Massachusetts Institute of Technology

August 25, 1971 Volume 16 Number 8

### Air Pollution Observatory Begins Study

The National Weather Service Monday formally dedicated its new observatory on the roof of Building 24.

Oscar Tenenbaum, the Meteorologist in Charge at the National Weather Service's station at Logan Airport, opened the ceremony. Professor Norman Phillips, Head of the Department of Meteorolgy, and Carl Johannessen, Associate Director of the National Weather Service, outlined their hopes for the new facility. Following introductory remarks by the three men, Henry Cochran, who will be in charge of the station's operations, launched its first observation balloon.

Mr. Cochran, Thomas Malmgren, Francis Patterson and John Cohen will launch two instrument packages each day into the Boston air (see Tech Talk, July 21, 1971). The packages will relay information about the temperature, air pressure, wind conditions and humidity of the air over Boston. Using this technique, the four men will be able to determine the "pollution potential" of the city's air-"how thorough a job the air is doing of cleansing



Left to right, Oscar Tenenbaum, Henry Cochran, Karl Johannessen, and Professor Norman Phillips with one of the pollution station's balloons.

## Laser Group Studies Light with Tiny Diode

A group of laser scientists in the Physics Department has achieved a new breakthrough in their study of light waves.

Professor Ali Javan and his associates have succeeded in making the first direct measurement of the frequency of a light wave.

the group envisions for its findings is to determine the speed of light more precisely than has ever been done before

The experiments used a microscopically tiny antenna in a subminiature diode to examine infrared light from lasers. The diode itself represents a new technological concept, according to Dr. Javan. Ordinary diodes of the kind found in radios work only with radio waves, whose frequency is much lower than that of light, and whose wavelength is several times longer. A diode that works with light waves must have an antenna which is smaller that one wavelength of light (less than one ten-thousandth of an inch). Because an optical frequency diode must be so small, no one had ever built one before.

The graduate students who have assisted Dr. Javan in the research include Dr. Lon Hocker, Dr. David Sokoloff, Antonio Sanchez and Venchenzo Daneu. This group conducts one of the world's largest programs of fundamental laser research. Faculty and students use some 40 lasers in their work. The group has done pioneering work in several areas, including what has come to be

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#### Among the several applications itself," Mr. Cochran explains. Alumni Fund Has Best Year

As Number of Donors Rises

ord during the 1970-71 year, Kenneth S. Brock, Director of the Fund, has announced.

Gifts by alumni to the Fund totalled \$2,564,395--an increase of 11 percent over last year and the second highest total in the 31-year history of the Fund. The all-time record was set in 1969 when the total was \$2,680,077.

Equally important, however, Mr. Brock noted, is the fact that the 21,344 alumni who contributed to the Fund during the 1970-71 year represent a new record in number of donors. Moreover, 1970-71 marked the sixth consecutive year that a record has been set for numbers of donors. This year's all-time

The Institute's Industrial Liai-

son Office, familiar to most simply as the ILO, relocated its oper-

ations to the sixth floor of Build-

ing 39 earlier this month.

The Alumni Fund set a new rec-record is a four percent increase over the previous year. The Institute has 49,000 active alumni and 44 percent of them contributed to the Fund this year.

> "Alumni support, participation and interest have never been higher," Mr. Brock said. "There is an increasing awareness among our alumni of the financial burdens confronting higher education today, a growing sympathy with the university in contentions over political and social problems, and a willingness and desire to help. Over 2,000 alumni volunteers worked on this campaign to dispel further any idea that large numbers of alumni are decreasing their commitment to their alma

### Institute Examines Effects of 'Freeze' President Nixon's Executive employees whose probationary

Order freezing prices, rents, wages and salaries and the amplifying decisions of the Cost of Living Council are being examined carefully to determine their application and effect at MIT.

One of the Council's first rulings was that previously announced tuition rates for the 1971-72 school year are permitted to go into effect. The Council explained that these are considered transaction prices, since commitments have been made and there are a number of cases where payments have been made. Actually, MIT's present tuition probably would not have been affected by the freeze in any case since the new rate of \$2,650 became effective with the beginning of the Summer Session in June. The more recently announced increase to \$2,900 is not scheduled to go into effect until the summer of next year.

Clarification is still being sought by MIT and other universities as to whether medical fees and board and room charges, often associated with tuition, are exempt from the freeze along with tuition, or must remain at rates in effect before August 15, even though increases had been announced previously

Wages and salaries are frozen, under the Executive Order, at rates in effect prior to August 15. For MIT faculty, staff, exempt, bi-weekly and hourly personnel the 90-day freeze will not have a major impact because wage and salary adjustments for these groups are normally made during the period from January 1 to July

An exception will be those new

period will end during the freeze and who would regularly be considered for increases at that time. The Executive Order does not permit these increases to be given during the 90-day period, nor may they be made retroactive to cover the period of the freeze. Supervisors have been urged, however, to process recommendations in the normal manner and in accordance with existing Institute policy for these and other increases justified by employees' performance so that they may be acted upon later as Government regulations and Institute policies may then permit.

