

GOVERNMENT GEOLOGIST

REPORT ON THE PROSPECTS OF THE STANLEY
RIVER TINFIELD.

[ONE PLAN.]

Zeehan, 25th January, 1904.

SIR,

I HAVE the honour to forward you the following report on the prospects of the Stanley River Tinfield, which, in accordance with your instructions, I visited in November last.

The Stanley River is a tributary of the Pieman, flowing into the latter from the north at a distance of about 20 miles from the Pieman Heads. It rises in the Meredith Range, and flows southwards between Mount Livingstone on the west and Parson's Hood on the east. The tinfield, so far as it has been prospected up to the present, includes the eastern spurs of Mount Livingstone and the western slopes of the Parson's Hood. The southern portion of the field is distant by pack-track from the Pieman River about 9 miles, and from Zeehan about 19 miles. From the southern end of the field the tin has been traced northwards up the Stanley for a distance of 5 miles, making the Upper Stanley workings 24 miles from Zeehan.

The prevailing rocks of the Stanley River field consist of granites, with their associated granite porphyries and aplites. In the south end of the field, as shown on the accompanying sketch-map, the older Silurian rocks appear. These are much hardened and altered for a considerable distance from the contact of the granite. The latter extends in a north-easterly direction along the Meredith Range towards Mount Bischoff, the porphyry dyke at Bischoff being evidently connected with this same mass. The country between the Stanley River and Mount Bischoff has been prospected to a very small extent, and it is highly probable that between these points areas will be found containing deposits of tin ore.

I need not in this report deal exhaustively with the origin of the tin lodes. The lodes of the Stanley River field are of the same type as those of Mount Heemskirk, and I would refer those who desire to study the local evidence on this

question to my recent report on the Heemskirk district. It will here suffice to state that the presence of the tin is believed to be due to "after actions" connected with the granite eruption; that, during the later stages of the consolidation of the granite, vapours of great chemical activity and containing volatile compounds of tin and other elements, were given off; that these vapours ascended through cracks and fissures, formed largely by shrinkage in the cooling granite, and attacked some of the constituents of the latter, especially the felspar, and replaced them with such minerals as tin, tourmaline, topaz, and quartz. The evidence of the replacement of the felspar by quartz, tourmaline, and tin is very remarkable in the Heemskirk district. At the Stanley River it is even more so, and must be apparent to the most casual observer. The granite porphyries of this district often contain beautifully formed, sharply cut crystals of felspar embedded in a finer-grained groundmass of quartz and felspar. These larger crystals are, in the vicinity of the tin veins, generally completely replaced by tourmaline or tin. We therefore have what appear to be crystals of tourmaline or tin occurring in the crystalline form of felspar. I know of no other locality where these false crystals or "pseudomorphs" of tin and tourmaline after felspar are so perfectly developed.

The tin lodes consist of a zone of replaced granite (quartz tourmaline), with usually a central seam or fissure filled with tourmaline and tin. The central seam is generally small, and seldom exceeds more than a few inches in thickness. The replacement of the felspar with quartz and tourmaline on either side of this central seam may vary from a few inches to many feet. Where the lodes are very wide, there are usually a number of parallel seams of tourmaline running through the stone. The tin occurs both in the central seam and in the replaced rock. In the latter it occurs in the form of minute grains, and in definite pseudomorphs. There are very few other minerals present. Pyrites occurs in some of the stone, and probably will be found in all of it when depth is gained. This is an almost invariable accompaniment of lode tin, and presents no serious difficulty in its elimination. Another mineral which occurs in small quantities is monazite, a phosphate of the rare earths. This is the first locality in Tasmania, so far as I am aware, that this mineral has been found in its mother rock. Up to the present it has been found only in alluvial. It occurs only in small quantities, and can never be a serious impurity in the tin ore.

Where the quartz tourmaline reefs occur, the hillsides in the vicinity are strewn with quantities of quartz tourmaline stone. This collects in the creeks, and often forms the greater part of the alluvial wash. Such wash usually contains considerable quantities of alluvial tin.

It is, of course, not to be expected that all the quartz tourmaline stone carries payable tin. In this district, as in every other, the tin will be found to occur in shoots and patches, with barren or nearly barren stone between. The value of the deposits therefore depends upon the size and frequency of these shoots, and cannot be determined until a considerable amount of development work has been done. Up to the present prospecting has been almost entirely confined to the alluvial ground. This, however, has shown that a considerable proportion of the quartz tourmaline stone is tin-bearing. Large blocks and boulders are found in the wash carrying rich tin. So much is this the case in some places that it has been suggested that the whole of the wash might be put through the battery. Personally, I am inclined to doubt the advisability of this scheme, but certainly the richer tin boulders obtained in sluicing should be picked out and preserved for the battery. The quantities of this rich stone in the wash is the best evidence we can have of the presence of good payable shoots in the lodes. Many of the largest boulders, ranging up to 1 and 2 feet in diameter, carry rich tin, and these must have come from formations of considerable size. The country is very heavily timbered, and until quite recently no serious effort had been made to trace the alluvial tin to its source. Since my visit, however, several discoveries have been made, and I have little doubt that wherever the good alluvial occurs its source will be quickly found by prospecting on the spurs and hillsides in the locality.

