

REPORT ON THE PROPERTIES OF
MESSRS. W.A. & O.J. WALSH, BRANXHOLM.

Introduction

Messrs. Walsh Bros. hold a considerable area (384 acres) of country under lease in the district to the SE of the township of Branxholm. This area includes a number of mines which have been in the past, and can be at present, worked independently. They cover a tract of country about 3 miles in length and extending in a general E and W direction from a point 2 miles SSE of Branxholm to a point about 4½ miles SE of Branxholm.

In addition Messrs. Walsh Bros. hold a number of water-rights, dam sites, races, easements etc. to provide a water supply to enable the above mines to be worked.

These mines and water supplies have not previously all been held by the same interests, but the present arrangement is exceedingly advantageous and makes the system of water-supply a very flexible one and enables the mines to be worked to the greatest advantage.

The individual mines with their method of working, water-supplies etc. will be discussed below.

Access.

As stated above, the mines are situated to the SE of Branxholm in NE Tasmania. This township is connected by rail and road with the city of Launceston and thence with the remainder of the State.

Three cart roads (one suitable for motor traffic almost to two of the mines - the Royal Gordon and Ruby Flat) radiate from Branxholm and form the only ready means of access.

Royal Gordon Mine

This mine is situated on the E side of Mount George, two miles SSE of Branxholm.

Seven leases are held in the vicinity of this mine and have an area of 90 acres. These leases are occupied wholly by Devonian granite with the exception of a small remnant of the intruded Cambro-Ordovician rocks along the W boundary of 8875/M. Surface soil and detritus cover the granite bedrock and on the flanks of Mt. George these include pieces of Cambro-Ordovician sandstones.

Tin ore occurs under several conditions. Firstly it is abundant in the surface soil and detritus. Secondly it occurs throughout the soft granite formation which has been exposed in the mine, and thirdly it is present in quartz greisen veins in the latter. The latter is an unimportant source as the veins are narrow, but both the superficial deposits and the granite formation have been sluiced for their tin contents.

The workings consist of an irregular hole on the E slopes of Mt. George. This has been made by hydraulic sluicing in a general N direction from a tributary gully of Boulder Creek. The hole has a length of 8 to 10 chains a maximum width of 4 chains and depths ranging up to 40 feet.

Over 50 tons of tin ore have, it is stated, been obtained from the above work. A very approximate calculation from the above figures give a content of 1 lb. per cubic yard.

The granite formation consists of a soft muscovite granite possibly representing an alteration of the normal type. The normal type occurs on the W face of the workings and is apparently also tin-bearing. Cassiterite occurs throughout the soft granite and can in places be detected by eye, its occurrence being in the form of small isolated patches. A large amount of fine tin ore also occurs which can only be detected by prospecting dish.

The formation represents an altered granite, the alteration being carried out by the mineralising solutions or vapours which deposited the cassiterite. The narrow quartz greisen veins were possibly also formed at the same time.

With such an origin, the formation may be expected to persist in depth. Of particular importance however, from the point of view of sluicing, is the softness of the formation. While this is probably chiefly due to the alteration of the granite it may be partly due also to superficial weathering. It is impossible to definitely state from the depth of the workings whether there has been any superficial softening superimposed on the natural softness, but if the softness continues to slightly greater depths than those at present worked it can safely be assumed to be natural to the formation.

The extent and value of this formation could be determined by shafts of bore holes sunk round the present workings. It is considered to have a considerable extension to the W, but this cannot be considered to be definitely proved. Greisen veins with some soft granite certainly exist in that direction, and work of the above nature could easily determine whether this represents an actual continuation of that worked.

The mine was formerly worked by water from the Nugget race which gave a pressure head of 150 feet and this scheme can be used at any time desired. At present, however, this water is being run into the Argyle and Pearce Cascade Creeks where it is used and is then brought by a low level race to the Royal Gordon Mine where it has a pressure of 50 feet. Another water scheme is to use the 10 head of water in the Black Creek race with a pressure head of 200 feet.

The present working consists of bringing in the tail race at a smaller grade and sluicing the bottom of the former workings at a greater depth. The granite could be worked to greater depths still by bringing in the tail race at a lower level. The topography along the tributary gully permits of this being done.

Ruby Flat Mine

This mine is situated to the E of the Royal Gordon. Three leases with a total area of 238 acres are held along the valley of the Pearce Cascade Creek and its tributaries.

Practically the whole of the surface was occupied by alluvial and detrital deposits of recent and slightly older age. The remainder of the surface and the whole of the bedrock of the valley is occupied by Devonian granite. The granite is generally of the normal type

with large crystals of felspar (plagioclase).

