

AD INTERIM REPORT on some of the more prominent Stanniferous Deposits in the vicinity of the River Ringarooma, County of Dorset, Tasmania.

In the following remarks I desire to note the results of some brief examinations conducted whilst engaged upon my duties connected with the administration of "The Regulation of Mines Act, 1881." The result of those observations have led up to the discovery of the demonstrable existence of a system of sub-basaltic channels filled in with rich tin-bearing strata of the Pliocene age; and it is deemed advisable, considering the importance of this matter, that these investigations should be at some future period resumed, as the information now submitted would thereby be augmented and my views confirmed.

The geological structure where these deposits occur, as shown on the geological sketch plan herewith presented, comprises a district which extends from the head of Ruby Flat, near Branxholm, to the vicinity of the Pioneer T. M. Company's workings, some four miles north north-east of Moorina. The prevailing rocks are granite, frequently porphyritic in character. These protrude the, and are overlaid in places by metamorphic schists, and the latter are sometimes capped by greenstones (augitic), which, so far as my observations in Tasmania have proved, belong to, or were erupted at, an era antecedent to our auriferous and stanniferous deposits—vein or diluvial—being formed. The rich tin-bearing gravels at the heads of the various tributaries feeding the main and much deeper channels are both, in most instances, covered by *newer* alluvial drifts, which latter are only moderately stanniferous, which may, most probably, be accounted for as the result of denudation, through erosion and abrasion of the older and lower beds, with subsequent redeposition of these upper and much poorer gravels; in which case the latter are enriched at the expense of the former. This has occurred principally where the present river has forced its way along the edges of the basalts and where it crosses the original course of that water-course. The channels in the "ancient" watersheds have also been obliterated,—firstly, by having become filled in with sands and gravels, and, secondly, by flows of basalt ejected, in all probability, by some extinct craters, such, for instance, as that designated on the sketch plan as "Bullman's Bluff."

This gradual sanding up, as it were, of all drainage outlets of an extensive watershed necessitated the formation of fresh outlets, which latter now constitute the River Ringarooma and its tributaries. It will be found that wherever those volcanic sheets of basalt obstructed the drainage, the new river forced its way along the flanks of the former and where the tributaries joined with their main body, and in this manner two very noticeable results were produced; viz.—that small outliers of basalt now indicate the original course of those tributaries, and that those rich stanniferous deposits, which led to the discovery of others in the vicinity, were disclosed in the ground held by the Krushka Brothers, or original Brothers' Home.

The indisputable existence of stanniferous deposits beneath the basalt,—the same as the auriferous deposits at Lefroy and at Back Creek, probably of the same age,—is, therefore, quite a new feature, and establishes a very valuable and interesting fact. And in this case I discovered a large extent of similar country where these sub-basaltic stanniferous diluvials prevail, which will afford constant and remunerative employment to the many; and they require only an "*abundant supply of water delivered at the mines at high pressures*" for their successful exploitation during almost unlimited periods of time to come, considering the great depth and width of these rich gravels, together with the length of these old channels in their former course.

It will be perceived from the plan that what is accepted as the "main channel" or "lead" from the Arba Company's mine to James Brown's twenty-acre section has been so much denuded, where it is traversed or crossed by the present river, so as to render it somewhat doubtful for any of the original deposits to remain except at great depth, though, apparently, older Tertiaries occur in both Blackhall's, on the east side, and in Houghton's and Forrest's sections, on the west side of the river, and in both cases rich in tin ore it is reported. A short distance from Brown's section this pre-

historic watercourse is hidden or disappears beneath that high basaltic plateau which is so well and favourably known for its rich and fertile surface soil. The same thing occurs at the North Brothers' Home Company's ground, and also at another eastern tributary in the ground newly discovered in Robt. Bennall's ground in the vicinity of the Sarah Ann T. M. Company's holdings.

The continuation of the main "lead" was discovered in the bore-holes sunk by Mr. Pearce at David's Creek, both at the upper and lower ends of that watercourse, and though, owing to the gradual dip of the lead, no less than 114 ft. of poor gravel had to be bored through at the upper end, rich tin ore was got at that depth. At the lower bore-holes from 26 to 50 ft. of valueless gravel had to be perforated only, owing to the denudation of that higher gravel, before good payable gravel was intersected. This tin-bearing strata is characterised throughout by a uniform sandy nature, interstratified beds of clay, disclosing vegetable fossil remains, which, I think, are closely allied to those occurring with the Pliocene auriferous drifts in Victoria and New South Wales, otherwise it would be a matter for surprise to notice that these rich deposits have not received any attention at the hands of the miners; but two serious obstacles intervene,—viz., the lands on the plateau have been alienated from the Crown, and that a very considerable additional expense will be entailed in working same through shafts beneath the basalt. It is quite probable, or almost certain, that the old Cascade River channel, with its famed Brothers' Home and North Brothers' Home claims as a tributary, and another lower down the river, which has been proved in the Sarah Ann claim, and in another by means of a tunnel—new discovery on the plan—eventually join the main channel or lead in a westerly direction, and that therefore it is quite probable that the trend of the latter and of the two former has been indicated on the Geological Sketch Plan with sufficient accuracy.

