

REPORT ON NICHOLLS RANGE COPPER DEPOSITLOCATION AND ACCESS:

Nicholls Range is a unit of the western highlands of Tasmania extending northerly from Gordon River at a distance of approximately 45 miles upstream from Macquarie Harbour.

Access is difficult, the only present means, being by motor boat from Strahan across Macquarie Harbour and up the Gordon River as far as Cataract Creek, a distance of 44 miles. Above this point rapids are frequent and access is made possible by using flat bottomed row boats for a further distance of about 23 miles.

In 1900 a track was constructed along the north side of Gordon River from the deep water portion at Gould's Landing, through a saddle in the southern part of Nicholls Range to Maxwell River. This is now overgrown and difficult to find.

TOPOGRAPHY:

The main topographical feature of the area consists of Nicholls Range, a meridional trending mountain rising to approximately 1,500 feet above sea level. Gordon River skirts the southern base of the range, flowing by way of a sinuous channel, in a general north-westerly course, to Macquarie Harbour.

Other drainage channels consist of Smith and Maxwell Rivers running southerly to join the Gordon River on the west and east sides respectively of Nicholls Range.

GEOLOGY -

Pre-Cambrian: The Nicholls Range is composed of quartzites and schists of Proterozoic age, the main types of the latter being mica and quartz schists.

The rocks have strikes varying from 293° to 323° and dip to the north east at angles between 50° and 80° .

Silurian:

Rocks of Silurian age are in contact with Proterozoic schists on west side of Nicholls Range gorge. They extend over a north-westerly trending belt along which Gordon River flows to Macquarie Harbour, and are well exposed in the banks of that stream. The rocks consist of an inter-bedded series of limestones, quartzites and slates which have been referred to as the Gordon River Limestone Series. The limestones are generally massive, blue-grey types, but shaley and argillaceous varieties occur in places.

The quartzites are massive and generally fine grained, while the sandstones appear to be derived by weathering from the former. The slates are dark-grey to black in colour and show cleavage planes parallel to the bedding. A series of anticlinal and synclinal folding, with northerly trending axes, is suggested by measurement of the

strikes and dips of the beds through a section along Gordon River, from Butler's Island to Nicholls Range. A distinct syncline is visible in the western portion of Princess Range gorge, and near eastern end faulting is prevalent in conjunction with what is possibly an anticlinal fold. Between Franklin River and Cataract Creek anticlinal folding is indicated.

South east of the Franklin River the rocks have strikes varying from 340° to 350° and away from the folding dip at angles between 45° and 85° to the north-east. To the west of Franklin River the strike alters to the north-east, and low dips towards the north-west are the rule.

The limestones occur in three, and the quartzites in four separate belts approximately parallel. The available evidence is insufficient to show if they represent beds of the same horizon, which have been repeated owing to folding or/and faulting, or whether they were deposited at different stages.

Typical Silurian fossils are present in abundance in the slate and sandstone beds bordering Gordon River on the upstream side of Harrison Creek mouth. Diligent search disclosed no definite fossils in the limestones.

The relationship between the Proterozoic schists and the Silurian rocks is a faulted one, the latter occurring in a block faulted down against the schist.

THE COPPER DEPOSIT:

Statements have been made that the deposit was discovered by R. Marriott about 30 years ago, but no attempt was made to prospect or develop the occurrence.

The deposit is situated on the banks of a small stream flowing to Maxwell River on the eastern fall of Nicholls Range, and adjacent to the highest southern peak. It occurs within 100 yards of the old track, and about 450 feet below the saddle across which the track was constructed en route to Maxwell River.

The rocks in the vicinity consist of mica, quartz mica and talcose schists, having a general strike of 323° and dip to the north east at an angle of 50°.

Mineralisation occurs in the form of impregnations of portion of this schist belt by small blebs and veinlets of chalcopyrite (copper pyrites), and to a less extent, pyrite, distributed along the planes of schistosity. Covellite also occurs, but in minor quantities, as an alteration product of chalcopyrite. Bunches and small veins of quartz frequently traverse the schist planes. These seldom contain copper but the distribution of chalcopyrite in the rocks appears to be associated with the quartz.

A leached zone extending to a depth of one to three feet occurs at surface and is represented by varying quantities of green copper carbonate (malachite), leachings along the outcrop. The most conspicuous leachings occur in a cliff face, up to 75 feet in height, rising from the right bank of the creek. The staining is more concentrated along certain bands of the schists, over a width of twelve feet, where it follows the outcrop of the schist planes up the cliff to a visible height of 50 feet.

At ten feet above creek level the weathered surface rocks have been blasted out to expose the primary chalcopryrite bearing schists. Three contiguous samples from this point, over a total width of 11 feet 10 inches, taken at right angles to the schist planes, were submitted to the Assayer for treatment with the following results:-

<u>Width</u>	<u>Gold</u>	<u>Copper</u>
1'0"	Nil	1.58%
3'10"	"	1.90%
7'0"	"	2.06%

The three samples obtained gave an average of 1.96% copper and indicate the copper content of the mineralised body, providing no unusual enrichments or impoverishments occur.

The primary zone is not exposed elsewhere in the area since no further prospecting or development work has been undertaken. Owing to thick undergrowth and soil covering, these schists are elsewhere poorly exposed, and for this reason little impression of the extent of mineralisation could be ascertained. All that can be said is that the mineralised belt appears to be small in consideration of a low grade deposit of this type.

CONCLUSION:

A low grade copper deposit consisting of chalcopryrite impregnating bands of mica and talcose schists of Proterozoic age, exists at Nicholls Range, an isolated district difficult of access.

The full extent of the mineralisation has not been proved and little prospecting carried out. A leached zone occurs at surface and the primary zone has been broken into at only one point.

A limited amount of development is warranted to test the deposit for possible enrichments and to gain information relative to extent of the mineralised belt. For this purpose an adit, commencing at creek level, at foot of cliff face referred to, would be the first consideration. This should be sited to cross-cut the schist planes, as far as possible, to ascertain width of ore-body and facilitate sampling.

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12th December, 1938.