

## MINING - ZEEHAN DISTRICT

Having been instructed to make a special investigation of the position of mining in the Zeehan District with the view to assisting in the production of silver-lead ore, as the Honourable the Minister for Mines is anxious to assist those engaged in the development of mines, as well as to promote the production of ore thereby tending to ensure permanent work for miners, the Department having funds available to assist the industry, incidentally relieving unemployment, I proceeded to the field accompanied by the Hon. J. McDonald M.L.C. it having been arranged that he should accompany me as he had advanced several proposals. His assistance and helpful suggestions were very much appreciated. I herewith submit my final report, various reports in connection with individual applications for assistance having already been handed in.

When I was relieved of the Zeehan Area at the end of 1922, being transferred to Burnie, I made the statement that galena would still be produced there long after I had passed away and I am still of that opinion. This visit of inspection having strengthened that view considerably, having been able to do much more field work than I had time for in the past.

Owing to the low prices existing for lead and silver for so long a time, the mining of galena had got down to a very low ebb in the district, but now that silver has got to the vicinity of 3s. per oz. fine, and lead to £14 per ton, apart from the exchange, it is hoped that more attention will be given to its production and thus assist Zeehan generally.

I might say here that in looking over Mr. G. Waller's geological map of the Zeehan field, published with his report dated 1904, I have been much struck with it, it being one of the most useful I have ever come in contact with. Much that he gave there at that time has been fully borne out. Any one interested in the Field would do well to study these. Geological Bulletin No. 8 by Messrs. Twelvetrees and Ward is also useful. Some of the deductions having proved to be correct.

I do not think there is any need for me to go into the geological features of the area, even if I had time, other than to give my reasons for thinking that certain lines of country are worthy of more attention.

I had thought of giving a resume of the mines in operation and their production, etc. since Messrs. Twelvetrees' and Ward's Geological Bulletin was published, but do not think it would add much to the value of this report, and, owing to lack of time and data to hand, have decided not to do this.

## COMSTOCK TUNNEL

A proposal was submitted by Mr. McDonald to extend the Main Lower Adit at this mine to go in the direction of the Sylvester Mine. Having been the manager of this Comstock Mine when held by the Broken Hill Pty. Bloc 10 Co. for some months, during 1909-1910, I knew something of the prospects. I had wanted my Company to purchase the adjoining property, known as the Boss Mine, but the price wanted was prohibitive, so the Main Adit and the drive into or towards Allison's Lode stands today as I left them. I believe there are four lines of formations ahead of the Main Adit that are well worth

investigation. The drive towards Allison's Workings is the nearest towards the Sylvester Mine, but there is some country to the east of the Main Adit that I like very much, and in some ways would prefer to extend this, rather than the other, but to do so means turning the direction of the Main Adit and if good values are struck at Allisons and ahead, drives could be turned from there in a southerly direction to get to it, so it is thought best to continue from the nearest and to the Sylvester Mine. I therefore recommend that this Allison's end be continued. As the lodes mentioned above are intersected they can be driven on as desired, and risen on for ventilation.

To the north of Allison's workings there is a fault (cross-course) throwing the formations to the east, but as far as can be ascertained it is not a big one and the formations would soon be picked up again. From this point for several hundreds of feet, as far as I can ascertain, there are no further faults, but at some distance from the old Sylvester workings there is, I believe, a big fault again throwing to the east. However, the country appears to be very open and may drain the workings so they can be investigated to see if it would be worth while putting in the lengthy cross-cut that would be required. I have been asked to consider whether it would be a better proposition to get to the Sylvester Mine from the Comstock Mine or from an adit started many years ago and which was driven about 120 feet. The total distance would be 2700 feet to reach the main formation. The ground in the face of this tunnel is hard and there are several trenches on the surface, and from existing evidence I do not consider the driving of this tunnel justified, at present writing. Mr. G. Waller, late Government Geologist, in writing about this proposed tunnel, expresses the same opinion, viz:- "There does not seem to me to be much encouragement to continue the adit."

The Comstock Tunnel would be used purely as a drainage system. As soon as openings are made to the surface on the ore bodies, the ore could be worked from them and put on to the Comstock Tramline or Main Road much cheaper than taking same out of the tunnel and hence to road or tramline.

The ground in the faces of the Comstock Tunnel is black graphitic slate, but from indications in Matheson's Workings to the south, where some splendid galena was won, should soon cut out, giving place to soft tuffs, which would make for cheaper driving, much cheaper than from the Sylvester end.

Once a payable formation is struck this could be driven on and getting towards the Sylvester the formation and those adjacent could be proved, but going from the Queen end towards the Sylvester there are no payable lodes known of. In fact I do not know of any until in the vicinity of the main lode on the Sylvester workings.

It had been suggested that in relaying the truckline it might be advisable to take into consideration putting the water flow under the centre of the line and create additional depth so as to keep the rail above the present level of the flowing water. There is over 1000 feet of rails now laid in the tunnel and to do so would necessitate these being lifted and the whole of the bottom cut up for some 1800 feet. This would be a costly job for a large length is in hard dolomite. It would certainly be better than as at present and would assist ventilation, but as a prospect I hardly think the expenditure is warranted.

