagatananda, Fri, 5:15pm, Chapel,



50 Years Ago

Dr. Samuel Prescott '94, in a talk on "The World's Food Supply-Its Sources and Preservation," prophesied that within a few decades cattle would be raised almost solely for dairy products and not as a meat supply. He said that scientific improvement of food production was essential to keeping the rapidly increasing population supplied with food.

Plans for the Institute Circus to be held in April were announced. The committee in charge of circus arrangements declared that "Any attempt on the part of co-eds to crash this year's circus will be strenuously opposed."

40 Years Ago

Members of the MIT Radio Society held an all night vigil handling distress calls from flood victims in New Hampshire and Vermont.

Olympic gynmastics tryouts for New England were held in Walker Gymnasium. Charles A. Curtze '37 won a place on the New England team to go to the finals in June.

25 Years Ago

For the second successive year the Beavers varsity rifle team captured the championship of the New England College Rifle League.

The Aeronautical Engineering De-

Newton Homes Exhibited in Rotch A photography exhibit of archi-

tecturally significant homes in Newton, Mass., is on view in the Rotch Library of Architecture (Room 7-238) and the Rotch Visual Collections (Room 7-304) through March 26.

"Photographic Portraits of Historic Houses, Newton, Mass." shows the work of Robert Arruda, Betsy Fuchs, Donald Grey, Georgia Litwack and Birgitta Ralston. The houses represent a number of architectural styles and show the detailed work of generations of craftsmen.

Two essays complement the exhibit. One, by Jonathan Green, associate professor of photography in the MIT Department of Architecture, discusses the camera as a way man

can "communicate his response to

architecture.' The second essay, by Michael McKinnell, architect of Boston City

Hall and professor at the Graduate School of Design, Harvard University, explores the enjoyment that comes from looking at photographs of architecture. McKinnell believes houses reflect "the values of the individuals and the society that built them.'

Historical documentation and commentary on the houses is provided by George Stephen, Jean Husher and Duscha Scott, all members of the Newton Historical Commission.

			Aero	Barker	R, R,	Dewey	Humanities	Lindgren	MARIC
Fri.,	Mar.	19	9-6	9-6	10-5	8:30-6	8-8	8:30-5	9-6
Sat.,	u -	20	12-4	9-6	closed	9-6	9-8	10-6	closed
Sun.,		21	closed	1-9	closed	1-10	1-10	1-9	closed
Mon.,		22	9-5	9~9	10-5	8:30-10	8-10	8:30-5	9-6
Tues.,	**	23	9-5	9-9	10-5	8:30-10	8-10	8:30-5	9-6
Wed.,	"	24	9-5	9-9	10-5	8:30-10	8-10	8:30-5	9-6
Thur.,		25	9-5	9-9	10-5	8:30-10	8-10	8:30-5	9-6
Fri.,	**	26	9-5	9-6	10-5	8:30-6	8-8	8:30-5	9-6
Sat.,	**	27	12-4	9-6	closed	9-6	9-8	10-6	closed
Sun.,	n	28	closed	1-9	closed	1-10	1-11	1-9	closed
			Music	Reserve Book Rm.	Rotch	Science	Space Center	Student Center	Von Hippel Materials Center R.R
Fri.,	Mar.	19	9-5	8-5	9-6	8-8	9-5	24 hrs.	9-5
Sat.,	**	20	9-5	9-5	10-6	9-8	closed	24 hrs.	closed
Sun.	**	21	closed	closed	1-9	1-10	closed	24 hrs.	closed
Mon.,	11	22	9-5	9-5	9-9	8-10	9-5	24 hrs.	9-7
Tues.,	**	23	9-5	9-5	9-9	8-10	9-5	24 hrs.	9-7
Wed.,		24	9-5	9-5	9-9	8-10	9-5	24 hrs.	9-7
Thur.,	**	25	9-5	9-5	9-9	8-10	9-5	24 hrs.	9-7
Fri.,	**	26	9-5	9-5	9-6	8-8	9-5	24 hrs.	9-5
Sat.,	н.	27	9-5	9-5	10-6	9-8	closed	24 hrs.	closed
Sun.,		28	1-11	closed	1-9	1-11	closed	24 hrs.	closed

Spring Vacation Library Hours

All Libraries resume regular term hours on Monday, March 29.

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Center for Policy Alternatives

Undergraduates are encouraged to participate in a number of projects being conducted at the Center for Policy Alternatives: 1.) Environmental Regulation. 2.) Occupational Safety and Health. 3.) Government Policy and Technological Innovation, 4.) Occupational Licensure. 5.) Consumer Durables. Other potential project areas include studies of job satisfaction and manpower economics in other countries. Contact Ellen Smith, Rm 39-554, x3-1669.

Center for Advanced Visual Studies

One or two undergraduates are invited to assist with the experimentation and fabrication of steam fountains in a laboratory on campus, four half-days per week. Students should have knowledge of basic plumbing skills, understanding of steam pressures, and temperatures. Some experience in computer programming is needed. Specific projects: 1.) Experimentation of source/sink arrangement in which steam is placed with hot air. 2.) Design of fins to be placed inside vertical cylinder through which steam will pass. 3.) Building of working model of steam fountain for presentation purposes. 4.) Designing computer programming with which steam emission will be controlled. Contact Professor Eugene Larrabee, Rm 33-303, x3-2271,

Orshansky Transmission

Corporation

A student interested in mechanical systems with a knowledge of FORTRAN is invited to

Belmont, Ma



March 17-23 Channel 10 Thursday, March 18: 12:30pm to 4:30pm, MITV News

Friday, March 19: 12:30pm to 4:30pm, MIT Historical Collections Presents: "The Social Beaver" and "A Bell for MIT"

Channel 8 Friday, March 19

9:00 am Decision Analysis #6-Dr. Myron Tribus

Monday, March 22: 9:00am Decision Analysis #6 (repeat)

8:00pm Electromagnetic Fields and Energy (6.013), Professor H. Haus Problem Solving #4 (live)

Tuesday, March 23:

8:00pm Electromagnetic Fields and Energy (6.013), Prof. H. Haus, Problem Solving #4 (repeat)

partment announced plans for the construction of a new transonic Wind Tunnel to be located beside the Wright Brothers Tunnel.

Prepared by Ethel I. Newell, MIT Historical Collections, x3-4444.

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Record Number Join Quarter Century Club

A record "class" of 105 new members—the largest in history—will be inducted at the annual meeting of the MIT Quarter Century Club Tuesday, March 23, at a dinner in Walker Memorial.

Included in the new group as an honorary member is Margaret Compton, widow of MIT's ninth president, Karl Taylor Compton. Dr. and Mrs. Compton came to MIT in 1930 and Mrs. Compton has continued to play an active role in the community ever since. Dr. Compton died in 1954.

Paul V. Cusick, MIT vice president for fiscal relations, will be master of ceremonies. Jeri Whitman of the Draper Laboratory, president of the Club, will give welcoming remarks.

Ms. Whitman and Robert Radocchia, chairman of the board of the Club, will present certificates and pins to the new members. Closing remarks will be given by Howard W. Johnson, chairman of the MIT Corporation and also an honorary member of the Club.

Altogether, some 500 active and retired members are expected to attend the dinner. The Club is composed of persons who have worked at MIT for 25 years and includes members from the campus, Lincoln Laboratory and Draper Laboratory. This year's new members will bring total membership to approximately 1,200.

New members are:

John Adams of Bedford, Lincoln Laboratory, Group 43.

- Frederick Allen of Lynnfield Center, Draper Laboratory Business and Legal Office. Robert Baltimore of Randolph, Draper Lab-
- oratory Navy Programs Department. Earl F. Bardsley of Arlington, Draper Lab-
- oratory Air Force Programs Department. John W. Barrett of Concord, Research Lab-
- oratory of Electronics. Robert S. Berg of Lexington, Lincoln Laboratory Group 63.
- Michael Blaho, Jr. of Cambridge, Francis Bitter National Magnet Laboratory.
- Dominick Bonelli of Hingham, Draper Laboratory, Administration and Facilities Department.
- Ralph C. Brown of Braintree, Draper Laboratory Component Development Department.
- Francis T. Buckley of Roxbury, Physical Plant.
- Gertrude E. Burns of Belmont, Sloan School of Management.
- Joseph E. Cairns of Burlington, Department of Electrical Engineering and Computer Science.
- Joseph A. Caloggero of Nahant, Department of Mechanical Engineering.
- Kenneth M. Campbell of North Acton,
- Center for Space Research. Michael M. Catalano of Waltham, Lincoln Laboratory Group 72.
- James J. Cattel of Milton, Draper Laboratory NASA/Army Programs Department.
- Harold David Clinch of Stoughton, Draper Laboratory Air Force Programs Department. Mark E. Connelly of Concord, Electronic
- Systems Laboratory. Nathan A. Cook of Cambridge, professor of
- mechanical engineering. Russell M. Daniels of Braintree, Draper

Commitments

With the selection of students Ken-

neth S. Flamm, G, and Douglas C.

Knott, '78, membership on the Ad

Hoc Committee on International In-

stitutional Commitments is com-

plete Dr. Phillips W. Robbins, pro-

fessor of biology and committee

Other members are: Ann M. Gray-

biel, assistant professor of psycholo-

gy; Thomas F. Jones, vice president

chairman has announced.

Laboratory Navy Programs Department. William L. Davis of Cambridge, Department of Physics.

- Anthony G. DiNapoli of Quincy, Draper Laboratory, Navy Programs Department. David E. Donald of South Boston, Graphic
- Arts. Frederick R. Donald of Arlington, Draper Laboratory Navy Programs Department.
- Harold E. Dreyer of Belmont, Draper Laboratory Office of the Executive Assistant to
- the President. Rebecca Fairbanks of Cambridge, Draper Laboratory, President's Office.
- David F. Flett of Somerville, Physical Plant.
- John M. Frankovich of Lexington, Lincoln Laboratory Group 27.
- Erik D. Frederikson of Burlington, Lincoln Laboratory Group 61.
- Vincent A. Fulmer of Arlington, secretary of the Institute. Michael J. Giunta of Malden, Draper Lab-
- oratory, Digital Computation Department. Anthony J. Guarnieri of Medford, Physical
- Plant. William M. Hall, Jr. of Reading, Lincoln
- Laboratory Group 12. Andrew Hamilton of Somerville, Laboratory
- Supplies. John V. Harrington of Lexington, professor
- of aeronautics and astronautics and professor of electrical engineering.
- George N. Hatsopoulos of Lincoln, senior lecturer in mechanical engineering.
- Hermann A. Haus of Lexington, Elihu J. Thompson Professor of electrical engineering. Jean S. Holden of Cambridge, Lincoln Laboratory, Group 13.
- Kerson Huang of Cambridge, professor of physics.
- John W. Hursh of Needham, Draper Laboratory Air Force Programs Department.
- Mark A. Kelly of North Quincy, Research Laboratory of Electronics.
- Richard B. Kendall of Saugus, Draper Laboratory NASA/Army Programs Department.
- Arthur V. Kesselhuth of Nashua, N.H., Lincoln Laboratory, Group 65. Andrew C. Lattanzi of Holliston, Draper
- Laboratory Component Development Department.
- Salvatore Lauricella of East Boston, Dining Service. Bertrand Lewis of Boston, Draper Lab-
- oratory Administration and Facilities Department.
- William Lobar of Brookline, Laboratory for Nuclear Science.
- Joseph Arthur Loughran of Milton, Labora tory for Nuclear Science.
- John C. MacCarey of Lexington, Lincoln Laboratory, Group 13.
- Theodore R. Madden of Somerville, professor of earth and planetary sciences.
- Samuel Maloof of Westwood, Draper Laboratory Navy Programs Department. Oscar J. Manuppeli of Everett, Physical
- Plant. Samuel Marcolongo of Stoneham, Depart-
- ment of Mechanical Engineering. Winston R. Markey of Lexington, professor
- of aeronautics and astronautics. Joseph L. Marksteiner of Dorchester, Aero-
- physics Laboratory. Frank L. Marshall of Cambridge, Draper
- Laboratory Air Force Programs Department. Richard E. Marshall of Concord, Draper Laboratory Air Force Programs Department.
- Bruce Mazlish of Cambridge, professor of history and head of the Department of Humanities.
- Noreen J. McSorley of Cambridge, assistant to the dean of the School of Science.
- James W. Melendy of Randolph, Draper Laboratory Business and Legal Office.
- Stanley Miller of Quincy, Comptroller's Accounting Office.

