GEOPHYSICS

Study Arctic Ocean Plateau

➤ A LARGE submarine plateau in the Arctic Ocean stretching from Ellesmere Island near Greenland to eastern Siberia was studied in detail during the International Geophysical Year, Kenneth Hunkins of Lamont Geological Observatory, Palisades, N. Y., reported.

He told the American Association for the Advancement of Science meeting in Washington that much new information about the plateau was gathered by studying it in detail from a drifting ice floe. A scientific research outpost was established and maintained on a ten-foot-thick ice island called Drifting Station A. It gave a stable platform for oceanographic studies of the ocean depths and of the sea floor itself.

Echoes from explosions were used to study the depth and slope of the bottom, Mr. Hunkins reported. They showed that along the track of Station A, the Arctic Ocean floor has as much relief as the Rocky Mountains. They also showed that the plateau is a much more prominent feature than had previously been realized. In its central parts, the plateau comes within 4,500 feet of the surface, rising from depths of 10,000 to 15,000 feet on either side.

Mr. Hunkins said the first measurements of the speed of currents sweeping slowly across the ocean bottom were made by submarine camera during IGY. Velocities of about six inches per minute were found by taking a timed sequence of pictures of the clouds of sediment stirred by the camera as they moved slowly across its field of view.

Life on the Arctic Ocean floor is sparser than in other oceans, Mr. Hunkins reported, but is still present only a few hundred miles from the North Pole. Such animals as sea cucumbers, bryozoans and brittle stars were seen in photographs of the bottom and brought up by a dredge.

The bottom photographs were the first made of the Arctic Ocean floor. They showed an abundance of rocks of all shapes and sizes strewn over the bottom. The rocks, Mr. Hunkins said, were evidently carried by floating ice from their origins near shore and dropped to their present resting place on the ooze hundreds of miles from the nearest land.

Such abundant scattered rocks have never been seen in submarine photographs taken in temperate latitudes. Large numbers of rocks were dredged from depths of more than a mile, Mr. Hunkins reported. They consist of unsorted, angular gravel, chiefly limestone. Study of these rocks should lead to a knowledge of past ice movement in the Arctic and possibly to a new understanding of the ice ages.

The bottom was also studied in depth with a piston corer that plunges into the sediment and removes a vertical sample up to seven feet in length. A dark organic surface layer about six inches thick was consistently found on the ocean floor, and this layer is now being dated by the radioactive carbon method, Mr. Hunkins said.

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BOTANY

Antarctic Plant Life Rich

➤ ANTARCTICA, "a continent better known as a depository of ice and snow than for its plant life," is rich with algea, mosses and lichens.

Botanical studies conducted by U. S. scientists during the International Geophysical Year, which closed Dec. 31, have increased our understanding of the kinds of plants found in Antarctica, Dr. George A. Llano told scientists at the American Association for the Advancement of Science meeting in Washington. While it is still early to draw inferences from the information collected, some general conclusions can be made.

For example, Dr. Llano said, cold is not the major inhibitor to plant life and growth in the area. Vegetation is dependent on a combination of moisture and insolation, a weathering process in which extreme daily temperature changes result in the cracking of rock surfaces. Apparently insolation is also responsible for building up a shallow layer of heat over the rocks and earth which is "quite independent" of the surrounding temperature.

This means, Dr. Llano explained, that during the Antarctic summer mosses, lichens and algae probably grow under conditions "not too dissimilar" from comparable places in temperate regions.

Birds play an important role in the Antarctic plant life. Some may bring in new plant colonies to exposed land by carrying such things as spores on their bodies. Also the birds and their guano are an important accelerating factor in polar plant development.

Of the three plant groups, algae, mosses and lichens, the land and fresh-water algae are probably the most widespread, Dr. Llano said. Lichens are next, their presence predicted for all exposed land masses even deep into the continent. Mosses are more restricted in distribution and are found along the coasts.

Specimens were collected from virgin areas of West Antarctica, said Dr. Llano, who is secretary of the National Academy of Sciences' panel on biological and medical sciences for the Committee on Polar Research. Studies of one area, Vincennes Bay, suggest that it has been exposed for a long period of time because of the variety and extent of the plant life. In other places, unexpected absences of lichens and mosses will be the subject of further studies.

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"EXOTIC FUELS—Prof. Riley Schaeffer of the Indiana University chemistry department is shown sealing off a flask suspended in liquid nitrogen which is boiling at 320 degrees below zero. He is studying boron hydrides, the "exotic fuels" which may provide rocket power in the future.

GEOLOGY

New Theory of Ice Age Proposes One Glaciation

➤ A NEW THEORY of the Ice Age proposes that there was only one great glaciation, not four distinct meltings and reformings of glaciers.

Dr. Richard J. Lougee, geomorphology professor at Clark University, Worcester, Mass., outlined his new theory at the American Association for the Advancement of Science meeting. Dr. Lougee's proposal is considered a controversial one by glacial geologists.

He believes that one great continental glacier overspread the northern parts of North America from Canadian centers, extending as far south as St. Louis. The weight of this ice load pressed down the crust over much of the northern part of the continent. Later the ice melted and retreated. When the regions where Des Moines, Iowa, and Indianapolis, Ind., now are were uncovered, a mighty upheaval took place and the depressed regions began to rise.

Dr. Lougee estimates this uprising amounted to 1,600 feet at Pierre, S. D. From there the rising sloped gradually down to 540 feet in the Ozark foothills and on down to sea level. Some of this upward movement of the land from many thousands of years ago continues today in Canada, Dr. Lougee said.

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