

REPORT ON THE ALLUVIAL TIN MINES AT DERBY.

Mines Office, Launceston, 1st May, 1899.

SIR,

In accordance with your instructions I proceeded to Derby on the 8th ultimo to examine the alluvial tin mines in that vicinity, but owing to other pressing engagements I was unable to make a complete examination, and shall have to return when opportunity offers to finish the work. In the meantime I have the honor to forward you the following interim Report.

The Town of Derby, which is largely dependent on the mines, is situated at an elevation of about 400 feet above sea-level on the Ringarooma River, distant about 23 miles by road from Scottsdale. At this point the river has cut through what is known as the Brothers' Home or Cascade Deep Lead, a thick deposit of stanniferous gravels of Palæogene age, capped with basalt, and filling the valley of an older river corresponding to the present Cascade River. To the north of Derby is an extensive basaltic plateau of rich agricultural land, under which doubtless runs the main lead corresponding to the present Ringarooma River, of which the Cascade is a tributary.

The formation of the deep leads of Tasmania has been fully described by Mr. A. Montgomery, M.A., late Government Geologist, in his Reports on the Gladstone District, on Thureau's Deep Lead, &c., but it may be well to here briefly recapitulate the principal points.

In early Tertiary times the general level of northern Tasmania, irrespective of the great denudation that has since taken place, stood considerably higher than at present. Of this we have abundant evidence. The bottom of the Launceston Tertiary Basin, for instance, has been proved by boring to be at least 200 feet below sea-level. The bottom of the Ophir Deep Lead at Beaconsfield is over 270 feet below sea-level, and the Deep Leads at Lefroy and Back Creek also run well below sea-level. The ancient rivers were then engaged in carving out their valleys, the scouring action of the water being probably increased by a gradual elevation of the land. Then followed a long period of subsidence, which caused a decrease in the grade of the rivers, and, instead of wearing their beds deeper, they began to deposit their burden of detritus, and thus the old valleys became filled to a considerable depth with gravel, sand, &c. As the land subsided the sea naturally encroached further and further inland, and remains of Tertiary marine beaches are found on the slopes of Mount Camheron and elsewhere. At the close of this period of subsidence there was a period of great volcanic activity, when showers of ashes and streams of lava were poured forth, which filled up the valleys and diverted the streams from their courses. Then the land rose again, probably slowly and gradually, and the rivers began to carve out fresh channels following the general direction of the older streams, but sometimes cutting right across them, as in the instance under consideration. Here we have a deposit of gravel and sand, in places over 150 feet thick, which has been buried beneath a thick covering of volcanic ashes and basaltic lava to a depth of over 150 feet, and so preserved from denudation except where cut through by the modern streams. It is evident that there were several outbursts of lava at considerable intervals, as we find layers of gravel with basalt below and above.

The wash consists almost entirely of quartz, ranging from pebbles the size of sparrows' eggs down to fine sand. Colourless topazes are not uncommon, and black spinels are frequently seen. These latter are sometimes mistaken for tin-ore, but may be readily distinguished by their superior hardness and lower specific gravity. In the lower drifts, as proved by boring, there is a good deal of carbonaceous matter, and pieces of lignitized and silicified wood are sometimes found in the basalt. Occasionally there are layers of pug or clay, and in places the gravel is so cemented together with silica and oxide of iron as to require the use of dynamite to break it. This is particularly the case in the Briseis workings, of which further mention will be made later on. The bed-rock, wherever exposed, consists of coarse grayish granite with large porphyritic crystals of felspar, which weathers very rapidly. A good deal of the wash has been formed from the direct disintegration of the granite, which probably carries a little tin throughout, but much of it is coarser than the quartz seen in the granite, and has doubtless come from quartz lodes; but the tin-ore is as a rule fine, and I have not heard of any specimens being found with quartz attached. In several places, however, I noticed small veins of quartz traversing the granite, and the discovery of some rich tin-bearing lodes has lately been reported near the head of the Cascade River. The mines at present working on the Cascade Lead are the Krushka Brothers, New Brothers' Home No. 1, and Briseis on the south side of the Ringarooma, and the Brothers' Home Extended on the north.

Brothers' Home Mine.—This is a private claim owned by Messrs. Krushka Brothers, to whom is credited the first discovery of tin in this locality. It is contained in Mineral Section 316, of 80 acres, extending from the Ringarooma River in a southerly direction up the lead for a distance of about 35 chains, bounded on the south by the New Brothers' Home No. 1 Mine, and on the east by the Briseis.

