

## BUNBURY TO BRIDGETOWN, THE TINFIELDS, AND ALBANY.

*Report issued June, 1889.*

The road for the first fifteen miles from Bunbury runs along the alluvial flats of the Preston River (where there is some most fertile land) to the foot of the range, which here is covered for the most part by clay and ironstone; outcrops of rocks occur in the river valleys, as do also many rich patches of land. Similar country extends to the Tinfield, which is situated on the road about eight miles North-West of Bridgetown.

**TINFIELD.**—The Tinfield is situated on a ridge on the North-East side of the Blackwood River, and between two of its branches: most of the best prospects have, however, been found on the Southern side of this ridge. The greater part of the surface on the high ground is covered with ironstone gravel, with here and there outcrops of hard crystalline rock and dykes of diorite and tourmaline, some of the crystals of the latter being of enormous size. The low ground is covered with sand, and is, where springs break out, rather swampy, so that very little can be told of the rocks till some shafts have been sunk.

On the ground belonging to the Bunbury syndicate a shaft has been sunk and the ground tested to a depth of eighteen feet on the North edge of the claim, which was discovered by Mr. Stinton, who obtained prospects in the wash from a little gully that crosses this claim, but, on sinking deeper, he found that this rested on a false bottom of ironstone, in which there were some pockets containing a good deal of tin ore, though very little in the ironstone itself. Beneath this bed he went down some sixteen feet through a coarse quartz grit containing very little clayey matter, but much rich tin ore and a good deal of tourmaline. This deposit has not yet been bottomed, but is so rich all the way down that a man might make a good living by simply washing with an ordinary dish, for what has been raised goes 4lbs. or 5lbs. to the dish. Fine colors of gold have also been found in this wash, proving that this country is gold-bearing, and there is every probability that some rich pockets of the precious metal may be met with when the wash is bottomed.

This shaft has, probably, been sunk in what would be called a deep lead in the other colonies, and will have no connection with the present gully, but will most likely be found to pass through the low rise towards the swampy ground near the spring to the South, or a little South-West, but the actual course can only be ascertained by sinking, as the surface is all covered alike by more recent deposits. Prospects of fine tin can be obtained nearly all over the field, even from sand at the surface, but, as little prospecting has yet been done, I can say nothing about the different claims, moreover, when I visited the field no one knew where his claim was for certain: but, judging from the one shaft, this is a most valuable discovery, and it extends over a large area, as I have obtained small prospects over most of the field. I hope that everyone will do what he can to test and develop this most important discovery, as all the claims are worth a trial, but which of them will pay to work must be left to the owners to prove.

That rich lodes exist on this field there is not the slightest doubt, but where, it is at present impossible to say, though probably one will be found not very far from Stinton's shaft, and to judge from the class of wash, it will consist of a series of small veins or strings of coarse crystalline tin ore (cassiterite) in a soft, large-grained granite.

The rocks of this district, where exposed, are nearly all gneissic and schistose, containing numerous dykes, though in one or two holes where rock has been met

with near the surface, it is so soft that it can be worked with a pick, and it will most probably be in this soft belt of country that the lode will be found.

I would recommend prospectors to examine the Blackwood River, and the small streams that feed it from this side, as the field will most likely be found to extend in this direction.

The field should be very cheaply worked, for there is a good fall towards the Blackwood, and, as there is an abundant rainfall, there will be no scarcity of water; while it is connected, by one of the best roads in the Colony, with the port of Bunbury, which is about fifty-six miles distant.

The country about Bridgetown is very similar in character to that around Newcastle; steep hills with deep, rocky valleys, and patches of good soil almost to the hill tops. Between Bridgetown and Albany there is some beautiful land which is heavily timbered, though at places there are patches of ironstone gravel, while sandy swamps and outcrops of rock occur in the river beds. Next year I hope to be able to follow some of these rivers down to the coast, as in them only does one get a chance of seeing anything like a section of country, and some specimens I have seen from the Deep River would lead me to believe that the same formation as occurs at Fly Brook extends round this South coast as well as to the North, and it probably crosses the Warren a little North-East of Brockman's. This is of very great importance, for the nearer to Albany is coal found, the more valuable will it be.

**ALBANY AND EAST TO THE PHILLIPS RIVER.**—For about fifteen miles to East and West, and thirty to the North of Albany, the country is for the most part covered by low swampy and sandy ground, though here and there bold granite hills rise to a considerable height above it. This land is highly suitable for growing vegetables, as is proved by several small gardens around the town, and there should be a large future for this industry, in supplying the ships that call in here.

After crossing the Kalgan River, the country gradually rises, forming a large open table-land about 200ft. above the sea, with here and there bold peaks and ranges of hard crystalline rock towering above it, and in other places large patches of broken country, where the rivers have cut their way down through the soft horizontally bedded sandstones to the highly altered clay-slates and quartz reefs beneath, some of which, as in the Pallinup, Fitzgerald, and Phillips Rivers, should be prospected for gold, where the stone is of a very likely character, greatly resembling that on the goldfields of the other colonies, and the more especially as this is in all probability the Southern continuation of the same line of country as that in which the Yilgarn goldfields are situated.

Near Middle Mt. Barren a mine was started for copper, and a good deal of work done on a lode; but I should not advise the prospectors to continue this work, or to spend much time on the hard coast ranges, as they are not of a highly promising character for valuable minerals.