Although merit and longevity increases are not allowed, bona fide promotions that constitute an advancement to an established job with greater responsibility are permitted. Similarly, scheduled pay raises which are dependent upon employees completing certain educational requirements may be paid during the freeze.

The new salary rates for Research and Teaching Assistants were put into effect with appointments made at the beginning of the Summer Session. Since these are the most recent rates in force prior to August 15, they will apply to appointments made at the beginning of the fall term.

John M. Wynne, Vice President for Administration and Personnel, has overall responsibility for determining the effect of the freeze on the Institute. However, many other offices, such as the Medical Department, Housing and Dining, Personnel Relations, Purchasing and Real Estate will try to answer individual questions as they arise.

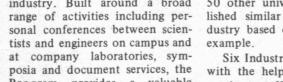
### Burton Rebuilding Project Gives Old Dorm New Look

Burton-Conner House is ready for students to live in again after 14 months of facelifting.

"We gutted the building's interior and completely did it over," says Director of Housing and Dining Services Howard Miller. The Turner Construction Company tore down everything inside except the supporting walls and the elevators, and completely rebuilt the facility.

Except for some minor construction, cleaning up and exterior landscaping, the job is essentially done. Furniture for the rooms will arrive shortly-just in time for the

(Continued on page 4)



According to Mr. Jack W. Christensen, '58, Director of the ILO, steady growth of the Institute had caused overcrowding at the previous location in Building 5, and the move had been considered for some time. Completion of the activities of the MIT Commission made available the first space of sufficient size to accommodate the ILO's extensive activities.

The Industrial Liaison Program has been an integral part of MIT for over 20 years. It stimulates and encourages communication between the Institute and private industry. Built around a broad Program provides a valuable means of contact with some 100 of the nation's largest corportations.

ILO Coordinates MIT, Industrial Research

Member companies provide substantial, and usually unrestricted, financial support to MIT in return for the opportunity to associate with the Institute's faculty and research staff. In the course of discussions which take place, our faculty are kept informed of industrial research and can establish professional ties which result in continuing collaboration and cooperation. Nearly

50 other universities have established similar programs with industry based on MIT's successful

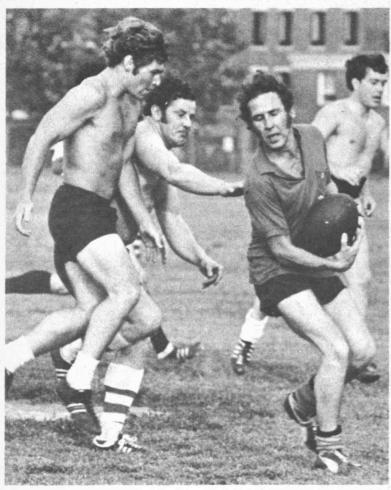
Six Industrial Liaison Officers-with the help of additional supporting staff for conferences, travel and publications-serve as representatives to the member companies. In order to carry out their roles, these Officers keep well informed about MIT's research programs. They are all graduates of MIT, typically trained to the master's degree

Each Officer is also well acquainted with the 15-20 companies he represents. He works in close cooperation with the faculty and research staff and with cor-

(Continued on page 2)



Barbara Pugh unpacks publications in the ILO library.



Ruggers in action on Briggs Field.

### Rugby Club Prepares for Matches in Britain

New England holds its twiceweekly practice sessions right here at the Institute.

Every Tuesday and Thursday at 6pm members of the Boston Rugby Club meet on Briggs Field for a workout. Right now they are preparing for an upcoming twoweek tour of Great Britain, where they will play a series of exhibition matches against top-flight British teams.

Some of the club's players come from MIT. Since the old MIT Rugby Club dissolved, the Boston Rugby Club has welcomed tryouts by men here who play the

Rugby somewhat resembles American football. Each team has 15 players, who wear no helmets or padding for protection. At the start of play a large shoving match, or "scrum," determines who will get possession of the egg-shaped leather ball. After the am the team with the ball trie to carry it down the field. As each

#### Information Center Moves Back to 7-111

After more than a month squeezed into an unused classroom, the Information Center is moving back into renovated Room 7-111 Friday. The Center will be open for business as usual Friday, though service may take a little longer as the Information ladies get resettled. The redecoration-the first in more than 20 vears-gives the Center a more spacious atmosphere, even though the actual space is exactly the same. Carpeting and draperies make it more welcoming to the hundreds of daily visitors.

The champion rugby team of ball carrier is tackled, he laterals off to a teammate. Passing the ball forward is not permitted.