In addition to the stanniferous quartz-tourmaline lodes there is another type of ore deposit represented in the district, which deserves some notice. I refer to the large "iron blows" which occur at intervals along the margin of the granite. These consist largely of magnetite, with some pyrites and a good deal of black tourmaline. At the surface the magnetite is largely converted into limonite or brown oxide of iron. Three of these iron blows are marked on the accompanying sketch-plan. Somewhat similar deposits are found surrounding the granite at Mount Heemskirk, and are alluded to in my report on the Heemskirk district, and also more particularly in my report on the iron and zinc-lead deposits of the Comstock district. These deposits at

6A

the Stanley River are, however, somewhat different in type to those at Mount Heemskirk. In the latter, tourmaline appears to be absent. In the Stanley River deposits it is present in large quantities. Their positions, however, at or near the contact of the granite and sedimentary rocks does not leave us in doubt as to the nature of the deposits. They are granitic contact deposits formed by emanations from the granite during the earlier periods of its consolidation. The question which most interests prospectors at the present time is whether these deposits are likely to contain tin. To this question a definite answer cannot be given. Granite contact deposits often do contain tin, but seldom in payable quantities. There is, however, no known reason why the deposits should not carry payable tin, and if it is found in the *débris* and alluvial in the vicinity of these blows they are certainly worth prospecting.

Sections 133-M and 134-M.

These two 80-acre sections are charted in the name of R. W. Maskell. They were formerly held as reward claims, and charted as 1940-91M (Albury and Mitchell), and 1941-91M (Upchurch). They are situated on the Stanley River, in the southern portion of the field. The river here runs through a somewhat extensive flat, containing deep alluvial ground. Most of this is situated in the northern section, No. 133-M. In the northern portion of Section 134-M the hard quartzites outcrop in the bed of the river, forming a bar, which is believed to be higher than the general level of the bottom of the flat. The area of the deep ground is probably between 15 and 20 acres. There are two classes of wash in this flat, one consisting almost entirely of quartz tourmaline stone and the other of hardened slates and sandstones from the contact country. The latter evidently comes from a couple of creeks which flow along a long flat from the north-west, following approximately the line of contact of the granite and sedimentary rocks. Most of the quartz tourmaline stone has been brought down by the Stanley River. So far as I have been able to judge, the quartz tourmaline wash carries the best tin, and the greater part of the wash in the deep ground is of this class. A good deal of prospecting was done on this flat some years ago, and proved the wash to be tin-bearing almost from the surface. All the old pits and shafts are now full of water, and could not be examined. I understand that the true bottom was never reached, owing

to the water being too heavy. In one case a shaft was put down to a depth of 25 feet through wash without reaching bottom. I am informed that the wash here proved to be tin-bearing throughout, and is estimated to average at least half an ounce to the small dish, or say 4 lbs. to the cubic yard. A dish taken from the wash at the mouth of this shaft in my presence yielded $1\frac{1}{2}$ oz. of tin, or three times the estimated average contents of the wash passed through in sinking.

In a cutting made into the bank of the Stanley River I had an opportunity of testing the quality of the upper layers of wash. The face exposed was about 9 feet deep, and consisted of (1) sandy loam 2 feet, (2) water-worn wash 5 feet, (3) white clay 1 to 6 inches, (4) water-worn wash 2 feet, not bottomed.

From this face the following prospects were obtained:—

- (1) From near the top of upper layer of wash, $1\frac{1}{4}$ oz. to the dish.
- (2) From about the centre of upper layer of wash, $4\frac{1}{2}$ ozs. to the dish.
- (3) From near the bottom of upper layer of wash, 3 ozs. to the dish.
- (4) From clay seam, small prospect fine tin.
- (5) From below clay seam, $1\frac{1}{4}$ oz. to the dish.

Taking the mean of 1, 2, 3, and 5, this gives an average of $2\frac{1}{2}$ ozs. to the dish, or about 20 lbs. to the cubic yard. In washing dirt of this nature the boulders and large cobbles are, of course, omitted. These represent from one-third to one-half of the bulk of the wash. We may therefore reckon that the whole of the wash at the point tested would carry from 10 to 14 lbs. of tin to the cubic yard, a result which can only be described as exceptionally good.

Mr. J. G. A. Stitt, assayer, Zeehan, made an exhaustive examination of this property in 1895, shortly after prospecting operations had been completed. He has kindly allowed me to quote the following results of prospects taken by him or under his directions:—

- "No. 1. Taken at top of flat from granite bottom in creek, northern section: 1 oz. per dish, equivalent to 7 lbs. 8 ozs. per cubic yard."
- "No. 2. Top of race downwards: several dishes yielding from 12 to 24 lbs. per cubic yard."
- "No. 3. Two dishes from windlass shaft by race gave 5 ozs., or 18 lbs. 12 ozs. per cubic yard."
- "No. 4. Three dishes from right bank of river below camp: here nice clean wash occurs. First dish gave

1670 grs., or 28.6 lbs. per cubic yard. Second dish gave 1870 grs., or 32.05 lbs. per cubic yard. Third dish gave 1100 grains, or 18.85 lbs. per cubic yard."

