

Report on the Fly-by-Night MineGladstoneLocation and Access ;

This mine is situated half a mile to the south east of the township of Gladstone in the north-eastern part of Tasmania.

The road from Herrick to Gladstone passes alongside the property and is within 15 chains of the present workings. This road is 14 miles in length and is suitable for all classes of traffic. Herrick is the terminus of the State Railway to north-eastern Tasmania, and is also connected by road with the remainder of the State.

Leases ;

The property includes the following leases and water rights :

Leases :

1098/M	20 acres	Johnson and Petts.
9781/M	5 "	" " "
9782/M	5 "	" " "
9783/M	5 "	" " "
9710/M	20 "	Ogilvie, Terry & Shield.

while applications have been made for two 80 acres sections (9941/M and 9942/M) in the name of E. Petts.

Water Rights :

Water Rights 2456/W and 1788/W consisting of Races and Dam sites are held.

Geology

The western part of the property is occupied by the slates and quartzites of the Cambro-Ordovician system. The eastern part is occupied by granite. The junction between the granite and the Cambro-Ordovician rocks traverses the property in a general north-north-easterly direction. The granite is intrusive into the slates and quartzites, and is regarded as being of Devonian age in conformity with the granites in other part of Tasmania.

The creeks have small deposits of alluvial material along their courses and the surface generally has a small depth of detrital matter over it. These are of Recent origin.

Economic Geology :

A large proportion of the alluvial and detrital material forming the surface of section 1098/M has been sluiced and large quantities of tin ore obtained. In the process of this sluicing, tin-bearing veins were exposed in the granitic bedrock and some of these were worked for their content of cassiterite. It is obvious that much of the secondary tin ore was derived from this original source, and this has been the determining factor in the richness of the secondary deposits. Practically the whole of the bedrock of the section consists of a soft granitic rock

which is best described as a greisenised granite. The rock junctions with the Cambro-Ordovician slates and quartzites close to the western boundary of the section. It also junctions with the normal granite near the southern boundary of section 1098/M and also near the eastern boundary of the same section. The extent of the greisenised granite to the north-east has not been accurately determined owing to the general undisturbed nature of the soil covering the bedrock. Quartz greisen veins have been exposed in the lease (9710/M) to the north, and it is possible that the greisenised granite extends some distance in that direction. It has indeed been stated that the greisenised granite occurs between the road and the Ringarooma River but this was not officially investigated.

This greisenised granite does not apparently contain any cassiterite except in the veins and formations about to be described. It does however contain numerous tin-bearing veins of the following types :

- (a) Quartz Greisen Veins : These consist of glassy quartz similar to that in the granite and of about the same grain size.
- (b) Mica Greisen Veins : These veins are composed of small flakes of a white mica resembling muscovite and similar to it in composition, but generally referred to as gilbertite..
- (c) Quartz-mica Greisen Veins : While the quartz and mica greisen veins occur separately, the majority of the greisen veins are composed of both quartz and mica either intimately associated or in the form of narrow veins of both types.
- (d) Quartz veins : These consist of the white milky quartz typical of reef quartz. They are few in number compared with the greisen veins.

The greisen veins are generally narrow and have no great length. They occur throughout the greisenised granite in all directions, but generally have vertical dips. The widths vary greatly along the strike and in depth, and generally the veins have the erratic features common to small greisen veins. While the cassiterite is associated with the quartz greisen, mica greisen, and the reef quartz, it is, as is common in other districts, more particularly associated with the soft mica greisen. It is generally distributed irregularly through the greisen, but sometimes occurs as narrow veins up to one half of an inch in width. The cassiterite in the veins is the typical brown-coloured type common to such.

The alluvial and detrital deposits yield types of cassiterite such as black, brown, ruby, resin and amber. Some of these are attached to specimens of quartz and must therefore be partly derived from quartz veins.

Past Workings :

The alluvial and detrital deposits on lease 1098/M have been worked for a long period for their tin ore. These workings have been mainly carried out along the courses of the small creeks which cross the section in a general direction from east to west. They have also been carried out on "runs" of alluvial independent of the present drainage and on the surface and detrital deposits on the high ground between the creeks or gullies.

Many of the greisen veins uncovered have also been worked by either sluicing methods or crude crushing methods

followed by sluicing to save the tin ore.

