

EXTRACTS FROM PROSPECTUS
IN MERCURY QUOTATIONS
FROM ULRICH'S REPORT
IN INVERTED COMMAS

17th August 1878

MOUNT RAMSAY BISMUTH MINING CO.

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The property of the Company will consist of three sections containing in the whole 240 acres, situated at Mount Ramsay and for which it is intended to obtain a new Consolidated Lease in the name of the Company. It is distant about 18 miles in a southerly direction from Mount Bischoff and a good pack track cut at an expense of £250 connects it with Knole Pl., to which there is access through the Van Dieman's Land Company's Tramway. As it is in the direct line of the rich band of mineral country lying between Mount Bischoff and Mount Heemskirk, to which so much attention and enterprise is now directed, it is almost certain that a main west coast road now generally advocated and admitted by the Government to be a desirable undertaking - will be constructed to afford facilities for opening up the mineral wealth of the western part of the colony and that it will pass near the Company's property.

The following extractions from Mr. Ulrich's report, dated the 14th February, 1876, upon the Bismuth deposit discovered by Messrs. Heazlewood and Harman will afford some idea of its magnitude and importance.

"I am of the opinion that even the extent of the deposit at present proved in view of the valuable metals contained therein, invites mining operations on an extensive scale. With regard to these metals, the native Bismuth is from its abundance, in connection with its high price in the market - ranging from £1,000 to 1,200 per ton - the one in which the value of the deposit at present centres".

"Before leaving the subject of the metallic contents of the deposit, I may mention that judging from the marked resemblance of the latter, regarding the minerals at present observed, to certain of the "Fallbands" of Modum, Norway, in which cobalt ores are abundant, there appears a probability of such ores making their appearance in depth also; the same may be said of 'Bismuthinite' of Sulphide of Bismuth. Considering the most advisable mode of opening the deposit, the position of the latter, high up on the steep slope of a mountain offers every facility for effecting it by adits - a method which would also obviate the water difficulty".

Although I have no doubt that at no distant day it may be found profitable to work the whole width of the deposit, still, considering the circumstances, I think it more advisable for the

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Company to confine their operations for the present to the opening and exploitation of the portion or shoot along the upper boundary as shown is richest in Bismuth and suriferous pyrites. The adit to effect the opening ought, in my opinion to start at the lower boundary of the Hornblende rock, below the large excavation and to be driven in the direction of the 16 foot shaft, where it might bring in a depth of above 60 feet. As the whole width of the deposit would be traversed by it, the not unlikely chance is presented of its intersecting ground rich in Bismuth on the way, which would of course, be worked conjointly with the other rich part.

"There are two other mineral occurrences in the neighbourhood of the Bismuth deposit, within the area of your mining sections, which judicious prospecting might prove valuable. One is that of tin ore though in small quantity in the drift of Scott's Creek, evidently derived, judging from pebbles showing grains of the ore enclosed, from a large dyke of tourmaline quartzite, which traverses the granite near the summit of the mountain and may likely contain rich patches of impregnation or perhaps veins of the ore. The other mineral rock is presented by a massive dyke of diorite greenstone crossing the mountain a short distance north of the head of the Scott's Creek. This rock, which contains a good deal of pyrites minutely impregnated closely resembles in mineral character and appearance that of some Victorian greenstone dyke, in which highly auriferous quartz veins occur, and it is therefore, by analogy, not at all improbable that any quartz veins found traversing the dyke under notice may prove suriferous also."

"Referring to the road, which Mr. Ulrich at that time thought might have to be made at the expense of the Association he says "Large as the outlay for this road may be estimated, however, both it and all expense for machinery and works required for the proper mining and treatment of the metalliferous hornblende described, are specially warranted by the high value of the latter in Bismuth - a discovery representing to my knowledge one of, if not, the most important and richest made of this rare metal in recent times".

A good water power with an abundant supply for driving all necessary machinery and for ore dressing purposes is obtainable near the property, and the facilities and advantages for conducting mining operations are highly important. The Bismuth which exists in the ore in rich abundance in an almost uncombined