For some distance up the lead from the river there was comparatively little wash above the drainage-level, the present river having cut out and sluiced away a large piece of the old lead; but there is a considerable depth untouched below this level, borings on the North Brothers' Home (now Brothers' Home Extended), on the opposite side of the Ringarooma, having proved the bottom of the old channel to be over 70 feet below the present river. For about 20 chains from the river the gutter runs in a south south-westerly direction, when it takes a sharp bend round to the S.E., and the ground gradually becomes deeper, the present face being about 280 feet high, of which about half is basaltic overburden and half drift. The upper part of the face consists of decomposed basalt, which is succeeded by about 50 feet of hard columnar basalt resting on a thick layer of basaltic tuff. The bottom of the face is close up to the southern boundary, and only a comparatively small patch remains to be worked in the south-eastern corner of the section. It will be impossible to work out the whole of this without bringing down very heavy falls of basalt from the Briseis and New Brothers' Home No. 1 Companies' properties, and encroaching on their top drift. The hill above the face is seamed with cracks caused by the subsidence, due to the underground workings of the adjoining mines, and as the gravel is sluiced away from the bottom occasional big slips of the basaltic overburden take place. These slips always give good warning, and, as there is a good get-away for the men, there is very little danger with ordinary care. The boundary-line between this claim and the No. 1 is marked by a wire stretched from the top of the cliff, the original surface having long since disappeared. Much of the basalt is so decomposed as to be readily broken up by the jet of water from the nozzle, but the more solid stones have to be carted away some distance to be dumped. The tail-race has been brought up as flat as possible, and Mr. Krushka informed me that it was only about 6 feet above the actual gutter at the face, so that there must have been a great fall in the old channel between this point and the river. Owing to the silting up of the river at the outlet, it is difficult to keep the tail-race clear, and a sort of plough is occasionally dragged along it with good effect. The top 50 feet of drift are very poor in tin, and not considered payable, but towards the bottom it becomes much richer, and the last 20 feet are very good. This is only as might be expected, for when the lower gravels were being laid down the channel was comparatively narrow, and the velocity of the stream was such as to carry the lighter gravels forward and admit of some concentration of the tin ore. As the land subsided the stream became wider, its velocity was consequently decreased, and, being overloaded, it would deposit its burden much more rapidly, the carrying power of a stream being reckoned to vary as the sixth power of its velocity. The upper gravels would therefore represent a considerably less degradation of the surface than the lower ones. In the gutter itself are found large boulders of granite (generally decomposed), and round these the drift is usually exceptionally rich.

Both the eastern and western reefs (a "reef" is the miners' term for the sloping bed-rock) are exposed a short distance from the face about two chains apart, and the gutter appears to be turning more to the south.

The top part of the race is cleaned up about once a month, and the rich sand is carted a short distance to the tramline, tipped into trucks, and run down to the tin-sheds near the river, where it is streambed in boxes, dried, and bagged. No figures of the output prior to 1883 are available, but from 3rd July of that year up to 31st March, 1899, 3791 tons 11 cwt. of tin ore, assaying about 74 per cent. of metallic tin were obtained,—a magnificent result, considering the area of the ground worked, and very encouraging for the working of the deeper gravels higher up the lead. The present output is about 10 tons per month.

New Brothers' Home No. 1.—This company possesses an extensive property of 220 acres, but the main workings are confined to Section 554 of 80 acres, situated immediately south of Krushka Brothers' claim. It was originally worked from a main inclined drive by drifting and blocking out successive layers of the washdirt, and in this way a block of ground from 40 to 50 feet deep, about 700 ft. long, and up to 300 ft. wide, extending to the Briseis boundary, was worked out. This system of working such a large body of drift is very expensive, owing to the immense quantity of timber required and the cost of hauling the dirt to the sluice-boxes, and it is impossible to work out the whole of the ground. A good profit was, however, made for some time, and the bottom of the gutter had not been reached when underground operations had to be suspended owing to the damage caused to the Briseis Company's main tail-race drive. A start was then made to strip off the heavy basaltic overburden, and an immense quantity of solid basalt was removed by manual labour, the softer portions being broken up by the hydraulic jet and sluiced away, but the old tail-race was too high to command the best of the drift. By arrangement with Messrs. Krushka, a new tail-race about 34 chains in length has been constructed through this section, striking the western reef near the boundary between the two sections, and most of the wash lying on the western reef, from which the overburden had been previously removed, was sluiced through this. The drift treated yielded about 3 lbs. of tin ore to the cubic yard, although much of the best of it had been previously blocked out, and sluicing was much hampered by the timber of the old drives. Further to the east, towards the centre of the lead, very good seams of tin ore are showing, the

