

Section S—Pharmaceutical Sciences

Chairperson-Elect: Stanley A. Kaplan
Member-at-Large of the Section Committee: Betty-ann Hoener

Members of the Electorate Nominating Committee: Walter D. Conway and Edward G. Rippe

Section T—Information, Computing, and Communication

Chairperson-Elect: Robert Lee Chartrand

Member-at-Large of the Section Committee: Robert S. Taylor

Members of the Electorate Nominating Committee: Ted Brandhorst and Linda C. Smith

Section U—Statistics

Chairperson-Elect: Lincoln E. Moses
Member-at-Large of the Section Committee: Ramanathan Gnanadesikan

Members of the Electorate Nominating Committee: Agnes M. Herzberg and I. Richard Savage

Section W—Atmospheric and Hydrospheric Sciences

Chairperson-Elect: Hans A. Panofsky
Member-at-Large of the Section Committee: Barry Saltzman

Members of the Electorate Nominating Committee: William R. Holland and Warren M. Washington

Section X—General

Chairperson-Elect: Lora M. Shields
Member-at-Large of the Section Committee: Rosemary Chalk

Members of the Electorate Nominating Committee: Rae Goodell and Walter A. Rosenblith

Science and Secrecy

In recent years the U.S. government has attempted to slow down the flow of selected technologies outside its borders by drawing a veil of secrecy around many areas of scientific research. It has placed restrictions on foreign scientists attending scientific meetings, classified nonmilitary research, and made proposals to isolate foreign students at American universities from certain fields of research.

What are the impacts of these actions on the scientific and technological community? The AAAS Committee on Scientific Freedom and Responsibility formed a subcommittee on national security and scientific communication to find out. The subcommittee is chaired by

Stephen Unger, professor of electrical engineering and computer science at Columbia University, who has prepared a background paper describing the situation and offering proposals. The Committee will also sponsor a symposium on this topic at the 1982 AAAS Annual Meeting.

The following report is taken from Unger's paper, "National Security and the Free Flow of Technical Information." (Unger's paper will be published in *Technology Review* in early 1982.)

Historically, there have been two types of restrictions placed on scientific and technical information. The government has classified information relevant to military purposes, and the private sector has restricted access to information concerning commercially important processes and devices. The government has also controlled sensitive technical products through weapons and export control regulations.

Over the past few years, however, several governmental actions have been directed at broadening control to include not only the technical hardware but also the technical knowledge generated by private investigators outside the government. Growing government concern is also seen through its efforts to make U.S. technology in areas such as microelectronics and computer research less accessible to foreign nationals and to impose prior restraint on selected publications.

The growing field of cryptology is a case in point. Cryptology was, until recently, primarily used by the military, intelligence service, and diplomatic corps. However, large-scale digital communications, electronic fund transfers, the storage of huge amounts of data on individuals and businesses in computer banks, and the increased concern about privacy in general, has made cryptology a subject of much broader concern.

On several occasions federal officials have asked that technical papers involving encryption devices not be presented at scientific meetings. Patent applications for these devices have been delayed.

The government's arguments for concealing cryptology work are that open publication would endanger national security.

This has been challenged on the grounds that, because the United States is so heavily dependent on electronic communications, a strong civilian capability in encryption and verification systems is necessary to prevent "data sabotage." It is also noted that this technol-

ogy is much more important to the United States than to the Soviet Union, which is far behind in the use of digital data systems.

In early 1980 the organizers of a scientific meeting on computer technology (the American Vacuum Society) and of a meeting on laser fusion (the Optical Society of America and the Institute of Electrical and Electronics Engineers) were asked by the U.S. government to restrict participation of certain invited foreign nationals. Both meetings were held with some government controls imposed.

The U.S. Senate has suggested that foreign students should be prevented from working with certain research programs involving high-speed integrated circuits. The large (probably more than one-third) proportion of engineering, physics, and computer science graduate students at American universities who are foreign nationals would make this restriction difficult, at best.

The constitutional conflicts over the government's right to classify nongovernmental information were well documented in the case of *The Progressive*, in which a journalist, working from unclassified documents, assembled information on the construction of the H-bomb. In this case, the government sought to classify the result of an independent researcher's work, not the documents used to support that work.

The overriding reason given to support secrecy in these and other areas of science and technology is national security. The military strength of the country has depended in large measure on the preeminent status of U.S. technology. Yet, in recent years, fears have been expressed that we cannot continue to disseminate "know-how" abroad without further eroding our leadership. Furthermore, America's technological predominance in the commercial sector has been called into question by nations such as Japan and West Germany. Why, proponents of secrecy ask, should sensitive industrial knowledge be exported?

But does secrecy actually promote security? The futility of trying to suppress scientific knowledge is illustrated by what happened in the early 1940's. Prior to the initiation of the Manhattan Project, American scientists agreed not to publish papers dealing with nuclear fission. Intrigued by this absence of publications, G. N. Flyorov, a Soviet physicist, assumed that the U.S. government had begun a secret nuclear project and urged the U.S.S.R. to do the same.

An argument can be made that secrecy, in the pursuit of high-quality science

and technology, does more harm than good.

