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

have under way. These fellowships are not intended for the support of field work, but it is possible that such activities may occasionally be included.

Candidates who have recently received their doctoral degrees will be given preference, but there are no rigid requirements in terms of age, sex, degrees, or academic background. Selections will be made by the staff of the department of anthropology, and the right is reserved to withhold the award of fellowships in any given year.

The period of the fellowships is for 1 year, beginning 15 June; the stipend is $5000. The first awards will be made for the year 1960–61.

Applications should include a full curriculum vitae, a letter describing the candidate's research aims, and supporting references. Applications should be submitted *before 1 March* to Dr. Harry L. Shapiro, Department of Anthropology, American Museum of Natural History, New York 24, N.Y.

Chemistry. The Division of History of Chemistry of the American Chemical Society is now asking for nominees to be considered for the 1960 Dexter Award in the history of chemistry, which is administered by the division. The award is made on the basis of services which have advanced the history of chemistry, such as the following: publication of an important book or article; furtherance of the teaching of the history of chemistry; significant contributions to the bibliography of the history of chemistry; or meritorious services over a long period of time which have resulted in the advancement of the history of chemistry.

All information, in duplicate, should be sent *by 10 March* to the secretary of the Division of History of Chemistry, Sidney M. Edelstein, Dexter Chemical Corporation, 845 Edgewater Rd., Bronx 59, N.Y.

Nephrology. A grant to provide travel funds for participants in the First International Congress of Nephrology, to be held in Geneva, Switzerland, 1–3 September, has been awarded by the U.S. Public Health Service to the American Society for Clinical Investigation. Members and nonmembers are eligible to apply for the funds, which are sufficient to send 20 people to the meetings. Applications should include, in quadruplicate, a curriculum vitae and a letter of application stating the basis for the applicant's interest in the field and in the congress. Applications should be sent before *1 March* to Saul J. Farber, Secretary, American Society for Clinical Investigation, New York University College of Medicine, 550 First Ave., New York 16, N.Y.

Nutrition. The National Vitamin Foundation wishes to bring to the attention of those engaged in clinical and basic research in the field of nutrition, biochemistry, and metabolism its current interest in the support of research, preferably on man, most likely to advance understanding of the diverse metabolic functions of the vitamins. The foundation wishes to encourage research on vitamin nutrition and metabolism in the areas of (i) mental health and (ii) side-reactions to drugs, and it invites applications for grants in support of such research.

Announcement of the new research interests of the foundation should not be interpreted as eliminating consideration of applications for grants-in-aid of research on other aspects of vitamin metabolism and nutrition. Application forms may be obtained from the offices of the foundation at 149 E. 78 St., New York 21, N.Y. The foundation takes action on applications twice each year, in the spring and fall. For grants to be effective on 1 July, applications should be mailed before *1 March;* for January grants, applications should reach the foundation by *1 September.*

News Briefs

Earthquake engineering. The second World Conference on Earthquake Engineering will take place 11–18 July 1960 in Tokyo and in Kyoto, Japan. The Science Council of Japan, a governmental organization, is organizing the conference with the cooperation of the Japan Society of Civil Engineers, the Architectural Institute of Japan, and the Seismological Society of Japan. For information, write to Professor Kiyoshi Muto, Chairman, Organizing Committee, Second World Conference on Earthquake Engineering, Science Council of Japan, Ueno Park, Taitoku, Tokyo, Japan.

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Chemical index. *Index Chemicus,* a monthly index to 50,000 new chemicals reported each year in the scientific literature, will be published by Eugene Garfield Associates, 1122 Spring St., Philadelphia. The first issue will appear early in 1960. New compounds will be reported in the index within 30 days after original publication in the scientific literature.

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Vulcanology program. A program in vulcanology, geochemistry, and petrology is being organized for the Helsinki meeting of the International Union of Geodesy and Geophysics, to be held 25 July–6 August. Symposia on geochronology, high-pressure chemistry, isotope geology, and atmospheric chemistry, as well as a general program in geochemistry and petrology, will be included. For information write to Irving Friedman (U.S. Geological Survey, Washington 25), secretary of the Section of Vulcanology, Geochemistry, and Petrology, American Geophysical Union.

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Overseas library. The U.S. Information Agency has assembled a small library containing 30 of the best available American paperbacks in the fields of science and technology as a simple and inexpensive means of providing overseas readers with information. The agency has ordered 500 of these "package" bookshelves, which will be available on loan to educational institutions, science clubs, and other groups.

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Biology news. The American Institute of Biological Sciences has announced establishment of the Biology News Bureau as a new activity to serve biologists and professional organizations in the biological sciences. The new AIBS unit has the assignment of smoothing the flow of information between the biological professions and the public.

Harold F. Osborne has been named director of the bureau. Osborne formerly was a science writer for the Seattle *Times,* an editor and correspondent for the Associated Press, and a member of the information staff of the Veterans Administration. The Biology News Bureau has offices at AIBS headquarters, 2000 P St., NW, Washington 6, D.C.

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Nutrition certification. The American Board of Nutrition will hold the next examinations for certification as a specialist in human nutrition during the week of 11–15 April in Chicago, Ill. Application forms, which must be submitted before 1 March, may be obtained from the secretary, Robert E. Shank, Department of Preventive Medicine, Washington University School of Medicine, Euclid and Kingshighway, St. Louis, Mo.