If this work is undertaken it would be necessary for the Government to resume the ground so that it could be let out on royalty basis when payable ore is struck from time to time.

#### NO. 6 ARGENT MINE

Mr. McDonald also suggested that this mine might be opened up again by the Department or its potentialities brought under public notice with a view to attracting attention of investors.

During 1921 in reporting on this mine with the late Mr. J. Levings, then State Mining Engineer, we stated "should the mine re-open an entirely new system of working will be essential. The most responsible and important deduction what we feel we are called upon to make deals with the re-opening of the mine. The main shaft will need to be enlarged and sunk 120 to 140 feet and a different set of pumps installed. A new Head-frame and alterations to plant will be required. The work of sinking the shaft, driving the cross-cut and putting the mine in thorough working order, means considerable expenditure and it would be well for any company which undertakes this development to have available capital to the amount of £10,000."

During 1924 Messrs. W.H. Williams, Inspector of Mines for the Zeehan and Queenstown areas, Mr. J.B. Scott, State Mining Engineer and myself were asked to make a report by the then Hon. the Minister for Mines. It was pointed out that the work suggested by Mr. Levings and myself had not been gone on with and the mine badly handled. Among other things the following was recommended:- "The Government is not recommended to provide the amount of capital necessary to further explore the possibilities of the mine, if an approved syndicate is prepared to raise capital to further operate we would not be adverse to recommending financial assistance to an extent dependent upon the scheme of working to be applied and provided approved methods of working and economics are practised."

The opinions expressed there are still held by me and until cheap power is available nothing can be attempted towards re-opening the old workings, owing to heavy water flow. Even when this is available it would be absolutely necessary to have at least a capital of £10,000 to £12,000 to give this mine a reasonable chance to make good. If a company of bonafide investors could be induced to take over the area and to equip and develop the mine on sound lines, when cheap power is available, I would feel quite justified in recommending the Department to assist them on the £ for £ basis to the above figure. Money to be refunded on a royalty basis.

I have made a careful examination of the ground to the east of this mine and am inclined to think that there are good possibilities there. Owing to a heavy covering of unproductive sandstone very little work has been done in the past in that direction, but there is a position in the gully to the south-east from which fair backs could be obtained and values in galena may have come up in sufficient quantities to be payable. It is well known that owing to heavy water flowage the top portion of the lodes in some parts of the Zeehan field show the effects of leaching very much and it may be so there. However, if lines of formations, carrying even low values, were exposed, it would give a greatly enhanced value regarding the unwatering of the old mine. (It might be mentioned here that some £64,000 worth of galena has been won from this mine and

that from a comparatively small depth.) I strongly recommend that some work be carried out in that direction and this can be done while awaiting cheap power to be brought to Zeehan. The ground appears to be easy and should not be costly to put out a cross-cut from the end of an adit already existing there, which has been driven in a northerly direction, say to a distance of 150 to 200 feet.

If the lines of fracturing are there as I expect them to be they should link up with a line that goes right under the township, near the Council Chambers. Being right in the heart of the township there, practically no attention has been given to it.

I do not think there is any need for me to re-state here what has been written in previous reports regarding No. 6 Argent or other mines in the district as they are available to anyone who wants them, from the Mines Department.

Considerable attention has been given to lines of fracturing along the Big Ben and Barnett's Mines, Nth. Zeehan; the old Spray Mine extending along to the west of the Nike Mine; the area between the Swansea and the Britannia Mines; the Sylvester to the Comstock Mines; also the Dundas area, with a view of recommending that assistance be given to those already engaged thereabout, to encourage others to try out other places and in view of this report. Reports having been already made in connection with the following properties:-  
W.F. Thomas, on the Argent; J.J. Hill's, Nth. Swansea; J. Griffith's Sth. Comet; C.H. Bell's Nth. Zeehan; G.T. Bell & Pilkington's, Zeehan; and J. Dunkley's, Comstock.

#### Spray Mine to West of the Nike Mine:

Knowledge obtained in the Spray workings show, as Mr. G. Waller explained in his Geological Bulletin, 1904, fine, well-defined fissure formations running parallel with one another. I was surprised to find such a little evidence of prospecting work to endeavour to pick up these fine formations to the northward, the slopes giving fine opportunities to do so, particularly so on the hill to the west of the Nike Mine. I like the position at this latter place very much and strongly recommend that some prospecting work be done here. Some work was done near the summit of the Zeehan-Comstock Tramline but there is a series of short cross-courses there, the country being very much distorted. One tunnel driven from the No. 2 Argent side was noticed, but this had not gone far enough in to cut the Spray No. 1 lode, and it only struck a cross lode of practically no value, which, if examined, can be seen crossing the No. 1 lode at the summit. This cross lode carried galena of the usual character known to Zeehan where it crosses the Spray lode at the summit, but the Spray carries a good deal of antimony. A shaft was also sunk a little to the right of the tramline but this also only cut this cross lode.

