



**REPORT on the future Prospects, as regards Productiveness and Permanency, of the
BACK CREEK GOLD FIELD, County of Dorset.**

The principal range of this district, near the Sir John Franklin Gold Mining Company and the slate quarries, is located 95 feet above the summit at Lefroy, or 415 feet above sea level.

Geological Features.—The formation of rocks principally belongs to the Silurian era, consisting of soft to hard, light to dark coloured sandstones, which are distinguished by massive bands or beds of slate of good quality and colour. The district has been proved auriferous, both in the vein quartz and in the gravels, especially the latter; and the gold found in the alluvial is mainly confined to a series of leads (gutters) trending in a south south-easterly direction. These, properly speaking, diluvial leads have frequently been very remunerative to work, and operations came to a standstill only upon their digging beneath flows of basalt which overlay all these "runs" of gold, which constitute a system of ancient or pre-historic river drainage.

So far, quartz mining has not been sufficiently remunerative or successful as the indications would warrant the miners to anticipate; and beyond those gold-bearing veins in the vicinity of the Franklin Company other veins of quartz were found too poor, though the heavy gold, at the "White Lead" for instance, is of so quartziferous a character as to indicate a reef at no great distance from that rich deposit of gold. There are, however, other indications in various parts of this goldfield of quartz reefs existing, as the primary source of the gold-bearing gravels worked in the beds of the ancient rivers.

The Franklin Company hold a lease of 18 acres, upon which several shafts have been sunk, from 67 to 200 feet in depth. Irregular gold-bearing leaders were discovered near their deep or engine shaft, which dipped first north and afterwards to the south-west, and they were from a few inches to two feet six inches in width. A great deal of prospecting and mining has been carried on, but owing to the want of a more powerful engine than the one in use (7 h.p.), the influx of water could not be mastered. As this belt of auriferous quartz has doubtless been the source from which the Albion Lead derived its gold-bearing deposits, the deeper ground, and that beneath the old workings, where the strata has become denser and more tenacious, deserves to have further tests made, and an underground diamond drill would, no doubt, solve the question whether or not these veins, leaders, and semi-detached bodies of quartz would continue so disordered at greater depths, or whether they form offshoots only of more massive and regular lodes occurring below present workings. Both in the private property (Australian Slate Company) and in the Albion Gold Mining Company's lease similar bodies of more or less auriferous quartz have been met with at various depths; but it appears that these have likewise been subjected to disturbing influences. In the private property, for instance, south-west of the Franklin Company, a number of shafts have been sunk; and in the most westerly one, at a depth of 32 feet from the surface, a ferruginous vein of brown quartz was met with. This vein, two feet wide, carries good payable gold; but a "slide" or "fault" dipping north cut the vein off or "threw" it to some distance, so that its discovery at the 67-foot level would demonstrate how considerable a disturbance these strata, and the auriferous veins of quartz they enclose, must have been subjected to.

It is doubtful whether the Albion or All Nations line of reef constitutes the source of the old Back Creek lead. In my opinion other lodes exist higher up the valley and its branches. That lead was, it will be remembered, very remunerative to work in the early days of gold mining in Tasmania.

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The configuration of the district may be described as strongly resembling other well established goldfields,—viz., rounded hills, wide flats, and shallow alluvial workings, merging, however, into deeper and more confined "leads," which are here and there severed by the more recently formed watercourses. All these auriferous runs of diluvial gravels demonstrate an immense force of water running in swift torrents in self-eroded channels in pre-historic times, as evidenced by the rounded and semi-angular boulders of a hard silicious breccia, one of which was found embedded in a reddish clay, and which measured 15 feet across by a thickness exceeding four feet, having evidently travelled over a considerable distance, as I could not discover any similar rock in the district.

All these diluvial "gutters" trend in a south-westerly direction, and here and there other smaller tributaries have been traced to their junction with either the Back Creek, Albion, or other leads. Eventually, however, it was found that they (gutters) dipped rapidly in their course, and finally a heavy influx of water interfered very considerably with profitable working, and, at the same time, a new feature still further increased the difficulties the miners had to contend with, viz., the filling in or covering of these ancient river channels by flows of basalt or lava. And as this occurred in all the four principal deep leads at Back Creek, that goldfield was partly abandoned, and only a few parties are now eking out a living in the shallower workings.

Having carefully examined this goldfield, I have come to the conclusion that, because of there being every probability of the Albion, Back Creek, Prince of Wales, and White Leads joining in one main sub-basaltic channel, to which the outlet of the "Den" goldfield could be added, the deep sinking and working of the auriferous deposits promises to be successful, if carried out with proper and powerful appliances.

