East, a somewhat similar area. In 1957 there were 65 faculty members from the Near and Middle East in this country and 5243 students; the 1959 totals are 132 faculty members and 6619 students.

House Committee to Provide Forum for Scientists

A group of scientists has been invited to use a congressional committee as a forum in which they can present their ideas. Chairman Overton Brooks (D-La.) of the House Committee on Science and Astronautics reports that 12 scientists and engineers have agreed to serve on a science advisory panel to aid the committee in its work. The members of the panel will meet with the committee once or twice a year.

The Science and Astronautics Committee, which is entering its second year of operation, is the first committee in Congress to be devoted to science in general. In announcing the new advisory group, Brooks said:

"It is unfortunately true that too many times scientists with important ideas that would help advance the interests of the United States and mankind in general have been unable to find anyone to listen to them. Theirs have been, on too many occasions, voices in the wilderness.

"Now, through this panel, we shall make available to them a public forum in which they can be heard. If their proposals have merit, and I am confident they will, the Committee will give them the utmost consideration and, if necessary, enact such legislation as is required to carry them out."

Panel Members Named

The members of the advisory panel, the fields in which they specialize, and their affiliations are as follows: Edward J. Baldes, biophysics, senior consultant, Mayo Clinic; Clifford C. Furnas, chemical engineering, chancellor of the University of Buffalo; Martin Goland, applied mechanics, Southwest Research Institute, San Antonio, Tex.; W. Albert Noyes, Jr., general chemistry, University of Rochester; Clarence P. Oliver, genetics and zoology, University of Texas; Sverre Petterssen, meteorology, University of Chicago; Roger Revelle, geophysics and oceanography, director, Scripps Institution of Oceanography, University of California, La Jolla; Richard L. Russell, geology, Louisiana State University; H. Guyford Stever, aeronautical engineering, Massachusetts Institute of Technology; James A. Van Allen, nuclear physics and cosmic rays, State University of Iowa; Fred L. Whipple, astronomy, director, Astrophysical Observatory, Smithsonian Institution, Cambridge, Mass.; and Maurice J. Zucrow, jet propulsion, Purdue University.

Canada's Oceanographic Research To Be under New Committee

The Canadian Government has set up a committee to coordinate and direct its work in oceanography and to represent the government internationally in the field of oceanographic research. In a move to insure that Canadian research in oceanography is carried out on an integrated basis and, at the same time, to maintain the necessary international liaison with other countries doing similar research, the Canadian Government has reorganized its Joint Committee on Oceanography and renamed it the Canadian Committee on Oceanography.

Federal agencies interested in oceanography are the Royal Canadian Navy, the Fisheries Research Board, the Department of Mines and Technical Surveys, the Defence Research Board, the National Research Council, and the Meteorological Branch and the Marine Services of the Department of Transport. The new committee will comprise representatives from these agencies as well as from universities interested in this field of work. W. E. van Steenburgh, director general of scientific services of the Department of Mines and Technical Surveys, has been selected chairman of the new committee, and H. B. Hachey of the Fisheries Research Board has been named secretary.

Growing awareness throughout the world of the vital current importance of oceanographic research has focused attention on the necessity for such research in countries like Canada, which possess long coast lines and extensive continental shelves. More recently, Canada's need for a national committee empowered to represent the government on international committees has been evident. In particular, the new committee will represent Canada at the Special Conference on Oceanographic Research (SCOR) of the International Council of Scientific Unions and on the NATO Scientific Committee on Oceanographic Research.

The reorganization of the Canadian Committee on Oceanography, by providing better coordination of federal activities in this field with the work of the universities, will give added impetus to Canada's program in oceanography. A major feature of this program is the establishment on the east coast, under the Department of Mines and Technical Surveys, of a $3-million oceanographic institute, to be known as the Bedford Institute of Oceanography. The new institute, which will have facilities for study in any phase of the science, is being built in Bedford Basin near Halifax. Construction will take 5 years. When the institute is in operation it will have a staff of some 300 oceanographers, hydrographers, submarine geologists, geophysicists, and other scientific personnel, plus supporting staff, and an operating fleet of ten oceanographic and hydrographic vessels.

William M. Cameron, leading Canadian authority on oceanography and director of plans of the Defence Research Board, will direct the expanding oceanographic research program of the Department of Mines and Technical Surveys. He will have charge of the over-all development of the new Bedford Institute.

The Fisheries Research Board and the Department of Mines and Technical Surveys will completely coordinate their oceanographic activities on the east coast; the physical oceanographers of the Fisheries Research Board will be housed in the institute, while the board's biological research activities will continue to be located at St. Andrews, New Brunswick.

A multi-million-dollar shipbuilding program will provide the fleet of vessels. The first of these, the $7-million *C.G.S. Hudson*, is expected to be commissioned in 1961.

On the west coast, Canadian oceanographic investigations are carried out by the Pacific Oceanographic Group of the Fisheries Research Board; this group will maintain close liaison with the committee.

