

SILVER - LEAD AT THE ARGENT TUNNEL NEAR ZEEHAN.

I have your memorandum of the 8th February, 1951, regarding representations made to the Hon. The Premier and to the Department of Mines regarding silver-lead lodes intersected during the cutting of the above tunnel. At the outset it must be stated that, as the tunnel is now completely lined with concrete, no examination of the walls is now possible. The following notes, therefore, are compiled from several examinations of the tunnel and adjacent areas made during the asbestos investigation which was carried out in the early part of 1949 together with an examination of the dump heaps at the southern portal of the tunnel.

The Argent Tunnel is driven in green and purple argillites of the Dundas Series. Intruded into this series more or less concordantly are a number of ultrabasic bodies mostly consisting of pyroxenites which have subsequently been converted to gabbro and serpentine. One such body occurs just south-east of the tunnel and forms Serpentine Hill which was recently worked for asbestos by the Tasmanian Asbestos Pty. Ltd. The contact of the ultrabasics and the Dundas Series can be observed in the cutting leading to the southern portal of the tunnel. This contact was figured in Plate VIII of "Asbestos in Tasmania" 1949. This shows that the intrusion contact is roughly parallel to the dip of the argillites.

The Dundas Series is known to be the host rock for silver-lead-zinc lodes in the Dundas and adjacent areas and rocks of equivalent age in the Zeehan basin also carry metal lodes. Ore is likely to be emplaced where there are zones of weakness in the host rock. In this area, the zones of weakness are usually fractures zones such as occur at the Montana Mine, in the Zeehan basin and further afield in the Meredith and Bon Accord areas. A different type of zone of weakness but one just as effective in determining emplacement of ore is a contact particularly one between an igneous and a sedimentary rock. Such a type of emplacement is exemplified by the Razorback tin mine in the Dundas area which occurs along the contact of serpentine and Dundas Series. In the tunnel area, an example of this type of lode was noted during the asbestos investigation. A small outcrop of gossan carrying lead occurs along the serpentine Dundas Series contact some 100 feet north of the Tasmanian Asbestos Pty. Ltd. Northeast Cut. This occurrence is right on the contact. Also I have been advised by an old prospector in the district, Mr. G. Wallace, that several silver-lead lodes occur in the Argent valley just north of the tunnel. I must emphasise, however, that I have not seen these occurrences. In addition, the area southwest of the tunnel is known to be mineralised viz. at the "Lead Blocks" and at the Duke of York Mine. A different type of mineralisation occurs at the Copper-Nickel Show.

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The greater part of the spoil derived from the tunnel was used as a filling across the Argent River and as ballast along the line. The only dump of spoil, therefore is a small one of approximately 150 cu. yards located near the southern portal. An examination of this dump was made. The material is mostly green and purple highly compacted argillite. The bedding is vague but can be observed and a slight development of slaty cleavage was noted. In general the purple material is very fine grained and the green material somewhat coarser. A mass of calcite veins crosses the bedding at high angles the veins varying from hair width to several inches. In the narrower veins the calcite is fibrous and in the wider veins coarsely crystalline. In general the calcite is pure but sometimes there is an admixture of siderite giving a cream colour to the calcite. Rarely, veins of siderite occur. Very occasionally quartz occurs with the calcite. Where-ever the calcite veins are thin no ore material occur. In the thicker veins, however, signs of mineralisation are usually apparent. The minerals associated with the calcite have been determined as follows :-

Pyrite  
 Pyrrhotite  
 Chalcopyrite  
 Bornite  
 Covellite  
 Chalcotrichite (form of cuprite)

In the specimens collected traces only of these minerals were observed. In no case was any workable concentration seen but the occurrence is of value in indicating that mineralisation was actually met with in the tunnel. In one case a specimen was obtained showing siderite veins with which fine grained galena was associated in blebs. With the galena was found pyrite, chalcopyrite, and chalcotrichite. In all specimens showing copper ores malachite occurs as a secondary mineral. Specular haematite was also noted in one specimen as plates occurring in calcite.

The general geology of the tunnel area and the known occurrences of mineralisation near at hand indicate that it is likely that mineralisation may occur in the tunnel rock. The investigation of the dump heaps has shown that mineralisation does indeed occur. The presence of copper minerals in addition to the galena is of interest. It is not surprising that no clean metal from a definite lode was found in the heaps. The tunnel was driven in 1900 when Zeehan was a flourishing mining town and the population very metal-conscious. It is most likely that any clean ore was removed from the area. The conclusion that has been arrived at as a result of the present investigation is that the tunnel area is indeed mineralised but that no idea can be gained as to the extent of the mineralisation. More specific information as to the actual location of the lodes in the tunnel itself would be of value.

The Director of Mines,  
HOBART.

Signed (B.L.Taylor)  
GEOLOGIST.

Zeehan  
 8th March, 1951.