The whole of the older tin-bearing strata were examined at the Arba, Brothers' Home, David's Creek, and near the Pioneer, and they corresponded in resemblance both lithologically and petrographically, leaving no doubt as to their belonging to the same formation or deposit.

For about 40 ft. beneath the basalt the wash has been, in most claims, proved too poor to work for tin; below that, or for over 70 ft., the per-centage of the ore in the gravels gradually increases and becomes very rich in places,—for instance, at the Brothers' Home (original) and North Brothers' Home mines. In the former the bedrock was reached in a shaft sunk to a depth of 26 ft. below their present working level, passing through very rich deposits of tin ore; at the latter, or about 60 chains to the north, a shaft, also sunk beneath their working level through similar rich strata, could not, on account of the heavy influx of water so near the river, reach the bed-rock at 25 ft. The tin ore occurs in nests, seams, and patches, distributed irregularly throughout the gravels, and in both claims these beds observe a northerly dip.

At David's Creek it was proved by means of shafts and boreholes that this uniform dip was being maintained under the basalt, and that owing to additional accumulations of drifts the "unremunerative" wash had, in a distance of about four miles, increased from 40 feet to 114 feet in thickness as overlying the lower tin ore-bearing gravels, and the latter was in every respect similar to those at the Arba or Brothers' Home mines. The same features occur lower down this creek, but there, at a lower surface level, the stanniferous drifts were found at but from 15 to 52 feet from the surface, and it was observed that here, at so much lower level on the course of the "lead," the drifts on being cut into by the auger exuded large and continuous streams of water, rising above surface level like Artesian wells—a further proof of the continuance of the old Tertiary drifts in prehistoric river-beds.

Towards the sea coast these drifts become very shingly, interstratified with easily dissolvable clays and marls, rendering it very difficult to obtain "prospects" either by the ordinary drills, and impossible, even after tubing the boreholes by the diamond drills, so that it has been found impracticable to bore deeper or to reach the bedrock. At several of the higher beds of gravel, and especially so in the Pioneer Company's workings, the "wash" is of blackish colour and very sandy, pebbles are but infrequently met with, but there is no difference in the appearance of the tin ore. In the Pioneer Company's workings, which are but of moderate depth, the drifts are more argillaceous, assuming a reddish white hue, gradually passing into what may be termed a *secondary* granite, horizontally bedded however, otherwise not differing from the original rock; besides, were it not for the occurrence of sparsely distributed rounded pebbles in this deposit it would be difficult to see the difference; these pebbles, however, prove that it was formed by abrasion of the original primary rock, and its subsequent redeposition in this tributary to the general system of Pliocene drifts.

Considering the large scope of metalliferous country in the district just reported on, and the, comparatively speaking, tardy progress made and making in mining the same, though the Arba, Brother's Home, and other mines' success should prove a great incentive to others, there cannot be any doubt but that this is due to the great want of an unlimited supply of water capable of being delivered at various points at a very high pressure. It is not owing to the want of energy on the part of those proprietaries really at work that the output of tin ore is not more than quadrupled: it is also owing to the want of very powerful pumping machinery lower down the lead, *i.e.* David's

Creek, to unwater the higher ground in order to work the deposits properly. The higher portions of the Ringarooma and the Dorset and other rivers offer great facilities for intercepting waters now running waste; and as the necessity for the initiation of a water scheme, comprehensive enough to cope with nearly twelve miles of rich tin-bearing gravels scarcely infringed upon, either private enterprise or the Government might find it profitable to obtain all the necessary information upon this important matter, with a view of carrying out works which will not require a large outlay in order to secure more than the ordinary scale of profits for a long time to come.