On the Back Creek Lead a peculiar formation has been observed, tending to show how very similar this goldfield is to those in Australia; viz.—At first the auriferous gravels rested on the Silurian bedrocks; after a distance this bedrock dipped away suddenly, by which occurrence a gold-bearing "false bottom," resting on a coarse boulder drift, was formed; and on sinking through this drift the regular Silurian bedrock was again found 48 feet from the surface, also carrying fine gold, and dipping south. One hundred yards south of any workings a new shaft could not reach bottom whilst sinking on account of a heavy influx of water, but in the last five feet of gravel very good prospects of gold were obtained, and the following strata was passed through,—viz., clay with heavy round gold; white and black slate, lying flat; and then the wash, furnishing good prospects of gold in the pan; finally, it was proved that the course of the Back Creek Lead would be from north to south nearly. On the Prince of Wales Lead the last shaft sunk near the edge of the basalt (as shown on plan) also yielded good prospects of heavy gold. And on the White Lead the miners, only recently, obtained very rich returns of heavy gold.

One feature deserves attention both at the Back Creek and Lefroy goldfields,—viz., that on approaching the basalt these tributaries exhibit an abrupt dip under the volcanic formations, thus, to a certain degree, accounting for the temporary cessation of the occurrence of gold at so steep an incline; no doubt lower down the main channel, and on a more even bedrock, the auriferous deposits would resume a more regular character.

A glance at the plans accompanying this Report will show that there is every prospect of another, but deeper goldfield existing here, now lying dormant; and when it is considered that, owing to the narrowness of the basaltic flows, every facility exists for proving and working these auriferous deposits cheaply and expeditiously, the total stoppage of all deep lead workings becomes a serious public question. Had the Deep Lead Alluvial Company, for instance, sunk their shaft on the northern edge of the lava, where the "honeycombed" or porous basalt and the underlying schists were easier to sink through, and had they then driven under this lava in the schists, their engine would possibly have been powerful enough to test the ground, and the cost for doing this would have been also very much less than what it has been through their sinking in hard and wet bluestone rock.

Proceeding by way of the Back Creek Bridge (Johnson's Corner), the main bed of lava still continues, and what appears to render the indications for auriferous gravels existing beneath these basalts or bluestones (Vict.) is the occurrence at their edges of beds of indurated clays, resting on quartz gravels (rounded); the former a product of volcanic contact, and the latter of lower beds of diluvial gravels. Further on it is observable and clearly indicated, to the north of the Lorah and West Lorah Quartz Mining Companies' workings, that this deep ground still traverses the country, which everywhere else is of the Silurian age; at those companies' workings another rich tributary originates, dipping rapidly beneath the edge of the basalt, and then losing the very heavy gold it carried down to that point, where also water prevented further progress.

On reaching the Piper's River (Lot 970), a distance of over three miles from the White Lead, this basaltic plateau, which has but a fall of 70 feet in that distance, it was found that that river's bed was 200 feet deep, and that the schists could be discerned at some points both above and below, or north and south. This locality would most probably constitute the "outlet" for the Back Creek

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ancient river or diluvial gravel system. On enquiry, I was informed that in the more recent fluviatile gravels of the Piper River gold had occasionally been found, which was probably derived from these older gravels through denudation. At the same time it is quite possible that that flow of basalt which follows the Back Creek north may cover an equally as deep, if not deeper channel, in which case the supposed outlet at Lot 970 would constitute an eastern tributary only, which may be the case, as the schists protrude almost uninterruptedly and at a higher level on the river directly opposite the supposed exit.

Taking a comprehensive view of the peculiar geological features of the whole region, I have come to the conclusion that this whilom abandoned gold field offers substantial encouragement to the mining capitalist for the purpose of submitting several localities to systematic tests and practical development. The channels now filled or covered with basalt are so narrow, and the fact of not less than four (or more) narrow, though sometimes rich, leads of gold disappearing beneath these volcanic flows, are more than suggestive to a practical mining geologist or miner as to their value after their junction has taken place. It would, however, not be judicious to commence operations too near the point where any of these leads have dipped under this basalt; far better to select a place lower down as already mentioned. And in this connection it would be advisable to use a diamond drill (large size) to prospect for the deep ground along the edges of the bluestone, in order to avoid long main drives. As regards the future richness of these sub-basaltic auriferous deposits, I think it is safe to infer, from the fact of the tributaries having been frequently rich, the accumulated contribution from these "feeders" should be of a similar character.