"No. 5. Left hand branch of river: two dishes. First dish gave 300 grains, or 5.14 lbs. per cubic yard. Second dish, 230 grs., or 3.94 lbs. per cubic yard."

"No. 6. Left hand bank of river above dam: 2 dishes. First, 708 grs., or 12.13 lbs. per cubic yard; second, 324 grs., or 5.55 lbs. per cubic yard."

At present prices tin ore is worth about 9d. per lb., so that according to the above prospects the wash is worth from 3s. to 21s. per cubic yard. If the wash taken all through will yield an average equal to the lowest of these figures, the ground would pay very handsomely if worked by the methods of hydraulic mining.

More than one attempt has been made to work this flat in a small way, but so far without success. The ground is very flat, and there is no chance of getting in a race with sufficient fall to carry away the tailings. In one place a drainage race has been brought up through the flat, but this is not more than 8 feet deep, and only enables the upper layers of wash to be worked. A small paddock was taken out at the head of this race, and is said to have yielded 10 bags of tin.

Another attempt was made to divert the Stanley from its present course in order to work the present bed of the river, and with this object in view a dam was thrown across the stream. This was, however, washed away at the first flood, and the attempt was abandoned. It is now quite evident that the ground cannot be worked successfully without elevating the tailings. It has been suggested that the bar might be shot away and a tail-race brought up from the south, but I am of opinion that this is impracticable. The Stanley is very flat for a long distance south of the bar, and I very much doubt if sufficient fall could be got to carry away the tailings. In any case the cost would be practically prohibitive. The most feasible method of working the ground appears to be to elevate the tailings hydraulically. The Stanley River rises pretty rapidly to the north. I took an aneroid reading on the track to the North Stanley sections at the first crossing of the river, about three miles north of the reward sections. At this point the river is 430 feet above the flat in the reward sections. The water could be brought from here, or any point lower down if less head were required, along the western slopes of the Parson's Hood, *via* News Creek, into the claystone hill to the east of the reward

sections. This would bring the water within about 20 chains of the flat.

When I visited the district there had been no rain for several weeks, and the river was exceptionally low. I estimated the amount of water flowing in the river to be not less than 7 sluiceheads, and I am informed that for eight or nine months in the year 15 head may be depended on. This water would be sufficient to enable the ground to be economically worked.

This property is, I believe, well worthy of the attention of investors. There are no serious difficulties to be overcome; the wash contains no large boulders, and on the whole is very easily disintegrated. The tin is of good grade, parcels of ore sent from the district assaying from 71 to 73 per cent. metallic tin. There is no wolfram present, and besides tin the only heavy mineral found is a little monazite—not sufficient, as the above results show, to seriously affect the assay value of the ore. The bottom layers of wash have not been tested, but the prospects obtainable from the upper layers are such as leave no doubt as to the richness of the deposit. I believe the property is a most valuable one.

Besides the alluvial deposits on the flat, there is another formation on this property which deserves some attention. It consists of an iron blow in the north-west portion of Section 133-M. The formation is now so densely overgrown with scrub that there is very little to be seen, but Mr. A. Montgomery, reporting on the field in 1895, states that he obtained excellent prospects of very ragged tin ore from the gossan. This is close to the contact of the granite and Silurian strata, though whether it lies just inside or just outside the granite I could not determine. I think it is probably one of the contact deposits already referred to, and will turn to magnetite and pyrites in depth. The presence of tin in the gossan at the surface is encouraging, and warrants the formation receiving a fair trial.

Section 288-M.—A. E. Hodge.

This is an 80-acre section, situated north-west, and adjoining the northern section of the old reward claims. The flat already described on the latter section has two branches, one following the Stanley River in a northerly direction, the other stretching away to the north-west, and separated from the former by a high granite spur. The wash in this branch is mostly composed of hardened slates and sandstones, but there is also a good deal of quartz tourmaline stone.

Good prospects are said to have been got in several places, but the tin appears to be patchy. A little ground has been worked in the north-west corner of the section, but I understand that the ground did not pay. Some dishes washed in my presence gave over an ounce of tin to the dish; other prospects were smaller. There appears to be little or no tin except right on the bottom in this part of the ground. The flat is, however, a very extensive one, there being about 40 acres of alluvial on this section alone. It has not been half-prospected, and it is at least highly probable that there are some good leads yet to be found. It would, I think, be advantageous to both parties if the owners of this section and the reward sections would join forces and together obtain the necessary capital to enable all the ground to be worked economically.

Castle's Alluvial.

Sections 303-M, 74 acres; 390-M, 20 acres; and 391-M, 20 acres. These sections are charted in the name of H. Castle. They are situated north and adjoining the reward claims, and take in a good deal of alluvial ground along the Stanley River and along Castle's Creek, a tributary of the latter, which joins the Stanley from the west a little north of the centre of Section 303-M. The flats are from 2 to 3 chains in width, and the depth of wash varies from 2 to 6 feet. The lower portion of the ground along the Stanley River is very flat, and could not be worked unless some provision were made for elevating the tailings. It is, I think, very doubtful whether this part of the ground will ever pay to work. The Stanley River would have to be diverted, and it is questionable whether the amount of tin obtainable would pay for this. Along Castle's Creek the conditions are more favourable, and probably the wash is of better quality. Altogether there is about 20 chains of this creek which is workable. For most of this distance the width of the wash is from 1 to 2 chains, but in the northern section it widens out to about 4 chains, the wash rising in the western terrace some 40 feet above the level of the creek.