those they think appropriate. The

judgment as to whether particular

projects should be brought to our at-

tention will be difficult in some

cases, especially since the prede-

cessor committee chose not to pro-

vide specific guidelines. In the light

of the resolution of November 19 it is

clear that this judgment is to be

made by the initiators of any proj-

ects. We can provide little by way of

Group Issues Statement

- Willard A. Mosher of Winthrop, Francis Bitter National Magnet Laboratory. Georgia M. Nagle of Dorchester, Informa-
- tion Processing Center. Robert E. Ogilvie of Lexington, professor of
- materials science and engineering. Peter J. Palmer of Wellesley, Draper Lab-
- oratory Air Force Programs Department. Theodore L. Parrella of Medford, Draper Laboratory Component Development Department.
- Benjamin Paulekas of Arlington, Physical Plant.
- Elizabeth A. Pigott of West Medford, Office of the Honorary Chairman of the Corporation. Albert R. Pitts of Holbrook, Draper Labora-
- tory Air Force Programs Department. Henry J. Pritchard of Norwood, Purchasing Office.
- Fiori H. Puntiri of Holbrook, Laboratory Supplies.
- John J. Quirk of Hyde Park, Lincoln Laboratory Group 72.
- Ernest Rabinowicz of Newton Centre, professor of mechanical engineering.
- Robert R. Ragusa of Melrose, Comptroller's Accounting Office.
- Robert C. Reid of Lexington, professor of chemical engineering.
- Frank P. Ricchio of Belmont, Francis Bitter National Magnet Laboratory.
- Alden V. Roberts of Woburn, Lincoln Laboratory Group 76. Paul Rosen of Lincoln, Lincoln Laboratory
- Division 6. Julia D. Rosentel of Islington, Patent Office.
- John G. Rossiter, Jr. of Rockland, Draper Laboratory Navy Programs Department.
- Louis W. Rovner of Randolph, Draper Laboratory Navy Programs Department. Arthur P. Rudolph, Jr. of Burlington,
- Department of Civil Engineering. Howard D. Ryder of Lexington, Lincoln
- Laboratory Group 28. Arthur Sabbag of Lincoln, Draper Labora-
- tory Administration and Facilities Department. Joseph M. Salvatore of Canton, Physical
- Plant. Nunziato Sansevero of Needham, Draper
- Laboratory Navy Programs Department. Theodore Sarantos of Lowell, Lincoln Lab oratory Group 69.
- Norman E. Sears of Sudbury, Draper Laboratory NASA/Army Programs Department.
- George L. Sherback of Watertown, Draper Laboratory Air Force Programs Department. Agnes V. Smith of Arlington, Comptroller's
- Accounting Office. Benjamin S. Smith of Marblehead, Draper Laboratory Air Force Programs Department.
- Joseph W. Souza of Dorchester, Lincoln Laboratory Group 15. William L. Spiers, Jr. of Lexington, Lincoln
- Laboratory Group 11. Ralph E. Stahle of Melrose. Draper Labora
- tory Navy Programs Department.
- Frederick D. Straccia of Medford, Draper Laboratory Component Development Department.
- Dominic Tino of Everett, Faculty Club. Milton B. Trageser of Winchester, Draper
- Laboratory Scientific Research Department. Carol Ann Tranfaglia of Melrose, Lincoln Laboratory Director's Office.
- John F. Throughton of Wakefield, Draper Laboratory NASA/Army Programs Department.
- Charles O. Webber of Billerica, Physical Plant.
- Roger P. Webber of Hingham, Center for Space Research. Herbert G. Weiss of Lexington, Lincoln
- Laboratory Division 4. Warren D. Wells of Cambridge, Registrar's
- Office.
- Robert F. Williams of Harvard, Lincoln Laboratory Group 69.

gree programs, those issues being

within the purview of the CGSP and

the CEP: nor does it have any res-

ponsibility with respect to individual

Initiators of projects or persons with questions should send them to

the Committee, in care of Professor

Phillips W. Robbins, Rm E17-233A,

consulting arrangements.

x3-3041.

for research; Fred Moavenzadeh, professor of civil engineering; George W. Rathjens, professor of political science; Edward B. Roberts, David Sarnoff Professor of Management; Walter A. Rosenblith, Institute Professor and Provost, and William F. Pounds, dean of the Sloan School of Management, coordinator for new international programs for the administration.

The Committee this week issued the following announcement.

By resolution of the Faculty, November 19, 1975, the Ad Hoc Committee on International Institutional Commitments has been established. It is to "review the scale and nature of MIT's international contractual commitments for education and/or research or service (whether at MIT or abroad) and report to the Faculty." The resolution also requires that "the Committee shall stand ready on request to consult with administration or faculty initiators of projects that involve such international institutional commitments."

We now invite initiators of such projects to bring to our attention

guidance at this time except to remind the faculty that our Committee, and its predecessor, were established because of concern that some international programs might, in the opinion of a part of the community, be inappropriate for MIT, because of the likelihood of the training or research results being used for socially undesirable ends or because of jeopardy to those involved. We suggest that, in deciding whether to consult with us, initiators of projects consider not only whether they see any unusual or possibly objectionable features but whether there is a reasonable likelihood that others in the community might. Additionally, we would point out that if we are to be maximally useful we should be informed of possible commitments bethat it would be embarrassing were they to be terminated or the nature they to be terminated or the nature of the project substantially modified.

Finally, we would remind the community that this Committee is not charged with any oversight role as regards such matters as criteria for admission and requirements for de-

NSF Summer Grants Available

The Department of Nutrition and Food Science is accepting applications from undergraduates interested in conducting research this summer in the application of biology to energy and resource utilization.

Twelve stipends of \$900 each are available, through the National Science Foundation's Undergraduate Research Participation Program. The program this year will provide research grants for 1,481 college students in the United States.

The project director for the grant made to MIT is Dr. Charles L. Cooney, associate professor of biochemical engineering in the Department of Nutrition and Food Science. Applications can be obtained from the department's undergraduate office, in Room 56-125. The deadline is April 15. Students with questions are requested to call Miss Debbie McCoy in the undergraduate office, at x3-1712. vironmental Sciences and Engineering at MIT for a term of one and a half years.

Dr. Keith D. Stolzenbach, assistant

professor of civil engineering at

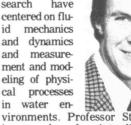
MIT, has been appointed Arthur D.

Little Assistant Professor in En-

Announcement of the appointment was made by MIT Provost Walter A. Rosenblith.

Professor Stolzenbach is the third named to the professorship. Previous chairholders were Professors William H. Matthews, also of civil engineering, and Michael W. Golay of the Department of Nuclear Engineering. The purpose of the term professorship is to encourage and support younger MIT faculty members in interdisciplinary environmental studies.

"Professor Stolzenbach is especially well suited to hold the Arthur D. Little Professorship of Environmental Sciences and Engineering," Professor Rosenblith said. "In addition to his technical expertise in the application of fluid mechanics to environmental engineering problems, his awareness of the economic and social aspects of, and conflicts between, effective resource utilization and environmental protection is a great asset."



in

ACCOUNTING TRANSFER of a portion of MIT's present group life insurance

coverage to two minority firms was discussed this week by (left to right): Kim

Valentine, assistant to the treasurer; William J. Kennedy III, president of

North Carolina Mutual Life Insurance Company; Chancellor Paul E. Gray;

Clarence Williams, special assistant to the President and Chancellor for

minority affairs; and Weathers Y. Sykes, senior vice president of Supreme

MIT offers its faculty and employ-

ees a choice of group life insurance

options: a contributory plan, where-

by both MIT and the insured con-

tribute a monthly percentage, or a

free policy, providing \$5,000 in insur-

ance, pro-rated in the case of part-

Clarence G. Williams, Special As-

sistant to the President and Chan-

cellor for Minority Affairs, said the

business agreement illustrated

MIT's role as a prime mover in aid-

"We hope this helps open doors

and generate new contacts for the

minority companies, which have al-

ready distinguished themselves as

economically sound, reputable con-

The 76-year-old North Carolina

Mutual Company, which operates in

15 mid-border states and Washing-

ton, D.C., is the largest black-owned

corporation in America, according to

its 1974 annual report. With more

than \$2 billion in insurance, the com-

pany holds policies for such black

universities as Morehouse and How-

ard and re-insurance agreements-

similar to the MIT arrangements-

with several Fortune 500 companies.

part of another company's insurance

business is becoming more of a na-

tionwide trend," Mr. Valentine said.

pany of America began operations in

1921 and has increased its business

over the years by re-insuring such

companies as the Federal Life In-

surance Company of Washington,

D.C., Dunbar Life Insurance Com-

pany of Cleveland, the minority busi-

ness of the Chicago National Life

Since Professor Stolzenbach be-

came assistant professor of civil en-

Insurance Company, and others.

The Supreme Life Insurance Com-

"Re-insuring, or contracting for

ing all segments of society.

time employees

cerns," he said.

Black Firms to Share MIT

Life Insurance Business

Life Insurance Co. of Chicago.

By PATRICIA M. MARONI

Staff Writer

negotiations are in progress for

transferring 10 percent of its group

life insurance coverage with the

John Hancock Company to two of the

nation's largest black-owned insur-

ance companies-North Carolina

Mutual of Durham, N.C., and Su-

preme Life Insurance Company of

The agreement is basically an ac-

counting transfer in which the

minority companies share in reve-

nue from MIT and MIT's insurance

risk, with all other administrative

and contractual responsibilities re-

Chancellor Paul E. Grav, who

made the announcement, said the

move represents a significant com-

mitment on the part of MIT to help

minority companies play a greater

role in America's majority busi-

nesses. He said that MIT was ini-

tially approached by North Carolina

Mutual after the company had nego-

tiated a similar agreement with

(face amount) of group life insur-

ance with the John Hancock Com-

pany. Under the negotiated plan,

each minority company will be

responsible for five percent of this

Kimball Valentine, Jr., assistant

to the treasurer and insurance of-

ficer for MIT, said, "From the indi-

vidual insured's point of view, there

is no change. John Hancock is still

responsible for the account, but it is

transferring-or ceding-a share of

the risk and the premium dollar to

Water Specialist Appointed

To A.D. Little Professorship

gineering

ing

1974. his teach-

and re-

the minority-owned companies.'

MIT currently holds \$266 million

Harvard.

total business

maining with John Hancock.

America, of Chicago.

MIT announced this week that

vironments. Professor Stolzenbach is a member of an interdisciplinary team which will carry out largescale field studies on pollutants in the water environment.

A native of Washington, D.C., Professor Stolzenbach received the SB in 1966, the SM in 1968 and the PhD in 1971, all in civil engineering from MIT. He joined the Tennessee Valley Authority in 1971 where he developed a computer program for threedimensional heated-surface discharge computations now used by government agencies and consultants engaged in nuclear power plant licensing and design.

Tech Talk, March 17, 1976, Page 3



Seminars and Lectures

Wednesday, March 17

Mechanisms of the Human Use Committee* – Warren Point, MD, assistant medical director, chairman of Committee on Use of Humans as Experimental Subjects. Nutrition & Food Science Seminar. 9am, Rm E18-408.

Oceanic Renaissance: Using the Seas to Save People** – Dean Hom, executive officer, Sea Grant Program; Douglas Carmichael, power engineering; and students. Women's League Seminar. 11am, Rm 10-340. Followed by sherry, 12:30pm, & luncheon, 1pm. Cost: \$2.25. Reservations: Mary Pinson, Rm 10-342.

Observed Correlations Between Oceanic Internal Waves and Low Frequency Currents* – Barry Ruddick, WHOI. Oceanography Sack Lunch Seminar. 12n, Rm 54-311. Bring lunch, coffee available.

Perspectives in Evaluation* – Karen C. Cohen, visiting lecturer, DSRE. DSRE Luncheon Seminar. 12n, Rm 20C-117. Lunch \$1.

Nuclear Engineering Plasmas and Controlled Fusion Seminar* – Franklin Chang. 3pm, Rm 38-136.

Holographic Imaging: The Second Decade* – Stephen A. Benton, Polaroid Corporation. Laser Applications Seminar with demonstratio..4pm, Rm 37-212.

