REPORT ON THE ALLUVIAL TIN DEPOSITS AT BICHENO

LOCATION & ACCESS

The alluvial deposits are situated two miles to the south-west of Bicheno on the south side of the Hobart-Bicheno road.

The township of Bicheno is 106 miles by road from Launceston and 113 miles by road from Hobart.

TOPOGRAPHY

A low and broken range of hills extend south from Bicheno parallel to the East Coast. This range forms a watershed between the steep slope to the coast and on the east the mature valley of the Apsley River on the west. A similar range extends to the north-west from Bicheno and joins the main East Coast Range.

In the vicinity of Bicheno, numerous small streams rise in the hills and flow in southerly and westerly directions to join the Apsley River. After leaving the foothills these streams flow across the plains extending along the Apsley River.

GEOLOGY

Granite occupies the greater part of the district under review. It extends as a narrow belt from Bicheno southwards along the coast. In the vicinity of Bicheno it is exceedingly coarse in grain and contains very large porphyritic crystals of felspar.

In the area where the tin ore is found, the granite is not porphyritic and is generally much finer in grain. The rock consists essentially of quartz, felspar and biotite (black mica) and is generally similar to the Devonian granite of north-eastern Tasmania.

Typical Mesozoic diabase (dolerite) occurs to the west of the granite. The relation between the two is very indefinite in this area but in other parts it is found that the relation is a faulted one. The fault is present along a considerable part of the East Coast and is a very large and definite one. The down-throw is to the west.

In the vicinity of Rule Creek and the eastern part of Lilla Villa the relations between the diabase and granite are very complicated.. Small areas of granite occur within the diabase and small and large areas of diabase occur within the granite. These occurrences are along the line of the above fault and it is therefore assumed that they are caused partly or entirely by the faulting which is a apparently not of a simple character.

The plains along the Apsley River consist of gravels, clays and alluvium. These probably range in age as far back as the Pleistocene. The grits, gravels and alluvium along the present streams are of Recent age.

ECONOMIC GEOLOGY

On the eastern part of Lilla Villa and on the lease and prospecting areas to the east, numerous shafts have been sunk and some revealed the presence of alluvial tin ore. The majority of these shafts were sunk in the Recent deposits along the course of the small creeks. These alluvial deposits are shallow (up to 10 feet in depth) and narrow, being confined to the stream valleys. They consist chiefly of quartz grit (derived from the granite) with in some case one to two feet of gravels or "wash" on the bottom and overlying soft granite.

The superficial detrital matter on the banks between the streams has also been tested by prospect holes and found in some cases to contain tin ore.

As all the small streams traverse the plains along the Apsley River it was thought that the deposits forming those plains might also carry tin ore.

The source of the tin is the granite to the north-east of the plains. No lodes or primary deposits have yet been located in the granite, but some, even though small must occur. Pebbles and pieces of vein quartz and of quartz and tourmaline are numerous but none examined were found to contain cassiterite (tin ore). The granite is generally similar to the Devonian tin-bearing granites of north eastern and eastern Tasmania.

It is probable that the cassiterite occurs in the granite as short narrow veins or else is disseminated throughout it.

BORING OPERATIONS

A boring campaign was carried out with the object of determining whether any extensive deposits of alluvial tin-bearing extensive deposits of alluvial tin-bearing ground exists on the Lilla Villa estate. Several lines of bores were put down to test whether the tin-bearing alluvial ground extends southerly and westerly from the northern and eastern boundaries. These locations were chosen because the streams from the granite hills flow in these directions and the "leads" would be more or less coincident with the streams. Further the best prospects of cassiterite were obtained in shafts sunk near the eastern boundary of Lilla Villa.

Altogether 16 bores were put down, four surface prospects were taken and two shafts were examined and sampled. In addition, four holes were put down by holders of the reward lease and the prospecting claims.

The boringwas carried out with a hand boring plant, with two-inch screw auger bits. No casing was available and so the results cannot be taken as being absolutely satisfactory. The absence of casing was also disadvantageous in attempting to bore through the clean quartz grit. The grit often caved in and filled the hole faster than it could be removed by the sand pump, and so some of the holes could not be bottomed on the granite. The boring was conducted under the supervision of Mr. F. Blake, Assistant Government Geologist, who is also responsible for the preparation of the Attached table.

Results of the Boring Operations

As will be seen from the accompanying plan three lines of bores were put down in the "flat" or valley of the streams which traverse the reward lease and pass westerly into Lilla Villa. In the first two lines the deposits ranged in depth from 4 to 9 feet and consisted of clean quartz grit with little, if any, wash, resting upon a soft granite bottom.

In the third line, a shallow layer of grit (1 to 4 feet thick) rested upon clay with a thickness of at least 12 feet.

As to values those in the first line ranged from 0.005 to 0.209 lbs. per cubic yard; and in the second line from 0.004 to 0.062 lbs per cubic yard, while the material from only one bore in the third line was washed and gave 0.047 lbs per cubic yard).

A fourth line was put down across the creek out of F. Bowker's block. The depths ranged from 4' 6" to 12' 3", and the values from 0.003 to 0.173 lbs per cubic yard.