best of it being below the present tail-race, which is about 35 feet above the bottom of Messrs. Krushka's face, but it would be impossible to work this at present without bringing down large falls of basalt into the Krushkas' workings. Last year tenders were invited for removing 100,000 cubic yards of the overburden, and an offer was made to do this for 1s. per yard, but the tender was not accepted. Over the centre of the gutter there is about 140 feet of overburden, a large part of which is solid columnar basalt, but the hill slopes towards the western reef, and on this side the basalt is more decomposed. A cut is now being made through this to the south, the stripping being removed at the rate of about 2000 cubic yards per week, which Mr. Whittle, the manager, informed me cost only about 5d. per yard. This will probably uncover a good deal of payable drift, but the best of it will still be inaccessible. The stuff is first broken down by a giant nozzle with a pressure of over 200 feet. The solid stones are separated out by a large perforated plate placed in the tail-race and sent over the tip, the smaller stuff being carried down the tail-race and discharged into the river, and the largest stones, which are too heavy to be moved by the water, are trucked from the face, but operations are very much hampered for want of a convenient dumping ground. There is still a point of drift carrying very good tin remaining on the western reef on Messrs. Krushka's ground near the boundary, and if this were removed there would be good dumping-room for a long time to come. Some time ago an offer was made to the No. 1 Company allowing them to sluice away this gravel on condition of giving up half the tin, but the offer was refused; now, Messrs. Krushka require all the tin, and, as a convenient dumping-ground is absolutely necessary for economical working, the No. 1 Company would do well to accept this offer. One great drawback to this company is the want of an adequate and permanent water supply. At present the main supply is drawn from what is known as the Cascade Water Trust Race, belonging jointly to the No. 1 and Briseis Companies. Under an agreement between the two companies, when the water in the race exceeds 16 sluice-heads the No. 1 is entitled to receive and use 8 sluice-heads and the Briseis takes the balance, but when the water in the race falls below 16 sluice-heads the No. 1 Company is only entitled to 8 heads for 16 hours in each day, viz., from 4 o'clock in the afternoon till 8 o'clock in the morning, the Briseis Company being entitled to the excess over 8 sluice-heads during these hours, and to the whole of the water in the race during the remaining 8 hours, from 8 in the morning till 4 in the afternoon. The Krushka Brothers have a prior right to 5 sluice-heads lower down the stream, and, consequently, when the available water in the Cascade River falls below this neither the Briseis nor No. 1 get any. The Briseis Company pays two-thirds and the No. 1 one-third toward the maintenance of the race, rents, &c. The No. 1 Company has lately applied for a water-right of 15 sluice-heads from the Ringarooma River, which, it is estimated, can be brought in in a race about 16 miles long. They have also applied for 8 sluice-heads at the junction of the Cascade and Ringarooma Rivers, and it is proposed to pump the water up to the mine. A Tasmanian sluice-head, it may be mentioned, is the quantity of water passing through an aperture 16 inches wide and one inch deep in the outlet, and of a horizontal gauge-box 12 feet long when the surface of the water is six inches above the centre of the aperture, and is approximately equivalent to 150 gallons per minute. To the south of the main workings there is good tin showing in shallow wash belonging to a more recent deposit along the courses of several small creeks, but the only outlet for the tailings at present is through the Briseis Company's main tail-race, and the ground cannot be worked without the consent of the latter company.

