

NOTES ON THE TOWER HILL MINE

The Tower Hill Mine is situated in the Tower Hill district about midway between the mining districts of Mathinna and Mangana in north-eastern Tasmania.

The country in the immediate vicinity of the mine is fairly level and in fact represents a re-exposed portion of an ancient peneplain. It is at an altitude of approximately 1800 feet above sea level.

The peneplain was formed by a long period of erosion acting on the rocks of the Cambro-Ordovician sedimentary system and the intrusive Devonian granite.

On the peneplain the basal members of the Permo-Carboniferous system were deposited followed by the later members. The basal members consist of fine conglomerate and grits and pass up into normal sandstones. These are followed by the siliceous mudstones and limestones, all highly fossiliferous and belonging to the Lower Marine series. These were probably followed by the Upper Marine series and later by the Triassic system.

The Permo Carboniferous and Triassic systems were later intruded by the diabase of Mesozoic age.

The basal and Lower Marine series of the Permo-Carboniferous system occur on the flanks of Tower Hill, but the overlying members have been removed by subsequent denudation. Diabase, I believe, occupies the summit of Tower Hill.

The Cambro-Ordovician system consists of slates, quartzites and sandstones, and forms the bedrock in the vicinity of Tower Hill. Slates are the most prominent rock type. They are light coloured at the surface (greys and buffs) but at depth give place to dark unweathered types. The quartzites are fine-grained types representing altered sandstones, and are generally greyish at the surface and darker at depths.

The slates and quartzites are all conformably bedded. The strikes and dips cannot be given owing to absence of notes of observations taken during the visit to the mine.

A small amount of basic (or ultra-basic) rock occurs in association with the slates, etc. It is all completely weathered and occurs in narrow bodies (either intrusive dykes or interbedded lava or ash beds). One such body occurs near the old Sunbeam (?) workings.

The above series of slates and quartzites belong to the Mathinna series which occur in all the goldfields in north-eastern Tasmania. The usual type of gold deposit is the normal quartz reef with small amounts of sulphides and gold. The quartz reefs are genetically associated with the Devonian granite of north-eastern Tasmania. The basic igneous material does not appear to be connected with the gold deposits in any way.

The deposit at the Tower Hill Mine is somewhat different to the usual type. It consists of numerous short and narrow quartz veins in a band of quartzites about 100 feet wide. As far as my inspection could determine (although there were not many exposures and

samples suitable for observation) the gold only occurred in the quartz veins and not in the quartzites. It is improbable, and I believe that this was proved by the workings, that any of the individual veins would be of sufficient size to mine by itself. Even if one or more veins could be mined separately, the reserves in each would be very small and a large amount of developmental work would be required to find and prove similar veins suitable for mining, supposing such exist.

The deposit would probably have to be mined on a large scale to be of economic importance. The success of this would depend upon whether the whole bed of quartzites (or a large part thereof) and the contained quartz veins have a gold content sufficient for profitable extraction and treatment.

The operations of the Tower Hill G.M. Co. (who operated in 1926 and 1927) were designed with this object in view. Surface trenching was carried out to a certain extent and then a main shaft sunk to a depth of, I believe, 120 feet. A certain amount of crosscutting was carried out from the shaft.

The sinking of the shaft had not been completed at the time of my visit and I was unable to examine any of the underground workings. Neither am I aware of the values and results obtained in the sinking and crosscutting. The obtaining of such values should give a very fair idea of the value and possibilities of the deposit. Further work could also be based on these results.

It must be pointed out that the basal conglomerates and grits of the Permo-Carboniferous system have been mistaken for alluvial deposits. These beds may contain some gold but their method of formation in wide, shallow waters necessarily excluded the possibility of any great concentration of gold.

The above notes were written from memory and are necessarily sketchy, but give a general account of the geology and the mode of the occurrence of the gold deposit at the Tower Hill Mine.

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