metallic state can be extracted with great ease and at trifling expense by the process of breaking the ore into fragments and exposing it to liquidation in properly constructed retorts, heated by a wood fire when the metal is obtained in about 10 minutes after charging. The simple experiment of holding a small piece of Mount Ramsay ore over the flame of a candle for a few seconds, will convince anyone how easily the metal can be separated from its matrix. This valuable metal of which the market price was recently quoted at 6/-per lb., enters into several alloys used in the arts, such as pewter, solder, type and atereotype metal, fusible metal, mosaic gold, etc., besides being employed for medicinal purposes; and there can be no doubt that, if it were obtainable in greater abundance, its uses would be rapidly extended. Besides the Bismuth certain of the other ores upon the Company's property may probably be worked to considerable profit, arsenical pyrites rich in gold is found plentifully distributed in the vast body of Hornblende rock in which, the Bismuth occurs. This ore on assays by Mr. Cosmo Newberry, the Government Analytical Chemist, of Victoria, yielded at the rate of 3 ozs. 5 dwts. Sgrs. and 3 ozs. 15 dwts. 9 grs. of gold per ton; and the copper pyrite which is also found in the Bismuth Lode yielded at the rate of 20 ozs. 6 grs. of gold per ton
12 dwts.

Most encouraging prospects of tin ore have been discovered on the property; and some specimens present undoubted indications of having been derived from a lode for the existence of which the geological features of the country are highly favourable.

M O U N T R A M S A Y M I N ESITUATION

This mine is situated on the mountain of that name some 15 miles distant by the present track from Waratah in a S.E. direction.

To reach it the Corinna road is followed for about 2½ miles; a pack track then branches to the east passing over open plains for about 1½ miles and then plunging into the myrtle forest. For nine miles it passes through this at a level usually some hundred feet above Waratah, traversing a plateau formed by a deposit of tertiary basalt, which is intersected by small valleys worn away by the rivers that flow from the plateau.

At about two miles from the mine the basalt ceases and the granite rock is reached at the base of Mount Ramsay itself, and in passing over it the track rises about 800 feet to reach the mine hut, placed by the summit of the northern peak of the mountain.

The track, except in a few places, gives a good grade for the first 10½ miles, but the basalt in decomposing leaves a rich clayey soil which is soon cut up by the traffic in wet weather. The last two miles over the granite include some steep pinches, and follow the western side of the mountain, rising unnecessarily a height of at least 400 feet. The mine is situated over the mountain on the eastern flank, on a steep slope of about 25 degrees down to the Ramsay River.

GEOLOGY

Mt. Ramsay itself is formed of granite, typically coarsely crystalline, with large feldspar crystals and little mica, hornblende and tourmaline become important constituents.

About 50 yards from the mine in a N.E. direction a rock occurs called sometimes "diorite" sometimes simply "the metamorphic rock."

It may be a dyke, but more probably is a marginal modification of the granite; its relation to the ore-body cannot at present be traced. Further down the hill-side, about S.S.W., and

vertically 400 feet, the lode formation is met with, lying between the granite on the north and west, and the slates on the south and east. It is composed of alternate layers of a hard flinty rock known as hornstone, and a soft rock composed of hornblende with pyrites, fluorspar and scheelite as chief subsidiary constituents.

Hornstone is usually the result of the action of neighbouring igneous rocks on a sedimentary rock. There seems little doubt in this case that the lode formation has been produced by the action of the cooling granite magma on the Silurian slates; the hornstone representing the physical effects of the heat and pressure; the hornblende being the result of the chemical changes produced by the mineral bearing vapours and solutions emitted by the cooling and contracting mass.

Changes of the slate rock of a similar nature are frequent in Tasmania, though usually the proximity of the granite is not so clearly shown; in most cases the resulting rock is heavily charged with pyrites, and frequently it bears valuable constituents such as copper, tin, and a little gold distributed irregularly through it.

Mr. Waller's report on the N.E. Dundas field gives an interesting resume of some of these formations.

In this case the general strike of the deposit is about 20 degrees north of west, and its dip varies from about 73 degrees to 55 degrees to the S.E.; the hornstone and hornblende occur in bands of varying width; in the shaft the bands are about 8 feet 6 inches wide, but neither here nor in the tunnel do they appear to maintain any regularity in width or inclination. At the bottom of the shaft the hornstone band becomes flatter and appears to be cutting out the hornblende band. I do not think that any permanence of the separate bands can be looked for, either in horizontal or vertical extent, but that they will be found to be interlocked irregularly in the lode bed.

LODE

The hornstone contains pyrites, but it is to the hornblende rock that the value attaches. The accompanying map shows a plan and section of the workings. A shaft has been sunk in the ore

body some 30 feet. At a level 84 feet below the mouth of the shaft, a tunnel has been driven 119 feet. This has passed through the lode body for the whole distance. Besides these works two open faces have exposed the ore body to the S. and N.W. of the shaft, and by trenches carried along the mountain side to the W. it has been shown to be of a large extent. Below ground the tunnel passes through the same characteristic bands of rock as are found in the shaft, and the hornblende rock of the tunnel in main features bears a very close resemblance to that in the shaft; the pyritic constituents vary, pyrrhotite, arsenical and copper pyrites being present in different proportions at different points, but on the whole the ore body has been proved to extend consistently at least 130 feet across the formation.