Crystal Structure Relationships Among Some Families Sulfides* – Bernhardt J. Wuensch, ceramics. Materials Science Panel Seminar. 4pm, Rm 13-5101.

Mesozoic and Cenzoic Sea Level Changes and the Sedimentary Structure of the Continental Margin* – Walter Pitman, Lamont-Doherty Geological Observatory. Earth & Planetary Science Colloquium. 4pm, Rm 54-915. Tea 3:30pm, Rm 54-923.

Evaluation of Advanced Reactor Blanket Designs* – **J.I. Shin,** G. Nuclear Engineering Seminar. 4pm, Rm NW12-222.

Transmission of Electric Pulses in Nerve Fibers* – Felix Villars, physics. Undergraduate Physics Colloquium. 4:15pm, Rm 4-339. Social hour following.

Thursday, March 18

Far Infrared Emission by Optical Pumping of Molecules* – H. Fetterman, Lincoln Laboratory. Laser Spectroscopy Seminar sponsored by Laser Physics Laboratory & Spectroscopy Laboratory. 11am, Rm 10-105. Coffee 10:30am.

Later Jurassic and Early Cretaceous Evolution of the Western Central Pacific Ocean* – Roger Larson, Lamont-Doherty Geological Observatory. Earth & Planetary Sciences Sack Lunch Seminar. 12n, Rm 54-611.

Illustrated Lecture on Dams^{*} – J. Laginha Serafim, president of COBA, Lisbon. Civil Engineering Constructed Facilities Division Seminar. 12n, Rm 3-270.

Introduction to the CMSE Computation Facility: Using BASIC and FORTRAN IV on the PDP 11/40^{*} – Joe Driear, G. CMSE Computation Facility Seminar. 12n, Rm 13-5101.

Manufacture and Properties of Hydrothermally Hardened Sand-Lime Lightweight Concrete Blocks* – Anders Henricksen, G. Materials Science & Engineering Ceramics Seminar. 1pm, Rm 3-464.

Optical Wavefront Correction in Real Time* – V.N. Mahajan, C.S. Draper Laboratory, EE & CS Optics Seminar. 2pm, 36-428.

Inter-Materials Competition-Economic Effects and Policy Implications* – Joel Clark, materials systems. Materials Resource Policy Seminar. 3pm, Rm 13-5101.



cians devoted to contemporary percussion music, are shown with some of the instruments they'll use in a lecture demonstration Thursday, March 18, 1pm, and a concert that evening at 8pm

Marine Mammals in Biomedical Research* – Dr. Sam Ridgeway, Naval Underwater Center, San Diego, Calif. Migrants in the Sea: Sharks, Whales, and Man Lecture sponsored by New England Aquarium & MIT Sea Grant Program. 7pm, NE Aquarium auditorium.

Friday, March 19

Degradation of Dilute Polymer Solution in Extensional Flow* – P. Leopairat, G. Chemical Engineering Seminar. 2pm, Rm 66-110.

New Developments in Thermal Constriction Resistance* – M. Micheal Yovanovich, thermal engineering group, mechanical engineering, University of Waterloo. Mechanical Engineering Seminar. 3pm, Rm 3-133. Coffee 4pm, Rm 1-114.

The Coalescence of Emulsions: Light Scattering from a Pair of Droplets* - K.G. Hellyar, G. Chemical Engineering Seminar. 3pm, Rm 66-110.

The Congressional Budget Process and its Implications for Domestic Policy* – Karl Gregory, Congressional Budget Office. Community Fellows Program Lecture Series. 3:30pm, Rm 7-403.

Radioimmunoassay Techniques with Application to Intravascular Coagulation Detection* – Malcolm M. Cronlund, MGH. Biomedical Applications of Radiation Seminar. 3:45pm, Rm NW12-222. Coffee 3:30pm.

Crystal Field Effects in Dilute Magnetic Alloys* – A. Narath, Sandia Labs. Materials Science Colloquium. 4pm, Rm 9-150. Tea 3:30pm.

Indian Agriculture^{*} – Dharm Narain, agricultural economics, Cornell University. Sangam Lecture. 6pm, Stu Ctr Rm 473.

Parallax: Perspectives on Photography* – Pete Turner, photographer. Sponsored by MIT Creative Photography Gallery & Polaroid Foundation in conjunction with Hayden Gallery exhibit. 8pm, Rm 26-100. Free.

Monday, March 22

Immunopathology in Aging Rodents* – Dr. Carel Hollander, Radiobiological Institute, Institute for Experimental Gerontology, Netherlands. Nutrition & Food Science Seminar. 1pm, Rm 16-310.

Tuesday, March 23

Large Commercial Systems, their Architectural and Technological Evolution* – Gene M. Amdahl, chairman of the board, Amdahl Corporation. Laboratory for Computer Science Distinguished Lecturer Series. 3pm, Rm 9-150. Refreshments 2:30pm.

Our Security or the Lack of it* – Oliver Boileau, president, Boeing Aircraft Corporation. Seminar on Technology and International Security. 4pm, Rm E53-482.

in Kresge Auditorium. Group members, all faculty artists-inresidence at Northern Illinois University, DeKalb, Ill., are (left to right) Garry Kvistad, David Johnson and Allen Otte.

Working Group on Office-Clerical Issues.

MIT Faculty Club Dinner Dance*** – Fri, Mar 26, 7pm-12m. Dinner served 5:30-8pm, choice of roast sirloin of beef or poached fillet of sole with lobster sauce. Dancing begins 8:30pm. Cost: \$15 couple. Reservations: x3-4896.

Food Day –Food Day Committee is coordinating a Benefit Dinner for the hungry Thurs, Apr 8. Theme will be "Food for All – Eating Lower on the Food Chain", and will feature international meatless dishes. Organizations needed to set up tables, help with publicity. Organizations or individuals should call Chiu-Nan Lai, coordinator, Rm 13-2062, x3-4170 or x5-7256 Dorm.

The Wives' Discussion Group** – Led by Myra Rodrigues, social worker; Charlotte Schwartz, sociologist; & Carol Hulsizer, faculty family in residence, Ashdown. Wed, 2:15pm, Stu Ctr West Lge. Babysitting Stu Ctr Rm 473.

Social Events

Strat's Rat – Sat, Mar 27, 8:30pm, Sala or Lobdell. Free, light & dark beer sold (\$.35/16 oz glass). Bottles of wine & coke also available. WTBS providing live announcer & records. College ID required.

24 Hour Coffeehouse* – Enjoy relaxing conversation, piano playing, inexpensive food, candy & drinks. Open 24 hours per day, 7 days per week, Stu Ctr 2nd fl lge.

Movies

Far From the Madding Crowd** – Humanities Film Series. Wed, Mar 17, 7pm, Rm 54-100. Free.

Secondary Flow* - Fluid Mechanics Film. Thurs, Mar 18, 4pm, Rm 33-319. Free.

Ulysses** - Humanities Film Series. Thurs, Mar 18, 7pm, Rm 10-250. Free.

Secrets of Women (Bergman)* – MIT Film Society. Fri, Mar 19, 7:30pm & 9:30pm, Rm 6-120. Admission \$1.

Twelve Chairs** – LSC. Fri, Mar 19, 7 & 9:30pm, Rm 10-250. Admission \$.75, MIT or Wellesley ID required.

A Big Hand for the Little Lady** – MidNite Movie. Fri, Mar 19. 12m, Sala or Lobdell. Admission free, MIT or Wellesley ID required. Bring blanket to sit on.

Three Stooges Follies** – LSC. Sat, Mar 20, 7 & 9:30pm, Rm 26-100. Admission \$.75, MIT or Wellesley ID required.

Regulation of Purine Salvage Pathways in Human Cells in Culture* – Mary Jane Carey Holland, MD, Division of Human Genetics, New York University Medical Center. Nutriton & Food Science Seminar. 4pm, Rm 16-134.

Computer Systems for Advanced System Control and Data Acquisition* – Martin S. Ewing, Owens Valley Radio Observatory, California Institute of Technology. HST Biomedical Engineering Center for Clinical Instrumentation Program Seminar. 4pm, Rm 36-428.

Approaches Toward Carbohydrate Sequencing* – Gail Hudson, G. Analytical Chemistry Seminar. 4pm, Rm 8-105.

Modern Biology and the Human Imperative** – Everett Mendelsohn, history of science, Harvard University. Humanitas Lecture. 4pm, Rm 9-150.

Pressure Measurement in Porous Media* – Ananda Wijesinghe, G. Mechanical Engineering Thermal-Fluids Seminar. 4pm, Rm 5-234. Coffee 3:45pm.

Computerized Tomography: A New Role for X-Rays in Medicine* – Jay Stein, American Science and Engineering, Inc. Physics Colloquium. 4:15pm, Rm 26-100. Refreshments 3:45pm, Rm 26-110.

Page 4, Tech Talk, March 17, 1976

Wednesday, March 24

History and Significance of Fish Protein Concentrate** – Ernst R. Pariser, advisory services officer, Sea Grant Program. Women's League Seminar. 11am, Rm 10-340. Followed by sherry, 12:30pm, & luncheon, 1pm. Cost: \$2.25. Reservation: Mary Pinson, Rm 10-342.

Thursday, March 25

Multistep Laser Spectroscopy in Atomic Uranium* – R. Solarz, Lawrence Livermore Laboratory, Berkeley, Calif. Laser Spectroscopy Seminar sponsored by Laser Physics Laboratory and Spectroscopy Laboratory. 11am, Rm 10-105. Coffee 10:30am.

DNA Repair in Various Cell Lines and Human Fibroblast Strains* – Dr. James D. Yager, Jr., biological sciences, Dartmouth College. Nutrition & Food Science Seminar. 4pm, Rm 16-134.

Distribution, Abundance, and Migration of Sharks in the Western North Atlantic^{*} – Jack Casey, National Marine Fisheries Service, Narragansett, RI. Migrants in the Sea: Sharks, Whales, and Man Lecture sponsored by New England Aquarium & MIT Sea Grant Program. 7pm, NE Aquarium auditorium.

Community Meetings

MIT Women's Forum** - Meeting Mon, 12n, Rm 10-105 (Tues in case of holiday.) Mon, Mar 22: Report from members of the

Roti Kapda Aur Makan* – Sangam movie with English subtitles. Sun, Mar 21, 2:30pm, Kresge. Admission \$.50 with MIT ID.

Abandon Ship** – LSC. Sun, Mar 21, 6:30 & 9pm, Rm 26-100. Admission \$.75, MIT or Wellesley ID required.

The Juggernauts** – LSC. Fri, Mar 26, 7 & 9:30pm, Rm 26-100. Admission \$.75, MIT or Wellesley ID required.

Room at the Top* – MIT Film Society. Fri, Mar 26, 7:30 & 9:35pm, Rm 6-120. Admission \$1.

Pretty Maids All in a Row** – LSC. Sat, Mar 27, 7 & 9:30pm, Rm 26-100. Admission \$.75, MIT or Wellesley ID required.

Meet John Doe** – LSC. Sun, Mar 28, 6:30 & 9pm, Rm 26-100. Admission \$.75, MIT or Wellesley ID required.

Lobby 7 Events

Brattle Street Band* - Celebrating St. Patrick's Day. Wed, Mar 17, 12n, Bldg 7 Lobby. Free.

Music

Chamber Music Society Concerts* – Wed, 5:15pm, music library, Bldg 14E. Free. Info: x3-4892.

Organ Recital* – Marian Ruhl. Noon Hour Concert Series. Thurs, Mar 18, 12n, Chapel. Free.

Slackearth Percussion Ensemble* – David Johnson, Garry Kvistad and Allen Otte. Thurs, Mar 28, Kresge. Lecture/demonstration 1pm, concert 8pm. Free.

Dance

Folk Dance Club Spring Festival* – Workshops in Balkan dancing by Steve Murillo Sat, Mar 27, 10am-1pm & 2-5pm. Israeli workshops by Danny Vziel Sun, Mar 28, 10:30am-1pm & 2:30-5pm. Performance Sat, Mar 27, 7:30-9pm, followed by party intil 12m. Admission \$1.25/session, \$5 for block of 5 if bought in advance. Prices higher for non-MIT. Info: Nina, x5-6548 Dorm or Paul, x5-6395 Dorm or come to Club events.

Folk Dance Performances* – Performances of Irish, Scottish, Morris, Israeli and belly dancing as well as Balkan singing & music. Sponsored by Folk Dance Club. Sat, Mar 27, 7:30-9pm, Sala. Admission \$.75. Tickets available at Club events and at door.

