

very intrusive indeed. But if they should know, several years hence, that satellite-borne U.S. observers are gathering a mass of data on the Soviet economy and weapons potential, then the American proposals now tabled at Geneva perhaps will appear less radical.

Should the Soviets perfect their own MOL's, as expected, a situation might develop roughly analogous to that which preceded the partial test ban treaty, when both sides had learned long-range test detection techniques. Each given highly effective orbiting reconnaissance teams, the United States and the Soviet Union might temper their distrust—which appears to be mutual, despite the relative openness of U.S. defense activities—with the knowledge that to some extent arms control treaties have become self-enforcing.

Whether MOL will be more a stabilizer or a spur to the arms race depends partly on what happens here at home. There is some fear, now that the Air Force has its foot in the door, that it will demand—and get—a larger and larger part in the national manned space flight program. Such concern does not appear widespread, however, and perhaps for good reason, although the capabilities that the Air Force develops through MOL will have to be taken into account whenever new space programs are considered.

The National Aeronautics and Space Act of 1958 gave to NASA the responsibility for all space activities except those "peculiar to or primarily associated with the development of weapons systems, military operations, or the defense of the United States (including the research and development necessary . . . for the defense of the United States)." The line of demarcation thus drawn between the civilian and military space programs is somewhat indistinct, but Defense Secretary McNamara and his associates have argued that they have tried to observe it without taking chances with the national security.

In the name of defense, ambitious navigation, communication, weather, ballistic-missile early warning, and reconnaissance satellite programs have been undertaken. Defense officials have indicated that the reason manned military space flight is so long in coming has been the absence of realistic proposals. The total military space program is not small, the budget having run to more than \$1.5 billion for each of the

past three fiscal years and to \$1.7 billion for the current year (including \$150 million for MOL, which ultimately is to cost about \$1.5 billion or more). The Defense Department gets nearly a fourth of the total space budget.

Much of the spending has not been against known military requirements, but for the development of a broad base of technology as insurance against an uncertain future. For example, development of the Titan III, which as the Air Force's workhorse booster will put MOL into orbit, was begun several years ago even though there was no specific mission for it. Nevertheless, in nearly all cases space systems have not been approved for operational use or deployment unless a military requirement has existed. "This is not the Department of Space," a Defense official reminded an aerospace group a few years ago.

Civilian control of the military space program also can be exercised at higher levels in the administrative structure. Vice President Humphrey, as chairman of the Space Council and at least nominally an important adviser to the President on space matters, is not likely to take a romantic view of Air Force space proposals. Though they favor MOL, the space committees of the Congress, if only out of jurisdictional jealousy, may buck against expansions of the military space program at NASA's expense; some members of the House committee already are watchful for any such tendency. (In this regard, however, the large overlap in membership of the Senate space and armed services committees should be noted.)

The Air Force has allies in the aerospace industry, the trade press, and the Air Force Association who strive to keep before the public visions of outer-space combat. Some members of Congress, including Barry Goldwater, when he was there, have tried to keep these same visions alive, but without much success. A turn for the worse in East-West relations, or a series of Soviet space spectacles, could make for a more propitious atmosphere in which to propagate fears of eerie celestial conflict, however.

All predictions of what may come in the wake of the MOL program probably are premature. All one can do is to regard it as an important precedent and to hope that from it will flow more good than ill.—LUTHER J. CARTER

Announcements

The **American Society for Engineering Education** has moved from the campus of the University of Illinois, Urbana, to Washington. Its new headquarters is at 1346 Connecticut Avenue, NW, Washington 20036.

The National Institutes of Health has announced that funds of individual research or training grants may not be used to pay travel expenses for scientists to attend the ninth international **cancer congress** in Tokyo next October and this item should not be included in grant application budgets. Instead, NIH will provide travel assistance through contributions to a fund to be administered by the National Academy of Sciences—National Research Council. The decision applies only to this congress and does not imply a precedent that might govern other meetings of this type. Information on travel awards to the congress should be addressed to the U.S.A. National Committee on the International Union Against Cancer, Division of Medical Sciences, NAS—NRC, 2101 Constitution Avenue, NW, Washington 20418.

An **advisory committee for collaborative research** in the immunology of organ transplantation has been formed at the National Institute of Allergy and Infectious Diseases (NIAID). Bernard Amos, professor of immunology at Duke University, is the chairman, and John R. Overman, associate director for collaborative research, NIAID, is executive secretary. The other members include:

K. Frank Austen, Massachusetts General Hospital, Boston;
Walter Bodmer, Stanford;
Felix Milgrom, State University of New York at Buffalo;
Felix Rapaport, N.Y.U. Medical Center;
Robert Schwartz, New England Medical Center, Boston;
Chandler Stetson, Bellevue Medical Center, N.Y.U.;
Roy Walford, U.C.L.A. medical school;
Maurice Landy, NIAID.