A very striking feature in the wash in Castle's Creek is the abundance of quartz tourmaline stone. This rock must represent 95 per cent. of the whole wash. A lot of this stone is rich in tin, and has evidently been derived from tin lodes in the vicinity. Near the northern boundary of Section 303-M Messrs. W. Castle and party have worked a patch of

ground with fair results as regards free tin, but in addition to this they have stacked 1000 tons of quartz tourmaline boulders, a considerable proportion of which carry good tin. I took a sample from several of the richer boulders, and submitted it to Mr. W. F. Ward, Government Analyst, for assay. The return was 11.5 per cent. metallic tin. This specimen stone is of all sizes, from boulders 2 feet in diameter down to small pebbles. A small prospect of tin can be got on the shovel by crushing almost any of this quartz tourmaline stone, but it would be too much to expect it to be all payable. After crushing a large number of pieces of stone I have come to the conclusion that when no tin is visible the stone will not, as a rule, carry more than 0.2 per cent. oxide, while a good deal of it contains less than this. When tin can be seen in the stone at all a good prospect may be expected. It has been suggested that the whole of this wash would pay to put through a battery, and to test this I sampled the stone carefully in bulk. This sample was taken in duplicate, and the results came out identically the same, namely, 0.5 per cent. metallic tin, equivalent to 0.7 per cent. oxide. This result is lower than I expected, but it confirms me in my opinion that most of the tin is contained in the richer stone, in which the ore can be seen by the naked eye. I do not think that it would be advisable to put the whole of the stone through the battery. The rich stone should be separated from the barren by hand-sorting while the alluvial was being worked. This would present no real difficulty, as the eye soon gets trained to detect the presence of tin in the boulders, and these could be put aside for treatment in the battery. Most of the small specimens would be saved in the sluice-box. This specimen tin would then add materially to the alluvial yield.

The wash in this part of the section is from 2 to 5 feet in depth, with very little stripping. Several dishes were washed, yielding prospects of from 1½ to 3 ozs. of tin to the dish, omitting the boulders. Mr. W. Castle estimates the wash to carry an average of 1½ oz. to the dish. This would pay well to work, even if the specimen stone were neglected.

The two 20-acre sections north of these workings have been tested by a number of prospecting holes sunk in the small flats along the creek, and good tin has been got. The proportion of specimen stone showing in the wash taken out of these holes is, if anything, greater than on the sections lower down, while the free tin appears to be present in about the same proportions; the average depth of wash is about 3 feet.

10/20

I think that all of these sections could be most economically worked in conjunction with the sections held by the Stanley River Tin-mining Syndicate, described below. The owners of these sections are largely interested in the Stanley River Syndicate, and it is probable that an amalgamation could be easily brought about. I understand that negotiations are now proceeding with this end in view.

The Stanley River Tin-mining Syndicate.

This Syndicate has applied for four 80-acre sections on the spurs above the alluvial in Castle's Creek. Three of these, pegged in the names of H. Castle, A. D. Sligo, and H. Castle respectively, are situated on the spur between Castle's Creek and the Stanley River. The fourth, which is pegged in the name of W. Castle, is situated on the spur to the west of Castle's Creek. Very little prospecting had been done on these sections at the time of my visit, and I could only judge of their value by the distribution of the tin-bearing boulders in Castle's Creek and in the several small creeks running into it from the spurs on either side. From the numbers of rich boulders of tinstone in the alluvial, it is apparent that quartz tourmaline reefs containing shoots of good ore are to be found in the surrounding spurs. Most of the quartz tourmaline stone does not extend more than about half-way through Section 391-M, and the specimen stone appears to be all below this point. One naturally turns, therefore, to the spurs on either side. On the east side of Castle's Creek there are three small tributaries, as shown on plan. All of these creeks are full of quartz tourmaline stone, and many of the boulders contain good tin. One sample taken from a large boulder in the most southerly of these creeks gave a return of 12.8 per cent. metallic tin. Free tin is also obtainable in the wash. On the western side one creek is shown on the chart flowing through the centre of W. Castle's section. This creek also contains quartz tourmaline, some of the stone being rich in tin. This evidence all points to the fact that the alluvial and specimen tin in Castle's Creek has been principally derived from tin lodes situated on the two sections on the east spur charted in the names of A. D. Sligo and H. Castle, and also from the section on the west spur charted in the name of W. Castle.

A few days before my visit Mr. W. Castle had discovered a quartz tourmaline outcrop in the north-west corner of the south-eastern section. The outcrop was about 8 or 10 feet wide, and appeared to strike about 50° east of north. There

was a little tin showing, but the formation had hardly been broken into at the time of my visit. Since then I am informed that some shots have been put into this blow, and some very rich stone has been exposed.

