

RENISON BELL MINE

&

CORNWALL TIN MINING COMPANY

N.E. DUNDAS TIN FIELD

W. Coast Tasmania

Extract from R.E. Carr's Diary ≈ 1904

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Extract from diary of

P. E. J. CARR :- 1903-1906

MUSEUM

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N. E. Dundas Tin -
Field. W. Coast. Tasmania

Renison Bell Mine:

G. A. Waller says. "The majority of the ore consists of dense pyrite & pyrrhotite, with small crystals of tin^{oxide} embedded in it. The ore will have to be first crushed, then roasted, & the tin oxide concentrated from the roasted product. Further trials necessary before possible to decide on best class of machinery to adopt. In some of the ore, where the pyrite is not dense, it will probably pay to concentrate before, as well as after, roasting. Some of the tin is in an extremely divided state, & this no doubt will be difficult to save, & the

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loss in concentration will be considerable, but I think that, with the majority of the ore, the tin is sufficiently coarse grained to enable a fairly close saving to be effected.

Bulk samples of solid pyrite run from practically nil to about 10% metallic tin.

Very little work has been done. These deposits are very patchy in their occurrence, in some places very rich & in others practically barren. The question as to whether the proposition will be a payable one or not depends on whether the rich shoots occur in sufficient abundance & of sufficient size & richness, to pay for the prospecting work which will be necessary for their

discovery.

These deposits have been undoubtedly formed, like the other tin deposits of N. Dundas, by replacement of the slates & sandstones with mineral matter. In most cases, the mineralisation has taken place along certain zones of fracture or fissuring. The mineralising solutions have ascended along the cracks & fissures, & have attacked & replaced the country rock with which they came in contact; in other cases they have travelled along some specially porous or specially soluble bed, & attacked & replaced it with mineral matter, more or less completely.

It is probable that the seeming irregularities, not only in the tin contents, but also in the general mineralogical

composition of these deposits, may be satisfactorily explained, on the assumption that certain beds, owing either to their greater porosity or solubility, or to difference in chemical composition, & the presence of suitable precipitating agents, have been more favourable to the processes of replacement & to the deposition of certain metals than others. Where, therefore, these favourable beds have been intersected by fissures carrying mineralising solutions, there will be the most likely place for shoots of payable ore to be deposited.

The country rock consists of clay slates & sandstones. To the W. of the tin-bearing deposits a dyke of tourmaline porphyry traverses the sections, & there is no doubt

that the tin deposits are genetically connected with this intrusion. There are quite a number of tin-bearing formations known on the property, but are in a very undeveloped state.

The Cornwall. Tin Mining Co

A large tin bearing pyritic formation exposed in several benches & open cuts. Geologically, the deposit is of great interest. The banded nature of the pyrite, pyrrhotite & tin oxide, & indurated slates at once pronounce the deposit to be formed through metasomatic ~~dis~~^{re}placement of a rather finely laminated shale, the whole structure of the original shale being beautifully preserved in the dense ore. It is evident that the bed of shale was

impregnated by mineralising waters or vapours, which attacked the more soluble layers and, taking up the material of the shale in solution, deposited the pyrites & tin oxide in its place. It is a well recognised fact that tin deposits are intimately connected with granite intrusions. During the consolidation of the granite, it is believed that emanations of metal-bearing vapours or highly heated waters are given off, of very high chemical activity. The solutions attack & dissolve certain constituents of the rocks, & deposit mineral matter in their place. The solutions contain certain elements known as "mineralising agents", of which fluorine & boron are the commonest. These are believed

to play a most important part in the process, & minerals containing these elements are almost always found associated with deposits of tin ores.

At the Cornwall mine we have a boron mineral in the axinite, with which the deposit is associated, while at the Commonwealth Mine the mineral fluoite occurs. It is known that granitic rocks (viz. tourmaline-quartz porphyry) occurs in the vicinity of the deposits. It is further known that stanniferous & boron emanations have taken place from this rock, for the tin bearing veins in porphyry on the Penzance Co's Section are proof of the former; & the tourmalinisation of the slates & gabbro. in the vicinity of the porphyry are proof of the latter, tourmaline being another mineral which contains

boron. There can therefore be no reasonable doubts as to the main facts of the origin of the deposit; but there is still some doubt as to the path which the vapour or heated waters took in ascending from the granitic hearth. This point is of the greatest importance to the miner, because it is along this path that he must look for the continuation of the deposit.

At the Cornwall Mine, we may assume, as a working theory, that the solutions ascended along the fault-fissure now filled with azurite, & that from this fissure they attacked & replaced the most porous or the most soluble beds or layers of shale.