MIT Folk Dance Club – International: Sun, 7:30-11pm, Sala. Balkan: Tues, 7:30-11pm, Stu Ctr 491. Israeli: Thurs, 7:30-11pm, Sala.

Exhibitions

Photographic Portraits of Historic Houses in Newton, Mass* – Rotch Library exhibit thru Fri, Mar 26 during library hours.

Photographs by Robert Arruda, Betsy Fuchs, Donald Grey, Georgia Litwach & Birgitta Ralston. Eassays by Michael McKinnell & Jonathan Green, architecture. Documentary data by Jean Husher, Duscha Scott & George Stephen. Free.

Photographic Exhibition* – Hayden Corridor Gallery exhibit in conjunction with lecture series, Parallax: Perspectives on Photography, cosponsored by MIT Creative Photography Gallery and Polaroid Foundation. This week's lecture: Fri, Mar 19: Pete Turner. See Seminar listings.

Center for Advanced Visual Studies* – Works by Bart Johnson & Aljandro Sina. Tues, Mar 16-Fri, Apr 2, Bldg W11. Hours: Mon-Fri, 9am-5pm. Free.

Creative Photography Exhibit – Works by David Akiba Mon, Mar1-Fri, Mar 26. Hours 10am-10pm, Creative Photography Gallery.

San Francisco North: Photographs of Landscape and Wooden Architecture* – Photographs by Philip Molten. Faculty Club exhibit during March.

Helene Aylon: Paintings that Change in Time* – Public opening Fri, Mar 12, 8pm. Exhibit Sat, Mar 13-Sat, Apr 10, Hayden Gallery. Hours: 10am-4pm, Mon-Sat.

Strobe Alley* – High speed photographs by Harold E. Edgerton, Institute Professor and Professor of Electrical Measurement, Emeritus. Bldg 4, 4th fl.

MIT Historical Collections* – Permanent exhibition Mon-Fri, 9am-5pm, Bldg N52, 2nd floor. Bicentennial Exhibits: Katharine Dexter McCormick, '04; Vannevar Bush, '16; and Karl Taylor Compton, in Bldg 4 corridor.

Music of the Celestial Dieties* – Music Library exhibit of manuscript fasimiles & pictures. Daily, Bldg 14E.

Hart Nautical Museum* – Permanent exhibit of rigged merchant and naval ship models of yachts and engine models. Bicentennial exhibit: "1776-1976" – a frigate, 2 schooners, a gondola, and the Durham boat of the American Revolution. Open daily in Bldg 5, 1st floor.

Athletics

Wednesday, March 17 – V. Rifle. Boston State, 4pm, duPont Rifle Range. Saturday, March 27 – V Pistol. Boston State, 9am, duPont Pistol Range.

Soccer Officiating* – People interested in becoming high school of FIFA certified soccer referees should contact Tom Stagliano, x3-2433, before Fri, Apr 2.

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

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

***Open to members only

Send notices for Mar 24 through Apr 4 to the Calendar Editor, Room 5-111, Exy. 3-3279, before noon Friday, Mar 19.

200 Mile Limit Would Require Fisheries Management

Even if the US outlaws all foreign fishing within 200 miles of its coasts, domestic fishermen could easily overfish depleted offshore stocks, and will do so if effective regulations controlling entry to the fishery are not enacted, according to a study just released at MIT. Whether through legislation re-

Baram Authors Solar Energy Bill

Michael S. Baram, associate professor of civil engineering at MIT, is the author of a bill (H. 4316) recently introduced into the state legislature to govern and encourage the development of solar energy in Massachusetts.

Professor Baram, an attorney as well as an engineer, said the bill is "an omnibus approach in contrast to piecemeal approaches taken in other states." The bill would require state agencies to consider solar heating and cooling in buildings to be built with state funds or subject to state permits. The bill also would deal with present obstructions such as building codes, zoning limits, insurance and finance rates, restrictions on easements to light and air and other property rights issues. cently passed by Congress, or through treaties resulting from Law of the Sea negotiations that resumed March 15, a 200-mile limit for US coastal waters will probably take effect within the next year, and many assume that exclusion of foreign fishermen under the limit will automatically solve the economic problems of America's fishing fleet.

However, Dr. John W. Devanney, III, associate professor of marine systems in the MIT Department of Ocean Engineering, the author of the Sea Grant Program study, disagrees. Professor Devanney says US control of offshore fish stocks will not restore America's rich fisheries resources without efficient management to prevent domestic overfishing. The 200-mile limit thus represents an opportunity for the US to apply hitherto ignored resource allocation principles in managing its fishing industry, he said.

In his research, funded by the National Oceanic and Atmospheric Administration's Office of Sea Grant (US Department of Commerce) and by MIT's Center for Policy Alternatives, Professor Devanney recognized that fisheries management methods would differ in their effect on national income and on the shares of this income that would go to fish suppliers (fishermen and processors) and fish consumers.

Using economic analyses to evaluate alternative schemes, such as gear restrictions, fixed landing payments, total take restrictions and quotas, or boat-by-boat quotas or licensing, Devanney finds that competitive bidding for quotas may be the method most likely to bring about efficient exploitation of the stocks and to maximize national income.

Each scheme would encourage different levels of fishing effort, with corresponding variations in the yield of marketable fish and hence the price paid by consumers and received by the fishermen. Without

Mazlish Book

The Revolutionary Ascetic: Evolution of a Political Type by Bruce Mazlish, professor of history and head of the MIT Department of Humanities, was recently published by Basic Books, Inc.

The book explores why great revolutionary leaders of modern times— Robespierre, Lenin and Mao Tsetung, among others—have so often been ascetics and what these ascetic traits do for the revolutionary leader and his followers. regulations, free entry to the fishery would allow any vessel to harvest the resources without limit. High levels of fishing effort would result in overfishing, consequent low yields, and correspondingly high prices, Professor Devanney said.

In such a situation, fishermen's income may not suffer from overfishing. While few fish may be landed, their price will be high, and fishermen may actually be better off than if they landed more fish at lower prices.

The major economic impact of overfishing, argues Professor Devanney, may be on the fish consumer who is forced to buy less fish at higher prices. To resolve the price conflict between fish suppliers and fish consumers, Professor Devanney says, fishing effort must be held at that level which will provide the most national income (the sum of fishermen's and fish consumers' income) realizable from the fishery. Controlled entry to the US fishery will have to be enforced in order to manage the resource in this manner.

Professor Devanney's Sea Grant research into the 200-mile limit's impact on the domestic fishing industry will continue next year. He will test his conclusions on a specific case, the George's Bank fishery off Cape Cod.

Nominees Sought For Sizer Award

Nominees for the Irwin Sizer Award for "the most significant improvement to MIT education," are being sought by the MIT Graduate Student Council.

The award, which carries a cash gift, was established by GSC last year as a permanent tribute to Dr. Irwin Sizer, former Dean of the Graduate School and now president of the Health Science Fund and consultant to the Resource Development Office.

Nominations are also being sought for the Graduate Student Council Award for "effective and dedicated

Students Salute Expected Baby

When Rose and Paul Giordano, tutors of House Four, one of the six houses that comprise New House, announced that Rose was expecting their first child, they weren't quite sure how their students would react.

The students' reaction was definite -and positive. One particularly closeknit group of freshmen on the fifth floor, who call themselves the "Vardebedians," decided that the house should have a contest to come up with the most unusual names they could concoct for the baby. The entire house contributed ideas and money to print up the numerous posters which were distributed around the Institute Sunday night, announcing the results of the contest. The signs read, "Name Her Esmerelda" and "Name Him Neville" on-you guessed it-pink and blue paper.

The residents of House Four will have to wait until the end of July to find out if the baby is an Esmerelda or a Neville. Mrs. Giordano said that the students hope that the baby who, according to the Vardebedians, will be an honorary member of next year's freshman class—is a boy, but, said they'd love it even if it is a girl.

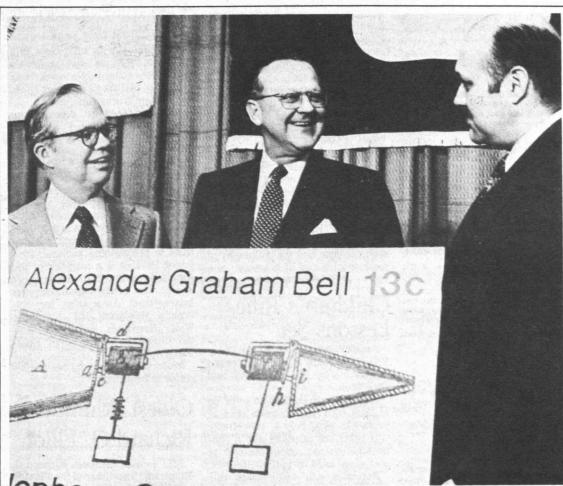
Schwartz on Panel

Dr. Brian B. Schwartz of the Francis Bitter National Magnet Laboratory served recently on the panel of judges for the 1976 science writing prize of the American Institute of Physics-United States Steel Foundation award in physics and astronomy.

Fred Golden of *Time* was selected the winner for his article "Forecast: Earthquake," which appeared in *Time* Sept. 1, 1975.

Feld Thanks Many Helpers

Professor Bernard Feld, who suffered a heart attack in Room 26-100 Wednesday afternoon (March 10) while lecturing the junior physics subject 8.06, issued an open letter of appreciation this week to those who helped him get immediate medical assistance. "One of the students called my distress to the attention of our demonstration technicians who promptly called the Campus Patrol," Professor Feld said. "The Patrol arrived immediately, quickly diagnosed the situation, and had me in an ambulance going to Mt. Auburn Hospital in a matter of minutes. "I'd like to express my profound and literally heartfelt gratitude to my students, the Campus Patrol, to the young lady from the Medical Department who ministered to my needs in 26-100 and in the ambulance, and to my colleagues, without all of whose prompt and effective action I would not be writing this today." Professor Feld is in good condition at Mt. Auburn where he is expected to remain for another two weeks.



TELEPHONE CENTENNIAL STAMP ISSUED—A 13cent commemorative stamp marking the 100th anniversary of the first transmission of speech over the telephone was issued by the US Postal Service Wednesday (March 10). Participating in first day of issue ceremonies at MIT were (left to right) Howard W. Johnson, chairman of the MIT Corporation; John D. deButts, chairman of the board of the American Telephone and Telegraph Co., and Postmaster General Benjamin F. Bailar. Ceremonies were held at MIT as part of a two-day (March 9-10) Convocation on Communications in Celebration of the Centennial of the Telephone co-sponsored by AT&T and MIT. The event marked by the ceremonies occurred March 10, 1876, when Alexander Graham Bell, working in a laboratory at 5 Exeter Pl., Boston, spoke via telephone to an assistant, Thomas D. Watson, located in another room. Bell, a professor of vocal physiology at Boston University, gave many of his early "telephony" lectures and demonstrations at MIT. Among those attending the stamp ceremonies in Cambridge Wednesday were descendants of both Mr. Bell and Mr. Watson. teaching of a graduate level course." Through this award, the Council hopes to focus attention on faculty who devote increasing amounts of time and resources to improved teaching.

Letters of nomination for both awards—including references and supporting material—should be submitted to the Graduate Student Council Office, Room 50-110, by April 20 at the latest.

Application Help

Any employee with college-bound children who has questions about admissions and financial aid applications, may drop in at either the Admissions Office (Rm 3-108) or the Financial Aid Office (Rm 5-119).

Staff members in either office also will help potential students and their parents to reach a decision about which college to attend. It is not necessary that the student be applying to MIT.

Interested employees may call Admissions, x3-4791, or Financial Aid, x3-4971, for an appointment.

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CLASSIFIED

For Sale, Etc.

Philco 15.9 cu ft refrig, yr old, perf cond, \$125; 3 pc parlor set, antique, nwly uphol, \$100. Call, 396-6343.

F 10 spd bike, 19" frame, hrdly used, \$60. Tony, x8-1319 Draper.

Grmn made camera, 3 lenses, access, exc cond, \$299. Phil, x3-7915.

Stereo 30W amp, \$30; Dual 1009 trntbl, \$40. Sears chain saw, \$30. John, x148 Linc.