The **Kettering Magnetics Laboratory**, formerly located in Dayton, Ohio, has been moved to the campus of Oakland University, Rochester, Michigan. The facility was built with funds from the

Charles F. Kettering Foundation and with the aid of the General Motors Research Laboratories. The laboratory is available to scientists for experiments that require great magnetic and mechanical stability. (According to a Coast and Geodetic Survey study, the horizontal gradient in the total magnetic intensity at the laboratory's site is less than 5×10^{-6} Oersteds per foot). Inquiries are invited; they should be sent to Ralph C. Mobley, Chairman of the Physics Department, Oakland University, Rochester, Mich.

Courses

A course on matrix methods in the design and analysis of **optical systems** will be presented at Foothill College, Los Altos, California, 29–31 October. It is sponsored by the college and the University of California extension. Sessions will include the following topics: basic description and classification of optical systems, standard optical instruments, optical systems specially suited for laboratory use, experimental determination of properties of optical systems, and effects of misalignment of optical components. The tuition is \$60 for students, \$100 for others. Deadline for enrolling: *21 October*. (Letters and Science Extension, University of California, Berkeley 94720)

Meeting Notes

Papers on original work are invited for presentation during the 23rd annual meeting of the American **Psychosomatic Society**, 18–20 March in Chicago. Eleven copies of 500-word abstracts are needed; only one copy should contain the author's identification. Deadline: *15 November*. (R. A. Cleghorn, American Psychosomatic Society, 265 Nassau Road, Roosevelt, N.Y. 11575)

"Ocean Research for the Benefit of Mankind" is the theme of the second international **oceanographic** conference, scheduled for 11–20 April in Moscow. Major sessions will be held on the ocean and atmosphere, ocean and life, oceanography of the Indian Ocean and the Antarctic, and marine geology and mineral resources of the ocean. A limited amount of financial support is available for U.S. participants in the congress. U.S. scientists who expect to attend should apply for additional in-

formation to the Committee on Oceanography of the National Academy of Sciences. Deadline: *8 October*. (R. C. Vetter, Committee on Oceanography, NAS, 2101 Constitution Avenue, Washington 20418)

Cancer of the gastrointestinal tract will be the subject of the 10th annual clinical conference at the University of Texas M. D. Anderson Hospital and Tumor Institute, Houston. The meeting will be held 5–6 November, and will be cosponsored by the division of continuing education in the university's graduate school of biomedical sciences. Current information on diagnostic procedures and tumor treatment will be presented. (R. Lee Clark, M. D. Anderson Hospital and Tumor Institute, University of Texas, Houston 25)

The University of Michigan is planning a summer institute in **mathematics for life scientists**, next year, 1 June to 23 August. Participation will be limited to ten persons; stipends will vary, but will include travel allowances. There is no mathematics prerequisite. The program will cover the equivalent of about three semesters of college mathematics, including foundations of mathematics, calculus, linear algebra, probability, and digital computer instruction. Plans call for a one-to-one student-faculty ratio. Deadline for receipt of applications: *30 November*. (R. M. Thrall, Department of Mathematics, West Engineering Bldg., University of Michigan, Ann Arbor 48104)

The fourth annual symposium on the **physics of failure in electronics** is scheduled for 16–18 November at the Illinois Institute of Technology Research Institute, Chicago. Emphasis will be on the "identification of the fundamental physical and chemical processes contributing to the degradation of electronic materials." Active and passive devices will be discussed, along with current problems in microelectronics. (M. E. Goldberg, IIT Research Institute, 10 West 35 Street, Chicago, Ill. 60616)

Grants, Fellowships, and Awards

The National Academy of Sciences invites applications from American scientists who wish to visit the U.S.S.R. for varying periods during the 1966–

1967 academic year. Under an agreement between the NAS and the Academy of Sciences of the U.S.S.R., approximately five persons may make 1-month visits for familiarization with current Soviet science, and about 13 may make research visits of 3 to 10 months. Applicants must be U.S. citizens and have a doctoral degree or its equivalent in physical, biological, or behavioral science, mathematics, or engineering. Participants will receive transportation to and from the U.S.S.R. and per diem allowance for meals. Persons who stay 3 months or longer will be reimbursed for salary lost during that time and those who remain 5 to 10 months may also receive support to take their families. Applications are invited in anticipation of the Inter-Academy agreement's being renewed after its expiration at the end of this year. Deadline: *22 November*. (Office of the Foreign Secretary, NAS, Washington, 20418)

Scientists in the News

The Mayo Foundation has appointed **Charles F. Code** to the recently created position of director for medical education and research. He is professor of physiology in the Mayo Graduate School of Medicine, and head of the Mayo Clinic's section of physiology.

Philip K. Bondy, professor of medicine at Yale University, has been named chairman of the department, effective 1 October. He will succeed Paul B. Beeson, who has been appointed Nuffield professor of clinical medicine at Oxford.

George A. Olah, research scientist with the Eastern Research Laboratory of the Dow Chemical Company, has been appointed professor and chairman of the chemistry department at Western Reserve University.

Charles L. McCabe has been named to succeed **William W. Eaton** as Deputy Assistant Secretary of Commerce for Science and Technology, effective 13 September. He will take a leave of absence from his position as vice president in charge of research and dean of graduate studies at Carnegie Institute of Technology. Eaton has announced plans to return to private business.