If a team carries the ball over the opponents' goal line, it scores a "try," similar to a touchdown, good for three points. A "goal" after a try, made by kicking the ball through the goal posts, is worth another two points. If a player kicks a goal on the run, while play is still in progress, his team scores three points. After a score, a penalty or a play that goes out of bounds, a new scrum is held and play begins again.

"It's a social sport," says one rugger. "After beating another guy's brains out for an hour, you go off with him and see who can drink the most beer."

#### Red Cross to Be Here Next Week

The Red Cross will send a mobile blood unit to MIT for the first time next Tuesday afternoon. The unit, which accommodates two donors at a time, will be in the parking lot at the Ford Building from noon until 4pm. Because of space limitations, only personnel in the Ford Building are being solicited for this mini-blood drive, but donors from other parts of the Institute will be welcome if space is available. If you'd like to donate, call Sandy Holland, Ext. 4276, to make an appointment.

Telephone extensions in the Office of the Provost have been changed. Dr. Walter A. Rosenblith and his staff can now be reached on Exts. 1971 and 1972.

### Reference Desk Finds Answers to Wide Assortment of Questions

Need instant information? Try calling Ext. 5683, the Reference Desk in the Humanities Library. There, in one compact area, is a battery of reference works which can provide fast answers to all but out of the ordinary questions. Answering unusual questions may take a little longer.

Included among the references are telephone books for all major American cities and many foreign cities as well, and such compendia as Who's Who of American Women, the Congressional Directory, Dissertation Abstracts, Ulrich's International Periodical Directory and American Men of Science. In addition, the Reference Desk maintains a complete list of all MIT publications, including theses and reports. Nearby in a separate bay is a comprehensive collection of college and university catalogs from throughout the world. Also nearby is the central catalogue for the Institute

Not all the books are as helpful as one might expect, Claire Pulver, reference librarian, pointed out. "For instance," she said, "the New York Times Obituary Index is merely a listing of the deaths that have been recorded on the obituary page. People like John Robert Kennedy are not included because their deaths were announced in the news

Though telephone requests for

(Continued from page 1)

porate directors of research and may spend up to 20 percent of his time visiting company facilities in order to establish personal contacts and to promote an awareness of mutual interests between MIT and industry. Mrs. Victoria Waisnor leads a staff of eight secretaries in the office and Mrs. Barbara Pugh heads the ILO Publications Office, a beehive of activity, day in, day out.

Each year the ILO compiles and publishes the MIT Directory of Current Research which is distributed to member companies, the faculty and other interested campus groups such as the Student Center Reading Room. The ILO publications staff compiles and forwards to companies a Monthly List of Publications available from the Institute and also automatically distributes selected documents by prior arrangement. Additionally, over 5,000 individual requests for specific reports are answered by the office each

Fifteen to 20 symposia are sponsored annually under auspices of the Liaison Program. These are private conferences with participation limited to representatives of member companies, sponsors of research, the faculty-and students on a space available basis. The meetings reflect the Institute's broad research programs and draw upon all departments and interdisciplinary laboratories including the Special Laboratories. Over



Susan Stevick, left, and Claire Pulver field questions at the Reference -- Photo by Karl Seeler, '75 Desk in the Humanities Library.

information are a major occupation for the reference librarians, questions through the mail are also frequent. Even inquiries in foreign languages can be handled with a minimum of difficulty

since many of the library's staff members are bi- or multi-lingual. Technical translations are not attempted, but the librarians can recommend professional trans-

### to Offices in Bldg. 39

100 faculty and research staff members present informal reports at these symposia each year.

Personal conferences between scientists, engineers and managers from industry and members of the faculty and research staff are arranged by the company's Industrial Liaison Officer. Depending upon the particular topics involved, visitors usually meet individually with several members of the faculty for discussions. From time to time special conferences are held for a company's senior executive officers in order to explore areas of emerging corporate and Institute interest such as pollution monitoring and control or the management of technical innovation.

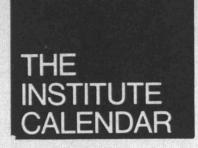
In addition to these on campus activities, the Liaison Office also sponsors faculty visits to company facilities where work of common interest has been identified. A standing committee of the faculty monitors the interests of the faculty in these exchanges.

In 1961 the Institute also established a program specially designed to serve the needs of smaller firms, including many science based companies in the Greater Boston and New England area. Mr. Leslie M. Boring, '64, is director of this activity, known as the MIT Associates Program, with offices in Room 5-118. Mrs. Naomi NcNulty is his girl Friday. Although the Associates Program conducts a separate format of activities and services for its member companies, it is closely allied internally to the ILO.

