

in existence, in order to see if it is possible to find out how the ocean moves by this cheap and interesting method of measuring the changes in the levels of the waters.

GLACIOLOGY

Glaciers once covered 32 percent of the surface of the earth; they now cover about 10 percent of it. They are found on all continents except Australia and occur even in the Tropics at high altitudes in South America, Africa, and New Guinea. Fluctuations in glaciers provide a clue to past climatic changes and to present trends. They also have an immediate effect on weather, and here the role of the polar ice caps in Arctic and Antarctic regions is most important.

Glaciers are thus tied in with the earth's total water and heat budget. One effect of the warming up of the entire earth would be the gradual melting of the world's supply of frozen water in the great glaciers and polar ice caps. If continued over a long period of time, this would have tremendous effects on the economic and political events in the world: opening of presently ice-locked ports in the far north; submersion of important coastal cities and low-lying coastal lands; alterations in the distribution of vast arid and verdant areas.

The study of the glaciers of the world, an assessment of their present status, and an examination of their delicate relationship with existing climate will occupy glaciologists during the International Geophysical Year. The United States program will encompass detailed studies at points in the Northern Hemisphere and at stations in the Antarctic, as well as reconnaissance observations in Western United States, Alaska, and portions of the Arctic in cooperation with Denmark and Canada. Observations made at United States Antarctic stations and by traverse parties operating between stations and radiating outward from them will have as main objectives studies of the present condition of the Antarctic ice sheet with regard to nourishment, wastage, volume and extent, structure, thermal regimes, and variations.

THE UPPER ATMOSPHERE

Investigations in meteorology, oceanography, and glaciology range from studies of the ocean depths to meteorological effects reaching up to about 100,000 feet. The high atmosphere, extending from above this height and thinning out to nothingness hundreds of miles above the earth, also plays a dominant role in the lives of mankind and in the civilizations of the world. The atmosphere provides a shield against lethal radiations from the sun and dangerous cosmic radiations. The heat balance of the earth is maintained by the atmosphere, which regulates heat radiation and holds surface temperatures to ranges suitable to life on the planet.

Many geophysical phenomena of fundamental importance occur in the high atmosphere of the earth. The fields of geomagnetism, aurora, ionospheric physics, and cosmic ray research are all directly related to the events which occur at heights higher than 50 miles above the earth.

The sun dominates most of these events. Solar flares and other eruptions from the sun create havoc with long-distance radio communications and produce the brilliant auroras prevalent in polar regions.