REPORT

ON THE BELL'S PLAINS DISTRICT.

Location and Access.

The Bell's Plains District is situated in the North Eastern Tasmania being 5 miles east of the Township of Ringarooma and 6 miles South east of the Township of Branxholm.

Access can be gained from Ringarooma by a road suitable for motor traffic practically the whole of its length. A cart track and pack track also connects the district with Branxholm.

The State Railway to North Eastern Tasmania passes within a few miles of Ringarooma and through Branxholm.

Leases.

The principal leases may be divided into three groups:-

(1) Those formerly held and worked in the interests of M. Hannah these comprise:-

$\frac{2120}{M}$	10 acres	Eberhard and Gee
$\frac{4955}{M}$	5 acres	do.
$\frac{5124}{M}$	20 acres	do.
$\frac{725}{M}$	40 acres	do.
$\frac{6358}{M}$	20 acres	do.

A dam site $\frac{1728}{W}$ of one acre and two water races $\frac{1714}{W}$ and $\frac{2126}{W}$ including a water right of three sluice heads are held in conjunction with the above.

(2) Those originally held by the New Hope Company but held in recent years by M. Hannah. These include:-

$\frac{4997}{93M}$	20 acres	Gee and Eberhard
$\frac{9879}{M}$	17 acres	P. Martin
$\frac{8746}{M}$	5 acres	Gee and Eberhard
$\frac{4362}{93M}$	40 acres	Gee and Eberhard

A dam site $\frac{1629}{W}$ (1 acre) and water races $\frac{104}{91W}$, $\frac{2075}{W}$ and $\frac{2241}{W}$ including a water right of 2 sluice heads are held in connection with the above leases.

(3) Three applications for leases :-

$\frac{9859}{M}$	80 acres
$\frac{9939}{M}$	40 acres
$\frac{9940}{M}$	40 acres

have been made by M. Hannah to the south of the above two groups.

TOPOGRAPHY

The country included in the above leases embraces practically the whole of a flat basis at the head of Black Creek and its numerous tributaries such as Exile Creek, Nelson Creek, and other unnamed ones.

These streams rise in a range of hills to the south of the basin and the drainage flows in a general northerly direction out of the district. Spurs from this range have a general northerly trend and limit the basin on its eastern and western sides.

The main range of hills has a general east and west direction and extends from the Ringarooma River on the west through Mt. Paris, Bell's Hill and ultimately connects with the Blue Tier to the east.

The basin has an altitude of 1500 to 1700 feet above the sea.

GEOLOGY.

The summit of the range to the south is occupied by Cambro-Ordovician slates, sandstones, and quartzites. These rocks probably extended over the whole of the district but have since been removed by erosion from other parts. Devonian granite occurs intrusive into the above rocks and now forms the bedrock of the country embraced in the leases.

Thin layers of gravels, sands and clays occupy a considerable portion of the basin. They are Tertiary to Recent in age.

ECONOMIC GEOLOGY.

The ore of commercial importance in the above leases is cassiterite or tin oxide. It occurs in the sands and gravels (wash) of Tertiary to Recent age and it is these materials that have been mined by hydraulic sluicing in the past.

Source of the Tin Ore:

The source of the tin ore is a number of primary deposits which occur in a very important tin-bearing belt of country. This belt has a general east and west direction and is more or less parallel to the range of hills. It occurs in the granite which either forms the summit of this range or outcrops on the northern slopes immediately below the Cambro-Ordovician rocks. The belt extends from Mt. George on the west through Mt. Paris, Bell Hill and to the Blue Tier on the east.

The primary deposits in this belt include tin-bearing greisen veins (quartz, quartz-mica and mica types) tin-bearing altered granites and tin bearing aplites. It is from these primary deposits that the immense quantities of tin ore have been shed and included in the rich alluvial tin deposits of Ruby Flats, Auton Creek, Black Creek etc. and the deep alluvial deposits of the Ringarooma system of leads (upon which the Briseis and Pioneer mines are operating).

The alluvial deposits of the basin described above are therefore favourably situated for the inclusion of tin ore

in them.

The Alluvial Deposits:

A hard "Bar" of granite occurs on the northern side of the basin and has been mainly instrumental in the formation of the large area of alluvial deposits in the basin on the upstream side of it.

The alluvial deposits range in thickness up to 10 or 12 feet. At the northern end of the leases the deposits form one continuous flat or plain. To the south it will be found, as has already been partly proved by the workings that separate "leads" or "runs" will occur with relatively higher ridges of granite between. These leads were formed along ancient stream valleys which will more or less correspond with the present ones such as Nelson Creek, Black Creek Exile Creek and an unnamed one between the two latter. It is even possible that some of the streams, e.g. Black Creek may have formed two distinct leads at different periods of its history.

The secondary deposits are not restricted to the alluvial ones of the above leads. On the higher ground of the sides of these old, and also the present, streams valleys detrital deposits occur. These contain, few, if any, water worn pebbles, but may contain angular pebbles. In some cases, pebbles are entirely absent, but as in the case of the alluvial these detrital deposits are generally tin-bearing. As a rule they are of lesser thickness than the alluvial.