Together these programs provide MIT with valuable channels of communication with the business and industrial communities. These activities enrich and enlarge the Institute's education and research programs. In addition participating companies are an important source of private financial support helping to defray a substantial part of the Institute's operating expenses. Mr. Christensen credits MIT's close relationship to industry to the extent and quality of the Institute's research and to the faculty's cooperation and natural inclination to establish professional contact with corporate research per-

Beyond the obvious benefits to students and faculty, the agencies of government who sponsor research at MIT benefit in important ways through the improved dissemination of basic research results to leading centers of R & D in indurustry. So does the nation. Indeed, MIT is the model of institutions aroung the world for the skill and success it has achieved in bringing basic research and industrial technology into a close and harmonious relationship. Visitors come from all over to learn from MIT's experience.

The ILO invites students and staff to visit their new offices high above Vassar Street in Building



#### August 25 through September 3, 1971

Send notices for September 1 through September 10 to the Calendar Editor, Room 5-111, Ext. 2701 by noon Friday, August 27.

### SpaceChange Complicated Procedure

Many physical changes are underway at the Institute this summer.

For instance, construction and renovation of office, classroom and laboratory spaces are or will be in progress at the Education Research Center, the headquarters of the Department of Nuclear Engineering, the Arteriosclerosis Center of the Clinical Research Center, the Urban Systems Laboratory, the Biology Department's Electron Microscope facility, the Departments of Architecture and Mathematics, the Telecommunications Office facility which will house the CENTREX system, and the Information Center; to men-

The large task of handling such construction and space changes at the Institute involves the efforts of many people. The Planning Office staff, together with the Physical Plant Department, sets the planning, administrative and operational functions in motion for every physical alteration made at MIT. Space change projects range in scope from building a simple partition to completely renovating an office or laboratory, and the cost of such projects varies from \$1,000 to as much as \$100,000.

Changing existing spaces of the Institute is no simple matter and requires a great deal of time and planning from the very start. Plans must be drawn up, evaluation of requirements must be studied, cost estimates must be made, work schedules must be formulated, and funds must be appropriated—all before actual construction begins.

Space change work expected to begin near the beginning of the fiscal year normally must be

#### TECH TALK

Volume 16, Number 8

August 25, 1971

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Tech Talk is published 50 times a year by the Institute Information Services, 77 Massachusetts Avenue, Cambridge, Mass. 02139 and distributed free to all members of the MIT community. Additional copies are available in the Information Office, Room 7-111, or in the News Office, Room 5-105. Mail subscriptions are \$7.50 per year. Please address news and comment to the Editor, Room 5-111, Ext. 2701.

#### Seminars and Lectures

Parametric Identification of Non-Linear Stochastic Systems Applied to Ocean Vehicle Dynamics \*

Michael N. Hayes, doctoral thesis presentation in the Department of Ocean Engineering. Friday, August 27, 11am. Room 5-234.

Family Day Care Orientation \*\*

Series of discussions, speakers and films on the day care program. Wednesday, August 25, and Thursday, August 26, 9:30am to 2pm. Room 491, Student Center. Lunch and refreshments served. Child care provided during all meetings. For information, call Kathi Mahoney, Ext. 4973

#### MIT Club Notes

Baker House SPAZ Jogging Club \*\*

Jogging around BU and Harvard Bridges. Daily 10:45pm. Baker House, Second Floor West.

Science Fiction Society \*

Every Friday, 5pm. Student Center, Room 421.

Classical Guitar Society \*\*

Summer classical guitar classes every Monday and Thursday, 5pm. Room 1-132.

Outing Club \*

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

Nautical Association \*\*

Basic Sailing Shore School. Repeated every Wednesday throughout the summer, 5:15pm. MIT Sailing Pavilion.

MIT/DL Duplicate Bridge Club \*\*

Every Tuesday, 6pm. Student Center, Room 473.

#### Movies

Knock on Any Door \*

MIT Film Society. Monday, August 30, 8pm. Room 10-250. Admission \$1.

requested by the end of the preceding calendar year. All projects requested are investigated, a preliminary estimate is made, and a space change program is summarized. The summary is presented to the Subcommittee for Space Planning which, chaired by the Provost, decides what projects can be undertaken.

Because of the ever-present shortage of funds and the large number of space changes requested each year, the committee has to make some difficult choices. Project sites usually are visited and some are investigated in great detail. The 80 to 100 projects considered during the year actually are in competition with each other because of the ceiling on total funds available.

After deciding which projects can be funded, the committee refers the space change requests to the academic deans for readjustments and recommendations. Members of the committee have voiced strong concern for fair and equitable distribution of the limited funds available for space changes. They feel that having the deans study proposed projects is one method of detecting possible inequities. After the dean's review, the projects get final approval, and the appropriate departments and offices are notified.

The next step is preparation of projects schedules. The Design Section of Physical Plant and the Planning Office specify the date of week when each phase of a project-funding, estimating, design and drafting, construction and occupancy—is to be performed. Such scheduling is particularly

difficult in the summer when the greatest demand and least capability exist (due, in part, to personnel reductions in Physical Plant and to summer vacations for both Institute and contractor employees).

