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ANTARCTIC EXPLORATION.

BY HUGH ROBERT MILL, LIBRARIAN, ROYAL GEOGRAPHICAL SOCIETY.

CONSIDERABLE interest has been awakened by the greater part of the Dundee whaling fleet abandoning the Davis Strait "fishing" and taking their departure for the Antarctic seas. The venture is a purely commercial one, and has been in contemplation for some time, as the northern whaling has in recent years become almost unremunerative. Shortly before the vessels sailed it became known that they might possibly afford some facilities for scientific work, and the Royal Geographical Society (London), the Meteorological Office, and other institutions took steps to obtain successful observations. Additional chronometers and standard compasses were supplied to all the vessels, together with a complete set of the best meteorological instruments. The captains undertook to lay down their track as accurately as possible, and to fix the position and report upon the appearance of any land they might sight in the far south; also to observe the variation of the magnetic needle as frequently and carefully as they could. It is not likely that startling geographical discoveries will be made, although perhaps the coast of Graham's Land may be followed farther south and more accurately mapped. Everything in this department must depend on the discretion of the captains and the caprice of the whales. The vessels will not try to make a high latitude unless it is necessary to do so in order to get a cargo, but the captains will not hesitate to force their way far into the ice if they find it to be necessary, and from their long Arctic experience in ice-navigation it is safe to say that nothing less than an impenetrable barrier will stop them.

It is unnecessary to remind the readers of *Science* that since the expeditions of Wilkes and Ross, fifty years ago, no explorations worthy the name have been made in Antarctic seas. The Challenger, probably the only steamer that has gone so far south, merely crossed the Antarctic circle, and, being unprotected against ice, had immediately to return. Recent oceanographical and meteorological researches have gradually increased the desirability of improved knowledge of high southern latitudes, and representations have been made on several occasions as to the advisability of a properly equipped scientific expedition being sent out by the British Government. While this desirable expedition is deferred, the necessarily fragmentary results of trading voyages may afford most valuable hints,

The four Dundee ships, which sailed on September 6, 7, and 8, are barque-rigged wooden vessels fully protected for ice-work and provided with auxiliary steam. Their tonnage is about 400, but on account of the enormous thickness of their timbers the size externally is nearly that of 600-ton ships. Three of the vessels, the "Balaena," Captain Fairweather; the "Active," Captain Robertson; and the "Diana," Captain Davidson, carry surgeons who were specially selected on account of their scientific tastes and their willingness to utilize all opportunities to the full. Mr. W. S. Bruce, the surgeon of the "Balaena" has a very complete equipment of apparatus for sea-temperature work and for biological collecting. He is accompanied by an Edinburgh artist, Mr. W. G. Burn Murdoch, who goes specially with the object of sketching the scenery of the southern ice. Dr. Donald on the "Active," and Mr. Campbell on the "Diana" are also equipped with appliances for collecting. Each of the ships carries a photographic apparatus.

The scientific results expected on the return of the whalers six or seven months hence are as follows: Full meteorological logs with records of surface sea temperatures and densities, and of temperatures at a few points down to the depth of 150 fathoms; deeper observations would be impracticable without hampering the real business of the cruise. A large collection of small surface organisms will be secured by tow-nets, a mode of collecting for which there will be unlimited opportunities as the vessels slowly follow their boats when engaged in whaling. No dredging can be attempted in deep water, but it is possible that there may be some shore-collecting in southern lands not previously visited. Observations on ocean-currents will be made by the captains in the ordinary course of navigation, but floats will also be launched in high southern latitudes, the recovery of which will be looked for with interest. Special attention will be directed to all phenomena connected with sea-ice, and, in case of any mud or stones being observed embedded in icebergs, an effort will be made to secure specimens in order to get some idea of the geology of the land hidden under the southern ice-cap. A large and representative selection of birds will almost certainly be secured, and some problems as to migration may be elucidated. Samples of sea-water from various depths will be brought back for careful analysis.

From a scientific point of view the expedition will be the more successful the worse it is commercially; for, if whales are not found on the margin of the ice, a very high latitude may be reached during the search for them. In any case the barometric readings are bound to be of the greatest interest, as they will throw light on the remarkable area of permanent low pressure which surrounds the South Pole. And it is impossible that the observations of so many highly trained sailors and enthusiastic naturalists can be barren of results in many departments.

THE ABORIGINAL USE OF BONE IN VERMONT.

BY G. H. PERKINS, UNIVERSITY OF VERMONT.

OBJECTS wrought from bone appear to be quite uncommon throughout the country, unless it be in the neighborhood of shell-heaps. Certainly in the Champlain Valley they are the rarest of archæological finds, and until within a few years none had been found, so far as is known to the writer. At Plattsburgh, on the New York side of the lake, a few pointed implements and barbed spear-points have been found, and are in the fine local collection made by Dr. D. S. Kellogg of that place; but until very recently none had been found on the Vermont side, and they are still exceedingly rare, although, in all, many hundreds of stone implements and ornaments, some of them of very fine workmanship, have been discovered, as well as many fragments of decorated earthenware and a few implements of copper and ornaments of shell.

For many purposes, as awls and the like, bone would seem better suited than stone and much more easily worked; and it is hardly conceivable that bone was not used more commonly than is indicated by our collections. And yet, making all possible allowance for the perishability of bone, we cannot suppose that objects made of this material were ever very abundant; for the other specimens found in some of our localities are not very ancient; and, in more than one instance, entire bones have been found in fair preservation, and there is no reason to think that if bone objects had ever been associated with those of stone they would not now be found with them.