

tro-chemical process during a considerable period in former geological times, by which compounds of silver were reduced and deposited in their present form. It is not, therefore, to be expected that such heavy native silver will continue to any great depth. In the deepest parts of the Larose mine, 200 feet from the surface, a notable increase in the proportion of argentite has already taken place, dark red silver (pyrargyrite) has made its appearance and the changes due to surface influences in the wall rocks, gangue and ores, are less noticeable, as all these have assumed a firmer and fresher appearance.

The following notes on some of the individual mines of the Cobalt district are partly from personal examination and partly from descriptions given me by reliable persons, mostly the agents or the original owners of the properties. Up to the beginning of April, about forty different properties had been or were being worked. With three exceptions the depth attained was less than 100 feet, and in most cases it did not exceed 30 feet. At the Larose mine, the shaft (including sump) was 205 feet deep; at the Trethewey mine (J.B. 6), 100 feet, and at Little mine 106 feet. The company which has, so far, produced most silver is the Nipissing, which owns 900 acres of mining land to the southeast of Cobalt Lake. Its mining operations have, as yet, been confined to one lot—RL 404—comprising only 10 per cent. of the whole, but which includes the Cobalt Hill mine on its north side and Little mine in its southwest corner. Twenty-five other separate openings have been made on this lot, all in agglomerate rock. They have been numbered in the order in which work was commenced upon them, and more or less silver has been extracted from each. Only three of these openings exceed 30 feet in depth. According to the records in the books in the local office of the company, these workings have produced, since operations began in 1904, silver, with a small proportion of other metals, to the value of \$1,045,000, of which about \$145,000 worth is still in the storehouse at the mines.

From Little mine, a shipment of 20 tons was sent to market a year ago. It assayed 4,800 ounces per ton. At 60 cents per ounce this amounted to \$57,600 and was the best car-load which has yet been exported from the Nipissing Company's mines.

At the working on the company's property, called No. 19, there is an open cut 50 feet deep and about 200 feet long with a breadth of 6 or 7 feet. It is said that out of this cutting 200 tons of ore were taken, worth \$1,200 a ton or a total of \$240,000, which is more than has been produced by any other single opening in the district.

In the southeastern part of Lot R. L. 404, and close to the shore of Petersons Lake, are situated the open cuts called Nos. 12, 13, 15 and 21, at two of which work was going on at the time of my visit. Very rich ore has been found in No. 12, and the

superintendent stated that \$25,000 worth of silver had been taken out of it; also that some of the dressed ore of No. 13 assayed as high as 3,500 ounces per ton, and none less than 2,500 ounces.

Three car-loads of 30 tons each, or 90 tons in all, of cobalt and nickel ore were reported as having been sent last year from the Cobalt Hill mine. The company received almost nothing for the nickel and arsenic contained in the ore. It was rather a singular fact that this ore contained less than half an ounce of silver to the ton. From the same mine, in 1904, the Nipissing Company's books show that 397,310 pounds of smaltite, containing only  $5\frac{1}{2}$  ounces of silver to the ton, were sent to New York. The heaviest single mass of cobalt ore found upon the Nipissing Company's land was in No. 8 open cut, which about 100 feet long and runs about east and west. From this opening 132,000 pounds of cobalt ore, containing 10 per cent. of the metal, were taken out. One large slab of solid smaltite was removed which was 16 inches in thickness and weighed over two tons. In this cutting, great quantities of cobalt bloom were uncovered along the south wall. The laborers threw it out in shovelfuls, in the form of a plastic mass.

The workings known as the Trethewey mines are situated on lots J.B. 7 and J.B. 6. Silver was discovered by Mr. W. G. Trethewey on both of these lots on the same day, 23rd May, 1904. The more northern lot, J.B. 7, which belongs to Mr. Trethewey personally, is called the New Ontario mine. The principal vein on this location is 8 inches wide and runs nearly east and west. A shaft was sunk upon it to a depth of 70 feet. On driving eastward at this depth, the vein soon forked. The drift was continued 40 feet on the northern and 190 feet on the southern division. This again split up into branch veins comprised in a breadth of 7 or 8 feet, between which the wall-rock was well charged with silver, and the small branches were also "shot through" with the native metal. After much work had been done on the south fork, an experimental break was made into its southern wall and after crosscutting only four feet a larger vein than the one being worked was struck, which materially increased the output. A good deal of stoping was done on the small veins and adjoining rock, and prior to November, 1905, 44 tons of ore which had been taken from these workings had been sent to New York in two cars and sold for \$110,000. Two other car loads of lower grade ore were also sent. Immediately adjacent to the veins, the wall-rock holds sheets or plates and nuggets of silver. One of the former had a superficies of about 25 square inches. Some small boulders of granite, about the size of a man's head, taken out of the agglomerate had been fractured *in situ* and were penetrated by veins or sheets of native silver. The gangue of all the veins here is calcite and, besides the native silver, it holds smaltite and niccolite.