Project schedules can and do change. Frequently the committee for Space Planning is asked to decide on the order of projects and sequence of execution. During periods of heavy workloads, schedules may have to be rearranged to accommodate a new and essential project. When this happens, projects which were previously planned and scheduled are postponed.

Several factors--materials, nature of the work, and economy-affect priorities or the order of work performed on projects. For example, it is much more practical to have all walls and ceilings installed at the same time, rather than calling the contractors back to campus for each project in order of published priority. This means, however, that a project which doesn't require walls or ceilings may be delayed for a short time.

In addition to schedule changes, hundreds of administrative, architectural, engineering and even political problems inevitably appear during the evolution of a space change. Every project is slightly different from the next one, and even experience can't foresee all the troublespots. However, the Planning Office, Physical Plant and, to a great extent, the offices receiving space changes, work together to make the system operate as smoothly as possible.

#### **Dance**

Modern Dance Class \*\*

MIT Dance Workshop. Intermediate/Advanced. Every Thursday, 7pm. McCormick Gym.

Israeli Folk Dancing \*

MIT Folk Dance Club. Every Thursday; party last week of each month. 7:30-11pm. Student Center, Room 407. Basics taught from 7:30-8pm.

Friday Afternoon Dance Break \*

MIT Folk Dance Club. International Folk Dancing on the oval lawn in front of Kresge Auditorium. Every Friday, 12-1pm.

International Folk Dancing \*

MIT Folk Dance Club. Every Sunday, 7:30pm. Student Center, Sala de Puerto Rico.

Balkan Dancing \*

MIT Folk Dance Club. Basic, Intermediate, Advanced. Every Tuesday; party first week of each month. 7:30pm. Student Center, Room 407. For more information call Jane Weiman, 876-5609.

Square Dance Club \*

Every Tuesday, 8pm. Student Center, Room 491. For information call x6213.

Folk Dance Practice \*

New England Turkish Students Association. Every Wednesday at 8pm and every Sunday at 6pm. Student Center, Room 407. For more information call Y. Ayasli, 864-8276.

Modern Dance Technique Class \*\*

Elementary/Intermediate. Every Monday, Wednesday, and Friday, 5:15pm. McCormick Gym.

#### **Exhibitions**

Seymour Lipton: Recent Sculpture \*

20 sculptures from the past five years, of nickel, silver or bronze on Monel metal. Sponsored by the MIT Committee on the Visual Arts, courtesy of Marlborough Gallery, NY. Drawings by Seymour Lipton are on exhibit in the Hayden Lobby. 1-5pm daily through the summer. Hayden Gallery and Courtyard, through September 19.

Steamboat Design \*

Details of Robert Fulton's steamboat "North River" and other early American steamboats. Hart Nautical Museum, Building 5, First Floor.

Deep-Ocean Mining \*

Material from Sea Grant Project Office. Hart Nautical Museum, Building 5, First Floor.

Main Corridor Exhibitions \*

Presented by students and departments. Buildings 7, 3, 4, 8.

#### **Athletics**

Summer Rugby \*

Every Tuesday and Thursday, 5pm. Briggs Field.

#### Religious Services and Activities

Christian Bible Discussion Group \*

For details contact Professor Schimmel, x6739. Every Thursday, 12:15pm. Room 20B-031.

Islamic Society Prayers

Every Friday, 12noon. Student Center, Room 473.

Roman Catholic Mass

Every Sunday, 11am. MIT Chapel.

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

#### Don't Forget

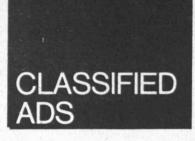
Join your friends at the Muddy Charles Pub, 110 Walker Memorial, 11:30am to 7:30pm daily. Ext. 2158. \*\*

\*Open to the Public

\*\*Open to the MIT Community Only

\*\*\*Open to Members Only

†Freshmen interested in departmental program encouraged to attend.



Ads are limited to one per person per issue and may not be repeated in successive issues. All ads must be accompanied by full name and extension or room number. Ads may be telephoned to Ext. 2707 or mailed to Room 5-105. The deadline is 5pm Friday.

#### Burton-Conner to Reopen Soon

(Continued from page 1)

students to move in early next month.

"The new living arrangements are a lot like those in MacGregor House," Mr. Miller points out. The 344 residents will live in single- and double-bedroom suites, each of which has a common living room, kitchen and bathroom in addition to the bedrooms. One group of suites—the fourth floor of Conner Hall—will have the capacity to house 34 women.

The new Burton House is a bright, modern building. Gone are the long, gloomy corridors and the endless succession of doors. In their place are suite corridors that now have attractive wood paneling and brightly colored carpeting.

Each suite's kitchen has a selfcleaning oven, a garbage disposal and a large new refrigerator. The student team which advised the designers as they formulated their plans was particularly interested in having the ovens, even at the expense of the living room furnishings, if necessary. Fortunately, it wasn't. Many of this fall's Burton residents will be returning to the dorm after a year in Hamilton House, Random Hall or a Medford apartment complex. While they were there they often did their own cooking. Since Burton's dining hall will not be reopened this year, many may want to continue to cook their own meals. The kitchens provide the facilities for doing so.

