nounced their opposition in strong terms. Charles F. Phillips of Bates, James S. Coles of Bowdoin, and J. Seelye Bixler of Colby issued a joint statement that the disclaimer provision constitutes a "serious threat to academic freedom." Hugh Borton of Haverford said that the requirement "is tantamount to signing away one's right to freedom of thought, as well as endorsing a Government action which makes the individual's opportunity for education contingent on his personal beliefs." Courtney Smith of Swarthmore observed: "It is as though we asked our children to take an oath that they love us before we gave them their allowance."

Professional Organizations Speak Out

In addition to the American Association of University Professors, other major professional educational organizations have taken a firm stand on the issue and have approved emphatically worded resolutions.

The Association of American Colleges polled its 750 member institutions and adopted a statement that disapproves the disclaimer affidavit and urges its repeal. The American Council on Education's Committee on Relationship of Higher Education to the Federal Government voted unanimously to support the elimination of the disclaimer oath; the majority of the committee also believed the oath of allegiance to be "unnecessary and undesirable." The State Universities Association has announced that it is opposed to all disclaimer oaths. And finally, the American Association of Land-Grant Colleges and State Universities, which represents 92 institutions, has reported that it opposes disclaimer oaths "except in cases of employment directly and clearly related to national security."

Congressional Action

The legislation on repeal of the loyalty provisions that is being considered by Congress is for the most part brief and to the point. Representative Frank Thompson, Jr. (D-N.J.), introduced the first of the five bills before the House, HR 284 (the only one of the group that also contains other recommendations), on the opening day of the 86th Congress. His bill asks that the disclaimer oath be omitted and the oath of allegiance retained, as do two other bills, those of Representative James Roosevelt (D-Calif.), HR 2437, and Representative Peter Frelinghuysen, Jr. (R-N.J.), HR 2332. It should be noted that Frelinghuysen has often been the sponsor of Administration legislation. The two other House bills, HR 4038 and HR 4066, were introduced by Representative James C. Oliver (D-Me.) and Representative Edith Green (D-Ore.), respectively. They both propose elimination of the entire subsection.

The bill before the Senate, S 819, which is sponsored jointly by Senator John Kennedy (D-Mass.) and Senator Joseph Clark (D-Pa.), also proposes that all of Section 1001 (f) be deleted from the Education Act. In a speech on the Senate floor in connection with the introduction of his bill on 30 January, Senator Kennedy commented on the singling out of recipients of federal scholarships and student loans and not those who "receive old age benefits, crop loans or other unrelated payments." At the end of his talk, in a reference to the fact that the National Defense Education Act had been set up especially to develop scientific talent, Kennedy observed:

"But surely, in our efforts to attract into scientific pursuits the best talents, the most inquiring minds of our nation, we do not wish to exclude the non-conformists and the dissenters. . . .

"And we in the Congress should be concerned . . . as to whether this unnecessary, futile gesture . . . will not defeat the very purposes of last year's bill. For, unlike the Soviets, we cannot take steps to keep our brightest minds *in* scientific careers—but we can take steps that keep them *out*."

Senator Kennedy's remarks are a reminder that so far scientists and scientific societies have not taken a stand on the loyalty provisions of Section 1001 (f). Spokesmen for some of the major professional educational organizations are attributing this to timidity.

Committee on Bio-Astronautics Established by Academy of Sciences

The National Academy of Sciences-National Research Council is organizing a committee which will advise the Armed Forces in any matter concerning the biological or medical aspects of space exploration. The group, called the Armed Forces-National Research Council Committee on Bio-Astronautics, will have more than 100 members, of whom at least half will be nominees of the various military services. It will serve as a conference or forum of active investigators, meeting periodically to review scientific and technical problems, exchange information, and establish liaison between investigators with allied interests. In addition to the basic goal of "providing specific answers to specific problems posed by the Armed Forces," the committee will direct its attention to other related matters. Among these matters, as developed at a recent organizational meeting, are the dissemination of research information on bio-astronautics, stimulation of research on hitherto neglected problems, and the acquainting of scientific investigators with problems that the military faces in making space an operational medium for man.

