

ARSENIC RESOURCES OF TASMANIA.

Arsenopyrite, sulph-arsenite of iron Fe As S , better known under the vernacular name of "mispickel", occurs plentifully in the ore deposits of Tasmania, but not in sufficient quantity to warrant extraction. Larger deposits are known to exist at Dundas, Mt. Horror and Scamander, but have not yet proved of economic importance. It usually occurs in the amorphous condition, and when in the crystallised state the individual crystals are more imperfect than those commonly found elsewhere in other parts of the world.

In the Alberton and other far north-eastern districts, arsenopyrite, usually auriferous, is the predominating sulphide in the normal quartz reefs, and in conjunction with the close proximity to granite indicates a higher temperature formation than elsewhere in Tasmania.

W.F. Petterd, in the Minerals of Tasmania, reports under Arsenopyrite as follows:- "about Lyndhurst and east of Mt. Cameron it is abundant and commonly highly auriferous." "At the Magnet Mine it occurs sparingly, but in beautifully formed crystals and trillings. At the Colebrook Mine it is found intermixed with axinite and pyrrhotite. At many other localities the mineral occurs, but does not, so far as is known, present any features of special interest. Occurs as minute needles abundantly scattered throughout siderite gangue, Block 291 Ringville. Analysis of the mineral from this locality:-

Fe	32.95%
As	43.20
S	<u>21.48</u>
	97.63

with about 2 per cent antimony."

Of scientific interest only is the occurrence of native arsenic, in hemihedral crystallizations, with radiated internal structure; colour almost tin white, tarnishing black, in the East Bischoff and North Valley lodes, and arsenolite (arsenious acid or white arsenic at the Penguin Mine, Mt. Horror and in the vicinity of the Western Pinnacle etc.

Mt. Horror Prospect.

Many years ago, during the period of gold mining activity in the Warrentinna district, three parallel, arsenic bearing lodes were discovered on the southern slope of Mt. Horror. At the time, little exploration work was performed but the hopes of the operators were not realized and the prospect abandoned.

In 1924 attention was again directed to these lodes, this time as a source of arsenic, which with the addition of the small proportion of gold, it was considered would allow profitable exploitation. The main ore body is well exposed, The outcrop can be traced several chains along a sharp ridge, with a general northerly

trend. The body ~~as~~ exposed in the trench ~~is~~ eight feet in width and consists of a glassy quartz flecked with arsenopyrite, a little chalcopyrite and a little pyrite. The proportion of arsenopyrite on the hanging wall side is very small, increasing gradually as the footwall is approached until it represents one fifth of the lode material. Short shoots of clean arsenopyrite, ~~two~~ to three inches wide, appear at intervals.

The following analyses represent the arsenic and gold content of the average grade and selected ore respectively:-

No. 1 sample	Arsenic	9.66%
	Gold	Nil
	Silver	0ozs. 6 dwt. 13 grs.
No. 2 "	Arsenic	3.80%
	Gold	Nil
	Silver	0 oz. 9 dwt. 4 grs. As.
No. 3 (selected ore)	As.	31.76%
	Gold	Trace
	Silver	3 dwt. 22 grs.

Careful investigation shows that even a very large body of the average grade of ore cannot be mined, treated and marketed at a profit to the operator. The proportion of selected ore is too small to be worthy of consideration.

In the Scamander district, east of the Western Pinnacle group, many years ago, Dr. L. Grey Thompson and David Powell located an arsenopyrite prospect and the body was opened in trenches and an adit. An irregular but large body of quartz, arsenopyrite and pyrite is exposed in a trench 60 feet long and is apparently a part replacement of the containing quartzite and tuff rocks. Much of the arsenopyrite has been oxidised to white arsenious oxide. A sample of the ore did not contain a trace of tin. It is reported that tin was found in the ore cut in the adit. The ore body is exposed again in trenches on the east and west sides of the track.

Other exposures in this district are at the Trafalgar, Beahr's P.A. etc.

In Geological Survey Bulletin No. 36 - The Dundas Mineral Field - by A.M. Reid, reference is made to the large proportion of arsenic contained in some of the sulphidic ore of the Razorback Tin Mine, the saving of which in future operations on a more extensive scale may be worthy of consideration.

This depends in the first place on the quantity available, and also on the ultimate necessity for a calcining plant when the oxidised ore shall have been removed and the sulphidic zone shall have been entered.

The oxidation of arsenopyrite, if associated with

marcasite under natural conditions, is very rapid and is sufficient to set free the contained tin ore; but it must be kept in mind that the zone of primary sulphides, where pyrrhotite takes the place of marcasite, lies at no great depth below the surface.

A selected specimen of tin-ore with arsenic was composed of

Silica	8.60 per cent	Arsenic	20.93 per cent
Ferric oxide	22.06 "	Antimony	0.43 "
Alumina	1.94 "	Tin	11.33 "
Lime	Nil	Sulphur	0.13 "
Magnesia	2.89 "	Ignition Loss	21.80 "

No production of arsenic has yet been recorded from Tasmania.

From the above it will be apparent that although arsenic in the form of arsenopyrite with gold and tin ore as common associates, is widely distributed throughout the State, no deposits of commercial importance have yet been located.

The Dundas deposit associated as it is with cassiterite is likely to prove the most important of the known deposits.

Q.J. Henderson (Sgd)

ASSISTANT GOVERNMENT GEOLOGIST.

Mines Department,
HOBART

9th September, 1935