The dorm also contains many luxuries besides those in the suites. It has a darkroom, a computer console room, an exercise room, electronics and hobby workshops, a language lab, several lounges, a conference room, a rathskeller and a game room.

"The whole project went extremely well," says Mr. Miller. "We didn't have any of the problems with labor contract negotiations that we had with MacGregor."

The \$5 million project has virtually created a new building. "The old Burton was considered to be in the worst condition of any dorm," says Mr. Miller.

### Laser Group Studies Light

(Continued from page 1)

known as nonlinear precision laser spectroscopy.

Professor Javan is already famous for his invention of the gas laser. His original device, a helium-neon laser, operated for the first time December 12, 1960, about six months after the invention of the solid state pulse laser, which uses a ruby crystal.

Dr. Javan is now in Iran where he will direct an International Symposium on Fundamental and Applied Laser Physics next week. Some 70 physicists from throughout the world, all noted specialists in quantum electronics and related fields, are attending the meeting in Esfahan.

#### For Sale, Etc.

Moving must sell: K tbl & 4 chrs, K cab, lrg desk, dresser & mirror, rugs, chrs, bed, magazine stands. Jean, x3724.

Dresser, avail 9/17, \$15; 3 shelf bkcase w/glass doors, \$35; green hassock, \$5. Call 876-4160.

Free: couch, nds repair; matching chr, \$20; Sears zig-zag sew mach, \$60. x5730 or 527-2124.

Snows for Olds, mounted, used one season, \$15/pr. Takashi, x5323.

Air cond (2), \$75 & \$60; vac clnr, \$30. x4847.

Dan Lounger, \$65; 9x12 rug, \$65; fold away bed, \$20; lamps, \$10, \$4; etc. Call 491-7066.

Brn leather handbag, \$5. Betty, x3757.

Grindstone & stand, 100 yrs old, \$50. x7287.

Twin beds (2), dresser & couch. Call 868-6744.

Beige carpet w/mat, 12x15, gd cond. Sandy, x3533 or 354-4005 evgs.

Bureau w/mirror, \$45; 3 drw antique pine chest, \$40; BR chr, \$5; arm chr, \$20; 3 spd GE fan, \$20; Thor ironer, \$20; trunk, \$15; 2 6x9 rugs, \$15 & \$10; misc hsehold items. Call 484-2624

Waterbed, king size, w/heat, platform, etc, reas. Dave, x2297 or x7080 or 492-0547.

Free: gas range, gd cond. Call 646-3157.

Sears 10 spd bicycle, gd cond, \$50. x5755 Linc.

Bl contemp couch, exc cond, wl negotiate. Call 731-0352.

Bl Dan mod couch, \$20; mono record player, \$10, gd cond. x4388 or 566-2035.

Kenmore elec dryer, exc cond, \$25. Ron, x6523.

Polyester dresses, 16-22½, slightly used. Call 369-6669.

Micro Dyn, 716, IC tester w/program, new \$3200, now \$1800. Mike, 484-4894.

Deep-freeze, refrig, wash mach, dryer, reas. x174 Draper 7.

Dbl bed, conv sofa, dressers, K tbl w/chrs, etc, best offer. x7311 or 868-9456.

Wh gas stove range & H unit, exc cond, best. x2383 or 484-9362 evgs 7-8.

RCA Whirlpool wash & dry, \$75 ea. Call 237-4827.

Lrg sofa/dbl bed w/cushions, \$40 or

best. Aleco, x7267 or 492-2826.

Everett upright piano, \$60, you move.

Tom, x6389 or 491-2622.

Formica covered DR tbl w/6 match

chrs, \$80. Tom, x2514 or 899-3890.

Challenge tennis racket, new competi-

tion string, \$15. x5764.

KLH 6 loudspeakers, \$80 ea; AR turntbl, \$50. x5476.

Boy's Schwin, Typhoon, 24" bike w/coaster br, gd cond, \$20. Horace, x4605.

Zenith TV, 16", B&W, \$80 incl antenna, x5725 or 261-1166.

Dbl bed couchs (2), \$10 ea; K set, \$25; hall chest w/mirror, \$15. Fisher, \$5571.

KLH stereo mod 24 w/FM tuner & dust cover, \$200 or best. Call 354-7215.

Dresser w/mirror, \$15; D tbl w/4 chrs, \$30; sofa/bed, \$35; conv baby carriage, \$20. x7533 or 646-7512.

Pineapple design poster twin beds, \$30. Call 327-8532 evgs.

Pr Kneissel bl stars, 205cm, 3 yrs old, Marker Rollerei bindings, \$40 or best; Molitor dbl lace men's ski boots, size 8, \$5. Wakeman, x2871.