Rek-o-Kut prof trntbl w/SME tone arm, 3' fl standing base, \$250; Rek-o-Kut prof tintbl w/SME tone arm, 3' fl standing base, \$250; Rek-o-Kut tintbl & tone arm, Stanton 681A prof crtrdg & base, \$125; pr Bic Venturi Formula 6 spkrs, \$310. Charlie, x5-9462 Dorm.

Hvy duty Kirby vac w/attach, rug shampooer, \$115 or best. x8-2050 Draper.

Contemp brass & wint; chandelier; Amer Std wall hung sink w/faucets, bge, 22x18". Stan, x3-2767.

Std classics 10 vol Dickens' works, \$4; wht satin qn sz sheets & pillow cases, nvr used, \$7; badminton rckt w/press, leath grip, \$2; Hai Karate shave lather & deod, \$1/both. x3-3952.

Elec trypwtr, SCM Electra 220 w/case, '71, used 1 yr, lk nw, all spec features, just reserviced, orig \$260, \$125 firm. Debbie, x3-4642.

Old oak vanity w/mirror, \$50; chest drwrs, \$10; refrig, \$45; desk, \$25; sgl bed frame & box spr, \$10. Kay, x3-4861.

Marantz 2270 rcvr, 70 W/ch, 3 yr grnty parts/labor, wlnt cab, \$400. Debbie, x5-7311 Dorm.

Pr stud snows, gd cond, on 5 hole VW rims, \$35; old 21" TV, nds work, \$5. Francois, 494-8741.

Full sz trntbl in gd cond, \$30. Call, 661-2065.

Cassette stereo tape deck, Realistic SCP-1, b nw, nvr used, was \$49, \$30. Nichols, x314 Linc.

Dual 1229 trntbl w/Stanton 681EE crtrdg, \$125; Sony port cassette rcrdr, \$15; Olympia man typwrtr, \$35. John, 965-3160.

Gibson classical guitar, exc tone, w/case, \$250; Ann Taylor jckt, striped w/Indian stylized face on back, sz 7-8, worn 2X, was \$48, \$30. Barbara, x3-2701.

Nikkormat FTN 1.4 lens, flash mnt, lens hood, nw case, \$225. Florence, x3-7052.

Pr Pont rims for '68 or '70, \$15; 1 Dodge '69 whl-end tire, \$10; Ford auto radio, \$25. x7145 Linc.

M 3 spd Raleigh bike, \$25. Henry, x3-7004.

Pr Bose 901 spkrs, mint cond, \$300 or best. Ed, x3-1606.

Old slvr Conn trumpet, \$200 or best; Sony TC 6 30D r-to-r tape deck, snd-on-snd, echo, 2 Sony dynamic mikes, orig over \$300, nds nw heads, ask \$150. Mike, x5374 Linc.

KLH mdl 11 compl stereo sys, fac reconditioned, \$100; Regina elec broom. Ross, x3-3224.

Tbl w/4 chrs, \$30; Caloric 42" stove, \$100; Norge gas dryer, \$50; trunk ski rack, \$8. Susie, x3-4856.

Rotel 150A rcvr & 2 Fisher XP44S spkrs, 2 yrs, \$125. Roger, 266-4796.

Dunlop tennis rckts, \$35-\$40 nw: med 1 yr old, \$15; hvy 2½ yrs, \$8. Nat, x3-4173.

Gibson 15 cu ft upright freezer, frost-free, wht, lk nw, \$200 or best. Bob, x8-1231 Draper.

Anderson casement wndows w/screens, 6, 2x5', gd con, \$5/ea. Call, 661-1588. Panasonic microwave oven, NE 6700, \$350. Call, 933-7587, aft 4pm.

Harmon-Kardon HK-1000 stereo cassette deck w/dolby, absolutely perf cond, must sell, \$200. x5-6512 Dorm. Hamilton Beach elec knife, nvr used, \$10. Lee Linsky, x3-1782.

Old oak bureau w/5 drwrs, attach mirror, \$50; antique hanging scale w/porcelain tray, dated 1912, \$30; Victorian wlnt carved chr w/round back, horsehair seat, \$30. Pamela, x3-4977, aft 1pm.

Ski boots: Rieker, \$10; Lange, \$20; Concord mono tape rcrdr, best. Kris, x3-2843.

Stereo equip, best: Marantz 2270 rcvr, nw; KLH mdl 20, gd cond; dust cover for Teac 5300 tape deck, nw; dog airline shipping cage. x7267 Linc.

Slvr: Victorian style chafing set, \$40; set 4 slvr china espresso cups & saucers, \$24; Revere bowl wall planter, \$6; ladle, \$9; filligree salt & pepper, \$8; also pewter items. Carol, x3-1332.

Bikes: 10 spd Schwinn Varsity, \$50; 3 spd Phillips, \$25. Call, 926-1685, evgs.

Woodard blk wrought iron DR tbl w/4 chrs, mtch cshns, glass top, \$300; Beautyrest supreme twn matt & box spr w/hvy duty Harvard frame, \$100. Denise, x3-2685.

Vehicles

'64 Ply Fury, V8, 4 dr, auto, p st, sgl ownr car w/less 80 K, exc run cond, \$375. Call, 232-7158.

'66 Olds conv Dynamic 88, std, exceptionally gd motor, top, body, \$600. Steve, x3-7351.

'67 Le Mans conv, a classic, V8, p st & br, radio, exc top, exc int, body gd, tires gd, nds some eng work, \$300 or best. x3-4588.

'68 Tri Spitfire Mk III, many nw parts, runs but nds work, \$400 or best. Dennis, 232-1698, aft 6.

'68 VW Sqbk, gd cond, \$800 or best. Call, 927-3268, wkdys 9-5 or anytime wknds.

'69 VW bug, gd run cond, 76 K, \$795. Call, 235-1843, aft 6pm.

'69 VW Sqbk, auto, reblt eng w/3 K, gd cln cond, exc 2nd car, \$1,200. x3-3380.

69 International Travelall, 4whl drive, 25 K, best, x3-4532.

'69 BMW 2002, gd cond, some rust, nw clutch & brakes, \$1,300. Call, 267-7901.

'70 Ford LTD Cntry Sq wgn, 53 K, AC, p st & br, gd cond, \$1,000 firm. Dave, x3-4489.

71 Chevy Imp, 4 dr hdtp, V8, auto, radio, gd run cond, hi mileage, some surface rust spots, \$500. Jim, x3-4265. '71 Audi S90, 46 k, 24 mpg, std, 4 dr,

grn, radials, \$1,600. x3-1313. '72 Buick Centurion, fully powered,

AC, \$1,900. John. x3-2772. '73 Ford Pinto, 4 spd, nw tires, snows,

lo miles, exc cond, \$1,400 or best. Call, 628-7966.

'75 VW Scirocco, std, front whl drive, blu, radials, amfm, sporty, gas miserly, 35-40 mpg hiwy, exc cond, 12K, \$3,800. Lewis, x3-2928.

Austin Cooper 998 cc, nw radials, cstm dash, spacers, Webber carb, eng exc, body gd, ask \$975. Bob, x3-1344.

Housing

Camb, furn rm for rent nr Cent Sq, 10 min walk MIT, hotplate, linen, free min walk MIT, hotplate, linen, free pkg, foreign stu espec welcome, \$90. x3-2983.

Everett, sub 3 rm apt, unfurn, has refrig & stove, on T, 7 Hancock St, \$155 incl ht, ht wtr. Midge, x3-4348.

Lex contemp 5 BR, 2 B, LR, DR, K, fam rm, perf cond, spectacular setting, Estabrook Sch district, hi 70's. Call, 861-9491.

Fryeburg, Me, spr/sum rental, 3 BR chalet w/frpl nr Saco River, ideal loc for xcntry, canoeing, hiking, bird watching, \$125/wk. Steve, x5584 Linc. Bartlett, NH, on Saco River, mod 3 BR chalet for wntr or sum rental, nr 6 major ski areas, slps 12, mod K, 2 frpl, Β, canoe, \$150/wk, \$500/mo. 11/2 x3-2868.



Draper, and Professor Rene H. Miller, head of the De- NASA.

place recently when Dr. Robert C. Seamans, Jr., left, saker and Dr. Draper are former heads of the depart-Administrator of ERDA, visited the campus. With him ment, and Dr. Seamans was on the faculty for many are Dr. Jerome Clarke Hunsaker, Dr. Charles Stark years before becoming Deputy Administrator of

Visiting Associate Professors Appointed

One woman and three men have been appointed visiting associate professors at MIT for the spring term.

They are Dr. Nancy J. Gaspard. visiting associate professor at the

Ride to Ithaca, lvg 3/19, for myself & 1 other David Mustelier, 247-8355.

ukelele, gd cond. Mary, 262-6153.

Ride to Maryland anytime, gladly share driving & exp. Joel, 547-1420.

Hsesitter avail sum months, reliable retired professional wishes to resume academic studies in Bos area, refs. Judy, x3-7153.

Steam tbls, Keenan & Keyes newest. Call, 494-8886, aft 7pm.

Piano in gd cond for gifted blind child, for cost of moving or moderate price. x3-4105.

One 26" front bike whl in reas gd cond. Rick, 262-2815, lve msg. Refrig, buy, not rent or lse. x5-6612 Dorm, aft 6.

Apt, 2 BR, w/porch &/or yard in Camb, pref vcty of BU Bridge, to sub beg May. Tim, 335-7208.

Schematic for Scott kit stereo master 60. Paul Mascal, x8-2861 Draper.

Ride nded to NYC (Manhattan) Mar 19 &/or rtn to Bos Mar 21. Marilyn, x3-1659.

Roommates

Rm in 2 BR apt, 100 Mem Dr. Camb. beg 5/1, garage pkg avail, \$124 + util. Richard, x3-2346.

Rmmate, 23+, to share lg sunny furn 2 BR apt, Arl, wash/dry, dw, no pets, \$125 + util. David, x3-1354.

M or f to share sunny, spac Belmont apt w/cpl, own rm, furn if nd, nr T, \$100 incl util. x3-5367.

F sum sub avail 6/1 w/Sept opt, share w/2 f, own lg BR, non-smoker, btwn H & Cent Sq. \$114 incl ht. ht wtr. Jane S. 547-4058

Rmmate for spac Bklne apt w/d&d, 2 B, LR, DR, \$125. Joel, 232-9091, evgs.

F rmmate, 30 yrs, for coop apt nr Porter Sq, temp or permanent ok, \$111.50 incl ht. Sarah, x3-5763.

Nwtn Ctr, rmmate nded for 2BR apt, 2 fam hse, 3 mi Paul, x3-2338. min T, pkg, \$155, nego.

M for own rm in lg Bklne apt, nr T, w/3 f, 2 m, worker or grad stu pref, \$91 incl pkg, all util. Call, 731-4994. Sloan School of Management; Dr. Owen F. Hughes, visiting associate professor of ocean engineering; Dr. Johan A.W. Kamp, visiting associate professor of philosophy, and Dr. Stephen D. Lewis, visiting associate professor of electrical engineering and computer science.

Professor Gaspard, chairman of the Department of Community Health Nursing at Boston College, is a visiting associate professor of public health nursing at MIT.

She received the BS degree from Boston University in 1956; the MEd degree from the University of Florida in 1962; and the MPH and DPH degrees from the University of California in 1964 and 1966 respectively.

Professor Gaspard was a staff nurse in Boston and then New Bedford from 1956-59. She taught public health nursing at the University of Florida, the University of California and Boston University between 1959 and 1970. Since 1970 she has been associated with Boston College.

Professor Gaspard, whose graduate research was primarily in the area of medical care organization, has worked with the Harvard Community Health Plan, the Greater Boston Health Planning Council and the Framingham Visiting Nurse Association. Her publications have appeared in several professional nursing journals.,

Professor Hughes, whose appointment in the Department of Ocean Engineering is part-time, has taught naval architecture at the University of New South Wales, Kensington, Australia since 1963.

He received the SB and SM degrees from MIT in 1961 and 1963 respectively, and the PhD degree from the University of New South Wales in 1968.

Professor Hughes has been responsible for teaching engineering analysis, naval architecture and ship structures at the University of New South Wales, as well as other engineering subjects.

Professor Kamp, whose specialties are mathematical and philosophical logic and the philosophy of mathematics and of language, is a ceived the BA degree in physics and mathematics from the University of Leiden and the doctoral degree from the University of Amsterdam. He also received a PhD from the University of California at Los Angeles in 1968.