Messrs. Page & McDermott had a splendid tribute on the old mine and paid £3100 royalty, being 10% of proceeds won from ore sold and were not long in doing so. There were three other formations cut by the Company in driving their main adit, but where intersected were poor and very little work was done on them. Why they have not received more attention I fail to see, as there are many poor places

on the lodes followed and worked with marked success, and the ore in Zeehan generally is in chutes.

The walls of the lodes are very often grooved almost horizontally and are slightly inclined to the north, showing movement has been in that direction. As far as I can ascertain no attention has been paid to cross-fracturing. To the north of tunnels, known as "C" and "E" there is evidence of this in two places and I could not see where a pick had been put in to see if there were any cross lodes here. At present writing I have received instructions to make a report in connection with an application for 10 acres as a Government Tribute on this area. I shall be surprised if something good is not found here.

I did not go over the southern end of this line of formation as a considerable amount of work had been done in that direction and my time was limited.

#### Big Ben and Barnett's Area

Personally I believe there are fine chances on old section 8909/M, 40 acres. Mr. A. McIntosh Read, late Government Geologist, gave particulars of two lines of formations and went on to state as follows:- "Between the western and the eastern lodes the sandstone rock has been out into exposing limonite and chalcopiritic on the joint faces. It is probable that this mineralisation indicates the near presence of another ore body not outcropping." I agree with this and recommend that some prospecting work be done here.

At the Big Ben Mine there are excellent prospects and if this mine were properly equipped and placed under efficient management it should give good results. The silver ration to that of lead is good.

There are other places on the known lines of fracturing where good work could be carried out providing the depth of Permo-carboniferous mudstone conglomerate and the sandstones are not too deep to allow the lead and silver values to be exposed.

At G.H. Bell & Party's Mines, Government Tribute, Section 8896/M, some good ore is showing in a winze that was being sunk at the time of our visit. They are now engaged putting in plant to allow them to sink on it and open up other known ore going underfoot by cross-cutting. This mine is an example of how easily a good lode can be missed on this Zeehan field. A lode was worked by Messrs. H. Quigley & Party in 1908 and stopped to the surface in one section. Some years afterwards some ground caved away near the surface and revealed another lode carrying splendid values behind it. Much richer than the one previously worked.

At this area there are other likely looking outcrops but owing to the depth of covering and the ore being leached out from the top of the formations and the necessity to sink to prove these, it makes prospecting work expensive. However, I am hopeful that if the present prices continue that more attention will be given to this area.

#### Swansea - Britannia Line

There is a splendid line of country here, water will no doubt be heavy, but if this area is systematically

prospected and opened up, it should pay the Hydro-Electric Department to put the power out into it later on.

J.J. Hill's property shows excellent prospects and if handled on practical lines should give very good profits.

We found one other party prospecting in between Hill's and the Britannia Mine. The party should get on to something here. Silver ratio is usually lower here than in most Zeehan Mines.

#### Other Lines

There are other lines over which I did not have time to go, but may be able to do so later on, but from past knowledge there are mines that if equipped with modern machinery and treatment plants with cheap electrical power available, and I understand this will be so in the near future, should be worthy of attention. Good ore is reported to have been left underfoot at various mines from the Oceania to the Dispatch Mines; the British Zeehan Mine at the Five Mile, and also at the Nike Mine and others. There is also another line out west of Comstock getting towards the contact of the granite that many persons think well of that has not had a great deal of attention paid it.

At present prices of metals I consider the Government would be justified in helping in every way possible those who are willing to help themselves on practical lines, and to prove out the places as suggested above. I know it may be said that considerable time and money has been spent in prospecting in and around Zeehan already, but I honestly believe there is plenty of room for valuable discoveries to be made in these areas. If only one or two good mines can be discovered it would help considerably. Some £416,000 was paid by three companies who started operations in Zeehan with a working capital of £46,000.

It might be pointed out that there is a marked difference between the extraction of metals that can be recovered now than when most of the big mines in the Zeehan area were being operated. Extraction then was in the vicinity of 65 to 75% at best. With the Flotation method 90 to 98% recoveries are possible. This is a big factor regarding whether a mine can be made to pay or not. Lower grade ore than previously can be handled.

In conclusion I might state that, in my opinion, there are extensive areas outside those mentioned above that are worthy of much closer investigation than has been given them in the past. There are also the Copper-Nickel areas awaiting development; the tin ores from the Razor Back to the Grand Prize; the Owen Meredith Area for silver-lead, and also the north-east Dundas are for fahlore, etc. etc.

Many have expressed the opinion that Zeehan is done, but I beg to differ, and trust that before long when the Hydro-Electric Department is in a position to make extra cheap power available that we shall see a great revival in mining.

(Signed) H.A. Vaudeau

Inspector of Mines & Explosives.

Upper Burnie,  
17th June, 1935