Briseis Mine.—This property, comprising Sections 452, 453, 454, 455, and 627, with a total area of 178 acres, is bounded on the west by the Krushka Brothers claim and the New Brothers' Home No. 1 Mine, and on the south by sections belonging to the latter company. It embraces the whole of the upper end of the lead, the granite which forms the rim rock on both sides of the original channel outcropping within the company's boundaries for over half a mile in length, and the lead runs out altogether in Section 454. Owing to its position it has been a very expensive mine to open up, the total expenditure up to date being approximately £190,000, and the tin-ore obtained up to 31st March, 1899, yielded 730 tons of tin, worth £51,293. The natural outlet through the Krushka's claim being precluded, it was necessary to drive a tunnel through the rim rock to tap the lead. This was started in November, 1884, and driven about 1200 feet through solid granite to the edge of the lead, and thence continued in the drift a further distance of nearly 1100 feet. From the mouth of the tunnel to the river there are over 10 chains of fluming, so that the total length of the tail-race is about 3000 feet. The tunnel, which is about 8 feet wide and 6 feet high, runs for the first 1000 feet in a S.S.E. direction, but the edge of the lead not having been reached where expected, it was curved round to the S.S.W. until the drift was cut. It was originally intended to open out here to the surface, and at the same time to continue the main tail-race drive in a south-easterly direction to what was known as the ABC Flat, where the overburden was much lighter, the greater part of the basalt having been denuded by natural agencies. With this object, stripping was started on the northern side of the main basalt hill to the east of the Krushka's workings, and a very large quantity of basalt was removed; but, owing to the deviation in the tunnel, the point where the edge of the lead was struck was only about a chain from the western boundary of Section 455, and as the stripping at the highest point would be nearly 150 feet deep, it was decided to abandon this for the present and concentrate all the water-power in stripping a large area on the ABC Flat and open out there. Near the top of this northern stripping face a layer of gravel, mixed with basaltic clay, is seen, which is said to carry a little tin, and drift at a

corresponding elevation is found at several places further south, where the top layer of basalt has been denuded. These gravels were laid down during a period of quiet before the last outbursts of lava, which finally diverted the river from its course. At the end of the rock tunnel a large chamber was cut in the granite in which sluice-boxes were set, and a good deal of driving was done in the wash, but most of the old drives have been filled in, and it is difficult to see what they disclosed. Much of the drift was very fine, and the drives had to be very closely timbered to prevent it running.

The following particulars of the work done are largely taken from old plans and the half-yearly reports kindly placed at my disposal by Mr. Edgell:—

It was intended to keep the main tail-race along the eastern edge of the lead, and a large drive was started from the end of the rock tunnel in soft granite, bearing about S.S.E., but after going about 250 feet in this direction it was found necessary to curve the drive round to the south on account of meeting a spur of hard granite, and it was finally abandoned at 318 feet, the end being all in granite. This is probably the continuation of the granite which outcrops on the surface further south, near the old locomotive shed, and runs thence in a south-easterly direction, forming the eastern reef of the main lead. To the east of this old tail-race drive connection was made with the surface by means of an inclined drive about 470 feet long, which is still open, and is used for taking timber, &c. into the tunnel. It is said to have been driven all in drift until the basalt was reached, and it is most probable that this belongs to a branch lead coming in from the south-east.

A rise was put up 10 feet above the tunnel-chamber, and a horizontal drive carried to the south at a distance of about 55 feet from the western boundary of the section, to which several short crosscuts were driven in the wash. Granite bottom was touched at 560 feet, and a drive was then brought up to join on from the floor of the chamber on a rising grade of 2 feet to the chain, and continued with this grade in a southerly direction, bearing round to S.S.E. along the edge of the lead to connect with a shaft sunk at the lower end of the flat. The wash-dirt obtained from these drives and crosscuts is said to have averaged about one per cent. black tin, but at the lower level several bands of cement were met with. Communication having been thus established with the surface, the work of opening out was begun by sluicing away the gravel round the "dump shaft," a large paddock having been previously stripped of the basaltic overburden. A branch from the main tail-race drive was also driven over 300 feet, and connected with a second "dump shaft," lying about 200 feet south of No. 1. In this way a very large excavation was made, but unfortunately it was found that overlying the drift at this part there was a layer of hard cement, in places as much as 15 feet thick. This had to be broken up with hammers, or by means of explosives, and as it could not be sluiced down the tail-race it had to be stacked out of the way, largely increasing the cost of working, besides considerably hampering sluicing operations. Beneath the cement at the No. 1 shaft there was about 70 feet of free drift, the top portion of which was almost barren of tin; but it improved with depth, and below this there were alternate layers of cement and free drift for about 19 feet to the bottom. For some time the lower cement formed the sluicing-level, but eventually an open cut was made through this down to the level of the tail-race drive, and at the head of this the sluice-boxes were set. This is the lowest point which can be commanded by the present tail-race drive, but prospecting shafts have proved that the gutter of the lead is at least 20 feet below this. The cement bands were doubtless formed by chalybeate waters, brought down by several small creeks which joined the main stream from the south and west, and as work advanced up the lead they gradually cut out, but similar bands are likely to be found at intervals higher up the lead. The cement contains a little tin, and also a little cobalt mixed with oxide of manganese in the form of asbolite, but is not rich enough to pay for crushing.

