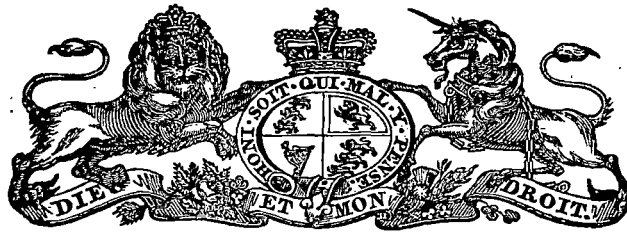


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PARLIAMENT OF TASMANIA.

HEAZLEWOOD SILVER-LEAD AND OTHER
ORE DEPOSITS:

REPORT BY MR. G. THUREAU, F.G.S.

Presented to both Houses of Parliament by His Excellency's Command.



REPORT on the Heazlewood Silver-Lead and other Ore Deposits in the County of Russell, West Tasmania.

Mining Geologist's Office, Launceston, 14th December, 1888.

THE track from Waratah to Corinna is intersected by two distinct belts of mineral country, at a distance of thirteen and sixteen miles from Waratah respectively.

The Thirteen-mile Mines.

The group of mines, a little south-east of the Government Hut, exhibits the following minerals and metals, viz.:—Galena (argentiferous), sulphides of silver, iron pyrites (slightly auriferous), azurites, and bornites; also, ferro-manganese. Rocks—Diorites, metamorphic schists, and silurian limestones.

On Section No. 999/87M (the Mystery Co.) they are working on the summit of a high hill, where they have found, in a cutting nine feet deep, a quartz leader showing some pentagonal iron pyrites, which assayed a quarter of an ounce of gold per ton. In a tunnel, a pyritous bed about 12 inches thick has been followed, with an incline of but 10 degrees southerly, as it is deemed feasible that the junction of both ore bodies may lead to a more prolific result. It is questionable, however, whether, with such poor prospects at such shallow depths, more success would be achieved.

On the south-eastern slope of this hill, a couple of score of yards from the last-mentioned workings, the Mount Zeehan Prospecting Association are reported to have had a sensationally high assay, such being stated at £20 ozs. of silver per ton of ore. Ores taken by me from the vein in question in a cutting only show specular or micaceous iron ore; and, if silver ore of so high a percentage does exist there it would be most satisfactory, and I should be pleased to receive some good-sized samples for additional tests. The mineral vein is from 9 to 12 inches thick; it underlies west, in which direction a vertical shaft is being sunk to strike same lower down. The vein is enclosed in diorites, yellow and green in colour, stained by black manganese, and in this formation irregular nests of reddish to black ore were found embedded. Should this vein be cut in the new shaft, then very careful assays of it can establish the value of same, or otherwise.

From this point, or lower down, the track was impassable for horses, consequently I followed, under guidance, the new track which was cut by the several mining proprietaries at their own expense (£30), and thus arrived on easy grades to within fifty yards of what is now known as

Godkin's New Discovery.

This is located on Section 1615/87M of forty acres, close to the northern side of a small tributary falling into the Whyte River. I noticed in the bottom of that rivulet a greyish slaty silurian limestone, somewhat galeniferous, bearing N. 75° W. Some few yards away the new discovery was inspected. After careful examination I concluded that this very large ore deposit had not, to my regret, been sufficiently opened up for careful inspection, especially for ascertaining what its dimensions were, in order to form a positive and reliable opinion upon the same.

There is an extensive surface outcrop, capped chiefly by black and soft ferro-manganese ores. Beneath these a semi-decomposed silicious mineral deposit occurs, stained deep green and spotted by manganites. In this deposit there were found, more or less frequent, nodules of blackish silver ores (sulphides). I question, however, whether the so very vivid green stains are exclusively caused by chlorides of silver, as I did not succeed in discovering any of them; more likely that nickel hydrates caused portions of this distinctive colouring matter. Across the presumable strike of the deposit, the eastern limestone forming one wall, the deposit may be from over 35 feet wide, but nothing certain

can at present be said about it, owing to the backward state of the workings. It is certainly the cap of a very large mineral formation, and has been most likely caused by hydro-thermal action. The ore possesses great specific gravity, owing probably to the presence of baryta.

Higher up the range, on Section No. 1076/87M, 80 acres, Mr. Thorn informed me that he was driving an adit, then 35 feet in length, through manganese. I found same, after usual tests, to be ferro-manganese.

Inasmuch as the cap of Godkin's find is over 500 feet below this adit, and inasmuch as silver ores, as a rule, increase in richness with corresponding depth, I opine that the great natural facilities of this locality for deep tunnelling ought, instead of present mining operations, to be embraced.

The second, or Sixteen-mile, belt of mineral country has been traced for about two miles, being intersected in the N.N.W. by the Heazlewood, and in the S.S.E. by the Whyte Rivers. On account of the larger scope of the mining operations it deserves special notice; also, from the fact that considerable quantities of ore have already been raised.

The principal rocks here are serpentines, hornblende, and diorites. Most of the mines are favourably situated for speedy work by means of deep adits.