SAMPLES

It is well established that good ore was found close to the surface near the shaft; it was necessary to test the ore body where exposed both here and in the tunnel, and samples were taken as follows:-

- (1) From the end of the tunnel, this being the point nearest to ore in the shaft. Result:- gold trace, bismuth nil.
- (2) Picked ore from tunnel, stacked outside the entrance. Result:- gold nil, bismuth trace.
- (3) From the shaft, the E. side of the bottom, across the band of hornblende rock, an area of 5 feet by 2 feet 6 inches. Result:- gold 4 dwts., bismuth .15%.
- (4) From the shaft:- the east side and half the face and roof of cuddy; the hornstone and hornblende are somewhat inter-mixed here, and the hornstone was omitted. Result:- gold 4 dwts, bismuth .3%.
- (5) From the shaft; the west side of cuddy similar to (4). Result:- gold 1 dwt., bismuth nil.
- (6) From the shaft, the west side similar to (3). Result:- gold 2 dwts. 14 grns., bismuth .15%.
- (7) The open face between the shaft and tunnel entrance. Result:- gold 1 dwt., bismuth nil.

The net results are an average value of about 3 dwts. gold, and .15% bismuth for the bottom of the shaft, and practically nothing for the other parts of the mine. Sample No. 5 is noteworthy coming practically from between the other 3 samples and yet being almost barren.

Sample 4 was concentrated by pan to one tenth of its weight and yielded gold 14 dwts. bismuth 2%. I have no doubt but that by further concentration higher results could be obtained, and that on a large scale this would be the first method of treatment.

VALUES

In itself, taking the gold contents as worth about 10/- per ton, and the bismuth at another 10/- net, I should consider the bottom of the shaft as offering payable stone and promising prospects, but in a position such as Mt. Ramsay a large quantity of this grade ore must be proved to make it valuable.

PROSPECTS

So far, though a tunnel has been driven for nearly 120 feet through the ore body, the work has not revealed any further extent of the area of enrichment. In itself this is disappointing, as it shows that large portions of the hornblende rock are barren but the work has not been sufficiently extended to allow any definite deductions to be made. It by no means follows that the enriched area is confined to a certain band of rock dipping with it at a regular angle. If anything, one would expect it to lie nearer the actual contact of the granite, while the tunnel, so far, has prospected only that part more distant from the granite. It is quite possible for a large body of enriched stone to exist lying to the N. of the end of the tunnel, only the margin of which is touched by the shaft. The property can in no sense be regarded as proven until this ground is tested. If the Syndicate wish to reap the benefit of the work they have already done the tunnel should be extended at least 100 feet straight across the ore-body. As to the prospects of success I must say clearly that what evidence there is, either general or special, I consider unfavourable to the existence of a large area of high grade enrichment, but the property has been so little opened up

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that this evidence might easily be contradicted by a few feet of driving. Moreover there appears to be no alternative between carrying out the above work, or abandoning the property completely, which, in view of the money already spent, would be regrettable.

FUTURE WORK

If the tunnel is extended, I should advocate the work being carried out on contract; some of the rock is very hard, and the cost of living would be high; but I believe a contract would be let at from £2 to £2/10/- per foot now that work is scarce on the West Coast. The terms of the specification would need to be rigid, especially in regard to the rise of the tunnel. Further, the work should be sampled and assayed every 6 feet at least. The whole cost of this work if done promptly should not exceed £300 - £400.

It is premature at present to discuss what course would be necessary if the mine turned out successfully, but I see no engineering difficulties of any importance. The connection with the main road or railway would probably cost less than in the case of the Magnet tramway (about £2 000 per mile) as the country is easier and the traffic would be lighter. Battery site and dressing water are available, while water power, either direct or indirect, could be secured.

I see no obstacle to the proposition being developed on a large scale provided the presence of the ore be proved.

Briefly, the formation is of the nature of a contact deposit with local areas of enrichment carrying gold and bismuth. As tested by a small shaft it appears to be payable. The work done to prove the extent of the payable stone is so far inconclusive and requires a further outlay of about £350 to complete it. If this work is successful there should be no inherent difficulty in developing the property on a large scale. It presents a fair mining risk, and it remains for the Directors to decide whether they take this and continue the work or sacrifice the result of their past expenditure.

(SD.) Hartwell Conder