Moving abroad, must sell: stereo, radio, elec appl, lamps, desk, beds, chrs, tbls, couch, drapes, carpets, misc items. Call 868-3273 early am or evgs..

Leaving country, must sell: furn, hair dry, humidifer, K ware, etc. Call 643-8176 evgs.

Dbl bed matt & box springs, \$20. x5787 or 354-1557 evgs.

Compl hsehold, exc cond, inclu D set, K items. Call 547-2667.

Woman's 3 spd Eng bicycle w/basket, \$35; Ski Way exerciser, \$20; night tbl, \$2. Irene, 783-3155 evgs.

Philco TV, 17", \$20. Kloster, x2355 or 354-2851

Coleman heater gas unit, 2800 BTU, exc cond, \$75 firm. Call 957-2113.

D tbl w/4 chrs, \$35; gold rug, 15x9, \$60; gr rug, 7x7, \$25; sm couch, \$25. Nancy, 491-2586 evgs.

Paramount bowl balls, Duck & candle pin, free engrave, gd prices. Karla, x7521.

McIntosh 30W audio amp & preamp, \$30. Bud, x4710.

Lrg tbl, \$5; 4 wd folding chrs, \$1.50 ea; percolator, \$4; desk, \$5; 3 sets curtains; 2 bath sets. Call 491-3358

Pentax 6x7 w/105mm lens & 200mm lens, incl cases, cost \$1200, best offer. x6286.

Zenith 25" color TV, exc cond, was \$695, asking \$350. x2128 or 862-4803.

K set, \$20; easy chrs, \$5 ea; twin bed w/matt, \$15; etc. x440 EDC.

Metallic trunk, 36" long, \$6; carpet, 8½'x11½", floral, \$12. Call 547-0459

Pr Goodyr 4-ply stud snows, F70-14. x7174 or 547-4470 evgs.

Whirlpool refrig, no frost, \$100; Sony tperecorder, TC-102A, \$45; sofa, \$25; baby carriage, \$18. Call 876-3508 evgs.

Masterwk stereo w/Garrard turntbl, \$45; DR tbl w/6 chrs & buffet, \$50; dresser w/mirror, \$20; wicker dbl seat, \$15. Gail, 267-5676.

Several lamps, exc cond; snows, 6.50x13, wh w, on whls; ski rack; ski boots, men's 11M, Rieker. Call 354-1341.

#### Vehicles

'57 VW w/'62 rebuilt eng, new br, body gd cond, does not run, nds valve work, first \$100 takes it. Gary, 723-7145.

'61 Chevy, new R, tires, shocks. Call 924-0264.

'62 Pontiac Bonnvl, 4 dr hdtp, auto trans, pwr st & br, \$150. Bill or Charlie, Dl 8270 evgs.

'62 Ford Econoline, window van, operational, gd br, nds body work, gd eng, \$150. x5274.

'62 Morgan, 4-4, bl w/red uphol, gd cond, 21K, new tires, \$1200 or best. x4549.

'62 Buick Electra 225, run cond, cheap. x6825.

'63 Chevy Biscayne, gd cond, \$300. x7027 or 354-3343.

'63 Ford, 4 dr, V8, std, \$150. x7779 Line or 263-3076.

'63 Volvo, 2 dr 122S, exc cond, new br. \$430 or best. Call 354-2249.

'63 Mercedes Benz 220S, pwr st & br, auto, R, clean, offer. Call 482-0359, evgs.

'64 VW, gd cond, 3 snows, \$350. Kerry, 729-0141 6-9 evgs.

[1] 。江南南部城市村台灣田東京中部城市和海南北连海市

'65 VW bug, 25K, gd cond, \$1250. x4337 or 623-8188 evgs.

'65 Chevy van, auto, R&H, new br, seats 6, best offer. x6253 or 923-2229 evgs.

'66 Volvo, new batt, br, 2 snows, exc cond, \$1000. Sue, 663-2486 evgs.

'66 BMW 1800, \$600 or best offer. Call 784-7321.

<sup>3</sup>66 Dodge Polara, 4 dr sed, auto, pwr st, R, exc cond, \$700. x4334 or 862-8757.

'67 Olds Cutlass, 2 dr, pwr st, exc cond, 60K, x1558.

'67 Ducati, flawless. Bill, 491-0687 evgs.

'68 Pontiac Cat, 4 dr, yel, exc cond, 56K, \$1500. Newberne, x6243 or 275-9517 evgs.

'69 Dodge Charger, loaded, \$1900.

'69 Mercury, all pwr, 29K, \$2600. x7309 Linc or 365-2471 evgs.

'69 Mustang, V8, auto, exc cond, \$2000 or best. x5374 or 298-6545

'69 VW, bl, R, 48K, exc cond, \$1575. x5309 or 868-5608 evgs.