Numerous veins of quartz greisen traverse the granite and have a general strike of 110 degrees. These become more plentiful and of much greater size towards the southern end of the Pearce Cascade Valley. It is these veins which have contributed the tin ore to the secondary deposits of the above valley. Many of the sluiced areas along gullies end against systems of these veins.

The more important deposits are the secondary deposits of the valley. These have sluiced during the past 40 to 45 years and so a large part of the deposits have been worked out. A considerable extent of virgin ground however, remains to be worked. The deposits range up to 12 feet in thickness and consist generally of fine gravels and coarse sandy materials. Pebbles and stones are of course common near the bottom.

At present sluicing operations are being carried out at the SE end of the property near the junction of Pearce Cascade and Argyle Creeks. Water from the Black Creek race is being used with a good pressure head. The Nugget race water could also be used on this property if required.

In addition to the virgin deposits, it is stated that some of the tailings could be profitably treated.

The extent and value of the remaining deposits and tailings could if required be proved by a systematic scheme of shafting, sinking or boring. Alternatively, the value of the ground could be determined by the results of sluicing which could be continued as long as the results were payable.

Sawpit Creek (Lease 8339/M & 8383/M)

This mine is situated about $3\frac{1}{2}$ miles to the south-east of Branxholm on the south western side of the valley of Black Creek.

Two leases - 8339/M of 5 acres and 8383/M of 2 acres are held along Sawpit Creek and its tributary.

The sections were originally taken up for the alluvial detrital deposits, but on sluicing the gully on 8339/M it was found that tin ore was being obtained from the soft granite bedrock. The granite is very soft and white, and consists of altered felspar, quartz and muscovite. Bunches of quartz and tourmaline occur within it and appear to be always tin-bearing, although the cassiterite is seldom visible. In addition the granite itself is tin bearing as evidenced by dish prospects. Narrow veins of quartz and indurated granite traverse the bedrock with strikes of 105 degrees.

The soft granite has been formed by the actions of mineralising solutions or vapours which at the same time introduced the cassiterite, tourmaline etc. It may therefore, be expected to have a continuation in depth. The lateral extent has not yet been proved, but if there is an extension it will probably be in an ESE-WNW direction.

The workings do not cover an acre in extent and have a maximum depth of 20 feet. They are arranged along a former gully and have a general ESE elongation.

This deposit could be conveniently worked by water from the Nugget Race immediately to the south.

Wood's Lease (8782/M)

This lease (8782/M of 5 acres) is situated 10 chains to the south of the above.

It is occupied wholly by granite, with the overlying Cambro-Ordovician rocks on the ridge to the west. The granite does not outcrop conspicuously, being covered by soil and hill detritus.

Near the southern boundary, a large working face has been carried into the hill by hydraulic sluicing. The working is 50 to 60 feet wide and extends westerly for several chains along a small depression which drained into Merrin Creek.

In the face, soil and detritus up to 5 feet in depth overlies granite. The granite is soft and tin-bearing and somewhat similar to that in the Sawpit Creek workings. Narrow short veins of quartz greisen veins with bearings from 85 to 98 degrees also occur in the granite.

The granite has been removed by hydraulic sluicing aided by the use of explosives where it was somewhat harder than the remainder. It is stated that the whole of the granite is tin-bearing although the cassiterite is not discernible by the naked eye, except in the quartz veins.

The alteration of the granite, introduction of cassiterite and formation of the veins was brought about by the action of mineralising solutions and vapours.

The lateral extent of the deposit has not been determined beyond the workings. Being a primary deposit, it should have an extension in depth to limits likely to be reached by sluicing. The lateral extensions could be determined by shaft sinking and boring.

This deposit is within 13 chains of the Nugget Race and could be conveniently and efficiently worked by the water from the race.

Hope Mine Section 9183/M

This section is situated 20 chains to the ESE of Wood's workings. It includes the land around the small headwater creeks and gullies of Hope Creek.

The bedrock of the lease is granite, but the surface is generally occupied by detritus. Alluvial deposits occur along the course of Hope Creek.

The ground was first worked by the Welcome Co. the alluvial deposits being sluiced and it is stated that 300 tons of tin ore were obtained. Later the ground was worked by the New Hope Co. The workings along the creek are 3 to 4 chains wide and 7 chains long covering 2 to 3 acres.

In addition to the alluvial deposits, the granite bedrock along Hope Creek is tin-bearing. It is soft and white due to alteration of the feldspars and is generally similar to that in Bessell's workings on Sawpit Creek.

