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REPORT ON THE PRIMROSE MINE, ROSEBERY.

Zeehan, November 2, 1903.

SIR,

Acting on your instructions, I left Zeehan on the 13th October last to examine and report upon the Primrose Mine, Rosebery, and have now the honour to forward you the following report:—

A short account of this Mine appeared in my previous report on the North Dundas district, as well as a general description of the geological features of the district and a discussion of the origin and mode of occurrence of the pyritic zinc-lead deposits, to which class the ore deposit at the Primrose Mine belongs. It will be unnecessary for me to go over this ground again in this report.

The Primrose Mine is a 10-acre section, charted as No. 62-93 G.L., and is situated south and adjoining the ground held by the Tasmanian Copper Company, on the southern slope of Mount Black. The Primrose lode is believed to be the same as that of the Tasmanian Copper Company. It strikes about 28 degrees west of north, dipping to the east at an angle of 55 degrees. The lode is exposed in the north-western portion of the section, and has been cut at a depth of about 25 feet by a tunnel driven from the east. From this tunnel the lode has been driven on northward for a distance of about 250 feet, when it was cut off by a deep gutter filled with cemented wash, which from its character I have no doubt is of glacial origin. It is unlikely that this gutter will live more than a few feet below the tunnel level, and as the lode is a strong one where it has been cut off, it will probably be found at the next lower level to be at least as strong up to the northern boundary of the section a further distance of 60 feet.

In a southern direction from the tunnel the lode has not been traced; where exposed on the surface it is living strongly in a southern direction, and there is no reason to believe that the limits of the ore-body have been reached in this direction. The ore consists of a dense zinc-lead sulphide, carrying more or less gold and silver. Quite similar ore has been mined for some years now at the Hercules Mine, Mount Read, and sold at a remunerative figure to the Tasmanian Smelting Company at Zeehan. The grade of the saleable ore at the Hercules is, however, rather better than the average at the Primrose. Still, as the following assays show, there are parts of the ore-body which carry satisfactory values in gold, silver, and lead, which should leave a good margin over mining, transport, and smelting charges

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Table of Assays, Sulphide Ore, Primrose Mine.

	(1)			(2)			(3)			(4)		
	Per cent.	Ozs.	Dwts.									
Gold	1	7	...	0	2·4	...	0	3·2	...	0	6
Silver...	...	9	3	...	7	7·6	...	15	12	...	17	0
Lead....	13·50	...	...	9·50	...	...	9·00	...	...	19·4	...	...
Copper.	0·68	...	...	0·65	...	...	0·60	...	...	...	...	...
Zinc	30·20	...	...	33·50	...	...	31·80	...	...	30·5	...	...
Iron	6·38	...	...	11·66	...	...	11·15	...	...	...	...	...
Silica ...	20·25	...	...	11·40	...	...	12·80	...	...	...	...	...

(1), (2), and (3) bulk samples of Primrose ore assayed by Mr. C. M. Henrie, late Metallurgist to the Tasmanian Copper Company.

(4), bulk sample from surface of tip, taken by me and assayed by Mr. W. F. Ward, Government Analyst.

It will be observed that these samples show a considerable amount of variation in their assay contents. Samples (1) and (4) yielded returns which should give a decided margin of profit over and above mining and smelting charges. Samples (2) and (3), probably, would not do so. Unfortunately, I am unable to state how samples (1) to (3) were taken. The results were given to me by Mr. C. M. Henrie, who told me they were from large bulk samples of Primrose ore. Sample No. (1) is presumably from the best ore; while samples (2) and (3) are probably bulk samples of the whole of the ore exposed. My sample, No. (4), represents about 50 lbs. of chips taken all over the sulphide dump, excluding only the very pyritic ore, which would naturally be separated by hand-picking were a parcel being prepared for the market. It should represent at least 75 per cent. of the whole dump, or, roughly, 750 tons of ore.