On Section 4/87M, or the Heazlewood Extended S.L.M. Co., a peculiar formation (*a*) has been laid open by a cutting in serpentine; the veins disclosed are thin, from $\frac{1}{2}$ in. to 2 in. thick, and they carry antimonial silver-lead and wulfenite. Its bearings are S. 51° W., and an adit (*a*) is being driven bearing S. 66° E. to intersect same from a deeper level (73 ft. in length, including approaches).

No. 2 (*b*) formation comprises a number of thin ore veins, chiefly composed of sphalerite, or zinc blende, with some argentiferous lead ores, and they underlie east.

No. 3 (*c*) formation runs S. by W. This presents a very peculiar appearance at the surface outcrop, for the joints in the hornblende rock are stained by an efflorescence by azurites—blue and green oxides of copper. Small veins of copper pyrites were likewise noticed, also bornites in small clusters; and, on the whole, this formation, occurring as it does in an argentiferous lead country, is of very considerable promise (a strong trace of gold being also found) when finally intersected by the adit driven at a vertical depth of 135 feet below this outcrop. This adit is now 260 feet in length, passes through diorite and hornblende, with a bearing of S. 77° E. The position for this upper adit is well selected, because from it all the other mineral formations can be intersected at various depths.

Considering the very perceptible average general thinness of the veins of ore—from $\frac{1}{2}$ inch to $4\frac{1}{2}$ inches, with assays, as I am informed, from 73, 92, and 107 ozs. of silver per ton—the quantity or bulk of ore obtainable by hand labour at per fathom is very limited, and must with greater depths diminish as mining operations become more difficult.

In view of the copious and continuous water-power obtainable for high-pressure motors, it should be a matter of serious consideration to replace manual labour by modern mining machinery, in order to deal with much larger removals of *débris* and minerals for treatment.

It is strongly recommended, therefore, that a Pelton Pressure Water-wheel, 5 feet in diameter with 12 inches breast, be supplied by means of wrought iron pipes from a point affording 180 feet of fall from higher up the Heazlewood River, to work one or two National Rock Drills and Stonebreaker, by means of a National Air Compressor, and other reducing machinery. This would result in opening up the mines at four times the speed than now, and, whilst the output is considerably increased, the expenses are proportionately lessened.

On Section 1309M the Heazlewood S.L.M. Co. have been carrying on extensive mining operations in following their lode by over and under-hand stoping from the tunnel for a length of 230 feet. I noticed about 260 tons of first and second quality of ore piled on the surface for shipment. The ore formation is well developed, only the disparity of its ore contents and the vein matrix is also noticeable as against the former. The vein-matter is from 4 to 8 feet wide, and in the vicinity of the ores siderite (carbonate of iron, which is the leading feature at Mt. Zeehan, occurs, besides which cerussite (carbonate of lead), and, less frequent, chromate of lead. Owing to the green stains so prevalent in the matrix, I am inclined to place this mineral as "*vauquelinite*," or chromate of lead and copper,—hence, through decomposition of the latter, these discolourations. The matrix, or dyke, traverses both through short jointed diorite and globular serpentine.

The stopes extend up the rise of the ranges to a main shaft sunk to a depth of 44 feet, in the bottom of which the pure ore is said to be 6 inches wide, when they were driven out by water. Another air shaft is now 45 feet deep, sunk on the course of the formation, and a prospecting adit is being driven towards the latter, now 220 feet in length.

On Section 1598m a new surface discovery has been made, exhibiting gossan ("the iron hat"), chromates of lead, and some galena; promising indications have also been found by this company in a northerly direction across the river.

Although this Company is at present well situated to produce ore, yet it is but a question of time when, with greater depths, the present method of stoping *débris* for an average width of from 4 to 8 feet in order to obtain the ore from the west vein, not exceeding 7 inches thick, and often smaller, whilst the much smaller veins in the east cannot add much to the output, will be found too expensive to carry on.

If these two principal mining proprietaries were to jointly carry out the scheme sketched above, and only a larger air compressor be added capable for four rock-drills and two stonebreakers, &c., &c., these mines would be in a position to drive very deep adits, sink winzes, and generally develop their mines more rapidly and economically, instead of sinking or driving expensive shafts or adits by hand labour, as at present.

On Section 1619m two ore formations have been prospected, and, as they nearly run parallel, about 30 feet apart, it is just possible that they may junction in the north; both underlie east. A good shaft has been sunk between both formations, but a sudden influx of water, when nearing the western formation, caused work to cease at present.

In this connection I may at once state that, so far as observable, there are here no regular "lodes," but simply some kinds of dyke formations, more or less distinct from the adjacent plutonic country rocks, and likewise impregnated by veins of ore. This makes it all the more requisite that the aid of modern mining machinery should be called in to aid future mining operations. Here, on above-named section for instance, the galena streaks measure but $\frac{1}{2}$ to $1\frac{1}{2}$ inches wide in hard country, which should be convincing proof that such and similar mines can only be carried on at a risk, whilst maintaining a precarious existence at considerable expense.

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