Professor Kamp taught for two years at Cornell University and since 1974 has held the position of lecturer at Bedford College, London University

His publications have been primarily in the borderline area between philosophy and linguistics in which techniques of symbolic logic are used in the analysis of semantic and pragmatic phenomena found in natural languages.

Professor Lewis comes to MIT from the University of Alberta where he has taught in the Department of Economics since 1969

He received the BA and PhD degrees in economics from the University of California in 1963 and 1969 respectively.

He has taught macroeconomic theory, econometrics, monetary growth theory and computer applications in economics. At MIT he is working in the Electronic Systems Laboratory on time-optimal control of theoretical monetary growth models.

Perkins Named

(Continued from page 1) and to professor in 1971. Until 1973 Professor Perkins was associate head of the water resources division where he had special responsibility for academic programs. Professor Perkins' research in-

terests center around hydraulic

transients; simulation in hydrology

and hydraulic engineering, and

instrumentation, water resources

planning and management. A major

professional contribution has been

development of computer applica-

tions for water resources and train-

ing practicing engineers in their use.

tions in professional journals, Pro-

fessor Perkins is a member of the

The author of numerous publica-

synth, VCO, \$60; assembled KYBD, \$130. Greg, 492-6983.

HP 35 w/charger & case, exc cond, \$80. Neal, 661-8240, evgs.

Mini refrig, elec, 8 cu ft, for office, etc, brn, exc cond, \$50. Call, 547-6689

Cinelli track bike, 21", 531 DB frame, Campy & Cinelli parts, tires & als not incl, \$295 firm. Matt, pedals 494-8129, evgs.

Pr 2 way bkshlf spkrs, \$75; Olds Ambassador trumpet, \$100; pr Bauer sz 10½ hcky skates. \$15. Bill, x5-9335 Dorm.

Used Magic Chef elec range, gd cond, \$130 firm, can be seen. Roberta, x3-5614.

M La Coste tennis shirt, lg, lt blu, b nw, nvr worn, \$12. Claudia Moloney, x3-4381.

Lg, comf solid oak desk, 7 drwr, dark stained, \$125. Lois, 491-7405, evgs.

Leath zippered case, wk old, \$40; gas 4 bmr stove, 2 ovens, 20 yrs, sound cond, \$25. x3-5296.

Aquarium, 20 gal O'Dell all glass w/all access, exc cond. x8-3484 Draper.

box spr & matt, \$30. Call, 239, aft 6pm. 521-0239,

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Animals

Free 2 altered m cats, 1 org/wht, yr old, other brn tabby & wht, 4 yrs, both trained; 10 mos registered Burmese m, trained, \$50 or best. Kathy, x3-5117.

Lost and Found

Lost: blu & wht knit cardigan w/slvr buttons, some time ago, reward. Call, 492-1661.

Lost: \$50 reward for rtn of lg blk portfolio containing stu's artwork, lost at MIT. Stuart Morgan, 232-3257, lve msg.

Wanted

Hay for mulch in grdn, spoiled hay OK also. Hank Goodman, x8-3484 Draper.

Used ham equip for HS stu, pref 10-15 mtr. John, 547-0524.

Gd qual stereo tuner-preamp combo unit, Marantz, etc, also electronic keybrds for use in synthesizer, used or otherwise, Tony, x3-7441.

Piano teacher. x3-1313.

M or f, pref non-smoker, share 4 BR w/3 f, Cent Sq, 10 min walk MIT, \$85 incl ht. x3-6603.

F to share sunny, lg 2 BR apt on Bdwy, Camb, exc loc, bus line, avail 5/1, \$112 incl ht & util. Maryjane, x3-5944.

Miscellaneous

Technical illustrating, prompt & expli-cit diagrams, illustrations or graphs to report, thesis, project. enhance x3-7027.

Exp tennis & squash rekt stringing. Charlie, x5568 Linc, noon best.

Wd whoever borrowed my "Lee Wards Needle-Craft" book, yel cover, during my IAP knit/crochet course, pls rtn it or contact me? Is part of set. Sue, x5-6508 dorm, or lve msg EC desk.

Exper handyman avail for int-ext painting, lite carpentry, cabinet mak-ing, gen home repair, free estimate. Charles Swenson, x5-9412 Dorm.

Reliable high sch f desires sum employment babysitting, other, for vacationing fam. Call, 491-4258, evgs.

Typing, tech & gen. Marge, x3-4981.

French lessons & conversation, all levels, by Fr MIT wife. Jacques, x3-5150.

Typing w/editing done, anything, effi-cient MIT wife. Mike, x3-6275.

native of The Netherlands and re-

Children's Rifle Lessons Set

An MIT Community Junior Daisy B-B Rifle Team is being organized this month by the MIT Pistol and Rifle Club.

Children who participate must be at least nine and no more than 14 years old as of July 1, 1976. Daisy B-B rifles are provided and a onetime \$10 charge covers the cost of equipment used by each child.

Practices will begin later this month and will be held either Wednesday evenings or Saturday mornings. They will extend through June. Parents are invited to participate.

Matches with other teams in the state will be scheduled. The winner of state competitions will represent Massachusetts at a national competition in Shreveport, La., in July, 1976.

To enroll your child, call Mr. T.P. McLennan at Ext. 3-3296 between 10am and 6pm.

American Society of Civil Engineers and several of its committees, the International Association for Hydraulic Research, the American Water Resources Association, and the Boston Society of Civil Engineers.

Professor Perkins and his family reside in Brockton.

Oldest Alumnus Richard O. Elliot

MIT's oldest alumnus, Richard O. Elliot, 103, a member of the Class of 1896, died March 5, at his home in Thomaston, Maine.

For many years Mr. Elliot was president of Dunn and Elliot Co., sailmakers and shipbuilders in Thomaston. Later he was president of the Thomaston National Bank from 1927 until his retirement in 1960.

Mr. Elliot is survived by a daughter, Mrs. Madeline E. Buckley of Marblehead; six grandchildren; four great-grandchildren and six great-great-grandchildren.

Tennis Lottery To Assign Places

Students for fourth quarter intermediate tennis classes will be selected a new way-by lottery-the Department of Physical Education has announced.

The lottery, limited to undergraduate and graduate students, is an attempt to deal fairly with the increasing number of student tennis enthusiasts.

All students interested in taking intermediate tennis should have good command of the games' basic strokes and the ability to execute them when playing. Beginners and near beginners should register for beginning tennis.

To participate in the lottery, students should pre-register in person by Friday, March 26, at the Physical Education Office (W32-135) for one of the following six sections:

Saturday - March 20, 1976

Monday - March 22 through Friday March 26

Monday - March 22 through Friday March 26

Friday - March 19 through Saturday March 27

Sunday - March 21, 1976

Saturday - March 27, 1976

Sunday - March 28, 1976

Sunday - March 28

Section 1: Monday and Wednesdays, 11am-12noon; Section 2: Monday and Wednesday, 1-2pm; Section 3: Monday and Wednesday, 2-3pm; Section 4: Tuesday and Thursday, 11am-12 noon; Section 5: Tuesday and Thursday, 1-2pm; Section 6: Tuesday and Thursday, 2-3pm.

Each section is limited to 14 students:

The drawing, by section, will be held Monday morning, March 29.

All students in the lottery must check in with instructor Manny Weiss during regular registration hours on Monday, March 29, from 11am-12 noon or from 1-3pm. Class positions not confirmed that day will be open for general registration on Tuesday, March 30, from 11am-12 noon and from 1-3pm.

Closed

Closed

9:00 a.m. to 2:00 p.m.

12 Noon to 12 Midnight

Lobdell Dining Hall <u>Closed</u> Twenty Chimneys 9:00 a.m. to 1:00 a.m.

pediatric surgical unit of Tufts Medical Center. He estimates that in addition to the

\$2200 room-and-board fees, there are books, materials, health service costs and clothes which cost him about another \$900 per year.

'The fact that college is not such a burden to my parents has had a lot to do with my decision to experiment with other courses I might not have tried," Richard reports. "For instance, I'm trying out an introductory civil engineering course this term just to see how I perform. I may even decide to earn two degrees in five years-which could only enhance my chances for medical school.'

According to Mr. MacKinnon, his son showed the same determination in applying to college two years ago.

"He took the SAT tests five times just to see if he could bring his marks closer to the MIT standards he had been taught to respect. The credit all belongs to him, but I'm still pretty proud when they tell me in Physical Plant how lucky I am to have a future doctor-with an MIT degree-in the family."

Other hourly, exempt and bi-weekly employees with children attending MIT include Mrs. Frances Chen, a scientific programmer at Lincoln Laboratory for the past six years and the mother of Leon, a freshman, and agement; Sabet M. Mangoubi, a whose son is Rami Mangoubi; Franklin Payne, an hourly worker in the late William S. Schwabe, whose ployee in the Department of Biology

All dining facilities will resume normal schedule on Monday - March 28, 1976. Last meal for board plan is dinner on Friday - March 19 and will resume on Monday - March 29, 1976.

Walker Memorial

Spring Vacation Dining Hours

Lobdell Dining Hall Twenty Chimneys

Lobdell Dining Hall

Lobdell Dining Hall Twenty Chimneys

Lobdell Dining Hall Twenty Chimneys

Morss Hall

Prichett Lounge

Prichett Lounge

Twenty Chimneys

Stratton Center



This list includes all non-academic jobs This list includes an indi-academic jobs currently available on the MIT campus. Duplicate lists are posted on the women's kiosk in Building 7, outside the offices of Special Assistants for Women and Work (10-215), and Minority Affairs (10-211), and in the Personnel Office (E 19-239). Personnel interviewers will refer any qualified interviewers will refer any qualified applicants on all biweekly jobs Grades II-IV as soon as possible after their II-IV as soon as possible after their receipt in Personnel. Persons who are not MIT employees should call the Personnel Office on extension 3-4251.

Employees at the Institute should continue to contact their Personnel Officers to apply for positions for which they feel they qualify.

Dick Higham Pat Williams	3-4278 3-1594
Carolyn Scheer (secretary – Dixie Chin)	3-1595
Virginia Bishop	3-1591
Mike Parr Ken Hewitt	3-4266 3-4267
(secretary – Joy Dukowitz))
Sally Hansen	3-4275
Lewis Redding	3-2928
Richard Cerrato	3-4269

planning; direct Committee work. Engineering degree, a broad technical, scientific background with extensive technical management experience, proven writing and speaking skills required. A Management Degree (or comparable experience) also necessary. D76-34 (3/17).

Academic Staff, Systems Analyst/Senior Systems Analyst to be Analysi Senior Systems Analysi to be responsible for all aspects of Medical Department computer system: plan and define objectives and requirements; design, implement and document programs; maintain security of confidential data base; prepare and monitor budgets; act as liaison with monitor budgets; act as liaison with departmental staff. Bachelors degree, extensive systems analysis, PLI grogramming and other computer related activities required. Familiarity with the Transcriptor Brongering the with Transactions Processing System (TPS) preferred. C76-3 (3/17).

Sponsored Research Staff, Energy Sponsored Research Staff, Energy Analyst to work with data from New England Management Information Systems and other sources; guide and direct students in NEEMITS projects; estimate, design and execute projects to answer specific questions (data collection, computer use, standard package program development). Write user guides and instruct users in use of user guides and instruct users in use of user guides and instruct users in use of models and package programs; write reports; assist in interpretation of analytical results. Masters or PhD in economics plus 2 years working experience as economist required. Familiarity with N.E. regional energy operations, particularly energy-related operations desirable. D76-28 (3/10).

Exempt. Nurse Practitioner or Physi-Exempt, Nurse Fractitioner of Filysi-cian Assistant in Medical Department Off-Hours Clinic: Duties include treat-ment of episodic illness, preventative health care, initiation of screening and diagnostic evaluation of patients. Mass. Registered Nurse who has completed an Adult or Family Nurse Practitioners Program or Physician Assistant Program, and has a minimum of 2 years nursin experience Ambulatory care and/or Emergency Room, required. Schedule: 4pm-12m weekdays, with an occasional day shift; rotate 8am-4pm or 4pm-12m weekend and holiday shift. E76-7 (3/17).

trained to use MT/ST machine. Posi-tion will be for 3 months with possible extension up to 6 mos. B76-99 (3/17). Secretary IV in Resource Development's Leadership Campaign Office to provide general support: arrange ap-pointments; travel; compose correspondence; type from machine dicta-tion. Requires excellent typing, organi-zational skills; ability to set priorities and work independently. At least 2 years experience necessary. College background plus MIT experience pre-ferred. B76-100 (3/17).