Besides the auriferous deposits described, it may be stated that native copper and its sulphurets and carbonates have been met with occasionally in various places; viz.—Native copper in the Sir John Franklin Company's tunnel, also in a clay at the head of the Albion Lead; green carbonate of copper in the upper tunnel of the Australian Slate Company, and nodules of sulphurets of copper near the same place. But as these were simply mere indications, no commercial value can be attached to the same until deposits are discovered of a more pronounced and permanent character.

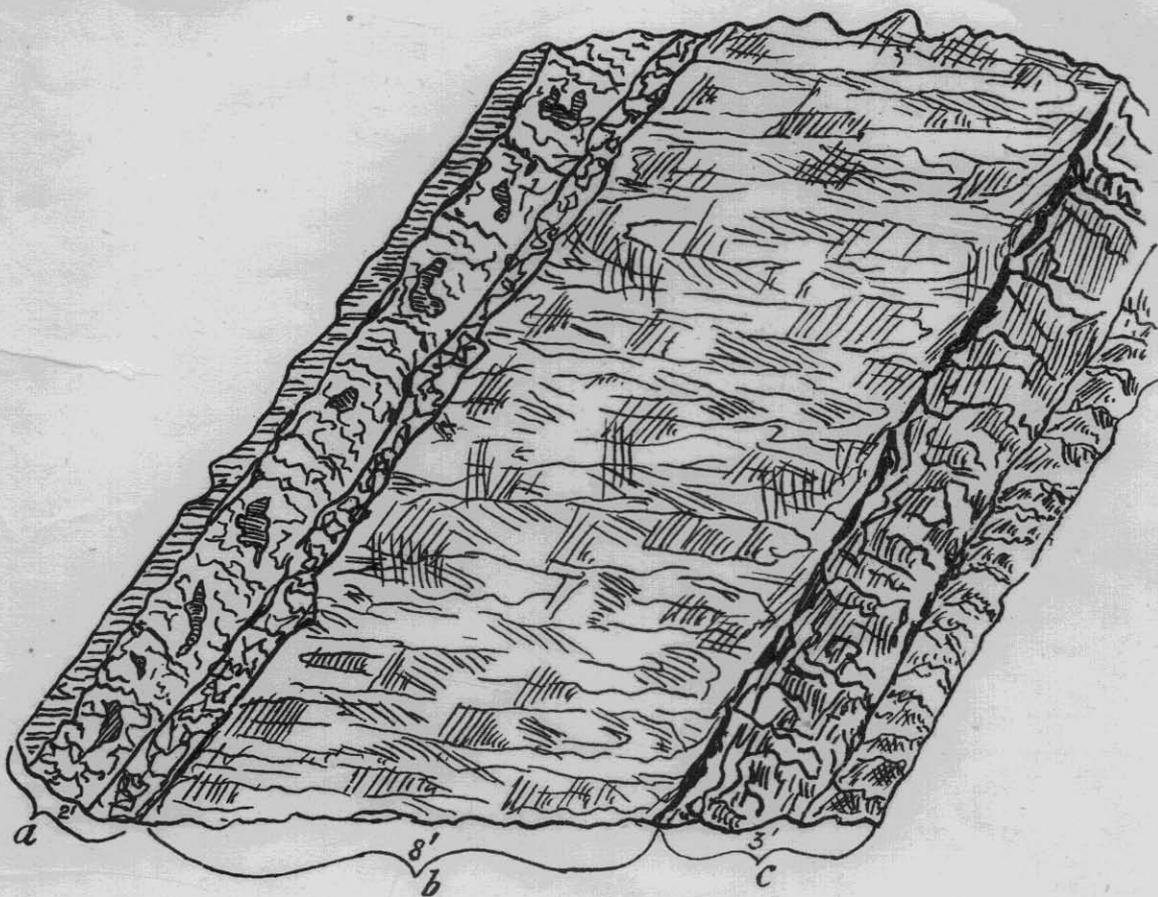
It has been stated already that the sandstones prevailing here were accompanied by massive bands or beds of slate of good quality and colour. And as these slates have formerly been wrought very extensively, a few remarks on this valuable mineral deposit cannot, in my opinion, be deemed out of place.

