

poses many problems in the physical and biological sciences. Its unique qualities as the greatest repository of cold are critical in world weather. The melting of its snow and ice plays an important role in oceanic currents. The presence of the South Magnetic Pole makes it an unusually important region in which to study cosmic rays and a unique region in which to study the aurora australis. The fact that Antarctica is a continent and thus provides a stable platform allows the study of ionospheric phenomena during the absence of sunlight and also provides an excellent platform for scientific observation stations. Study of its geological and glaciological features have barely begun. In short, Antarctica remains a region affording exceptional opportunities for scientific research.

There is worldwide recognition that the observations and measurements made during the IGY will not only greatly increase our understanding of that region, but afford a remarkable opportunity for continued and augmented scientific work. Such work will not only yield new knowledge but will simultaneously enhance the value of IGY data, and the latter data in turn will enhance the value of future findings. For such reasons as these the nations active in the Antarctic and possibly additional countries have planned to continue research in the Antarctic after the IGY.

This proposed research program for the United States is based on the assumption that an adequate and effective program will be carried out and will be well coordinated with the stations to be maintained by other countries. By means of such a many-nation integrated program, the efforts of each nation will be enhanced because of the sharing and interchange of data. The Special Committee on Antarctic Research (SCAR) has studied these matters and has made certain recommendations which are reflected in the scientific program presented in this document. Ten nations have announced their intention to continue scientific research in the Antarctic and SCAR will invite other nations to participate in additional new stations. The United States program is based on research at 5 stations and cooperative programs with other countries at an additional 4 stations. The United States program not only includes studies in the geophysical sciences, but also within the context of the SCAR recommendations, includes programs in geology, volcanology, and the biological and medical sciences.

Some of the most important considerations that call for significant participation of United States scientists in Antarctic research are the following:

- (1) Properly and effectively to conduct programs in geophysics, the relationships of many fields being worldwide and even interplanetary in nature, broad national and geographic participation is necessary, with emphasis on research in those areas (particularly the polar) where relatively little has been done in man's history.
- (2) An international, coordinated program will add greatly to the value of all elements of an Antarctic research program and will vastly enhance the effort of the United States, particularly through the interchange of data.
- (3) Significant new basic, scientific knowledge will be obtained, much of it also of great practical value (e. g., in meteorology and radio physics).
- (4) The conduct of Antarctic research has many byproducts. For example, there is continuing need within the United States to develop personnel competent for polar research and other polar activities, especially as so much of the earth's surface (the Antarctic, the Arctic Ocean Basin, and Greenland) are covered with ice. There is also, broadly speaking, an educational value as by its very nature polar research is interest-providing and appeals to the youth of the Nation. The stimulus by such activities during the IGY has been appreciable.

#### 3.2 Program by field or activity

*Aurora.*—The present programs of visual and other programs at Byrd, Pole, Wilkes, Halley, and Ellsworth Stations will be maintained with one auroral physicist at all stations except Halley, where a New Zealand scientist would be stationed. Auroral equipment from Little America, including the all-sky camera, the sensing spectrometer, and visual auroral and nocturnal observation materials, would be moved to the new station to be established at Beardmore and one additional scientist would be required at this station. One scientist would be assigned to the auroral program to be maintained at Scott Station jointly with New Zealand.

*Biological and medical sciences.*—The established stations in the Antarctic offer a unique opportunity for the conduct of scientific research in these fields. A laboratory facility with standard equipment for scientists in the biological and