

ZEEHAN FIELD

The Zeehan field is occupied largely by sedimentary rocks of the Cambro-Ordovician and Silurian systems. The rock types include conglomerates, grits, sandstones, breccias, slates, shales and limestones. Associated with the Cambro-Ordovician rocks there also occur spillites and keratophyric tuffs and breccias apparently of the porphyroid group. Intrusive acid (granites, etc.) and basic (gabbros and serpentines) igneous rocks of Devonian age are largely developed to the west of Zeehan.

The chief economic mineral in the Zeehan lodes is argentiferous galena, with which was associated greater or smaller amounts of sphalerite. The gangue consists of pyrite or siderite.

The lodes occupy fissures and the occurrence of ore-shoots are partly governed by the presence of cross-fractures of pre-mineralisation age.

The Zeehan lodes form a mineral belt from one and a half to two miles wide, with a general trend of 35° west of north.

The majority of the lodes in this belt have similar strikes but many strike at considerably different angles. The lodes appear to be more plentiful and perhaps important in the eastern part of the above belt.

The North Zeehan area is at the northern extremity, and the south-western area in the south-western part of this belt. There are thus possibilities of lodes being present in both these areas. The area at the south-eastern end of the belt also offers possibilities for the discovery of lodes. Prospecting has been considerably hindered by the occurrence over these areas of a layer of quartz grit ranging in thickness up to 20 feet and obscures all possible outcrops. It is under such conditions that the geophysical methods would prove their utility. The topography in these three areas is gentle and therefore favourable for geophysical methods.

RENISON BELL AREA

The following information is taken from Tasmanian Geological Bulletin No. 36 by A. McIntosh Reid.

The primary ore of the Renison Bell area consists of cassiterite in pyrrhotite and pyrite. The deposits are chiefly of the replacement-fissure type and represent replacements of dolomite, probably derived by alteration from pyroxenites. The pyroxenites occurred as carrow dykes intruding sedimentary rocks of the Dundas series. The latter include the following types:- slates, sandstones, quartzites, grits, breccias and tuffs. The strike of these rocks is from north-west to south-east, and to the dip north-east at angles of 4°-15°. The lode-fissures are parallel to the strike of the rocks of the Dundas series. Transcurrent faults of the pre-mineralization age traverse the rocks with resultant brecciation at some localities. The ore shoots are located at the intersection of the lode fissures and the transcurrent faults.

The oxidised part of the deposits consist of limonite and manganese-iron oxides. Marcasite occurs between the

gossan and the pyrrhotite. The oxidised parts of the deposits represent those which have been worked up till the present. In the oxidised ores the cassiterite was "free" and thus easily recovered by ordinary wet methods of concentration. In the sulphide ore the problem is a difficult one as the tin ore cannot be satisfactorily obtained by ordinary methods. Calcination of the ore is necessary and results in the production of slime tin ore.

The explorable ore is limited to ore shoots of limited extent.

There are thus difficulties in the way of commercial exploitation of the deposits.

#### RINGAROOMA VALLEY.

In connection with the conditions (in the letter of 30th October last) affecting gravimetric surveys, the following remarks apply to the Ringarooma Valley:-

- (1) The surface topography would be mild only on the top of the basalt flows or in the alluvial plains of the Ringarooma River where these plains are wide. The southern or south-eastern side of the Ringarooma Valley has steep slopes, while the other side has more gentle ones. There are always steep slopes from the basaltic plateau to the level of the present Ringarooma Valley.
- (2) The upper surface of the basalt is flat and horizontal or with gentle slopes only where large areas of it have been unaffected by the erosion of the present streams. There is not any superficial alluvium covering the basalt.
- (3) There are probably three basalt flows. Interbedded sediments occur only between the upper and middle flows and consist of a few inches to three feet of quartz grits. There is no evidence as to the persistence of this layer.
- (4) The basalt is underlain by a wide expansion of sediments (grits, sands and clays) ranging in thickness from 100 feet near the head of the valley to 350 feet lower down the valley. The lower surface of the basalt is approximately horizontal.
- (5) The angle of slope between the older rocks of the valley and the sediments and basalt varies according to the widths of the ancient valley. The geological sections attached give approximate values for these slopes.

The following table gives the values as taken from these sections:-

| SECTION | RINGAROOMA LEAD | WELD LEAD |
|---------|-----------------|-----------|
| A B     | West side       | 1 in 19   |
|         | East side       | 1 in 33   |
| C D     | West side       | 1 in 10   |
|         | East side       | 1 in 24   |
| E F     | West side       | 1 in 8    |
|         | East side       | 1 in 8    |

| SECTION | RINGAROOMA LEAD                        | WELD LEAD                              |
|---------|--|--|
| G H     | West side 1 in 13<br>East side 1 in 20 | West side 1 in 29<br>East side 1 in 27 |
| I J     | West side 1 in 25<br>East side 1 in 53 |  |

(6) The densities of the rocks have not been determined but should not differ to any great extent from those of similar types. The older rocks forming the sides and floor of the old valley are granite, slates and quartzites. The infillings of the valley consist of quartz, grits, sands, and clays, together with olivine basalt.

The five geological sections will, with the aid of Bulletin 35 and the above notes give most of the desired information.

The largest areas without basalt coverings (the basalt having been removed by denudation) are in the valley of the Ringarooma River north east of Branhholm and to the west of Derby, and around, and to the north of Herrick.

The most favourable area on the basalt would be to the north-north-east of Derby. It must be pointed out that the lead is here buried beneath 200 feet of basalt and 350 feet of sediments. The economical working of these deposits would also be a serious problem.

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