To the south-west of this blow two trenches have been cut, and have exposed what is believed to be the continuation of this lode. The lode is stated to be 15 feet in width, and to contain rich tinstone. I have seen samples from these workings, and certainly the stone is of a most favourable appearance, and of the same character as much of that found in the alluvial workings. The strike of the lode as determined by the trenches is said to be about 20° east of north, and I have adopted this bearing in plotting the lode on the sketch-plan. This lode could readily be exploited by tunnels. By driving on the lode from the south nearly 400 feet of backs are obtainable.

From the distribution of the tinstone it is apparent that there is more than one lode on this section. The ground further east is especially worthy of attention. On the east slope of the hill towards the Stanley some rich boulders have been found, and these have certainly come from a separate formation. It is quite likely that there are a number of parallel lodes on this section. On the western section also there is certainly at least one lode carrying good tinstone.

Another lode has been found on the boundary between the northern section and Section 280-M, 7 chains from the north-east corner of the latter. This lode strikes 30° west of north, and is exposed for a width of 4 feet, though this may not be the full width of the formation. Some of this stone carries a little visible tin, and a sample taken from this yielded 0.9 per cent. metallic tin. It is not possible to judge of the value of this formation till more work is done. The lode is situated right on the top of the spur, and is 1400 feet above the alluvial workings in Castle's Creek. Should it prove a payable lode, there are excellent facilities for mining it cheaply to a great depth by means of tunnels.

The ground held by the Stanley River Tin-mining Syndicate undoubtedly contains lodes carrying rich tin, and one of these has already been discovered. I have no doubt that further prospecting will result in the discovery of others. The facilities for cheaply mining and dressing the ore are excellent. A large amount of backs are obtainable by tunnelling, as will be readily seen by the heights marked on the plan. These are corrected aneroid readings, and may be taken as fairly accurate. Abundance of water power is available, not only from the Stanley River, but also from

13/20

Castle's Creek. From this creek as much as 750 feet of head can be obtained with about a mile of race. The stream contains nearly a sluichead of water in the driest season, and with the available head would be sufficient to supply all the power necessary for a battery of moderate size. The property deserves to be energetically prospected.

Section 280-M.—80 Acres.

This is a surveyed section held by Mr. H. Castle. The lode, which was cut on the northern boundary-line, has already been described. The lode traverses the north-eastern portion of the section for about 15 chains, as evidenced by the quantities of quartz tourmaline *débris* which is strewn along the top of the ridge. This lode has been proved to be tin-bearing, and should be thoroughly prospected. There are magnificent facilities for working it economically to a great depth.

On the western boundary also there is a good deal of loose quartz tourmaline stone, which has been derived from reefs in the vicinity. I understand that it is intended to amalgamate this section with the ground held by the Stanley River Tin-mining Syndicate. Certainly the whole ground could be most economically worked by one company.

News Creek.

News Creek is a tributary of the Stanley, flowing from the east, and following approximately the contact of the granite and metamorphic claystones. There was nobody at work in this part of the field at the time of my visit. I was kindly shown over the ground by Mr. W. Castle.

In Section 287-M, 61 acres, near the western boundary, a little to the north of the track, there is a black quartz tourmaline outcrop, on which a trench has been sunk. The stone is in blocks and boulders in the soil, but no doubt the formation itself is not far distant. This must be close to the contact of the granite and quartzite. A few chains north-east a couple of trenches have exposed a small quartz tourmaline lode some 8 or 9 inches wide. This is on the southern bank of a small creek which runs into the Stanley, and is said to contain from $\frac{1}{4}$ to $\frac{1}{2}$ oz. of alluvial tin to the dish. I could not see any tin in the stone, but the alluvial tin in the creeks indicates the presence of tin-bearing stone in the vicinity.

On Section 790-M, 40 acres, charted in the name of E. Hawson, near the centre of the northern boundary, there are

some old prospecting workings, consisting of a small shaft and some trenches, which have been made on a quartz tourmaline lode about 18 inches wide. On the surface some slugs of tin ore are said to have been found adhering to tourmaline, but no tin was found in the lode. A little tin is said to be obtainable in the creek below.

On Section 786-M, charted in the name of W. J. Hodge, two other formations have been found. One of these is another small quartz tourmaline lode, carrying a little tin. Assays are said to have been obtained up to 30 per cent. of tin, but I could find no stone of this class. The other formation consists of a large gossan outcrop on the eastern boundary of the section. This is a contact deposit, and contains a good deal of magnetite and black tourmaline. The presence of tin has not been detected so far.

News Creek flows diagonally through this section, and it contains a good deal of alluvial tin. The bed of the creek was worked some years ago for several chains with fair results. On the northern bank of the creek there is a terrace deposit of wash of considerable extent, which should pay a good working party to take in hand. The wash is from 3 to 6 feet in depth, and is said to average about $\frac{1}{2}$ oz. of tin to the dish. A small patch has already been worked, but the good tin which was started on, cut out, and nothing further was done. The ground could be worked very cheaply by ground sluicing, if a short race were cut, bringing the water from News Creek on to the terrace above the wash. The patch that was worked had to be wheeled to water and boxed. The ground is not rich enough to pay for this sort of thing, but might pay well for ground sluicing. I found several specimens of good tinstone in the wash, indicating the presence of tin-bearing lodes on the higher ground to the north. Two sections are held to the north of these workings, but I am not aware that any work has been done on them. They are certainly worth prospecting.

