

every solar flare be observed and recorded for correlation with geomagnetic, ionospheric, auroral, and cosmic ray variations and disturbances. This will require additional observers and coordination among the various observatories. Several special studies also will be made, such as the determination of the light intensity of solar flares by measurements of the red line emitted by hydrogen atoms and observations of the inner part of the corona using a special white-light photometer. One of the immediate uses to which solar flares will be put during the IGY has to do with the Warning Service Program. While regularly planned measurements will go on during the IGY period, it is especially important that experiments be conducted simultaneously throughout the world during periods of unusual solar activity. The Warning Service will collect data from all fields and will broadcast the onset or presence of unusual geophysical effects—solar flares, magnetic storms, ionospheric fadeouts, and blackouts, etc.—signaling the observers to proceed with their special pre-established studies.

7) *Cosmic Rays.* The program calls for the investigation of three types of problems: a) exploration of the variations in mass and energy of primary and cosmic radiation; b) exploration of the variations in cosmic radiation with both altitude and latitude; and c) investigations of the long-time fluctuations in the neutron component of cosmic rays. Some 130 balloon flights are planned for six sites in the Northern and Southern Hemispheres; fixed high altitude stations will be used, and aircraft flights are planned at constant altitudes along a longitudinal meridian.

8) *Glaciology.* Four studies are contemplated, two in the Northern Hemisphere and two in the Antarctic. One study is expected to be concentrated in the vicinity of the Janus Ice Field Project of the American Geographical Society. Studies of portions of the Ice Cap and fringe area in Greenland will be undertaken in cooperation with Danish scientists associated with the IGY. In the Antarctic, a group will study the Ross Shelf and survey the 400-mile front of this glacial feature, while another group will secure glaciological

data from the high polar plateau at the South Pole.

9) *Oceanography.* Tide gauges, surge recorders, and similar automatic recording devices will be installed at some forty sites in the Southern Hemisphere, Antarctica, and at islands in the Pacific. The data collected will represent valuable additions to those available from existing stations. A second major area of activity during the IGY will be the study of the sub-Antarctic waters. The structure and dynamics of currents, as well as other aspects of this oceanic region, will be explored intensively between 30° and 60° south latitude. Four oceanographic research vessels are expected to participate in the study, and, while the Antarctic Circumpolar Current will be the major topic, associated experiments in obtaining submarine profiles, sediment cores, magnetic fields, plankton samples, and seismic studies will be undertaken.

10) *Rocket Exploration.* Rockets (small balloon-launched rockets) and Aerobee rockets will be launched from sites in New Mexico, Greenland, Canada, and Alaska. Each rocket will carry a variety of instruments to measure a large number of such phenomena and quantities as atmospheric pressure, temperature and density, magnetic fields, night and day airglow, ultraviolet light and X-rays, auroral particles, ozone distribution, ionospheric charge densities, and cosmic radiation. These direct results will be integrated and correlated with the large bodies of indirect data provided by other techniques in the relevant geophysical fields. The launching of rockets at special times (World Days) of unusual solar or magnetic activity (or quiet) should be particularly fruitful.

It can be seen from the brief review of this United States program that the IGY will attempt, at least in part, to supplement with short-time geophysical observations made over as much of the surface of the earth as practicable the present long-time programs on which most of modern geophysics is based. It is hoped that prior to the meetings of several scientific groups in Europe during the summer of 1954 all interested scientists will give the United States National Committee the benefit of their comments, criticisms, and suggestions.