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# MONTREAL MINING COMPANY.

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## REPORT

UPON

### THOMPSON'S ISLAND,

LAKE SUPERIOR,

BY

DR. T. STERRY HUNT, M.A., F.R.S.,

*10th September, 1872.*



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ROBERT ANDERSON, ESQ.,

*President of the Montreal Mining Company,*

SIR :—

In obedience to the instructions received from you in July last, I have recently visited and examined Thompson's Island in Lake Superior. As a preparation for this I had previously examined Silver Islet and the adjacent parts of Wood's Location, then proceeded to Jarvis Island, and to the mainland adjacent to examine the old Prince's Bay Silver Mine. With the information thus acquired I visited Thompson's Island, where I spent a good part of three days, camping on the island for two nights. I then proceeded to Thunder Bay, where I carefully examined the Shuniah and other veins in the vicinity ; so that I have been enabled to form a good idea of the nature and relations of the Silver veins in this remarkable region.

The geological description of Wood's Location given by Mr. McFarlane I find to be strictly correct, though I do not think it yet established that the rich silver accumulations have any necessary relation to the diorite dykes, and especially to the dyke to which Silver Islet belongs. My reasons for

this are that, although the Silver Islet vein is barren in the adjacent grey sandstone, these same sandstones carry rich silver ore on the north shore of Thunder Bay, while the very rich ore of Prince's Bay is from a vein crossing a diorite dyke apparently distinct from that of Silver Islet ; and in Macgregor, as I am assured by the best authority, similar veinstones and rich silver ores are found cutting the ancient Huronian schists, which there come out from beneath the sandstones. With regard to the future of this silver region it must be remarked that the repetition of such a phenomenon as the deposit of Silver Islet is scarcely to be looked for in the vicinity, this exceptional richness and concentration of ore being limited, and not extending to the continuation of the same vein on the mainland, or even on the adjacent Burnt Island. Veinstones and silver ores, very similar to that of Silver Islet, have, however, now been found not only on the mainland, at various places, but on Pie Island, McKellar's Island and Jarvis Island, and there is good reason to believe that the explorations now being made on many of these veins will show that some, at least, of them may be wrought with profit. Up to the present time, however, the masses of rich silver ore in these lodes have been found to be irregularly distributed, and not continuous.

Thompson's Island is traversed throughout its length, from north-east to south-west, by huge dykes of diorite rock, which here, as at Wood's Location and elsewhere in

the region, intersect horizontal beds of sandstone. One of these dykes forms a vertical front, 200 feet or more in height, along the north-west side, to within half a mile of its southern extremity, while a second and similar parallel dyke, a little to the south-east of the last, runs quite to this end of the island. The interval between the two, being occupied by the sandstones, offers at the end of the first mentioned dyke or ridge, a little bay and harbor, with a portion of low well-wooded land. This is on the west side, about half a mile from the southern point of the island, and would be a good site for a settlement in the event of mining operations being undertaken. Again, on the east side, about a quarter of a mile from the southern extremity, is a small harbor, protected by the islands adjacent from almost all winds, and serving as a refuge, in which we were camped for two days and nights. Here there is no land fit for clearing, though the remains of a cabin of logs were found. The eastern, or rather south-eastern side of the island presents along the greater part of its length a bold front of diorite rock, falling away towards the northward; but no good harbors for small boats could be found except those mentioned on either side of the south-west end.

The geological features of this island, as already intimated, are precisely similar to those of Silver Islet and the adjacent islands and mainland. The sandstones of the Thunder Bay region are here, as elsewhere, cut by great

dykes running north-east and south-west, which, by their hardness and resistance to denudation, have given its form to the island. The silver-bearing veins of Silver Islet, Spar Island, Jarvis, Victoria and McKellar's Islands, traverse alike the sandstones and the dykes, running in a course between north and west, which is, however, subject to considerable variations. The veinstones themselves likewise present some differences in character, but are, nevertheless, recognized as belonging to a common system throughout the region, consisting of calcite, with more or less quartz and barytes, and carrying, besides silver ores, sulphurets of lead, zinc, copper and iron.

The shores of Thompson's Island were carefully examined, and not less than four well-defined lodes of this kind were detected on the north-west side, three of which were distinctly recognized on the opposite side of the Island. They vary from six to twelve feet, or more, in width, and are vertical in attitude. Three of the four veins are seen in the vertical walls of diorite which rise up from the water, and the constant storms which prevailed during my visit rendered it impossible to examine them with minuteness. The fourth or most southern one is, however, near the southern extremity of the Island, and on a low point. It is divided into three parts by interposed wall-rock. These, which are respectively  $3\frac{1}{2}$ , 2 and 3 feet wide, occur in a breadth of about 20 feet. They are vertical in attitude, have a course N.  $80^{\circ}$  W. (mag.) and consist of calcite with

a little quartz and barytes. The only metallic matter observed in this vein was iron-pyrites and a little zinc but in its general characters it closely resembles the silver-bearing veins of the region. Portions were with much difficulty obtained from two of the other veins, which presented similar characters. No silver was detected in the very limited examinations which were possible of these veins, but it is to be remembered that the precious metal is so distributed in most of the other veins that large portions of the veinstone show no evidence of its presence, and that, even in that of Silver Islet, as already remarked, the metal is not distributed throughout its length, but confined to a small portion.

I conclude, therefore, that the large and well-defined veins on Thompson's Island are eminently worthy of a trial, and that there is no locality in this region where the union of so many veins offers such chances of success as this Island. The adjacent Islands, McKellar's, Jarvis and Victoria Islands, with, I believe, but a single known vein each, are now the object of explorations on a large scale, and Thompson's Island may be said to offer a four-fold chance of finding a profitable silver vein. I therefore recommend to your Company, in concert with the Silver Islet Company, to make a thorough trial of the location. It will be easy to open the most southern vein, from the shore, and the boat-harbor near by, on the west side of the Island, will be found to offer facilities for erecting buildings, and will serve as a



base of operations from which to explore the other veins. These must be explored, not from the shore but from the interior of the Island, and, from their position, will be readily accessible from the harbor. The facilities offered by the Silver Islet Company, with their large and efficient steam-tug, will make the working of this location, which lies between their mine and the Jarvis Location, with which they are in constant communication, very easy. Should it be determined to undertake operations at this place, I can confidently recommend Mr. Alex. Mackenzie, my late assistant, who visited with me Thompson's Island and the adjacent region, as a competent person to take charge of the explorations.

I have the honor to be, Sir,

Your most obedient servant,

T. STERRY HUNT.

Montreal, Sept. 10, 1872.