Riley's Sections.

These are four 80-acre sections, pegged by Mr. C. E. Riley in the names of T. A. Brice, R. C. Lewis, H. Mackay, and A. Ross. They were not surveyed at the time of my visit, and consequently their positions, as marked on the sketch-plan attached to this report, are only approximate.

Tin was first discovered in Minor's Creek, a small tributary of the Stanley, which runs approximately through the centre of the two southern sections. This is a rough little creek flowing into the Stanley about a mile to the north of

Castle's Creek. A small patch was worked some years ago by a prospector named Minor, and he is said to have obtained six bags of tin from a piece of ground 30 feet in length. Above the ground worked by Minor the creek-bed is choked by large granite boulders, and below it the ground was at that time leased, and could not be worked. This ground is now all included in McKay's section. Two or three dishes were washed from the creek below Minor's workings, and gave astonishingly good prospects, namely, from 1 lb. to 4 lbs. of tin to the dish. There should be a good deal of tin to be got between this point and the Stanley, a distance of some 5 or 6 chains. The bed of the stream is wider and flatter here than higher up, and the tin would have a good opportunity of lodging on the bottom. Higher up the creek the fall is rapid, and the gully has steep banks, but even here there are good patches that will pay to work. In the eastern portion of McKay's section one of these patches has been opened out. There is a small run of wash here in the bed of the creek which yields prospects ranging from $\frac{1}{2}$ lb. to $1\frac{1}{2}$ lbs. of clean tin, besides 2 to 4 lbs. of small specimens to the dish. Many of the larger boulders here contain good tin, and point to the presence of rich shoots in the quartz tourmaline reefs in the vicinity. Four or five chains higher up there are a number of angular blocks of tinstone, carrying good tin. These appear to have all come from the same lode, which, by the size of the blocks, must be over 2 feet in width. This lode should be easily found by trenching along the bank of the creek, as the blocks of stone have not come far. The creek was tested in several places higher up, and yielded from $1\frac{1}{2}$ to 4 ozs. of tin to the dish, as well as a good deal of specimen stone. On the whole, there is evidence of the existence of several lodges carrying rich tin on these sections, and they should be easily located as soon as prospecting operations have got fairly under way. The alluvial tin is limited in amount, but it is very rich, and should be of material assistance in the development of the property.

Going northwards from Minor's Creek along the lower slopes of the Parson's Hood a large amount of quartz tourmaline stone is seen both *in situ* in the reefs and strewn over the slopes of the spurs. Some of this stone looks most favourable, though I did not actually see any tin in it. The reefs here strike about 30° west of north. The wash in the small creeks yields from $1\frac{1}{2}$ to $2\frac{1}{2}$ ozs. of tin to the dish, besides a good number of specimens. All of this country deserves most careful prospecting.

15/20

Munro's Sections.

These consist of one 5-acre section No. 3948-93M, and three 10-acre sections, Nos. 3949-93M, 3950-93M, and 3951-93M, situated on the Stanley River, about five miles north of the reward sections. The 5-acre section is situated about 20 chains lower down the Stanley than the other three, and takes in a nice little alluvial flat, from which good prospects of tin have been obtained. A hole has been sunk in this wash close to the river, and has proved the wash to be about 4 feet deep, with 3 feet of sandy loam stripping. The wash is stated to yield prospects of from 1½ to 2½ ozs. of tin to the dish. Mr. J. G. A. Stitt, in his report on these sections, states that he obtained a prospect, equivalent to 9.75 lbs. per cubic yard, from 2 feet of wash, just below the stripping. This hole is now filled with sand and rubbish.

On Section 3949-93M a patch of ground has been worked about 3 chains long by 15 to 20 feet wide. In order to work this ground a race had to be brought up, and the hard granite bottom shot away for some chains. The fall obtained was, however, not sufficient to enable the ground to be worked effectively by ground sluicing, and the attempt was given up. In the face of these workings there is about 2 feet 6 inches of wash covered by the same depth of sandy loam stripping. A dish taken from the bottom of the wash yielded 5 ozs. of tin. Another from the upper layers gave a small prospect only. The good tin appears to be principally confined to the bottom of the wash at this point. Another dish was tried from a prospect hole to the west of these workings, and this yielded 1½ ozs. of tin.

This alluvial ground extends along the Stanley River right through the three 10-acre sections, having an average width of from 2 to 3 chains. A number of prospect holes have been sunk at intervals right through the property. The average depth of wash is estimated at 2 feet, and the overburden at 2 feet 6 inches. I am informed that the wash taken all through will average 1½ oz. per dish. This would be equivalent to about 10 lbs. per cubic yard, and would pay handsomely to work. The ground is too flat to permit of ground sluicing being adopted, though I believe that the sandy overburden could be removed by this means. The greater part of the wash will have to be raised by hand and treated in the sluice-box. The whole of the wash in this flat consists of quartz tourmaline stone. The boulders are of all sizes up to 1 foot or more in diameter. Some of the stone carries good tin, and points to the presence of

rich shoots of tin ore in the reefs in the neighbourhood. It has been suggested that the whole of this stone might be put through the battery, but I think that this is too much to expect from an alluvial deposit. In order to obtain an idea of the bulk value of the stone, I took a large bulk sample from the quartz tourmaline boulders and pebbles thrown out of the old alluvial workings. This was assayed by Mr. W. F. Ward, and yielded 0.2 per cent. metallic tin. This certainly would not pay for crushing. Still, I am of opinion that it will pay to pick out the richer stone from the alluvial as it is being worked. This could then be crushed in a small battery erected for the purpose, or in any other battery which might be erected on the field.