Virtually all methods for effectively constraining the flow of information out of the country entail the imposition of restrictions on domestic circulation and publication as well. This would make duplication of efforts necessary, thereby slowing the process. Eventually, such a course of action could undermine the national security by weakening the nation technologically.

The exclusion of foreign nationals from university-based research would reduce the general pool of talented individuals at American universities. It would also have the more indirect effect of creating a feeling of distrust and ill will between this country and others.

Beyond these considerations is that of the traditional protections for freedom and openness that have always been part of American society and law.

Erecting significant new barriers to scientific communication, and establishing precedents with respect to prior constraints on publication and speech would degrade valuable American tradition and detract from the example of openness that this country has set for the rest of the world. It would also harm one of the few existing strands of international cooperation: that which links scientists and engineers across national boundaries.

The threat of expanding secrecy in technology merits the serious attention of scientists and engineers, both as professionals and as citizens.

NSF Committee to Hold Hearings at Annual Meeting

The AAAS Office of Opportunities in Science (OOS) will host a hearing on issues relevant to the participation of minorities in science for the National Science Foundation's Committee on Equal Opportunities in Science and Technology (CEOST). The hearing will be held Sunday, 3 January, from 7:00 until 9:00 p.m., in the Massachusetts Room of the Capital Hilton Hotel.

As part of the AAAS Annual Meeting, this will be the first structured setting for minority scientists, in particular, to communicate to the Committee their views on programming needs for minority science. Written testimony (two to three typewritten pages) is invited from persons who wish to be heard by the Com-

mittee, to offer insights, or to make recommendations in keeping with the mission of the Committee. A group of statements will be selected for oral presentation at the hearing and time for open discussion of the issues will be allowed.

Members of the CEOST will hear views on the needs and concerns of women during a panel convened by the Association for Women in Science and AAAS on Monday, 4 January, from 2:30 until 5:30 p.m., in the Chandelier Room of the Sheraton Carleton Hotel. Written testimony is invited; and interested individuals should attend and participate in the discussion.

The Committee on Equal Opportunities in Science and Technology was created by congressional legislation to advise the National Science Foundation "on policies and activities to encourage full participation of women, minorities, and other groups currently underrepresented in scientific and engineering fields." Cora B. Marrett, professor of sociology at the University of Wisconsin chairs the Committee whose members, appointed by the director of the National Science Foundation with concurrence of the National Science Board, represent a broad cross section of scientific and engineering disciplines.

Written statements should be sent, by 18 December, to Mary Poats, National Science Foundation, Room 537, 1800 G Street, NW, Washington, D.C. 20550.

Reminder

Edward E. Noble, chairman of the U.S. Synthetic Fuels Corporation, will give the keynote address at the December AAAS regional energy seminar.

"Western Oil Shale: Benefits, Risks, and Uncertainties," will be held in Boulder, Colorado, on 7 December (see *Science*, 6 November 1981, page 648.)

Meeting Notes

• Puerto Rican scientists and engineers will meet to lay the foundation for a national association for Puerto Ricans in scientific, medical, and technical fields. This meeting is planned as a follow-up to the April 1981 Conference of Puerto Ricans in Science and Biomedicine sponsored by AAAS and the National Institutes of Health. Regional coordinators, appointed at the April Conference, have been working to identify

Puerto Rican scientists and engineers who are interested in assisting in the formation of a national organization. The meeting will be held Monday, 4 January, in the Conservatory Room of the Washington Hilton Hotel.

• Annual Meeting participants are invited to attend an Open Forum sponsored by the Committee on Science, Engineering, and Public Policy on Tuesday, 5 January. Discussions will focus on major issues in the future of science and technology. The Open Forum will be held from 6:00 p.m. until 7:30 p.m. in the Senate Room of the Capital Hilton Hotel. A "no-host" reception will follow the meeting.

• Interested persons are welcome to attend an Open Forum of the AAAS Committee on Science, Arms Control, and National Security on Thursday, 7 January. The Forum will feature a description of ongoing and planned activities of this new AAAS initiative. Program suggestions from attendees are invited. The Open Forum will be held at 6:00 p.m. in the California Room of the Capital Hilton Hotel.

• Youth Activities: The special program for secondary school students at the AAAS Annual Meeting in Washington will begin on Sunday, 3 January, with an afternoon Youth Symposium at the Washington Hilton Hotel. The program includes special lectures, demonstrations, and Conversations with Scientists.

Additional Conversations with Scientists will be held on Monday, 4 January, and Tuesday, 5 January, at 10:00 a.m. until 11:00 a.m., and on Wednesday, 6 January, from 5:30 p.m. until 6:30 p.m. Student papers will be presented on Monday, 4 January, from 11:30 a.m. until 1:00 p.m. and from 1:30 p.m. until 3:00 p.m. For further information on Youth Activities contact Joseph M. Dasbach at the AAAS address.

Issues of Aging Subject of Seminar

A special seminar on "Work and Retirement in the Middle and Later Years" will bring scientists and legislators together to discuss some of the concerns of aging Americans.

The seminar, to be held 8 December at the Capitol in Washington, D.C., will focus on the economic, geographic, and political aspects of employment of the elderly. Participants will discuss the importance of older persons as economic