

Enclosure No. 3.

The Arctic Committee of the Royal Geographical Society have the honour to submit to the Committee appointed by the Council of the Royal Society to confer with them, the following Memorandum on the subject of a renewal of Arctic exploration.

General Scientific Results.—The results of scientific importance to be derived from an examination of the immense unknown area round the North Pole, are as numerous as the region to be explored is extensive. It may be shown that no such extent of unknown area, in any part of the world, ever failed to yield results of practical as well as of purely scientific value; and it may safely be urged that as it is mathematically certain that the area exists, it is impossible that its examination can fail to add largely to the sum of human knowledge. Further, it is necessary to bear in mind that the Polar area is, in many most important respects, of an altogether special character; affording exclusive opportunities for observing the condition of the earth's surface, and the physical phenomena there to be seen, under certain extreme and singular circumstances, which are due to the relation of this area to the position of the axis of revolution of the terrestrial spheroid, and which have to be considered not only with reference to the present time, but to the earth's past history. It may be, therefore, received as certain that discoveries will be made in all branches of science, the exact nature of which cannot be anticipated. But there are also numerous objects, that have been stated and enumerated by the Presidents and officers of the several Scientific Societies, the attainment of which make it desirable to despatch an Arctic expedition of discovery. These are as follows:

Geography.—A geographical problem of great importance and interest will be solved by completing the circuit of Greenland, ascertaining the extent and nature of its northern coast, exploring the land to the westward, and discovering the conditions of land and sea in that portion of the unknown area.

Hydrography.—An Arctic expedition is a necessary complement to the expedition now investigating the ocean bottom in the middle and southern latitudes of the globe. The hydrography of the unknown seas has a most important bearing on the general question of oceanic currents, a question which is of practical consequence to navigation. Our knowledge of the general system of currents will be incomplete without an investigation of the currents, deep-sea temperatures, and soundings in the unknown area. Observations, at great depths, with the improved instruments now in use, would be of much value in connexion with the like observations which are being carried on by the expedition now exploring the tropical seas.

Geodesy.—A series of pendulum observations at the highest latitude possible, following upon the series just completed in India, and made with the same instruments after verification at Kew, will be of essential service to the science of geodesy. Neither the data for forming a mathematical theory of the physical constitution of the earth, nor the means of testing such a theory, are complete without experimental determinations of the intensity as well as the direction of the force of gravity, and such observations would be especially valuable at the North Pole.

Meteorology.—Observations of the temperature of the sea at various depths; of temperature and pressure of the atmosphere; and of prevailing winds, with reference to currents, in very high latitudes, will form valuable contributions to meteorological science. The present state of meteorology requires a more thorough investigation of the motions of the earth's atmosphere than has yet been undertaken; and for this important object the less frequented parts of the earth's surface should be studied as well as the most frequented.

The climate of Europe in no small degree depends on the atmospheric conditions of the Polar area, in which the development of extremely low temperatures necessarily leads to corresponding extreme changes of pressure, and other atmospheric disturbances, the effect of which is felt far into the temperate zone. For the satisfactory appreciation of these phenomena, a precise knowledge of the distribution of land and water within the Polar area is quite necessary, and any addition to our geographical knowledge of the Arctic Region, accompanied by suitable observations of its meteorology, cannot fail to afford improved means of understanding the meteorology of our own country and of the earth generally.