'69 VW, R, 4 new tires, snows, sunrf, rfrack, chains, exc cond. x5754 Linc.

'69 MG Midget, 30K, \$1100. '69 Honda CL450-K2, 11K, \$650. Bob, 625-8386 evgs.

'70 Peugeot 504, 12K, exc cond. Call 484-2507.

'70 VW, blu w/bl inter, exc cond, \$1500. Carol, x2758.

Dune buggy, \$1000. Call 275-8710 evgs.

'71 Honda, CD350, 6.5K, \$700 incl 2 helmets. Paul, x273 EDC or 648-3897.

#### Housing

Bel farmhse, beaut lrg sunny rm in historic landmark, 15 min to H sq, avail now, \$100/mo. Kate, x2281.

Bk Bay: huge carpeted studio, sublet 10/1 for 11 months or 1 yr, \$170 + elect, has frpl. Claire, x5619 or 267-7964 evgs.

Camb-Arl 125 yr old farmhse, 4 BR, 2 car gar, sundeck, tennis court, playgrd, near T line, \$58,000. Call 646-3039.

Camb: sublet 1 BR furn apt for responsible person, avail now-10/15, \$100. x1627.

Cape Cod attrac htd cottage, nr shopping & beach, avail 9/4-9/11, 9/17-10/2 ½ rate beg 9/17. Ed, x5646.

Derry NH, 1900 village home, 6 rms, 3-4 BR, frpl, LR, 1% B, K, lrg porch, \$24,000. Call (603) 432-7564.

Ntn Ctr rms--sublet 3rd floor from MIT grad student & wife w/big house, share B & K; suitable for 2 or 3 M or F; yard, pkg, nr T; 45 Morseland Ave. Huey, 332-4592.

#### Animals

Guinea Pigs (11) w/cage, free or best offer wl separate. x4791 or 244-8303.

Free kittens, 6 wks old, 2 bl & wh, 2 gray & bl tigers. x5911 or 354-0350 evgs.

Free 6 wh mice, 4 wks old. M. Steinmetz, x7618 Linc.

Free: puppies, shep/collie, bl & wh, M & F, avail 9/1. x6634 or 242-4132 evgs.

M Dalmation, regis, \$75. Linda, x8120.

AKC blond crocker spaniel, 6 wks old, 2 M, \$35 ea. Kelly, x7245 or 484-1474 evgs.

Vivacious 4 mo old bl & wh F cat, nds home by 9/1. Helen, 547-8558 evgs.

AKC Gold Retriever puppies, 6 M, 3 F. x4278 or 369-1270.

#### Wanted

Belmont, Arl, Watert area, studio or sm apt for grad coupe in exch for babysit & Fr tutor. Call 547-7022 evgs.

House w/yard within 10 mile radius of Harv Sq, \$200-300, for 2 MIT couples.

Daily ride to Brockton, Ma, 9-5. x4797 or 584-2445 evgs.

Man's 3 spd bicycle. John, x6630 or 731-8788 evgs.

Room in apt, wl pay up to \$100. Nora,

Firm twin bed. x7811.

Mahog buffet, x4436.

Man's bicycle, 10 spd prefer. Bruce Gordon, x6391 or 776-2411 evgs.

Boston or Camb: 1 or 2 BR furn or unfurn apt, up to \$200, for 9/1-2/28/72. Bruce, x6788 or

WI pay ½ price for 7.01 texts. x2636 or 491-6981 evgs.

Babysitter, light housekeep in Belmont on 9/1. x1868.

Sturdy trunks or crates for overseas

shipping. Pat, x3822.

Young woman for babysit & hsekeep.

Call 482-0959.

Crib & matt, gd cond. Bob, x6759.

Any type of proj, slide or film, work cond. x4885.

Inform on gold buckie bracelet lost in ME office 8/17, ½" w, flat band, 12K. x2220.

x3769 or 491-1496.

Sm cottage for couple to rent in NH or Me for 1 wk in Sept. Margaret, x5831 or 876-1371 evgs.

F to share 2 BR lux apt, own R, pool, air cond, free pkg, \$132.50. Carol,

British architect prof wishes house for self & family, wl care for home of professor on leave. Joanne, x2017.

Garage or garage space, Camb/Bk Bay or on T line. Call 876-7218 evgs.

#### Miscellaneous

Tech thesis type, specialize in sp. Bob, x6464.

WI do type & tech type. Call 876-4744.

Quiet, 3rd yr grad stud wl housesit in exchange for free room. Kilo Hong, x9753 or x2961 (Ashdown House).

WI type manuscript, term paper, etc, fast, 90 wpm. Dee, x6838.

# Registration Due for LIS Courses

The Lowell Institute School is accepting applications for the 1971-1972 evening program in computer technology. Application forms are available in the LIS Office, Room 5-113, and should be submitted by Wednesday, September 1. Registration for the fall semester will be on Monday, September 13. For further information, call Ext. 4895.