REPORT.

on

THE TOWER HILL MINE - TOWER HILL.

INTRODUCTION.

The following report is not intended to be a complete report on the Tower Hill Mine, but rather one based upon an examination to determine whether the quartzite contained any gold values and to otherwise indicate the possibilities of exploitable gold deposits.

The mine was not being worked and none of the underground workings were available for inspection. The examination was, therefore, restricted to the surface outcrops and trenches.

LOCATION AND ACCESS.

The mine is situated 2½ miles to the east-north-east of Tower Hill in north-eastern Tasmania.

Access is gained by road from Fingal. Up till the present the usual route has been through Mangana a distance of 13 miles. This road involves a steep ascent from the valley of Grant Creek to the top of the plateau.

A new road is now in the course of construction from a point about 2 miles out of Fingal which rises to the plateau at a much better grade and reaches Tower Hill in about 11 miles. When the length of several miles between the end of the construction and the old road nearer Tower Hill is improved this will be much the better road.

LEASES.

The following Leases are held in the name of J. G. Woolcock - 1773/G of 30 acres, 2320/W - 20 acres, 126P/G of 20 acres, and 135P/G of 14 acres.

GEOLOGY.

The country in the vicinity of the mine is occupied by slates and quartzites belonging to the Mathinna series of north-eastern Tasmania. These have a strike of 330° and while the dip is not readily observable it is apparently high and to the south-west. These rocks are assigned to the Cambro-Ordovician system.

On Section 1773/G a narrow igneous dyke can be traced from the Sunbeam shaft in a general westerly direction towards the Tower Hill Mine. It is represented on the surface by a reddish brown decomposed rock apparently of basic composition. Fresher material is found on the dump of the Sunbeam Mine in which the dyke was probably intersected. The fresher material is more intermediate to acid in composition, but it is difficult to give a specific name to the rock until an analysis is obtained and a thin section examined. The dyke is probably either of Lower Palaeozoic or Devonian in age. If the latter it is connected with

the granitic intrusions and may have some relationship with the quartz reefs of the district.

Permo-Carboniferous rocks and Mesozoic diabase (dolerite) occur on Tower Hill to the west).

MINE WORKINGS.

The mine workings are confined to lease 1773/G. The oldest are the two shallow shafts and connecting trench known as the Prince workings, while some of the prospecting holes to the south-east may belong to the same period.

In 1922, the Tower Hill G. M. Syndicate N.L., sank two shafts to a depth of 53 feet. From the No. 1 or north shaft it is stated that a crosscut was driven 50 feet south and two quartz reefs intersected. The reef near the shaft was driven on 35 feet west and 46 feet east with a crosscut driven 12 feet to the south of the latter. The other reef was driven on for 6 feet only.

The No. 2 shaft was sunk from a point 230 feet south-east of No. 1 but no crosscutting was carried out from it.

In 1923, the Tower Hill Cons. N. L., took over the property. A main shaft was sunk in the slates to the east of the quartzites. It was intended to sink the shaft to 200 feet but it is stated that only a depth of 100 feet was reached and crosscutting into the quartzites was then carried out.

During 1929 and the early part of 1930, a considerable amount of trenching and sampling on the surface was carried out by those at present interested in the property.

The workings (excepting underground ones) are shown on the attached sketch plan. The numbering of the trenches is that of the writer as no plans were available to show the numbering adopted by those interested.

ECONOMIC GEOLOGY.

The formation that has been the subject of the mining work consists of a bed of quartzites interbedded with the slates of the district. This bed has a strike of 330° and apparently a high dip to the east. The width of the bed cannot be definitely determined as the enclosing slates do not outcrop to any great extent but judging by the outcrops of the quartzites it must be in the vicinity of 60 to 100 feet. This bed was originally deposited as sand but due to consolidation and later regional metamorphism it was converted to a sandstone and ultimately to a quartzite as were all the similar beds in the Mathinna series.

The quartzite contains narrow veins and irregular masses of white quartz. The general trend of the veins is across the strike of the quartzite. The trenches have often been excavated along the groups of narrow veins and show the strikes to range from 40° to 80°.

The quartz was found to be gold-bearing and all the earlier mining works were designed to test the veins. Thus the shafts were usually sunk on the outcrop of the veins which

were found to dip to the south, thus necessitating southerly crosscuts to pick up the veins. Except from the driving from the No. 1 Shaft, very little underground driving has been carried out on the veins.

When it became known that the quartz veins were narrow but numerous, the objective of the mining work (beginning probably with that of the Tower Hill Consolidated) was to ascertain whether the whole of the quartzite and contained veins contained a sufficient content of gold to render a large low grade deposit capable of being economically exploited.

The problem as to whether the quartzites contained any gold naturally arose. As a result of a brief visit in 1923, the writer stated that they did not contain any gold, and this statement was recently called into question or further guidance on the occurrence of the gold was sought. Accordingly on the recent visit the quartzites were sampled, care being taken to see that the samples were entirely free from quartz. The samples were taken by breaking off pieces of quartzite across the various trenches and thus represent fairly representative ones. Samples were taken from the following trenches - 1,2,3,4,5,6,7, 10 and 14. They were assayed in the Mines Department Laboratory, Launceston and each of the nine samples gave "NIL" results for gold and silver. These results prove beyond doubt that the quartzites do not contain any gold.

It is obvious, therefore, that the gold content of the quartz will have to be relied on if the deposit or any part of it is to be tested as to its economic possibilities. The fact that the quartzites do not contain gold does not necessarily mean that the deposit or portions of it are not exploitable, but rather that the quartz veins, or when the veins are close together the mixture of quartz and quartzite will have to be tested to ascertain the economic possibilities. The fact that the quartzites do not contain gold does, however, reduce the chances of such possibilities.

Judging by what can be seen from the surface workings it does not appear probable that any of the quartz veins or reefs will be sufficiently wide or long to make a profitable mine or to warrant mining operations. A sampling campaign to determine the gold content of the quartz was not undertaken owing to the limited opportunities on the surface and to the fact that the underground workings were not available for inspection.

The portions of the deposit, therefore, in which there remain possibilities of exploitable ore-bodies are those in which the quartz veins are sufficiently numerous and closely spaced. Such a condition will tend to make a large tonnage of ore available. The value of the ore would, however, be the determining factor and would have to be proved by prospecting, development and sampling before the ore could be considered as of commercial importance.

CONCLUSIONS.

The formation at Tower Hill which has been prospected and opened up consists of a bed of quartzite with narrow veins and irregular bodies of quartz. The quartzites are barren as regards gold and silver. The quartz must, therefore, be regarded as the only source of gold in the deposits. The quartz

veins are probably too small to warrant exploitation even if the gold values were sufficiently high. It would appear, therefore, that the only possibility of the existence of exploitable ore-bodies is that in some parts of the quartzite the veins and irregular masses of quartz are sufficiently numerous and closely spaced to render these parts of a nature suitable for mining.

As to whether such conditions actually exist, could however, only be determined by extensive prospecting, development and sampling both on the surface and underground to determine the extent and value of the ore.

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