A hole (No 13) in the flat of Rule Creek passed through clay and fine quartz grit and bottomed on carbonaceous shale or coal the conditions being similar to those in No. 10 bore. The value was 0.008 lbs per cubic yard.

Four tests were made of the surface grit or gravel on the banks between the flats. These gave values from 0.042 to 1.162 lbs per cubic yard.

The wash in the bottom of two shafts sunk by Mr. Gillies was tested and gave results of 0.954 and 4.250 lbs per bubic yard.

Of the four bore-holes sunk on the Reward Claim and the Prospecting Areas, the values, from figures supplied by Mr. Gillies, range from 0.025 to 0.141 lbs per cubic yard.

In the quartz grits, the tin ore was generally very fine. In the places where wash occurs viz in shafts A & B and bores 1 and possibly 3, the tin ore was much coarser. The ore is of the black ruby resen and amber varities and appears to be of good quality.

CONCLUSIONS

It is apparent from the results obtained above that the deposits are generally too low in value to be of economic importance.

The highest values and coarser tin ore were obtained from shafts and bore-holes where wash was found to occur. Where there is only quartz grit present the tin ore is fine and small in quantity.

The surface grit and gravel appears to give a better average grade than the deposits in the flats, but even it does not appear to be payable.

In the larger flats on Lilla Villa, the deposits consist largely of clay with a bottom or

false bottom of carbonaceous shale or coal. The conditions are thus unfavourable for the occurrence of alluvial tin deposits.

There appears to be more chance of success in the flats along the streams on the Reward Claim and the Prospecting Areas. The streams here have steeper grades and there is more chance of wash being present and of concentration of tin ore having occurred. The results of bore holes 1G to 4G however tend to prove that even here the values are too low to be payable.

The above remarks refer of course to the actual parts tested. They do not preclude the existence of perhaps small areas of payable ground, but it is not very likely that such occur.

P. B. Nye.

GOVERNMENT GEOLOGIST

Mines Department,
Hobart,
12/7/1927

Description	Depth in Feet	Section Soil to clay 3' 9"	Metallic Tin Contents lbs. per cubic yard	Remarks
No. 1 Bore	7'10"	Fine Quartz Wash to pebbles 2'3" Decomposed Granite 1'10"	.085	Granite Bottom Water came in at 6" from surface
No. 2 Bore	4'6"	Spil 1' Clay 3' Decomposed Granite 6"	.005	Granite Bottom
No. 3 Bore	7'9"	Soil 3" Quartz grit 7' 6"	.209	could only remove grit to 4' owing to water in hole
No. 4 Bore	8'	Soil 1' 6" Quartz Grit 3' 6"	.127	could only remove grit down to 3' owing to water forcing sides of bore in
No. 5 Bore	7'3"	Soil 9" Clay 4' 3" Quartz grit to wash 2' 3"	.062	could only remove grit to 6'6" owing to sides caving in
No. 6 Bore	7'3"	Soil 9" Clay 3' 3" Fine quartz Grit 3' 3"	.021	Granite Bottom

No. 7 Bore	9'3"	Soil 9" Clay 3' 3" Fine quartz grit 4' 0" Partly decomposed Granite 1' 3"	.004	Could only remove grit to 8'6" owing to sides caving in due to water in hole.
No. 8 Bore	8' 9"	Soil 1' 3" Clay 3' 3" Fine quartz grit 4' Partly decomposed Granite 0' 3"	.041	Granite Bottom
No. 9 Bore	4'	Soil 9" Quartz grit 3' Decomposed Granite 3"	.047	Granite Bottom
No. 10 Bore	16' 9"	Soil 9" Fine quartz grit 4' Stiff yellow and Black Clay 12'	core not washed	Shale or Coal Bottom
No. 11 Bore	8'	Soil 1' 6" Fine quartz grit 1' 3" Stiff yellow clay 5' 3"	core not washed	Not bottomed

No. 12 Bore	11' 6"	Fine quartz grit 1' 6" Stiff yellow white and pink clay 10'	core not washed	Not bottomed
No. 13 Bore	10' 6"	Soil 1' Clay 3' Fine quartz grit 4' Black carbonaceous clay 2' 6"	.008	Shale or Coal Bottom
No. 14 Bore	6'	Soil 6" Quartz grit 5' 3" Decomposed granite 3"	.020	Granite Bottom
No. 15 Bore	4' 6"	Soil 6" Quartz grit 4'	.003	Water came in and could only remove grit down to 2'6"
No. 16 Bore	12' 3"	Soil 6" Fine quartz gravel 1' Clay 2' 6" Quartz grit 8' Decomposed granite 3"	.173	Granite Bottom

W. Wash		Surface Gravel	.099	
X Wash		Surface Gravel	1.162	
Y Wash		Surface Gravel	.042	
Z Wash		Surface Gravel	.071	
A Shaft		Wash in bottom of shaft	4.250	
B Shaft		Wash in bottom of shaft	.954	
No. 1 G Bore	6'6"		.141	On section 10107 40 acre J.B.J. Gillies. Application for Reward.
No. 2 G Bore	8'		.118	On Prospecting Claim south adjoining Reward Section
No. 3 G Bore	7'		.079	On Prospecting claim in name of A.C. Gillies
No. 4 G Bore	6'		.025	On Prospecting Claim in name of Lacey.