North Parson's Hood.

Accompanied by Mr. C. Riley, I went up on to the high spur connecting the Parson's Hood with the Meredith Range. This lies about a mile to north-east of Munro's sections. On this spur I noticed a number of large quartz tourmaline formations, some of them carrying visible tin. One outcrop particularly, situated on one of the western spurs, showed fine tin in almost every piece examined under the magnifier. The width of this formation was not evident, as the stone was all loose, but it was evidently quite close to the lode from which it had been shed. Further east on the top of the spur some more stone was picked up, showing visible tin. This appeared to have come from a small lode some 9 or 10 inches wide. Further east still there is a very wide quartz tourmaline formation, just on the eastern fall of the spur. This is either one large reef 2 or 3 chains in width or, as I think more likely, a series of parallel reefs, each of them 8 or 10 feet in width. I could see no tin in the stone, but it looks favourable, and should be tested. Even a small percentage of tin in such a large and admirably situated formation would pay to work. I understand that since my visit this ground has all been pegged, and that some rich stone has been found in the vicinity.

The Harman Flat.

To the east of the Parson's Hood there is an extensive flat through which the Harman River flows. I only saw this flat from a distance, but from its position I should say it was well worth prospecting. If there is any tin on the eastern slopes of the Parson's Hood some of it must have found its way on to the Harman Flat. I am informed that

there is serpentine country in this direction. This rock is not favourable for tin lodes, but does not affect the chances of finding alluvial tin. It may, however, shed iron ores, &c., which will be more or less difficult to separate from the tin.

Smoko Creek.

This is a tributary on the west bank of the Stanley River, joining the latter just below Munro's sections. I did not examine this creek, as there was no one at work at the time of my visit. I understand that some alluvial was worked here some time ago by Mr. Weber, but had to be given up on account of the great difficulty of getting the ore to market. Messrs. Atkins and Riley have been prospecting this country for lode, and I am informed that they have made a promising discovery, in the form of a large quartz tourmaline reef carrying tin. I was shown a sample of this stone, which looks very promising.

Means of Access.

Every new mining field has to face the problem of access, and the Stanley River field is no exception to the rule. At present the field is reached by means of a pack-track from Zeehan. This track passes, for the most part, through open sandstone country, with a hard quartz gravel bottom, which makes an excellent track. The grade of the track could be greatly improved at a moderate expense by a few judicious deviations. The only soft ground that has to be passed is in the valley of the Pieman River, which, of course, is heavily timbered. There is no provision made at present for getting horses across the Pieman. They have either to swim, or, if the river is very low, they can wade across the shallows. When the river is high it is not safe to bring horses across at all. Foot traffic is provided for by two cages—one across the Pieman and the other across the Stanley. There is, however, no real necessity for two cages. Had the Pieman River cage been erected just below, instead of just above the Stanley, the Stanley cage would not have to be used, as the track is on the west side of the Stanley. These two cages are most inconvenient, as they necessitate unloading and loading the pack-horses twice instead of once, and the fording of two rivers instead of one. It would cost very little to move the Pieman cage to some point below the Stanley River. Were this done a horse could be kept at the north side of the Pieman, and stores could be got

across in all weathers, and almost as cheaply as if horses could go right through.

It has been suggested that a suspension bridge might be thrown across the Pieman below the Stanley River to enable horse traffic to cross the Pieman. After a careful examination of the river for over half a mile below the Stanley, I have no hesitation in stating that this scheme is impracticable. The river is 300 feet wide, with a low alluvial bank on one side, which would necessitate high trestle work and expensive foundations for anchoring the cables. The cost of such a bridge would be prohibitive.

The only way in which horses can be got across the Pieman at this point is by means of a punt or ferry, with a man in charge. This may become advisable in the near future, but I think that at present the first thing that should be done is to improve the track. With a small expenditure on the track it would be quite possible to get machinery out to the field, the Pieman being negotiated by means of a temporary punt. If this were done, and in addition the Pieman cage moved down to some point below the Stanley River, I think that reasonable facilities would be afforded until prospecting operations are in a more advanced stage than they are at present.

From all I can learn the natural permanent outlet to the Stanley River field is via the Meredith Landing on the Pieman River. A good route for either a road or tramway can be got to this landing from the lower Stanley. For a road the distance is about eight or nine miles, and for a tramway perhaps twelve or fourteen miles. Almost the whole distance is over hard open country, and a road would be very cheaply constructed. Fair-sized steamers can get up to the Meredith Landing, and I am informed by Mr. Val. Johnston, the local manager of the Union Steamship Company, that if there was anything like a permanent output from the field, tin could be shipped to Launceston for about 20s. per ton. No other route could compete with this one in the matter of cost of transport, provided there is enough freight, inwards or outwards, to make it worth while for a steamer to call. It is, however, probable that the Zeehan route will always be largely used, and when the field goes ahead it will no doubt be advisable to erect a ferry at the Pieman River, and convert the present track into a dray road.