Sluicing the tin-drift was started in 1890, and has been carried on since then with frequent interruptions, owing to insufficiency of water. To economise water, and expedite the removal of the overburden, a complete steam-stripping plant was purchased early in 1891 at a cost of over £4000; but this seems to have been more or less of a "white elephant," and the money would have been much better spent in augmenting the water supply.

From the boxes the eastern, or rather the northern, reef—for the gutter runs nearly east for some distance and then bends round to south east—has been laid bare for about 13 chains in length; and to the south the overburden has been removed to an average width of about a chain and a half for a length of about 9 chains, the portion stripped running approximately east and west. The basalt varies from 30 to 65 feet in thickness along this face, but becomes thicker to the south and east. It is partially decomposed, and is readily broken up by the jet from a 4-inch nozzle under a pressure of about 220 feet, most of it going down the tail-race, but occasional undecomposed kernels occur which have to be shifted by hand, and from surface indications it seems probable the basalt becomes more solid going south. Immediately under the basalt is a layer about 10 feet thick of stiff pug or clay quite free from grit, which is more troublesome than the basalt: the water simply bores holes into it, and it has to be broken up small with picks or mattocks before it can be sluiced away. Partly surrounded by the pug and resting on the drift, I noticed in places large boulders of rotten granite, some of them as much as 20 feet in length. It is quite impossible that these could have been brought into their present position by the action of the water, the presence of the pug showing that at that time the water was very still. Probably prior to the outpouring of the basalt there were extensive earth tremors, and these boulders rolled down from

the surrounding hills, which at that time were considerably higher than at present. Similar boulders are seen in the lower part of the Cascade River, and on the steep sides of the valley there are numerous boulders of all sizes up to huge tors, which are simply the result of the weathering of the granite.

At the time of my visit a low level tail-race, 6 feet wide, with a fall of 2 feet 6 inches to the chain, was being constructed, which will command about 50 feet of drift at the point where it is intended to start sluicing about 4 chains from the boxes. Just below this point a large quantity of basaltic *débris* and tailings was passed through, filling up a paddock which was lifted by a former manager. No particulars are available as to the size and depth of the paddock lifted, but the drift is said to have been very rich, and over 100 tons of tin ore were obtained from a small paddock.

The drift shows frequent instances of false or current bedding, pointing to the fact that it has been laid down in shallow water. The top 30 feet are very poor, but it gets richer going down, and in places near the bottom of the face very rich seams of tin-ore can be seen. These, however, are very wavy, and cannot be relied upon to continue far in any particular direction: thus it happens that a face may be showing very rich dirt, and a few feet further in on the same level the drift may be quite poor, and *vice versa*, so that it is extremely difficult to form an estimate of the average value of the drift. A large portion of that already sluiced yielded only from $1\frac{1}{2}$ to 3 lbs. of black tin to the cubic yard, but at the present high price of tin, even this low yield should give a good profit, and there is reason to expect that the drift will be richer towards the head of the lead. The present local quotation for tin-ore is 20s. per unit, the London market price for Australian tin being £117 10s. per ton. The ore from all the Derby Mines is very uniform, and can be readily dressed up to 74 per cent. tin without much loss. Thus the dressed ore is at present worth £74 per ton in Launceston, or, allowing 30s. per ton for cartage to Scottsdale and railway freight from there, £72 10s. on the mine. This is equivalent to about $7\frac{3}{4}d.$ per lb., so that a yield of even 1 lb. to the cubic yard should more than cover the cost of stripping and sluicing. This is of course not taking into account the drift below the level of the present tail-race drive, which wherever tried has proved very much richer than the upper layers, and in this lies the wealth of the mine. Probably the best way to work this would be by hydraulic elevators, but before this is started, it would be advisable to get well ahead with the sluicing of the upper drift down to the lowest level possible by the present tail-race drive, and then sink a series of prospecting shafts or bore holes across the lead to ascertain the position and average inclination of the gutter, which at present can only be guessed at. The stripping must be kept well in advance of the sluicing, which should go on night and day, and for this purpose a better water supply is absolutely necessary. Until recently the main supply was drawn from the Cascade Trust Race, under the conditions explained in speaking of the New Brothers' Home, No. 1 Mine, and in dry seasons work had sometimes to be almost entirely suspended for several months. Last year a race over 6 miles long, carrying about 12 sluice-heads, was constructed from Main Creek, at a cost of about £2600, and the water is conveyed to the face by a 20 inch column, 29 chains long, under a head of about 230 feet. This has proved of great assistance, but cannot be relied upon in the summer. Some ten years ago a survey was made for a race to bring in 60 sluice-heads from the Ringarooma River, a distance of 22 miles, at a cost of £22,881, but it is said that the race could be shortened 8 or 9 miles by cutting a short tunnel through a ridge, and brought in at a considerably higher elevation, which is of great importance owing to the extra pressure gained for stripping and elevating purposes.