The committee, which will be administered by the Academy-Research Council's division of medical sciences, will concern itself with any field of science or technology that it finds necessary in the pursuit of its objectives. Major fields that will bear on the committee's work will be astronautics, biology, chemistry, medicine, physiology, and psychology.

In structure and origins the new group will be similar to the Armed Forces-NRC committees on vision and bio-acoustics which have been in operation under the Academy-NRC division of anthropology and psychology since 1945 and 1952 respectively. Financial support for the new group is being provided equally by the three services, with the Air Force serving as the contracting agency.

Origins of Committee

In the early spring of 1958 a group of military men working in research and development discussed the need for a group similar to the existing Armed Forces-NRC committees to devote its attentions to the field of bio-astronautics. A planning group was set up, working procedures formulated, and a draft recommendation was submitted to Detlev W. Bronk, president of the National Academy of Sciences.

Bronk accepted the proposal and work began on organization. The first group formed was an executive council consisting of three military members, six persons from the Academy-Research Council membership, and three ex-officio members. In November of last year 66 specialists from the research and development branches of the three services were appointed to serve on the committee. A second group of committee members, to be appointed from the academic world and industry, will bring the membership up to 100 or more.

Relationship to Other Agencies

At present there are three other committees in either the government or the national scientific organizations that are concerned with bio-astronautics. One comes under the National Aeronautics and Space Administration, one under the Advanced Research Projects Agency and the Research and Engineering unit of the Defense Department, and a third is also a sub-unit of the National Academy of Sciences-National Research Council. In an interview, Sam F. Seeley, acting executive secretary of the new committee, said great care has been taken to make the various committees contributive to one another, rather than competitive. Seeley suggested that two factors, in practice, accomplish this end. The first is that each committee has a significantly different orientation. Thus, the Life Sciences Committee (the Lovelace Committee) of NASA is designed

to meet the needs of that agency's Project Mercury, a civilian program in which a man will be sent into orbit at a 100-mile altitude for 24 hours or less. The Advisory Committee for Man in Space serves the needs of the Defense Department's Advanced Research Project Agency and the Research and Engineering unit, military agencies with many bio-astronautical problems peculiar to their missions. The Psychological and Biological Research Committee of the Academy of Sciences' Space Science Board serves the function of providing a long, broad view of bio-astronautical problems and contributing to the thinking, the "philosophy," that gives the basic orientation to future research and development in bio-astronautics.

A second factor that works to avoid duplication, or more exactly, quadruplication, is what would be called the "interlocking directorate." As it applies to these four committees, the term means that an individual serves on more than one committee. For example, Don D. Flickinger of the Air Force is a member of both the NASA committee and the new Armed Forces-NRC group; Otto H. Schmitt, chairman of the latter committee, is also a member of the Defense Department's Man in Space group and of the Psychological and Biological Research Committee. There are numerous cases of such multiple membership. The effect of this arrangement, which reflects both planning and the fact that there are only so many qualified men in bio-astronautics, is obvious: on the one hand, repetition of effort will be avoided; on the other, "cross fertilization" will work in the favor of each committee.

Major Subjects of Study

As the result of two meetings of the committee's executive council, panels are now in the process of organization. These groups will address themselves to major problem areas of immediate concern as outlined by the council. These areas are: information in space biology fields, general biological problems of extra terrestrial life, closed ecological systems, bioinstrumentation for space experimentation, accelerational stress of ballistic rocket system, space orientation, space psychology (sensory deprivation, selection, isolation), space radiation biology, bio-engineering of protective systems, and specifications of unanswered problems in bio-astronomics.