Quality of the ore:

On Hannah's Mine, the tin ore appears to be remarkably free from other heavy minerals. Pleonaste (black jack), Zircon (ruby) Ilmenite (iron) Monazite, Pyrite were not detected in the prospects washed. It is stated that such minerals are not found when sluicing and dressing the tin ore, but that topaz and corundum (sapphires) occur to a slight extent. It is stated that the dressed ore assays 75% metallic tin. The cassiterite consists of ruby, resin and dark types.

On the New Hope Mine the tin ore is mixed with smaller quantities of Pleonaste (black jack) and Zircon. These minerals probably occur in the leads of Exile Creek and the unnamed creek to the east. They are easily removed in the dressing process and have little if any effect on the quality of the dressed tin ore.

THE MINING PROPERTIES.

(1) Hannah's Mine: This mine includes 95 acres embraced in the five leases referred to above. The northern leases referred to ($\frac{2120}{M}$ $\frac{4955}{M}$ and part of $\frac{725}{M}$) include about 30 acres of the shallow detrital deposits, only a very small portion of which has been sluiced, Lease $\frac{5124}{M}$ and the remaining part of $\frac{725}{M}$ include the large flate into which the various leads run and ultimately join.

It is stated that approximately 50 shafts were sunk on this flat to depths ranging up to 12 feet. Many of these were visited, but being filled with water and partly fallen in, the wash could not be tested. The wash however is well exposed in the deep tail race from the workings. It contains a large number of waterworn pebbles averaging

3 to 6 inches in size. Prospects washed from the bottom wash gave results ranging up to several pounds per cubic yard.
The workings of this mine (on $\frac{5124}{M}$ and $\frac{725}{M}$) cover about 10 acres of which it is stated that 7½ acres have been sluiced by M. Hannah. These workings have progressed to the south and east the present face being taken to the south east along the lead probably of Black and Nelson Creeks.

The southern lease (6358)/M has not been worked, but the above workings will enter it any time. It contains the lead of Nelson and Black Creeks.

It is stated that from the above 7½ acres, 160 tons of tin ore have been obtained. With an average depth of 7½ feet this would correspond to nearly 4 lbs of tin ore per cubic yard. It is claimed that the ground averages 2 to 2½ lbs per cubic yard.

The material in the above lead consists of several feet of wash on the bottom which is overlain successively by a dark sandy pug in the deeper part of the lead, and a loose sandy drift which is in turn overlain by the subsoil and soil.

Water rights amounting to five sluice heads were formerly held to work this mine, but rights of only three head are now held.

(2) New Hope Mine: This mine embraces 82 acres including in the four leases referred to above. The eastern lease (4362)/93M contains part of the flat at the junction of the leads and portions of the leads of Exile Creek, the unnamed creek and possibly one of Black Creek. The western leases will contain the unworked part of Exile Creek lead and any other small leads.

The workings have been carried out on sections 4362/93M and 9879/M. They consist of a narrow strip of about 12 chains long and 3 to 4 chains wide along the course of Exile Creek. The results of these workings are not known.

The ground consists of the pebbly wash as in the flat to the north which ranges in thickness up to 6 or 7 feet. The total depth of the ground ranges up to 10 feet. Prospects from the bottom wash gave results up to several pounds per cubic yard. The tin ore is similar to that in Hannah's mine but has Pleonaste and Zircon associated with it.

Formerly four sluice heads were held under water right, but only two heads are held at present.

(3) Recently applied for area: This includes three applications for leases totalling 160 acre to the south of the other mines. These leases will occupy practically the whole of the remainder of the flat land of the basin.

This area should include the upper parts of the lead of Black Creek the unnamed Creek and any other which may exist. It would also include any detrital deposits on the higher ground outside the alluvial leads.

This tract of country has been worked to only a very

slight extent. Over a large part it should contain deposits of similar nature and depth to those worked and described above.

Three or four shafts have recently been sunk in the central part of 9858/M and are stated to have yielded tin ore. No other testing of the area has apparently been carried out.

WATER SUPPLY

Formerly nine sluice heads were held to work the above properties but only five head are now held. Further supplies might be obtained during portion of this year, and conservation of the water would undoubtedly be a great advantage.

METHODS AND FACILITIES FOR WORKING

The ground has been mined by hydraulic sluicing with pressure heads of 90 to 100 feet.

The material is easily broken and there are no apparent difficulties to prevent such sluicing. The working has generally been carried out without hydraulic elevators (blowers) or gravel pumps. The grade of the bottom however is rather low and it would probably be advantageous to install one of these appliances.

It is proposed to commence sluicing on the northern part of the property with two or more plants and to work in a continuous face to the south. This would be quite the best method from several points of view. One great advantage would be that as the flat was worked out the lower parts of the leads would be accurately defined and workings could then be carried out up these leads.

CONCLUSIONS.

The properties above described include 337 acres under mineral lease or for which application for lease has been made. They are geologically speaking very favourable situated as they occur in a drainage system which traverses one of the most important tin bearing belts in the state and hence the alluvial deposits on them are likely to contain cassiterite (tin ore).

The greater part of the property is occupied by alluvial deposits representing a system of leads formed along the head-water streams of Black Creek of former times. Only a very small area amounting to some 20 to 30 acres has been worked out.

In addition to the alluvial deposits of tin bearing detrital material occur on the higher ground.

From statements of results of past workings it would appear that the worked ground had an average value of some two pounds per cubic yard. Part of the northern area has been tested by shafts but only a few shafts have been sunk on the newly applied for area to the south.

P.B.N.

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HOBART. 17/5/27.