In the Arctic, Canada has already initiated a broad program of research along the hundreds of miles of continental shelf that comprise the rim of the Arctic Basin. One phase of the study deals with the oceanography of

the Arctic Ocean and the main channels between the islands. The project, known as the Polar Continental Shelf Project, is also being handled by the Department of Mines and Technical Surveys.

The original Joint Committee on Oceanography came into formal existence in April 1946, to continue the cooperative work on the oceans carried on between agencies of the federal government during World War II. Reorganization of the committee as the Canadian Committee on Oceanography, with national status, is indicative of the marked broadening of Canadian interest in oceanography both at home and abroad.

Academy Report Stresses Need for Scientific Experimentation in Quest of Weather Control

If we are ever to succeed in our efforts at weather modification we must first change our methods of experimentation, states a report issued recently by the National Academy of Sciences–National Research Council. The report observes that many scientists regard the atmosphere as a natural resource of great magnitude. But, the report continues, present efforts to gain the basic knowledge needed to exploit this resource are small compared to the benefits to be gained from such use.

In stressing the need for fundamental understanding of atmospheric processes, the report distinguishes between experiments designed to produce basic data and experiments designed to produce rainfall. Acknowledging that cloud-seeding efforts during the past decade have contributed to our knowledge of weather phenomena, the report notes that they have also led to many "false starts" and that "the economic value of obtaining even a small degree of control over rainfall has created undesirable pressures which have tended to dilute the scientific quality of some weather-modification experiments."

The meeting on which the report is based was "The Skyline Conference on the Design and Conduct of Experiments in Weather Modification," organized by the Academy–Research Council's Division of Mathematics, which is under the chairmanship of Samuel S. Wilks, professor of mathematics, Princeton University. Thirty-one meteorologists and statisticians from the United States, Canada, and Australia attended the conference 1–3 May 1959, at Big Meadows Lodge, Shenandoah National Park, Va. The conference was initially suggested by Earl G. Droessler, director of the National Science Foundation's Atmospheric Sciences Program, which provided financial support.

The conferees found strong scientific reasons, apart from considerations of immediate economic gain, for concentrating initial research along the lines of precipitation control. These reasons include the possibility that in such research might be found the key to an understanding of energy balance in weather systems. Such a key would provide man with the ability to control not only rain and snow but also hail, lightning, and violent storms.

Other Problems

In addition to its comments on cloud-seeding and the inclusion of a compendium of the best known and most important weather-modification experiments undertaken in the last decade, the report makes the following points.

1) Laboratory and field studies should be carried out by individual researchers or small groups of scientists. Although such projects will be largely of an exploratory nature, the results, if promising, can be subjected to large-scale experimentation and statistical analysis. There is need for experiments to determine, for example, the relation between lightning and cloud-top temperature or to determine easily measured cloud parameters in various types of clouds, need for cloud-modification programs involving small geographical areas or individual clouds.

2) Statisticians must be enlisted to work with meteorologists as collaborative weathermen. In his foreword to the report, Wilks says: "The degree of success so far achieved by various research programs in weather modification is, in large measure, due to detailed and skilled analysis of the data which combines sound statistical technique and enlightened meteorological insight."

3) Where effective cooperation exists between meteorologists and statisticians, in universities and research institutions, it should be strengthened. Where only one group exists or is effective, the other should be created or bolstered. Fellowship programs should be established to encourage young scientists to enter these areas. Summer study groups, summer institutes, conferences, and seminars are needed for meteorologists, statisticians, and other scientists interested in weather modification.

4) Very few experiments thus far conducted in the United States have been carried out over a long enough time span. None, for example, can match the Australian Snowy Mountain project that began in 1955 and is still continuing. Most field experiments must be operated for several years if they are to yield enough information to be conclusive. At the same time, they should be conducted to yield information on a number of questions.

5) Experiments must be repeated in space as well as in time. Related to this requirement is the need for improved measurements, improved instrumentation, and standardized terminology. Meteorological categories such as "storm," "cloud suitable for seeding," and "day suitable for seeding," for example, must be objectively defined.

6) Basic research programs in atmospheric physics, chemistry, and electricity should be considerably augmented. Laboratory studies should extend into such areas as solid-state physics, crystallography, surface chemistry, and electron microscopy. Basic studies should also be conducted on specific weather systems, such as shower clouds, clouds influenced by mountains, hailstorms, lightning storms, and cyclonic systems.

Grants, Fellowships, and Awards

Anthropology. Two resident research fellowships, to be known as the Ogden Mills fellowships, are to be awarded annually by the department of anthropology of the American Museum of Natural History, New York City. The fellowships are intended for anthropologists who might benefit from a year at the museum, through having access to the anthropological collections, the library, and other facilities of the museum and through working in conjunction with members of the curatorial staff. There is no specific limitation on the kind of anthropological research that may be done under these fellowships, but preference will be given to those applicants who can make use of the museum's collections and archives (unpublished field notes, films, sound recordings, and so forth) either in the elaboration of special studies or in connection with research that they, or members of the curatorial staff, may