

REPORT ON D'URVILLE ISLAND COPPER MINE BY S. HERBERT COX, F.C.S., F.G.S.
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Mr. S. HERBERT COX to DIRECTOR of the GEOLOGICAL SURVEY.

DEAR SIR,

Wellington, August 27th, 1878.

I have the honor to inform you, that, in accordance with your instructions of the 22nd instant, I have examined the deposits of copper in D'Urville Island, to work which a company has recently been formed—the results of my observations are as follows:—

The mine is situated at the Southern end of D'Urville Island, the copper occurring in a belt of serpentine, which may be traced from the Dun Mountain at Nelson to the Croixelles and again throughout the length of D'Urville Island.

This belt of serpentine is in contact with certain coarse-grained green sandstones, and banded slates, of the Maitai series, in which veins of quartz, with nests of pyrites occur, the strike of the slates being about N.N.E.

It must not be imagined that the occurrence of copper on D'Urville Island is a new discovery, for as early as 1859 Dr. V. Hochstetter in a lecture on the Geology of Nelson, says, in speaking of the Dun Mountain, and the mineral belt generally:

“In Croixelles, and in current Basin, where copper mining operations have been carried on, the indications were very obscure, and the result has proved that there is no reasonable ground to expect a profitable copper mine there. More promising specimens of copper ore have been obtained from D'Urville's Island. The character of the ores met with there is quite the same as in the Dun Mountain.”

With reference to the present aspect of affairs at D'Urville Island:—

Outcrops of cuprite, coated with malachite and azurite, have been traced at intervals over a distance of 900 yards or thereabouts, in a N.E. and S.W. direction, these outcrops generally occurring on a bare ridge of serpentine which is about the centre line of the piece of ground which has been leased from the Maoris for mining operations.

The outcrops, and the various points at which prospecting operations have been undertaken can be referred with greatest ease to the manager's house, which is situated on the ridge just mentioned, about 300 yards to the North of the centre of the lease.

About 110 yards to the N.N.E from this point, a rock occurs, apparently as large boulders in the serpentine, containing small patches of native copper with silicates and carbonates on the outside of the boulder.

This rock occurs at several places where the copper has been opened upon, but never in such great force as at this point.

About 40 yards below the hut, bearing S.S.E., another outcrop of ore occurs, about 1½ feet thick.

A trench or underhand stope is being made on this outcrop; the results seem favourable.

Cuprite is found here, but at the time of my visit *copper glance* yielding 24.86 per cent. of copper appeared to be the most general mineral, and Mr. Skey has since assayed specimens of this for silver, and informs me that a very little occurs in the ore, but not sufficient to prove of any value.

About 210 yards from the hut, in a S.30.W. direction, a shaft has been sunk to a depth of 35 feet; this is known as No. 1, or Redwood's shaft.

At the present time *cuprite* and *copper glance* are being obtained from the bottom of this shaft, and a tunnel is being driven to the Southward in the direction that the ore band takes.

About 25 yards from No. 1 shaft an underhand stope has been commenced on a band of *cuprite* which cropped out at the surface, but was wedged out at a very short distance down, by a parting, which, on being broken through shewed another rich deposit of copper, the two bands thus found appearing to lie between well defined walls of rock, from which the ore readily separated.

This lower patch of ore, at the time I arrived at the mine, had just been struck, and by the time I left the island, had widened out to about six feet, the ore yielding by analysis 16.49 per cent of copper from a fair average sample.

No. 2 Shaft has been sunk at a distance of 250 yards from No. 1 shaft, and bears S.W. from the hut. It is 30 feet deep.

At the surface, I am informed that a band of ore 3½ feet thick occurred, which at a depth of eight feet was pinched out by a black compact serpentinous rock, and after sinking for another 10 feet, following the parting in this rock, that another patch of ore was found, the band of ore being 2½ feet wide, but divided by a band of serpentine breccia; the walls, however, seem well defined.

No. 3 Shaft bears S.50.W. from the hut, and is about 200 yards from shaft No. 2. This shaft is only 12 feet deep, but carries ore to the bottom, the ore band being from 1½ to 2 feet in thickness and very solid.

Another small shaft 7 feet deep, has been sunk near this, the ore being as good here as in the other localities.

A tunnel has been entered on the North-West side of the ridge on which the ore outcrops occur and has been driven for a distance of 135 feet in the direction of No. 1 shaft. This tunnel is entered at an elevation of 52 feet below the mouth of No. 1 shaft and at a distance of about 123 feet from the mouth of it, so that it would appear to have passed below the general run of the ore band. In summarising the results, I shall have occasion to refer to this.

SUMMARY.

It will be seen from the above notes that outcrops of ore have been traced, at intervals, for a distance of about 900 yards along the surface, in a S.W. and N.E. direction, and that four small shafts have been sunk to prove the ore at different points. These shafts do not appear to me to be on the same band of ore, but on at least three different ones, and I think it is probable that there is yet another.