In conclusion, I may say that although my visit to the Stanley River was only a short one, I took away with me a most favourable impression as to the future prospects of

19/20

the district. The small amount of work that has been done up to the present has not only revealed the presence of rich alluvial deposits of tin ore, but has afforded the strongest evidence of the presence of rich lodes. Few of these have so far been located, but there is every reason to believe that as soon as prospecting work has been carried into the timbered hills and spurs in the vicinity of the alluvial deposits the tin lodes will be quickly found. The district is one which will require a good deal of capital to develop, but on the other hand the inducements for the investment of capital are likely to be good.

I have to gratefully acknowledge the assistance and hospitality extended to me by Messrs. W. Castles and C. Riley during my visit to the field. Also I have to thank Mr. J. G. A. Stitt, of Zeehan, for much useful information in reference to the field.

I have the honour to be,

Sir,

Your obedient Servant,

G. A. WALLER,

Geological Surveyor.

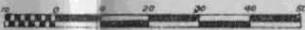
W. H. WALLACE, Esq.,

Secretary for Mines, Hobart.

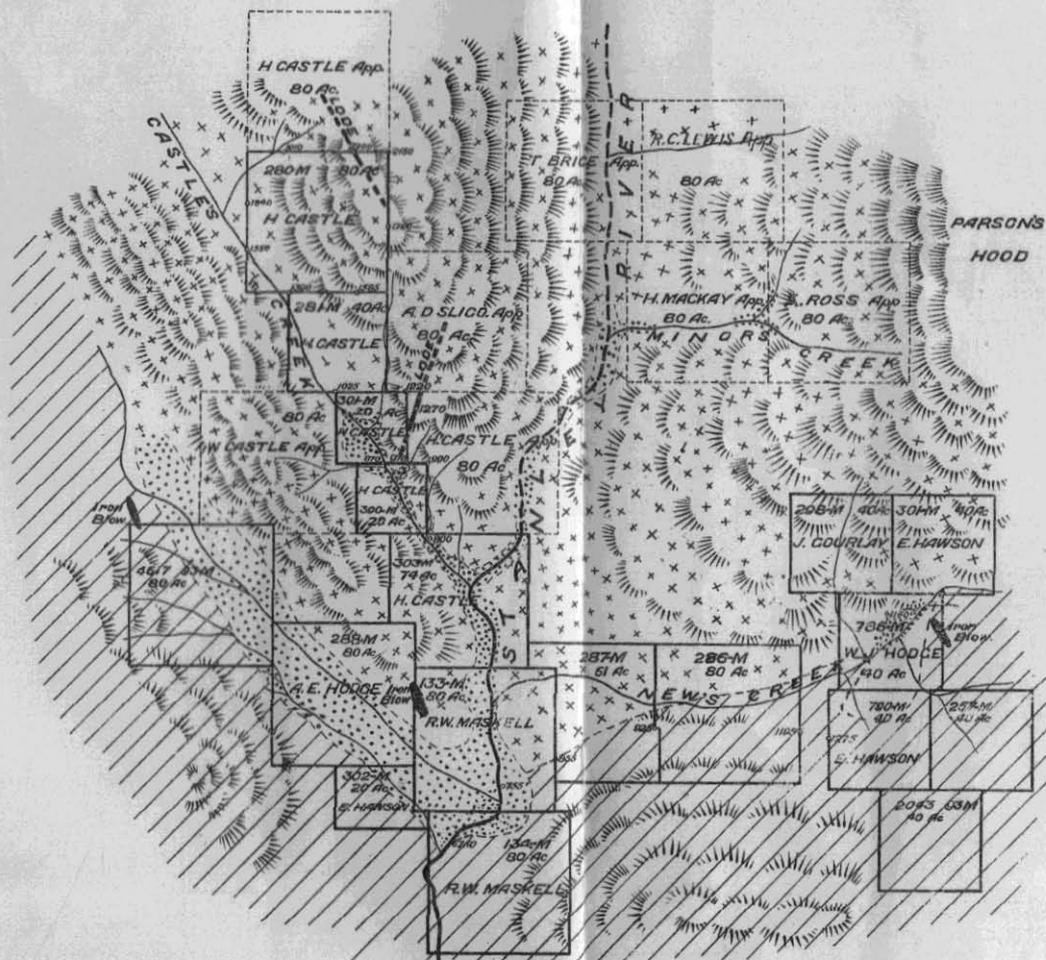
20/20

GEOLOGICAL SKETCH PLAN

SOUTHERN PORTION OF STANLEY RIVER TIN FIELD

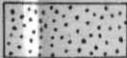
SCALE OF CHAINS 

J. A. Waller.
Geological Surveyor.
18-1-04.



Granite & Granite Porphyry 

Metamorphic Sandstones & Claystones (Silurian) 

Height above Sea level \circ 1240 Alluvial 

JOHN VAIL, GOVERNMENT PRINTER, TASMANIA.

