REPORT ON QUAMBY BROOK COPPER MINES

Introduction

Two years ago, in cultivating his 78 acre farm at Quamby Brook Thos. Hennessy unearthed a large boulder of copper ore. A little exploratory work revealed a large deposit, and a syndicate was formed in Deloraine for the purpose of testing the value and extent of the ore. This report is the result of a recent investigation of the deposits, and is designed to advise the interest holders as to the future development of the deposit.

Area, Situation etc.

The ore body occurs in a 78 acre freehold owned by Thomas Hennessy and situated 7-1/2 miles south of Deloraine. The road to Quamby Bluff connects with Deloraine which is situate midway between the ports Launceston and Devonport, thirty miles distant.

Geological Summary

The ore occurs in a body of altered gabbro which intruded the Pre-cambrian quartz and mica schists and schistose slates previous to the mountain building movements that brought about the folding of these very old rock formations. In proof of this the writer observed similar altered copper bearing gabbro in the valley of Dasher River fifteen miles to the eastward, a point where the next succeeding anticline is exposed at surface. The deposit of copper ore is of contemporary age. Wherever this particular basic member of the old schists is exposed copper ore in greater or less extent is found in it as instance the occurrence at Asbestos Range and Preolenna.

From the foregoing it will be seen that mineralisation took place long before the Devonian period during which nearly all our large ore deposits were formed.

The Permo-Carboniferous rock formation in which the oil shales occurs is much younger than the schists and was laid down as sediments on these folded rocks. The Permo-Carboniferous were later intruded by diabase (locally termed iron-stone) and still later sheets of basaltic lava were outpoured over portions of all preceding formations. The composition of the original is reflected in that of its derivatives epidote, bastite, amphibole asbestos scapolite and quartz. These secondary minerals indicate that the rock was of basic igneous character conforming to gabbro. This rock consisted essentially of augite and the labradorite variety of plagioclase both lime bearing minerals. The alteration was brought about by the action of hot carbonated waters which percolated through the rocks from a deep-seated source, and completely transformed the original mineral components into the secondary ones referred to. In some places the epidote component occurs with quartz with quartz in separate veinlets in the rock, in other places the epidote and quartz are very intimately intermixed. The hard dense opaque mineral scapolite is stained pink with rhodonite, a silicate of manganese, and is unevenly distributed. Bastite is not prominent near the ore bodies. Epidote is a silicate of calcium and aluminium with also a little iron. It is a secondary mineral derived from original gabbro, which consists of augite and plagioclase, and when the alteration is complete a mixture of quartz and epidote results. The yellowish-green or pistachio colour of epidote has led to the belief that this mineral is an ore of copper.

Bastite, the dark greenish-black, serpentine-like mineral, is an alteration product of the pyroxene component of the original rock and has the composition of serpentine, a hydrous silicate of magnesian. Amphibole asbestos is another product of the alteration of pyroxene rocks into hornblende rocks.

The hornblende thus produced when fibrous is known as asbestos actinolite, or uralite, and the change is called uralitezation. It is often accompanied and complicated by other changes such as the formation of epidote and it is usually coincident with the development of schistose structure. Scapolite is an alteration product of the plagioclase component of the original gabbro rock.

The ore body

The two basic carbonate of copper malachite $Cu_2 (OH)_2$ and azurite $Cu_3 (OH)_2 (CO_3)_2$ are the more important components of the ore. They were formed in the upper portions of the deposit by the action of carbonated waters on sulphide of copper, their conversion into carbonates having been conformed in place concurrently with the alteration by similar solutions of the basic igneous rocks in which they are contained. In addition to copper the ore contains gold and silver and a brace of nickel. The following analyses are indicate of the average metal content of the ore exposed in the prospect shaft and in the trenches.

No.	Description of ore	Constituents	Per cent	dwt	Gr
1	Copper ore	Gold		1	7
		Silver		2	15
		Copper	0.29		
		Nickel	trace		
		Gold			trace
2	Quartz ore	Silver		3	6

The ore is not of high grade, but the body from which it was taken is large. Owing to the deep soil cover, it is not possible to trace the ore shoots beyond the length of the small mine openings. So far as can be seen the ore occurs in lenticular bodies and disseminations in the rock and has no definite outline. It appears that the richer bodies occur toward the hangingwall side of the igneous rock, which is at least 300 feet in width. The ore lenses are separated by barren or comparatively barren zones of greater extent. These lenses may be found at any point of 70° to the north-east. It has been suggested that the carbonate ore will give place to sulphide of copper or copper pyrites at creek level. As the alteration was due to ascending carbonated solutions it will be found that the carbonate ores of copper will extend far below that depth, in fact, it is unlikely that sulphidic ore will be found at any depth on this formation.

Developments

The ore body is exposed on a hillside 200 feet above and on the west side of Quamby Brook. It is seen to advantage in the several shallow trenches and a shaft (45 feet deep) which form part of the syndicate's operations. In order to more thoroughly test the ore body a cross-cut adit 120 feet above Quamby Brook was commenced from the north-east side of the hill. After driving 30 feet in a south-westerly direction this work was discontinued. The only advantage to be gained by a continuance of these operations is that the full width of ore bearing rock will be revealed. It is considered that the best means of proving the ore body is by drilling holes to a depth of 500 feet on an angle of 45 degrees in a direction at right angles to the strike. The prospect is promising and is worthy of further attention, but it is not considered that the ore will prove of high grade in any part of the deposit. An encouraging feature is the presence of gold and silver in the ore in sufficient quantity to add appreciably to its value. However, a large body only of such ore could be regarded as of any commercial value.

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