The slate quarries extend over a large piece of ground, and they are situated upon and along the crest of a spur running towards the northern shore of Bass's Straits, which is reached by means of a tramway. The cross-section accompanying this report will tend to elucidate the manner in which the more valuable slates occur, with a horizontal cleavage inclining slightly north-west and dipping north. Like other slate countries (Wales), these Tasmanian slates rest on a hard "back," which latter, if regular, carries good slates. In this case, however, in the whole formation of slates, whether viewed vertically or along their strike, there are several contortions which, to a limited extent, interfere with the continuity of supply of marketable slates. As regards the quality of those slates which have been got from the lower levels from regularly formed blocks, it is very good indeed, and compares very favourably with the imported article. I examined dressed slates which had been exposed to the atmosphere for over fifteen months, and they were not in the least changed in colour, texture, or fracture. In fact, comparing same with some more recently raised, the former were much improved in hardness and, consequently, durability. The manager's house was roofed with slates from these quarries over six years ago, and on close examination it was found that they had not in the least lost their durability; they showed no trace of "flaking" in the form of films, and the only change perceptible was that they had changed from a deep black originally to a more greyish colour. This circumstance cannot, however, considering their preservation during the period stated, be held as detrimental to their use in hot climates, owing to the lighter shaded slates absorbing less heat than the black.

From the formation of the country farther to the north and along the strike of the principal beds of slate, I am inclined to think that they will be less subject to contortions and irregularities, caused chiefly by quartz reefs and veins, as at present, and therefore more likely to be productive of a regular and increasing supply, as the working extends, for commercial purposes. From what I saw of the slates exposed in the workings (which were planned with great care, evidencing much experience), there cannot be any doubt that this material will yet become of considerable value to Tasmania.

G. THUREAU, F.G.S.

Inspector of Mines Office, Launceston, 24th March, 1882.



CROSS SECTION AT SLATE QUARRIES
BACK CREEK

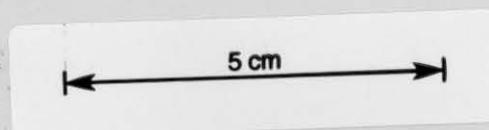
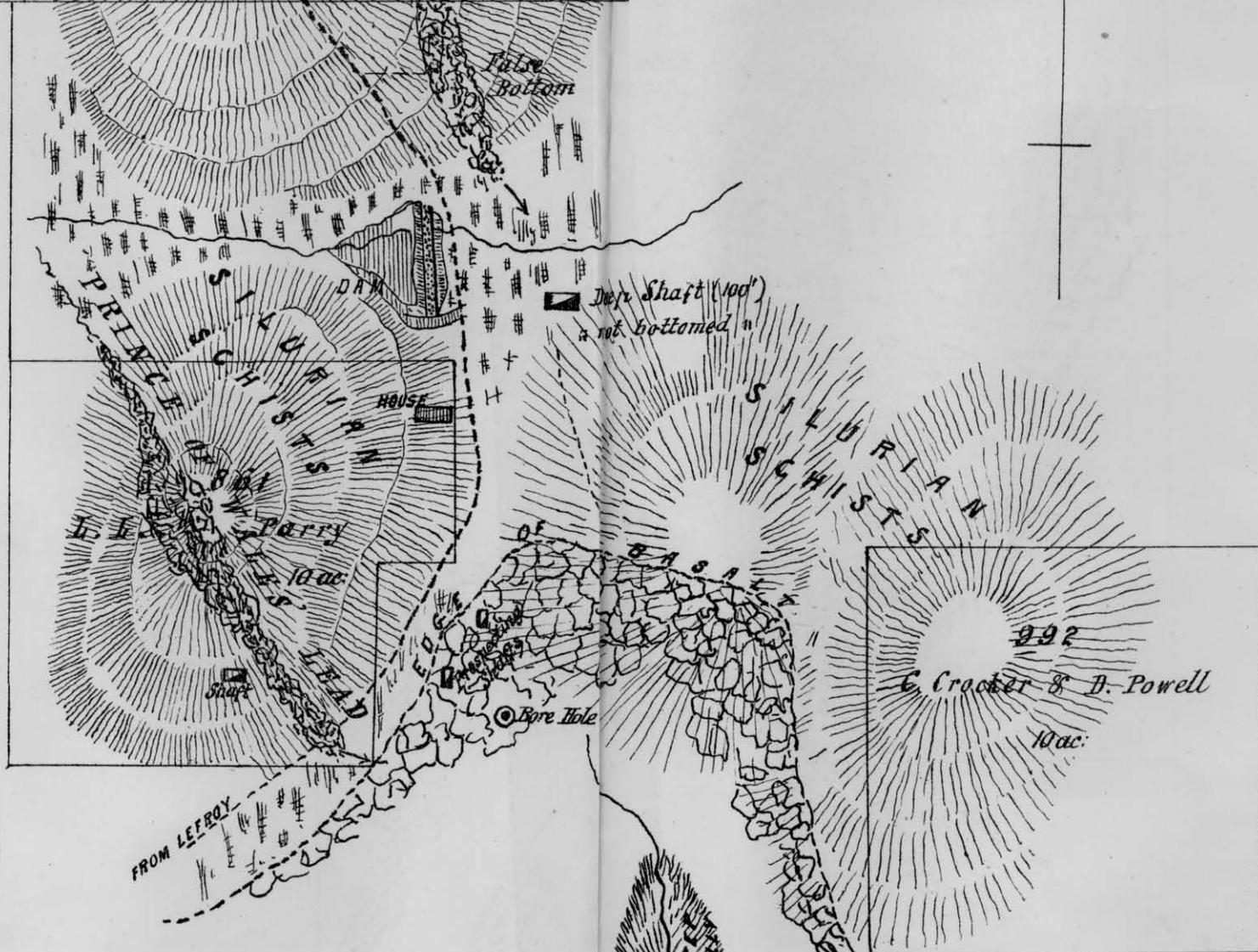
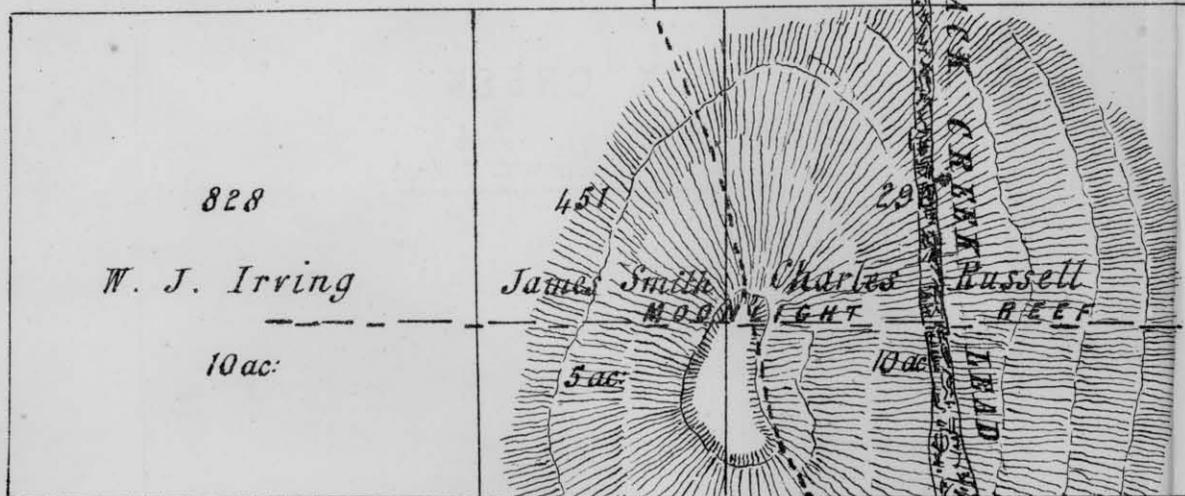
- a.* "post" enclosing nodules of copper pyrites
b. "band" of slate. - *c.* "post" (back)