For the last twelve months the mine has been let on tribute to Messrs. Ogden and Luttrell, who have been stripping the oxidised capping or gossan portion of the lode, and treating it in sluice-boxes, with the object of recovering the gold contents. Even this, however, is attained to a very imperfect degree, as much of the gossan is hard, and would require crushing in order to free the gold. Almost all the silver is, of course, lost by this primitive method of treatment. Messrs. Luttrell and Ogden have stripped the lode for a distance of about 180 feet, commencing at the north

end first, where the glacial moraine matter cuts off the lode. At this end the gossan proved to be only 3 or 4 feet deep, the unaltered sulphide ore showing along the bottom of the cutting. Near the south end of the cutting, however, the sulphide dipped under foot, and the gossan is much deeper, the south end showing a face about 15 feet deep, with gossan in the floor of the cutting. The width of the gossan here is about 13 feet. Some 15 feet back from the face there is another "make" of gossan 5 feet wide, breaking into the hanging-wall to the east. Whether this is a separate lode junctioning with the main lode at this point, cannot at present be determined with certainty. I am at present of the opinion that it is not really a separate lode, but a portion of the main lode with a horse of country in between.

Several assays have been made of this gossan, first by Messrs. Luttrell and Ogden, and later by Messrs. George Hull & Co., of Zeehan, with the object of ascertaining whether it were saleable direct. I also took several samples, the results of the assay of which are given in the following table:—

Table of Assays, Gossan Ore, Primrose Mine.

	(5)		(6)		(7)		(8)		(9)	
	ozs.	dwt.								
Gold, per ton.....	0	4	0	5	0	3	0	10	0	7
Silver, ditto.....	19	1	11	8	30	12	36	0	16	6

(5) Bulk from 5 feet ferruginous and soft gossan in north face of cutting.

(6) Bulk from 4 feet mullocky gossan in north face of cutting.

(7) Bulk from 5 feet of gossan in new make in the hanging-wall of lode.

(8) Bulk of gossan at grass, consisting of forkings and hard gossan, which was not put through the sluice-box.

(9) Bulk from old tailings, below sulphide dump.

These results are not so good as those obtained by Messrs. Luttrell and Ogden or by Messrs. G. Hull & Co., probably owing to the fact that they are bulk samples. The point which appears to be brought out by them is that the highest values are contained in the hard gossan. Thus, sample (8), which consists of the hard gossan, which could not be treated in the sluice-box, gave the best return by assay, and shows a payable quantity of gold and silver. A ready sale could be found for this ore, as it is high in iron, and would be

suitable for fluxing purposes. Sample (9) also gave a surprisingly high result considering that it was merely the rough tailings (not forkings) from the sluice-box, and mixed with a good deal of river sand and rubbish. I think it is quite likely that by screening away the fine sand and picking out the rubbish, a payable product can be obtained from these tailings. Samples (5), (6), and (7), on the other hand, which include both the soft and hard gossan, are probably too low to bear the smelting charge if sold in bulk. I am, however, of opinion, that, by making two products, No. 1 consisting of hard ferruginous gossan for sale to smelters, and No. 2, consisting of the soft friable gossan, for treatment in sluice-boxes, that the whole could be profitably handled.

As regards access to the mine and means of getting the ore to market, a good road, connecting with the Rosebery Railway Station, exists within about 25 chains of the present workings. From the end of the road to the mine there is a good bridle track, which at a very small expense could be made fit for cart traffic. As regards the amount of gossan likely to be available for treatment, it is impossible to form any reliable estimate at the present time. The lode has already been stripped for 180 feet, and it is only in the last 20 or 30 feet that any quantity of gossan has become exposed. There are certainly several hundred tons of payable gossan in sight, but how much more may be exposed as work goes on it is impossible to say. I understand that the Company has received offers from several parties to take the mine on tribute. I can see no objection to the acceptance of one of these offers, but if possible the tribute should be let to a party which is prepared to work the sulphide ore as well as the gossan. It is quite possible that when work is started quite a large proportion of the sulphide will prove to be payable, but this cannot be definitely known until actual mining has commenced.

In conclusion, I wish to express my thanks to Messrs. Luttrell and Ogden for kind assistance during my visit to the mine.

I have the honour to be,
 Sir,
 Your obedient Servant,

G. A. WALLER,
Assistant Government Geologist.

W. H. WALLACE, ESQ.,
Secretary for Mines, Hobart.