Membership of Executive Council

Policy decisions and the programming of activities within the committee are the responsibility of the executive council. The following scientists—representing different fields of endeavor in universities, private research organizations, and the armed forces—have been appointed to the council by Detlev W. Bronk, president of the Academy-Research Council: chairman, Otto H. Schmitt, department of physics, University of Minnesota; vice chairman, Melvin Calvin, department of chemistry, University of California, Berkeley; Howard J. Curtis, department of biology, Brookhaven National Laboratory; Paul M. Fitts, department of psychology, University of Michigan; Don D. Flickinger, Directorate of Life Sciences, Air Research and Development Command; John D. French, department of anatomy, University of California Medical Center, Los Angeles; Charles F. Gell, Office of Naval Research; James D. Hardy, U.S. Naval Air Development Center, Johnsville, Pa.; and Robert H. Holmes, Research and Development Command, Office of the Surgeon General, Department of the Army.

The ex-officio members of the council are R. Keith Cannan, Academy-NRC chairman of the division of medical sciences; Sam F. Seeley, professional associate of the NRC staff, who is acting executive secretary of the committee; and K. Cutler, Air Research and Development Command, who is the contracting officer representing the military services.

Scientific Information

The International Conference on Scientific Information, which was held in Washingon, D.C., 16–21 November 1958, under the sponsorship of the National Academy of Sciences–National Research Council, the National Science Foundation, and the American Documentation Institute, was the culmination of nearly 3 years of planning [*Science* **128**, 464 (29 Aug. 1958); **128**, 1126 (7 Nov. 1958)].

Background

Some 10 years before, a similar conference had been convened by the Royal Society in London, and in a certain sense this was a 10-year follow-up. There was an important difference, however. In 1948 it was still feasible to discuss in a single conference the entire problem of scientific information: primary publication, dissemination, abstracting and indexing, and financial and administrative problems relating thereto.

But the magnitude of this whole field of activity has swelled so rapidly with the steadily increasing volume of research that it no longer seemed practical to cover so broad a range of topics in 1958. A few years ago the National Academy of Sciences–National Research Council convened a relatively small conference on one aspect of the problem, primary publication; the recent international conference was concentrated on another aspect, storage and retrieval of information.

In another sense the International Conference on Scientific Information was more specialized than its predecessors, for a serious effort was made to concentrate primarily on the technical problems involved in storing and retrieving information without becoming involved with administrative and financial questions, except in a single session.

Organization

The opening session, on Sunday evening, 16 November, featured a formal but delightful address by Sir Lindor Brown, secretary of the Royal Society of London. Remarks of welcome on behalf of the sponsors of the conference were made by Detlev W. Bronk, president of the Academy–Research Council, Alan T. Waterman, director of the National Science Foundation, and Milton O. Lee, who represented the American Documentation Institute throughout the period of organization of the conference.

The discussions were organized in an unusual way, for the reading of papers contributed to the conference was expressly prohibited. Instead, the papers were distributed to all participants well in advance of the conference. The sessions were discussions led by panels. More than 70 scientists and information specialists, who usually were not authors of papers, took part as members of the panels. The authors also engaged in the discussions. There were approximately 150 active participants in all. In addition, nearly 1000 nonparticipating observers attended the sessions, and almost as many were prevented from attending by the limitation of space.

Less intense but perhaps equally rewarding activities during the conference were tours to some of the important information processing agencies in the Washington area and visits to an exhibition adjacent to the conference hall, where a number of significant systems and components were displayed by their manufacturers or proponents.

Sessions

It would be a bold individual indeed who would pretend to present a fair summary of the content of such a conference, but I will give some of my own impressions of it. Others may draw their own conclusions when the conference proceedings are published and available from the Academy–Research Council sometime in the coming months.

Everyone agreed with the truism that requirements of users should determine the design of new systems, but there was little agreement about what these requirements, in fact, are, how they vary from subject to subject, from country to country, and with the nature of research (pure or applied). Nor was there agree-