G. THUREAU F.G.S.

5 cm

BACK CREEK

Scale. Four Chains to an Inch



G. THUREAU F. G. S.

COUNTY OF DORSET
BACK-CREEK GOLDFIELD

Scale. Eight Chains to an Inch.

Australian Slate Co's
Lease

Most Easterly Section of
Australian Slate Co's Lease

878
Thomas Proctor
10ac
729
W. W. Parry
10ac

867
Henry Gardiner
10ac

15 ac. 100 ft. 100 ft. 100 ft.
Purchased alluvial
Aust. Slate Co.
Tunnel
J. Aubrey
882
G. Horne
5 ac

80ac

781
R. Coultass's
Thos Prant
7. 1. 21

778
Wm Smith
10 ac

628
Geo. Welling
5 ac

627
J. Minow

780
The Holmfast
Gold M. Co. By
S. Compt
White Lead
5. 3. 20

782
J. Minors & A. Webster
5. 1. 15

785
J. Clarke
10. 1. 8

788
D. W. Bartley
3. 0. 15

789
Geo. Smith
10 ac

696
Head G. M. Co.
Alluvial
10 ac

697
5 ac

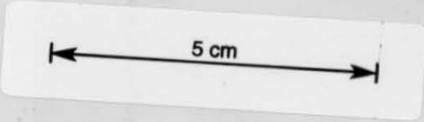
791
Henr Bernard
7. 2. 2

695
Deep
Shaft
10 ac

798
L. Johnson
10 ac

794
R. C. De Little
10 ac

799
Syren Co's



G. THUREAU F. G. S.

FROM LEPROY TO LEURA