

inspect, with a view to aid in determining the direction most consistent with the general interest, to be given to their bounding lines, in cases of collision between the lots of neighbouring claimants. Subsequently visiting Copper Harbour in Michigan, on the south side of the lake, for the purpose of gathering information regarding the nature of the copper lodes which had been opened in that vicinity, we crossed over to Fort William on the north, and entered upon the work assigned us, commencing our examination in the neighborhood of the British boundary at Pigeon River.

Mr. Murray's attention was devoted to the examination of the Kamanitiquia and Michipicoten Rivers, both of which he ascended to near the height of land, in addition to the inspection of several sections of the coast, his Report upon all of which, I have now the honor to transmit to Your Excellency. My own time was bestowed upon an examination of the mining locations and the coast generally; and finding it was in my power to work in advance of the land surveying party, I was happy to avail myself of the obliging offer of Mr. W. N. McLeod, who put at my service his canoe and eight voyageurs to transport me round the shores of the lake, by which I was enabled to make a more extended inspection than it would otherwise have been possible for me to effect in the limited time one season could afford. With the exception of Mr. Murray's excursion up the two rivers mentioned, the examination has necessarily been confined to the coast, and cannot be considered more than a *reconnaissance* of the district, to be carried into farther detail at a future period as occasion may serve.

The Canadian shores of Lake Superior in general present a bold and rocky coast, diversified in the character of its scenery in accordance with the distribution of its different geological formations. Cliffs and eminences rise up to heights varying from 300 to 1,300 feet, close upon its margin, and this, deeply indented in some parts with extensive bays, and in others presenting extensive clusters of islands, is in a multitude of places carved out into well sheltered coves and inlets, affording innumerable harbours of a safe and commodious character, destined greatly to facilitate whatever commerce may hereafter be established on the lake, whether in the produce of its mines or its fisheries. The timber of the district does not seem to promise much encouragement to traffic; it is not of the size nor of the kinds most esteemed in commerce, though there is much useful wood capable of being rendered available for mining or house-building purposes, as well as for fuel. Hard-wood is scarce, red pine is not often seen, and white pine not abundant. The trees most common are spruce, balsam fir, white birch and poplar, with cedar in moist places. On the immediate coast, many of the hills are nearly denuded of trees, particularly where granite and gneiss prevail. The hills composed of trap are better clothed; but it is in the trappean valleys and on the surfaces underlaid by sandstone, which are usually flat, that the largest growth is met with. It is chiefly in these localities also, and at the mouths of some of the principal rivers, that is to be found whatever land may be fit for cultivation; and although of this, in comparison to the area of the district, the extent cannot be called great, nor such as even less remotely situated, would tempt settlement, sufficient would probably be found to supply many of the wants of a mining population, should the metalliferous minerals of the region be found on trial to exist in sufficient abundance to be worked with profit.

Several considerable streams fall into the lake, the chief of which are the Kamanitiquia, the Neepigon, the Pic, the Michipicoten, and the Montreal. The first three flow in on the north, and the other two on the

east side; and the whole, taking their origin in the height of land separating the waters of Hudson Bay from those of the St. Lawrence, may pass through 100 to 200 miles of country before yielding their tribute to the grand head reservoir of the latter, which, with a rim of 500 leagues, comprises an area of 32,000 square miles, its greatest length being 300 miles, and its greatest breadth 140 miles. Its greatest depth is supposed to be 1,200 feet, which would make its bottom 603 feet below, while its surface is 597 feet above the level of the sea; and its mean depth, being taken at 600 feet, would give about 4,000 cubic miles of water.

The frosts of winter are not sufficiently long continued to cool, nor the heats of summer to warm this great body of water to the temperature of the surrounding surface, and the lake in consequence considerably modifies the temperature of the country on its banks, which is neither so low in the one season, nor so high in the other, as it is both to the east and to the west. In the middle of the lake, on a calm day of sunshine, on the 7th of July, it surprised me much to find that the temperature of the water at the surface was no more than 38° Fah. For this fact, which was ascertained by repeated trials, it appears difficult to account, even allowing a degree or two for inaccuracy in the construction of the thermometer; as it is known that water attains its greatest density at 39½°, and hence it might be expected that the body of the lake having once attained such a density, the stratum of particles at the surface would maintain its place, and be readily either cooled or heated. But whatever might have been the cause, a consequence was that the temperature of the atmosphere above the lake was no more than 51°, while in the interior of the country it may probably have been between 70° and 80°, or more. The result of such differences is the great prevalence of fogs on the lake, the vapour, brought in warm currents of air from the interior land, becoming condensed over the cool water of the surface. These fogs, as was to be expected, appeared to diminish in frequency as the summer passed away; but it is probable they would increase again in winter by a reverse of the process, the lake giving the vapour and the land the condensing currents of air.

SUCCESSION AND DISTRIBUTION OF ROCKS.

Lake Superior appears to be situated in a geological depression which presents formations of a similar character on both the north and south sides, dipping to the centre. The series on the north, in ascending order, consists of the following:—

1. Granite and syenite.
2. Gneiss.
3. Chloritic and partially talcose and conglomerate slates.
4. Bluish slates or shales, interstratified with trap.
5. Sandstones, limestones, indurated marls, and conglomerates, interstratified with trap.

1. Granite and Syenite.

The rock at the base of the series is a granite, frequently passing into a syenite by the addition of hornblende, but the hornblende does not appear to be often present wholly without the mica. Both the mica and the hornblende are in general black, the quartz either opaque or translucent white, or colourless and transparent. The colour of the feldspar is usually some shade of red, either pale or deep, and this being the prevailing constituent mineral, gives in most cases a reddish tinge to the mass. To this, however, there are exceptions, and both the quartz and the feldspar being occasionally white, while the mica and hornblende are black, the rock has sometimes a speckled aspect. In general the rock, except where cut by granite dykes, is not very large grained. It some-