Secretary IV in Medical Department Psychiatry Service. Will perform secre-tarial duties for two psychiatrists and some shared responsibilities with other secretaries. Responsible job in busy and stimulating office with emphasis on personal and telephone contacts. Sensitivity and good judgement in dealing with confidential matters, careful attention to detail, good typing skill required. Secretarial experience and/or College training preferred. Knowledge of Keypunching desirable but not essential. Hours: 8:30am to 5:00cm 876.14 (2)(17) 5:00pm, B76-14 (3/17).

Secretary IV in Nutrition and Food Science to type scientific manuscripts, correspondence; arrange travel for large research group; prepare purchase orders and other documents. At least 1 year's secretarial experience, excellent typing required. Knowledge of bio-logical and/or chemical terminology, shorthand skill helpful. B76-104 (3/17).

Secretary IV to Treasurer, MIT Devel-opment Foundation which is involved in the starting of enterprises to commercialize new technologies: type varied material including some tabular data; answer phones; file; schedule appointments; maintain financial re-cords. Two years secretarial experi-ence, familiarity with dictating equip-ment, facility with English grammar required. B76-90 (3/10). required. B76-90 (3/10).

MIT HOCKEY RINK is the usual meeting place for John MacKinnon (left) of the Physical Plant Department and son Richard, a sophomore in biology at MIT. The late afternoon meetings-between Mr. MacKinnon's 4pm-midnight shift as an air-conditioning mechanic and Richard's varsity hockey practice are times for catching up on family matters, scholastic performance and weekend plans.

and father of Eric Strovink.

Those with graduate student sons and daughters, who receive half tuition grants for up to three years' work, are: Mary E. Ciccolo of the Laboratory for Nuclear Science and mother of Arthur Ciccolo; Costas

Keypunch Operator III in Medical Department will assist Systems analyst with all phases of patient contact data processing system. Previous experience on IBM 129 Keypuncher and Verifier, ability to work effectively with minim al supervision required. B76-95 (3/17).

Clerk III at the MIT Press will act as Clerk III at the MIT Press will act as receptionist: answer phone inquiries independently, or refer to others; receive and direct visitors; process phone orders for books: receive and process a large volume of incoming mail. High school graduate, or equiva-lent, some secretarial school training, experience in dealing with public required. B76-94 (3/17).

Clerk Typist III in MIT Development Office to perform duties relating to fund-raising' efforts of the Institute: filing; updating of files; typing – all in support of Development Office Analysts, strong organizational skills, ac-curacy with English grammar, good typing required. B76-103 (3/17).

Sr. Clk,-Typist III for Neurosciences Research Program: type program Bul-letin on IBM MTST/Selectric Comp-oser System (will be trained). Will also provide audio/visual assistance: project and copy slides; tape-record meetings; set up conference rooms; maintain files, equipment, library and journal storage. Must have good typing skills. B76-39 (1/28).

Clerk-Typist III, part time, temporary, in the Summer-Sessions Office to assist in processing applications (type, xerox, file); prepare admissions material for participants; provide and obtain in-formation regarding the Summer Session Program on telephone; assist in weakly registration weekly registration process ar 7:45am on Mondays during summer months. Position is for approximately 2 hrs. per day through 5/31/76: then will be full time, 35 hrs/wk. for an as yet undetermined amount of time. B76-89 (3/10).

Jr. Accounting Clk. II, temporary, in the Summer Session Office to perform varied clerical duties: handle payment receipts, purchase orders; process refunds, housing and other changes; file; post payments; type order forms, vouchers; prepare statistics. Will also help with registration: answer phones, post address envelopes. Requires ability to work under pressure, deal with public. Typing and organizational skills necess B76-39 Must be able to report to work at 7:45am every Monday throughout summer. Temp., May-August, 1976. B76-98 (3/17). D75-253 B76-30 D75-113 B76-79 B76-48 The following positions were still available at Tech Talk deadline. The H75-172 A75-63 E76-2 date following each position is the date of the most recent Tech Talk issue in B76-88 which the position was described. B76-87 A75-60 B76-47 ADMINISTRATIVE STAFF A75-65, Acquisitions Editor, MIT Press (12/3) B76-81 B76-66 B76-78 A75-71, Documentation Mngr., Off. of Admin. Inf. Syst. (1/7) A76-2, Prog. analyst, Inf. Proc. Center (2/18) A75-67 D75-107 A76-3, Industrial Liaison Officer, Ind. Liaison Prog. (3/10) B76-84 A76-4, Systems Programmer, Inf. Proc. Center (2/25)

B75-543, Sec. IV, Chem. Eng.

B75-590, Sec. III-IV, Res. Lab. of

Clk./Keypuncher III,

BIWEEKLY:

Elec. (2/4) B76-65,

Physical Plant (2/25)

(10/15)

Constantinidis, a physical plant employee with a daughter Maria; Yenking Kan Wang, payroll clerk and the mother of Yi Ming Wang; and Leova B. Wolf of the Department of Urban Studies and Planning, whose son is Mark Wolf.

B76-69, Tech. Asst. V, Medical Dept. (2/25) B76-83, Sec. IV, Medical Dept. (3/10)

SPONS. RES. STAFF:

D75-48, Economist, Energy Lab. (6/25)

D75-120, Systems Programmer, Lab. for Nuc. Sci. (11/26)D75-161, Economist/Policy analyst, energy Lab. (9/10)

D75-167, end-use technology, ener-

(9/10)
D75-167, end-use technology, energy Lab. (9/10)
D75-219, continuing education,
Chemical eng. (11/5)
D75-229, Research Engineer, Energy Lab. (11/19)
D75-232, Programmer, Center for
Space Research (11/26)
D75-243, postdoc. res., computer
science, Artificial Intell. Lab. (1/7)
D75-244, postdoc. res., computer
science, Artificial Intell. Lab. (1/7)
D75-249, postdoc. res., physics,
Lab. for Nuclear Sci. (1/14)
D75-250, postdoc. res., physics,
Lab. for Nuclear Sci. (1/14)
D75-7, Project Coordinator, Energy
Lab. (1/28)
D76-12, postdoc. res., National

D76-12, postdoc. res., National Magnet Lab. (2/18) D76-³, 4, Tech. Asst., Arterioscler-

osis Center (2/18) D76-17, Bioc Elec. (2/25) Biochemist, Res. Lab.

D76-18, postdoc, res., Lab. for Nuclear Sci. (3/3) D76-19, postdoc, res., Lab. for Nuclear Sci. (3/3) D76-21, Data Analyst, Energy Lab.

(3/3)

(3/3) D76-22, Laser Physicist, National Magnet Lab. (3/3) D76-23, Programmer, Lab. for Comp. Sci. (3/10) D76-24, Programmer, Artifical In-tell Lab. (3/10)

tell. Lab. (3/10) D76-25, Asst. Proj. Dir., Joint Ctr. Urban Stud. (e/10)

HOURLY H75-55, Tech. B., Lab. for Nuclear

Sci. (6/25) H75-117, Tech. B., Radioactivity Center (10/15) H75-143, 2nd Cl. Eng. (10/15) H76-20, Cook, Endicott House, Dedham (2/25) The following position have been FILLED since the last issue of TECH TALK: Sr. Clk. Typist III Spons. Res. Staff Sec. IV Spons. Res. Staff (Cancel) Sr. Lib. Asst. IV Sr. Clk. IV Tech. A Admin. Staff Nurse Clk. II p.t. Lib. Asst. III p.t. Sys. analyst (Cancel) Sec. IV Cashier Admin Asst.VB76-75 Sr. Clk. III Acquisition Editor DSR Staff (Cancel) Sr. Lib. Asst. IV

Employee's Son Is Sophomore at MIT (Continued from page 1)

Closed 8:00 a.m. to 7:00 p.m. Closed 9:00 a.m. to 7:00 p.m. 7:15 a.m. to 7:00 p.m. Closed 8:00 a.m. to 7:00 p.m.

Elizabeth, a candidate for the SM degree at the Sloan School of Manbook checker in the MIT libraries, Building 13 and the father of Cheryl; son Edmund is an undergraduate; and William Strovink, an hourly em-

Lewis Redding Richard Cerrato (secretary - Susan Bracht)

Sponsored Research Staff, Staff Neurosciences Scientist, in the N Research Program to work on conceptual problems at various levels of brain research (molecular, cellular, neural, behavioral). PhD and sufficient related research experience to be able to critically evaluate scientific literature required. Applicants should have strong capability for creative conceptualizations and theoretical work. Appointment (beginning 7/1/76) is for 1 year but may be extended. D76-30, 31, 32. (3/17).

Sponsored Research Staff, Computational Physicist, in Research Labora-tory of Electronics to develop numerical analysis of problems in experimental and theorectical programs in plasma physics. PhD in Physics with good knowledge of main theoretical methods in plasma physics, excellent familiarity with use of computers to solve complex and analytical problems required. D76-33 93/17).

Sponsored Research Staff, Project Coordinator to work with Director of the Energy Laboratory. Duties include acting as liaison between Program Directors and Faculty Coordinators, liaison between Program contact with contracting agencies and industry. Coordination of report preparation, and of technical planning of new projects; assist Director in technical management and long-range

Exempt, Programmer/Computer Oper Exempt, Programmer/Computer Oper-ator Supervisor, to supervise students in Center for Space Research, Will be responsible for acquisition of quick-look data, received by NOVA mini-computer from the SAS-C X-ray astronomy satellite. Will also organize tape library, set up computer catalogue routines, maintain summary of satellite aspect history. Must have good organizational/supervisory skills plus ability to work under pressure. Experience with X-ray satellite data acquisition highly desirable. E76-6 (3/10).

Secretary IV to several Mechanical Engineering Faculty members will type varied material; arrange travel, appointments, coffee seminars; maintain accounts; excellent typing, basic book-keeping skills, shorthand and/or machine dictation skill, ability to interact well with people required. B76-93 (3/17).

Editorial Secretary IV, temporary, in Nutrition and Food Science to assist in the editing of scientific manuscripts. Will type technical material consisting of tables, scientific terminology (few equations). Requires good typing, grammatical skills. Familiarity with chemistry and biology helpful. Will be Secretary III-IV in Research Labora-tory of Electronics to faculty members and research staff. Will perform general secretarial duties including technical typing of reports and proposals. typing of reports B76-102 (3/17).

Secretary III-IV to two faculty members in Electrical Engineering and Computer Science Department will type course material (including technical typing), reports, proposals; arrange appointments, travel. Requires technical typing skills, initiative, ability work without supervision. B76-97 (3/17).

Library Gen. Asst. III in Dewey Library to assist in charging, receiving, library materials; maintain circulation records and statistics; train and supervise student assistants; may assist in other library duties, as required. Position may include some evening, holiday, week end work on pre-scheduled basis. Ability to deal effectively with the public, to understand and enforce regulations, some typing skill required. B76-92 (3/17).

Sr. Clerk IV in the Comptrollers Accounting Benefits Office: type letters, forms: act as receptionist; prepare benefits billing; assist in perroll distribution and other funcprepare benefits billing; assist in payroll distribution and other func-tions of the office. Minimum of two years office experience, accuracy with figures, typing and telephone skill required. Familiarity with computer-ized systems (input and output) desirable. B76-91 (3/10).

The fo HOLD B76-84 following positions are pending final decision: Sr. Lib. Asst. IV A76-1 C75-35 Admin. Staff Tech. Asst. A75-56 Admin. Staff

Tech Talk, March 17, 1976, Page 7

Employment Q & A

Q: Twice a year now, Biweekly employees utilize a semi-annual performance evaluation form to initiate a discussion between themselves and their supervisor. I prefer to talk to my supervisor on a more informal basis and find the forms distasteful. Does an employee have the option to forego this formalized procedure if he/she prefers?

A: During the period preceding a semi-annual performance evaluation for Biweekly employees each Administrative Officer (or designate) is asked to give each eligible Biweekly employee the choice between the two communication forms (Form A or Form B). The forms themselves were designed to facilitate an open discussion between Biweekly employees and their supervisors and to provide an opportunity for discussion at least twice a year. The formal review periods are not intended to replace informal discussion between employees and supervisors which ideally would occur on a continuing basis.