At present there is only one stripping nozzle at work, which discharges into the Cascade River by means of a tail-race cut through the intervening granite ridge. This should be deepened so as to command the whole of the stripping, it being necessary at present to send the bottom 12 to 15 feet down the main tail-race, which should be reserved entirely for tailings.

An electric light plant with several arc lamps is also required, and would greatly facilitate work at night. The dynamo could be worked by water, which could afterwards be used for flushing the main tail-race. With several faces constantly going, and the consequent larger quantity of water and tailings, it would be necessary to enlarge the fluming in the upper part of the tail-race drive, and the drive could be straightened with advantage. The rock tunnel has a very uneven grade. It is too wide for the present water supply, and has to be carefully watched to prevent it silting up; but this would be obviated by a larger water supply.

South-east of the present workings the ground rises for some distance, and provision will have to be made for the removal of considerable quantities of solid basalt, which here forms the capping. A good deal of work was done by tributors some years ago all over this hill on the later drift, much mixed with basaltic clay, which is found enclosed in the basalt. Occasional patches of cement are seen, and it may be expected that this will be also found in the lower drift underlying the basalt. To the east of the hill is a flat four or five chains wide, separated by a ridge of granite from the present Cascade River, which here runs in a general north-westerly direction on the bare granite. Two prospecting shafts were sunk on this flat about a chain apart over twelve years ago, and are said to have passed through very good tin drift. The first shaft bottomed at 69 feet, and passed through 26 feet of drift, 16 feet of which was estimated to contain 20 lbs. of ore to the cubic yard. The second shaft reached a depth of 100 feet without touching bottom, when water became too heavy to sink further. It passes through 3 feet of cement and 53 feet of drift (including 13 feet soft granite boulder), and the bottom, 46 feet, was estimated to average 40 lbs. of ore to the cubic yard. These figures are taken from the company's half-yearly report for the half-year ending 30th November, 1889, the shafts being now full of water.

Four or five chains further east the basalt cuts out altogether, and the bare granite crops out all round, so it is obvious that there must have been a very abrupt fall in the original stream at this point. The only outlet for this drift is down the old gutter, but it will be many years before the workings advance thus far. Lower down the Cascade the valley widens out, and the shallow modern deposit of the present river has been worked in places several chains in width. For some distance the river has been flumed to act as a tail-race; in places towards the lower end of this it appears to run on a false bottom, and it is quite likely that drift will be found beneath this belonging to the branch lead before mentioned as joining the main lead from the south-east. It is not likely, however, to be very deep here, as the distance between the solid granite outcropping on either side is only three or four chains in the widest part, and this rapidly decreases going up the stream, but further west there is a flat several acres in extent, bounded on the west by the main basalt hill and on the south by the ridge of granite mentioned as outcropping near the old locomotive shed. This flat is covered with a recent deposit of tin-bearing wash, and the surface has all been worked over, and yielded a good deal of tin; but, as far as I could learn, the bottom was never reached, and as there is likely to be deep ground here, it would be well worth while testing by boring or sinking.

It is a great pity that arrangements could not have been made at the first start to amalgamate with the Krushka Brothers and No. 1 Brothers' Home Company, as this would have been to the mutual advantage of all three, and large sums of money would have been saved. The Briseis, however, has at last, after many difficulties, obtained a fair start, and with an adequate water supply and systematic work should be a regular producer of tin-ore for many years to come.

I have the honour to be,

Sir,

Your obedient Servant,

J. HARCOURT SMITH, *B.A., Government Geologist.*

W. H. WALLACE, *Esq., Secretary
for Mines, Hobart.*