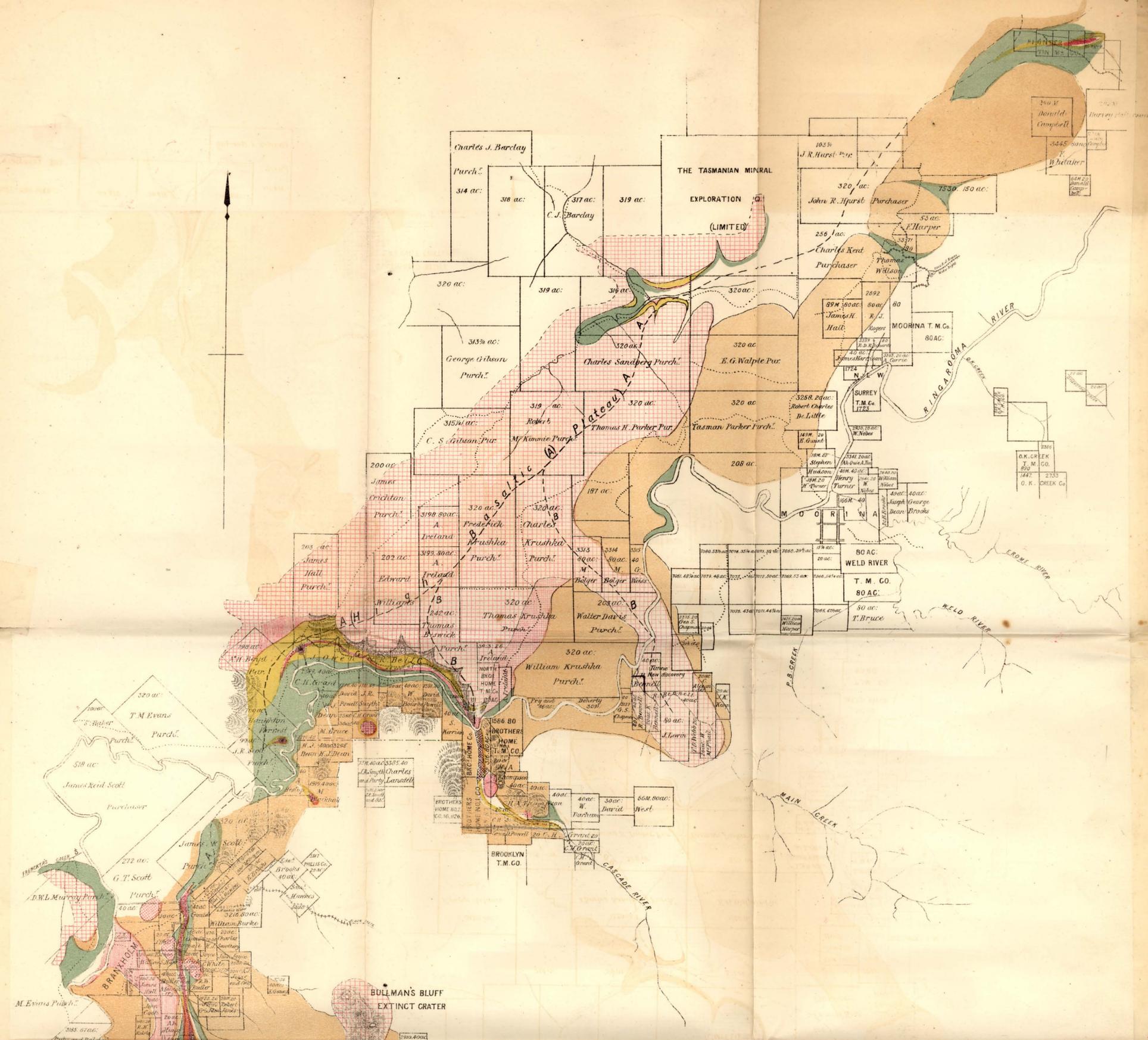
Veins of tin ore.—Whilst the ore in the older and deeper diluvial channels lower down the watershed partakes of a more finer grain to almost a slime, at the head of the principal water-courses or tributaries it is of a coarser, heavier, and crystalline character, frequently imbedded in its matrix. Indications were not unfavourable to the ore being found *in situ* as in veins, and possibly in lodes also.

The "Eastman's" lode formation appears to be of a promising character; the outcrop is strong and highly metalliferous, carrying besides fine crystallised tin ore, also copper pyrites, and those of arsenic, and, in places, blue and green carbonates of copper. The formation is about eight feet thick, of which two feet are somewhat laminated and carry most of the ore. The workings are only 20 feet deep, but the same thickness of the vein was proved, and altogether this deposit is worthy of a further test.

In the Standard Company's ground, Ruby Flat, two similar formations, carrying solid strings of cassiterite several inches thick, have been discovered whilst working the alluvial, the same in the Argyle Company's lease. The former are about two chains apart, and bear due east by west; one is 12 feet, and the other 4 feet wide. It is satisfactory to note that there are prospects for the produce of tin ore being continued after the shallower alluvial deposits have become exhausted, and vein mining will take the place thereof.

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Launceston, February, 1884.



Geological Sketch Plan
of the
RINGAROOMA RIVER
TIN MINING DISTRICT

Scale 40 chains to one inch.

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Geological Surveyor
OFFICE OF MINES
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- REFERENCE**
- Granite (porphyritic)
 - Basalt
 - Greenstone
 - Metamorphic schists
 - Alluvial (pleistocene)
 - Upper Silurian
 - Older Pliocene (True stanniferous sands) (Where shaded black indicate by Warington)
 - Probable continuation of deep sub-surface stanniferous gravel deposits
 - A. Main channel or lead; B. Tributaries to former; C. Rec. wash at junction of main lead with Tributary. Note Note a little rich deposits have been tested except where the wash has been removed by denudation
 - The late or late as now indicating a dry
 - Gold