It should be stressed that the forms were conceived to promote open discussion, not to act as a barrier in any way. Therefore, the forms themselves need not be used at all at the option of the employee if he/ she is uncomfortable using them. If neither of the forms is to be used, one set of forms should be signed by both the supervisor and the Biweekly employee to indicate the opportunity for their utilization existed at the time of the review.

Q: If a member of my family is hospitalized and uses blood, how do I get it replaced by MIT?

A: Because the record of the Institute employees as donors to the Red Cross Blod Bank has been outstanding, the Red Cross will supply blood when available to you or to a member of your immediate family. The Red Cross does not charge MIT employees or students for the blood, although a hospital may charge for administering transfusions.

You are invited and encouraged to give blood during the Institute's blood drives to help maintain the Institute's past superior record. However, you may still receive blood even if you are not able to donate. To arrange for blood transfers, call Norma Loomis at the Medical Department, x3-4371. At Lincoln Laboratory, contact Phyllis Giusti, First Aid Room, x7156.

Q: What involvement did the Working Group on Office/Clerical Issues have in planning this year's Biweekly Review procedures, if any?

A: The basic features of this year's Biweekly Review were set by the Working Group's recommendations last year, as modified by the evaluation conducted by the Working Group following last year's review.

Those features were: (1) publication of the funds available for the review; (2) incorporation of general and merit components into the Review Salary Increase; (3) equal access by Biweekly personnel and supervisors to information; and (4) encouragement of discussions about the job and individual performance.

As a result of opinions expressed in last year's evaluation, the Working Group recommended a formula calling for a greater amount for merit than for general increases.

Prior to the Review this year, the entire Working Group on Office/ Clerical Issues met twice with representatives of the Personnel Office to discuss plans for the current Review resulting in decisions to continue the basic format and communications procedures this year. The Performance Evaluation Task Group, a subgroup of the Working Group, held additional meetings to make suggestions for modifications of the 1976 Review. Their recommendations included making provision for increases to be expressed in amounts less than whole dollars, and the Review instructions permitted this option. They also recommended general guidelines for evaluating an employee's performance. These were specifically reviewed and approved by the entire Working Group and included in John Wynne's memo of Review Instructions of February 9, 1976.

The Working Group did not decide the sliding scale by which the budget allocations were made and which resulted in allocations ranging from 6.2% at the higher end of the Biweekly scale to 9.8% at the lower end. While the Working Group was informed in advance of the sliding scale, the decision to adopt it was part of the total plan for salary administration for MIT this year, which was influenced by the sharp drop in inflation to an annual rate of under 7% for 1975 and by the constraints of the Institute's financial position.

Mining in Space Possible

(Continued from page 1) asteroids, Professor McCord said, would be to choose a metal-rich asteroid about one kilometer in diameter, attach to it some impulsegenerating device (a rocket, a nuclear impulse device, etc.) and gradually move the asteroid to an orbit closer to earth.

The trip might take about 450 days; one could coordinate it with the motions of the earth and the moon, to take advantage of gravitational attraction.

obtained this way are so plentiful that one problem would be to avoid flooding the market, he said.

He and Dr. Gaffey have calculated that one cubic kilometer of nickeliron from an asteroid could supply the earth with enough iron for 15 years, and enough nickel for 1,250 years, as well as plentiful amounts of cobalt and copper.

At current prices, the gross value of such a haul would be about five trillion dollars, or about five times the US gross national product. "It should be apparent," they said, "that such a return cannot be realized in an actual market place, since the supply would far exceed the demand." But they estimate that if 650,000 metric tons of iron and 135,000 metric tons of nickel were delivered to earth each day, the annual supply would be worth at least 140 billion dollars. Other gains would not be simply financial, they say: an abundant supply of metals from space would safeguard our standard of living, and would eliminate the need for mining techniques that are increasingly destructive to the environment. In addition, limitless supplies of the metals would eliminate international competition over scarce resources, which are perhaps located in only a few places. Moreover, they say, it may be possible to extend such an operation to mining other materials, such as carbon compounds (for fuel), which are abundant on some asteroids, and titanium, which exists in the lunar soil.

Lincoln Satellites Launched

(Continued from page 1) another toward positions suitable for subsequent satellite-to-satellite crosslink communication experiments. Finally, the many electronic communication and control subsystems aboard the satellites must be activated and their performance evaluated and monitored.

Orientation and stabilization were accomplished within about an hour and other activities are well underway with very encouraging initial results.

Lincoln Experimental Satellites LES-8 and LES-9 are a pair of experimental communications satellites designed and built for the Air Force by the MIT Lincoln Laboratory in Lexington, Massachusetts. LES-8 and -9 are designed to operate in near-synchronous orbit and to communicate crosslink from satellite to satellite as well as with surface terminals. Each satellite weighs about 1000 pounds and has an overall length of about 10 feet.

At synchronous-orbit altitude, each satellite has a ground-visibility area about 8000 miles in diameter. With crosslink communication between the satellites, which may be spaced thousands of miles apart, a single pair of satellites could provide communications among terminals anywhere in an area covering more than 3/4 of the surface of the earth.

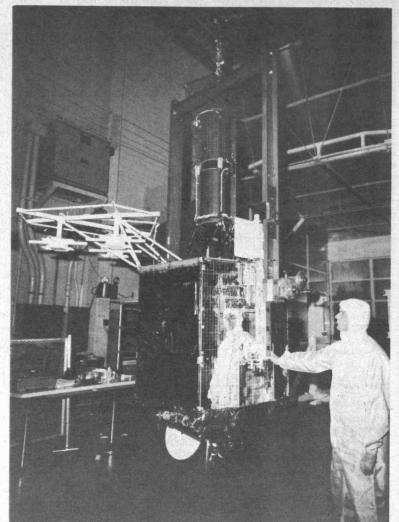
LES-8 and -9 are designed for use by small, mobile terminals as well as by transportable or fixed ground terminals. Associated surface terminals—to demonstrate communications among ground terminals, aircraft, and ships at sea—are being designed and constructed by Lincoln Laboratory for use with the satellites.

Three-axis stabilization systems keep one end of each satellite pointed at the earth and a crosslink antenna system pointed at the other satellite. The orientation of each satellite is maintained by a momentum wheel that operates like a big gyroscope, in combination with attitude-control thrusters to adjust or change the orientation of the satellite body.

In addition, each satellite carries a single-axis gyroscopic experiment developed for the Air Force by the Charles Stark Draper Laboratory of Cambridge, Mass. This experiment could lead to highly stable, longlifetime, completely self-contained attitude-control systems for future satellites.

Crosslink communications are at K-band frequencies considerably higher than any previously employed for satellite communication. Upand down-link communications are at K-band and in the military UHF band (225 to 400 MHZ).

LES-8 and -9 have also been designed to demonstrate and evaluate techniques to help satellites survive and continue dependable operation in a hostile environment. Electric power is provided by radioisotope thermoelectric generators (RTGs) rather than by solar cells, which are particularly susceptible to radiation damage, and electronic components are carefully shielded against radia-



LINCOLN EXPERIMENTAL SATELLITE LES-8 ready to be hoisted up and mounted on the payload support structure in preparation for launch. This is one of a pair of spacecraft (LES-8 and LES-9) designed and built by the MIT Lincoln Laboratory in Lexington, Mass., for the US Air Force to demonstrate and evaluate new techniques for military satellite communications. At the bottom of the spacecraft in this photo is the K-band crosslink antenna system that can relay messages from one satellite to the other. At the top is a pair of radioisotope thermoelectric generators (RTGs) that supply electrical power for the spacecraft. (The shiny checkerboard panels are not solar cells: they are thermal control panels, to radiate off into space excess heat generated in the electrical circuits inside the body of the satellite.) The white structure at the upper left is the UHF-band dipole array, one of several antennas for communication with earth-terminals, including aircraft in flight. Shown with LES-8 is Thomas N. Farrell, Lincoln Group 72.

tion. Signal processing circuits aboard the satellites are designed to resist electronic jamming.

Development and construction of the LES satellites is sponsored by the US Air Force; experimental prototype terminals are being developed for the Air Force and for the Navy.

LES-8 and -9 and the associated terminals are elements in a continuing Space Communications Program at the MIT Lincoln Laboratory, directed at developing and demonstrating techniques and equipment that will provide new capability to meet important military communication requirements. Primary emphasis is placed on the development of improved methods for maintaining voice or digital-data circuits among a number of widely separated terminals, circuits that will continue to function dependably in the face of natural or hostile interference or other disruptive influences

A series of Lincoln Experimental Satellites (LES) has been designed

and built by Lincoln Laboratory as a means of testing realistically, in orbit, new components and techniques developed in the Laboratory. LES-6, the most recent satellite in this series, launched in September 1968, has provided valuable service in experimental and operational functions well beyond its 5-year design lifetime. (LES-7 was partially developed but not completed because of program revision.)

As an essential complement to the satellite work, attention has been given to the development and testing of ground terminal techniques and equipment. Particular emphasis has been directed to multiple-access operation of reliable, broadband satellites by relatively small transportable and mobile terminals, in order to provide a higher degree of flexibility and resistance to physical attack than can readily be achieved with large, fixed terminals.

SOLRAD Also Aboard Launch

Launched aboard the same rocket with LES-8 and LES-9 were two Nav-

Lactose Test Questioned

(Continued from page 1) and loose stools may occur.

None of the white children studied

drink at one time."

Once near the earth, hunks of the asteroid would be melted down to ingots. The "furnace" used could be heated by light from the sun.

The next problem would be to safely transport the metal to earth. One technique, Professor McCord said, would be to inject the material with gas and let it cool rapidly, to create a kind of foam.

This "foam" would be like the pumice created by volcanoes, Professor McCord said. It would be extremely light but not mushy or sponge-like: a solid mass filled with the shells of bubbles, from which the gas escaped.

This material could be shaped into a vehicle that could be glided into the atmosphere and directed to a specific landing site in the ocean.

Such an operation could involve a score of space workers, or self-sustained colonies of thousands of miners, Professor McCord said.

Supplies of metals that could be

Page 8, Tech Talk, March 17, 1976

But the standard method of determining lactose intolerance has been to determine blood glucose levels of children given test doses of lactose. These blood glucose tests showed that lactose intolerance existed in many of the black children studied: 11 percent of those four to five years old, 50 percent of those six to seven years old, and 72 percent of those eight to nine years old.

But when the same children drank an eight-ounce glass of milk, no adverse reactions were detected.

Twelve ounces of milk produced mild reactions in six percent of the black children six to seven years old, and 15 percent of the black children eight to nine years old.

Sixteen ounces of milk—half a quart—produced mild or moderate adverse reactions in eight percent of the black children four to five years old, 12 percent of those six to seven years old, and 20 percent of those eight to nine years old.

But the researchers pointed out that "all the children studied viewed the 480 ml. (16 ounce) portion of milk as an unusually large amount to showed any adverse reactions to milk.

The researchers concluded that "extrapolation from results of standard lactose tolerance tests that usual quantities of milk will cause adverse symptoms, or that milk protein will not be utilized, are unjustified by most published data, and by the present findings . . ."

Milk programs for young children "need not be limited to considerations of primary lactose intolerance," they said.

Dr. Garza and Dr. Scrimshaw also found that the lactose-intolerant children did in fact drink as much milk as the lactose-tolerant children—although their parents drank less milk than parents of lactose-tolerant children.

Sales Tax Notice

Effective March 22, 1976, the 5% Mass. Sales Tax will be applied to all cash and personal sales at Graphic Arts Service. al Research Laboratory satellites, SOLRAD 11A and 11B, carrying instruments for more than 20 studies of solar phenomena.

Among the SOLRAD instruments are instruments designed and built at MIT to study the solar wind, a dilute flood of charged particles escaping from the sun at speeds of a million miles an hour.

The instruments were designed in part by a group of former undergraduates, under the direction of Dr. Alan Lazarus, senior research scientist in the Department of Physics and the MIT Center for Space Research. Dr. James Roberge, associate professor of electrical engineering, directed the electronics design and Daniel H. Galvin, Jr., of the Center's Laboratory for Space Experiments directed mechanical design and construction.

A more complete account of the experiment appeared in the March 3 issue of *Tech Talk*.

Dr. Lazarus said that the instruments would be turned on about a week after the launch.