This tin-bearing granite extends to the south up the hillside. It appears at the surface as boulders of

muscovite granite, but soft granite appears in the **faces**. Two faces appear on the hillside, the eastern being the larger.

The surface in these faces occupied by detrital material containing sub-angular pebbles of granite quartzite and occasionally quartz. Boulders of granite ranging in size to at least 10 feet in diameter also occur in the detrital deposits. The detritus is tin-bearing, brown, ruby and amber cassiterite being obtained. The granite is also tin-bearing as in the bed of the creek.

The tin-bearing granite in this locality appears to have an extension in a general WNW-SSE direction and it may be continuous with either one or both of the similar occurrences at Wood's and Sawpit Creek workings.

This section is immediately to the north of the Nugget race and the deposits can therefore be conveniently worked by this water.

Western Part of 9526/M

The western part of 9526/M includes the water shed between Hope Creek and Montrose Creek and the fall to the former. The muscovite granite containing tourmaline and cassiterite extends easterly from 9183/M (described above) into this locality.

The surface is occupied by detrital deposits to shallow depths. Overlying as they do, tin-bearing granite, they are themselves tin-bearing. It is stated that prospecting has proved the ground to contain 3 to 4 lbs. per cubic yard. Part of this ground has been scrubbed and is ready for sluicing.

This area is conveniently situated with regard to the Nugget race and can be readily worked with this water.

Eastern portion of 9526/M

The eastern part of this consolidated lease embraces a tract of land along Montrose Creek - a small creek flowing ENE into Black Creek. Alluvial deposits occur along Montrose Creek and form the valuable deposits on this property. The bedrock is granite and on the ridge between Montrose and Hope Creeks portion of this is probably tin-bearing.

At the head of Montrose Creek, the alluvial deposits are narrow but as Black Creek is approached they widen out into a flat ranging in width up to 10 chains. In the flat there is a well defined gutter which occurs a little to the south of the present creek. The deepest part of the ground is 12 to 15 feet. Towards the Black Creek and distant about 10 to 12 chains from it, it is believed that the lead of the former Black Creek junctions with the Montrose lead. The topography - a flat between two granite knobs - is quite in agreement with this view. The evidence of the stated abundance of pleonaste below the supposed junction in the Montrose lead (pleonaste being plentiful in the Black Creek) is greatly relied upon in putting forth this view.

The head of Montrose Creek has been sluiced by C. Bessell. Walsh Bros. are continuing this work in the vicinity of the dam on 2298/W. The old dam has been sluiced away and a larger one will be constructed when all the alluvial has been sluiced away. Water from the Nugget race is being used at present, but when the dam is complete, the

low level race from Black Creek will be utilised.

For future working of the deposits on the flats a tail race will be brought in from the Black Creek at as low a level as possible. When bottom is reached, a face of 12 feet is expected and working will proceed up the valley of Montrose Creek.

It is stated that C. Bessell obtained 5 tons of tin ore as a result of one winter's work, while Walsh Bros. obtained $3\frac{1}{2}$ tons for the first 4 months they operated.

Water supplies

In addition to the above leases and mines, Walsh Bros. hold a numerous water-rights, dam sites and easements etc.

The most important water-right and race is that known as the Nugget race. This race has its intake at the head of Cascade River and traverse the northern flank of the range between Branxholm and Weldborough, collecting further water at Black Creek. This race commands all the mines and can be used to work any of them from Montrose Creek to the Royal Gordon.

The next important race is the Black Creek race with its intake near the junction of Auton and Black Creeks. The water in the race can be used on the Ruby Flat and Royal Gordon mines only.

Another race is that with its intake on Argyle Creek which can be used to work the Royal Gordon mine.

A low level race might also be brought in from Black Creek to work the Montrose property.

Conclusions

It will be seen from the above descriptions that the properties held by Walsh Bros. comprise a number of mines along a tract of country to the south east of Branxholm.

The Ruby Flat and Montrose Creek mines consist of alluvial deposits. The Royal Gordon, Sawpit Creek, Woods, and Hope Creek mines contain soft tin-bearing granite formations in addition to detrital deposits occupying the surface. These formations are generally sufficiently soft to enable them to be worked by hydraulic sluicing methods.

For the working of these mines a number of water races, dams etc. are held. The whole of these mines and water supplies have not previously been held by the same interests. The present arrangement provides a sufficient supply of water to work several, if not all of these properties, at once. The present arrangement as regards the ownership is very advantageous in that the water supply scheme can be made very flexible and the mines can be worked as desired.

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5th March, 1927.