

COPPER PROSPECTS, MT. MUELLER MINE.

Messrs. F. Marriott and E. Sharp of Tyenna, while prospecting in the vicinity of the Needles, became interested in signs of mineralization at the old Mt. Mueller Mine, both in surface outcrops and old workings. They are desirous of obtaining assistance to cut a track from the A.N.M. Road to the old workings.

Means of Access.

From a point on the new A.N.M. Road between the  $4\frac{1}{2}$  and 5 mile peg from Maydena, an old track can be followed a short distance and then the going is mainly over open button grass country for 70 chains until the old Humbolt Track is reached on the edge of the Razorback. From here to the mine it is about  $2\frac{1}{2}$  miles but the track is quite overgrown and the scrub, particularly regrowth since the 1934 fires, is very thick. A better route from the Razorback would be further to the North where the going is, for most of the way, over open button grass.

Previous Reports.

In 1908, W.H. Twelvetrees visited the area. In his report he states that the lode outcrop was discovered in 1891 and then became a gold reward lease. He describes various small underground and surface workings and lodes and states that although lodes do contain both copper and galena, it would be premature to call them either copper or galena lodes before more work was done. Some new developments were attempted because in 1939, Q.J. Henderson reporting on an application for financial assistance, mentions a new shaft of 10 feet and a new adit of 60 feet. (It is this latter adit that Messrs. Marriott and Sharp re-located). Henderson concludes his report "It is apparent that the veins exposed are too narrow and low grade to be of economic importance and, in view of the nature of the deposits, further work in the hope of locating richer and bigger deposits cannot be justified".

Topography.

From the Needles and Tim Shea, the country falls away very rapidly and the bold topography of these high places gives way to small hills and button grass plains between the A.N.M. Road and the old workings. The only exception is a small ridge - the Razorback, through which the Northern branch of the Tyenna River cuts a small gorge. This stream, the largest in the area, follows an old glacial valley which originated between Tim Shea and the Needles.

Geology.

Along the new A.N.M. Road, Gordon River Limestone may be seen outcropping here and there and boring at the Gap indicates a good thickness of these beds. Stratigraphically below the limestone, but in places outcropping at higher elevations, is a series of quartzites, conglomerates and slates of probably Lower Ordovician Age. The quartzite and conglomerate members outcrop boldly, showing well defined structures on the

Needles and Tim Shea.

In the vicinity of the mine, however, the slate members predominate, although some quartzitic and transition rocks also outcrop. At the surface the slates often have a brownish colour but underground, in the adit examined they are very black and silicified. On the Razorback tubicolour quartzites outcrop, striking at  $305^{\circ}$  and dipping East at  $45^{\circ}$ .

The general structure of the area appears fairly simple. The Needles are an expression of an anticline, striking at  $305^{\circ}$  and dipping to the South East. The hard quartzite beds on the Eastern Limb have a steep dip and above these are the softer slate beds outcropping near the Humbolt Mine. The strike and dip of these beds have been measured at  $300^{\circ}$  to  $310^{\circ}$  with dip from  $70^{\circ}$  to  $85^{\circ}$  to the East.

Several authors in the past have placed these Humbolt slates and quartzites in a different and lower age (Cambrian) from the prominent quartzites and conglomerates (Ordovician) of the mountains; but there appears no justification for this and the beds at the mine succeed those of the Needles conformably and are themselves succeeded by the limestone.

Economic.

Two small surface cuts and a short adit were examined. The country rock is a black slate containing veins and bunches of quartz and carbonates, sometimes containing minor amounts of iron and copper pyrites. Just above the track on a spur facing the main slope of the Needles is a cut which penetrates 20 feet into indurated slate containing quartz-carbonate veins but no sign of sulphide minerals. Further up the hill an adit has been put in for 80 feet on a bearing of  $60^{\circ}$  on a series of quartz carbonate veins containing small amounts of copper pyrite. These veins are very narrow and erratic and drives to the South-east have tried to follow them. Nowhere are they more than a few inches wide and contain very small amounts of metallic minerals. Twenty-five feet further up the hill is a cut 10 feet deep exposing black slates cut by a quartz formation 15 inches wide containing much country rock and tiny specks of pyrite and chalcopyrite. This vein system is striking at  $30^{\circ}$  and dipping to the south-east at  $80^{\circ}$ .

The main adit of the old Humbolt mine is about 25 chains North of these workings and is now inaccessible.

Conclusions.

Although there is definite mineralization in this, and indeed several other areas, in this region, it is really of academic interest only. The veins exposed are too narrow and low in copper to warrant further development and indeed it is difficult to imagine the justification for the work already done. The source of the mineralization - a granitic magma - is not apparent anywhere at the surface and doubtless lies well beneath so that there is a likelihood of heavier mineralization at greater depth. However the indications revealed now are too meagre to encourage the extension of any developments from the surface.

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