Present and Future Workings :

A considerable amount of virgin ground (containing alluvial and detrital deposits) remains on lease 1098/M while the remaining leases have either not been working or only to a slight extent. It does not necessarily follow that all this ground is of the same grade as that already sluiced, but this is a matter which can be settled only by prospecting. The ground on 1098, 9783 and 9782 showed good dish prospects.

It is proposed to sluice the remaining payable ground on the property. During this work all stones of greisen, reef quartz etc. will be put to one side for future treatment.

Later it is proposed to treat the greisenised granite and the contained tin-bearing veins. The granite and contained veins will be mined in open cuts and then the cassiterite recovered in a treatment plant.

Testing the Deposits :

(a) Alluvial and Detrital : The alluvial and detrital deposits on the property are generally shallow and these could be easily tested by shallow shafts. The testing could be carried out systematically and as thoroughly as desired to prove the actual extent and value of the deposits.

(b) The Greisenised Granite and Contained Veins : The testing of this type of deposit is an entirely different matter and is practically an impossibility. The greisen veins are irregularly distributed through the granite and are themselves erratic as regards length, width, value etc. With regard to their persistence in depth, it may be said that while individual ones may peter out in depth the actual mineralised zone with contained veins will persist to appreciable depths possibly equally to the limits of practical mining.

One attempt has been made to test the deposit by the Pioneer Tin Mining Co. but this was more with the object of sluicing away the whole of the granite and contained veins. An open-cut, or large trench, adit, at least one shaft and one bore-hole were put in near the south-west corner of 1098/M. The trench was 3 to 4 chains long, 10' deep and was cut along a bearing of 50°. The soft material along this trench was sluiced, the harder stones being removed and not crushed. It is stated that seven bags of tin ore were obtained from this work but this was not officially verified. The adit is situated to the south-east of the trench and was driven along a parallel course of 100 feet. Two shafts exist to the east, being sunk to depths of 30 to 60 feet, the eastern having been sunk on a quartz vein and the western on a quartz mica greisen vein.

The results of the above test are not definitely known, but they could be taken to apply only to the south-western part of 1098/M. To more thoroughly test the property a number of such trenches would need to be cut in an east and west direction, as well as numerous

shafts or bore-holes. The exact extent to which the results obtained could be considered satisfactory cannot be definitely stated owing to the erratic nature of the deposits already referred to.

Water Supply :

The water at present being used is purchased from the Mount Cameron Water Race at a point 20 to 30 chains northwest of the mine to which it is led by gravity through a newly-constructed race. Water Rights 2456/W and 1788/W including races and two dams will also yield a small supply during the wetter part of the year.

In the future it is intended to take the purchased water from the Mount Cameron Race at a point to the east of the mine and pump it a height of 50 feet into the dam connected with 1788/W. This dam is situated on nearly the highest point of the property, and gives a pressure head ranging up to 100 feet or more at the NW corner of 1098/M. It is intended to install a plant capable of lifting the 4s.h. of water 100 feet in order that it may perhaps be incorporated in a later scheme of pumping. This scheme consists of pumping water from the Ringarooma River to the east of the mine in two lifts. A new plant will be used for the first lift and the plant about to be installed to pump into 1788/M will be used for the second lift. This latter scheme will ensure an adequate supply of water.

Conclusions.:

The property includes a tract of country along a contact between Cambro-Ordovician rocks and Devonian granite. The granite adjacent to this contact in lease 1098/M has been partly greisenised and contains numerous veins of greisen (quartz, mica, and quartz-mica) and quartz. These veins are tin-bearing in parts especially the soft mica greisen.

A proportion of the alluvial and detrital deposits overlying these formations has been sluicèd for its cassiterite content and a few of the veins have also been treated by sluicing and crude crushing methods.

It is proposed to install a pumping plant to ensure a supply of water under satisfactory pressure. It is then intended to sluice the remaining payable alluvial and detrital deposits. Later the greisenised granite and contained veins will be treated by crushing and mechanical saving appliances. It is not considered that the latter can be satisfactorily tested even with a large amount of work such as trenching, shaft-sinking, and/or boring, but that these methods represent the only means of arriving at an approximation of the tin values in the material.

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