In the bed of the Fitzgerald, some years ago, Captain Roe discovered what he thought to be a coal seam, but it has, unfortunately, proved to be nothing more than a brown carbonaceous substance, containing a certain amount of asphaltum. These deposits of coaly matter occur in a series of pockets or hollows resting on the upturned edges of the altered slates and quartz reefs, and are often full of angular fragments of quartz. It will not burn by itself, but, if put into a large fire, smokes and gives off a strong smell of asphalt, and is finally reduced to a firm, bulky ash of a reddish color. It is not a coal, and will never be of any commercial value as a fuel. No carboniferous formation exists here, and in this conclusion I am supported by Mr. H. L. Y. Brown, F.G.S., Government Geologist, S.A., and the Rev. C. G. Nicolay, M.A., both of whom visited and reported on

this deposit. What, I believe, led Captain Roe to believe coal existed here was the fact that all along the Southern coast of Australia large quantities of mineral pitch (bitumen) are washed up on the beach. Some of this he found at the mouth of the Fitzgerald, and, thinking that it must have been washed down, followed up the stream bed till he came to this deposit, from which he imagined it had come, as when wet it is black and has all the appearance of a weathered coal.

In the river flats there are some very fine patches of land, which are farmed at Cape Riche and the Gardiner River, but most of the broken country is covered with such dense thickets, that nothing can be done with it, while on the top of the sandy table-land no trees grow, except in occasional swampy patches. A great drawback to this country is the scarcity of water, as the good rainfall does not extend far into the interior, so that the rivers only run after heavy thunderstorms and these of late appear to have been of very rare occurrence. I am very sorry that I could not extend this trip further to the North and examine the Stirling Range, as was my previous intention, but, by the time I arrived at the Phillips, my horses had got into such a low condition, that I thought it best to get back as quickly as possible by the way I knew; but I hope at no very distant period to revisit this district, when I shall make a point of seeing the Stirling Range, though, to judge from its general appearance from a distance, I do not think it would pay prospectors to spend much time in looking for lodes, for it has generally proved that a hard, bold range, rising up from low ground, is not rich in metalliferous veins, but the low ground around the base of the range, where low ridges of soft rock out-crop, is far more likely to reward research.

KENDENUP.—At Mount Barker and to the North the country changes entirely in character. Crystalline and metamorphic rocks with numerous dykes and quartz reefs make their appearance, capped on all the high ground by iron-stone gravel and clay, with patches of very good land along the valleys. Some years ago, in one of these reefs, at Kendenup, gold was found, and although the assays yielded very good returns, yet, on mining, very little gold was obtained; whether from defective machinery, the mode of working, the large amount of mundic (which, although roasted, might not have been entirely decomposed), or the fact that the gold is very patchy in the stone, it is impossible now to find out; and as the tailings have been much washed about, it would not be much use testing them to see if they contained the gold; but, to judge from the appearance of the stone and the assays of the stone sent away, I think the mine ought to have another trial, as it would have a very fair chance of success if properly worked, especially as such great improvements have been made in machinery of late. There are several other reefs on this property that still remain to be tested, and there is also an old shaft that was sunk on a vein containing graphite, which, now that the railway passes so close, should pay to work; in any case, a sufficiently large sample should be sent home to ascertain what the present market price is.

Taken as a whole, this trip has been most important and interesting. In the first place I passed along a line of country between Perth and the Fly Brook, in any part of which coal may exist, but this can only be proved by boring here and there in a systematic manner. Whether true coal measures exist, or not, we know that we have a good deposit of lignite, though a more recent formation, still a very useful fuel, and in several other places indications that these beds exist over a considerable area. Whether this country extends to the East it is impossible to say at present, but we know that some beds of lignite exist near Torbay, and, though of poor quality, there is no reason why better ones should not exist beneath them. If this belt of country were properly tested, the matter would be set at rest once and for all, and we should know whether this was going to be a great coal mining country, or whether it would be better to settle down quietly to farming.

The tin is also of great importance, and should prove of immense value to the Colony, if properly worked, and though many of the claims will, undoubtedly, prove to be of no value, others, there is not the slightest doubt, will be very rich.

## THE YILGARN GOLDFIELDS.

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In this report I do not propose to give a description of all the claims on the field; because I had not time to examine them all, and, moreover, in the majority so little work had been done, that no satisfactory conclusion could be drawn of their possible value. I shall therefore only mention those claims that have been sufficiently opened up, or upon which there is a large enough body of stone in sight, to warrant their owners in putting up machinery at once.

Since my last visit to the Northern portion of these fields, most of the claims, which then extended for miles over the country, have been abandoned, even before they had been thoroughly prospected; and this is just as well, for, as it is, there is still a good deal more land taken up than can be properly developed by the limited capital available in this country, and outside capital will not be invested until some of the reefs have been proved in value and extent: consequently we should devote all our energies to ensure the success of some of the richest areas, and leave the poorer and more difficult until the fields are well established.

**GOLDEN VALLEY.**—I start with the Waterhall claim, as it is on the most important reef, as far as at present known, in this part of the field. This area is comparatively small for this district, where thirty-three acres is about the average extent, and it is of an irregular shape as it was taken up at a later date and had to fit in with pre-existent claims. It is in the middle of the valley to the South-East of the Kathleen. The reef was discovered beneath the bed of a little gully and a large *paddock* has been opened on its cap which appears, as far as I can at present judge, to be the top of a saddle reef, one leg of which can be clearly seen to dip to the East, while the other plunges almost vertically down at the West end of the hole, while the country which consists of a compact mica schist on the foot-wall and a hornblende schist on the hanging-wall, has the same anticlinal fold as the reef. This form of reef is characteristic of the Sandhurst district of Victoria, but whether here, as there, both legs will be found to carry gold as they descend, and one saddle below another will be found, can only be proved by sinking; but I am of opinion that this is a true saddle reef, for parallel beds of identically the same rocks occur on the hills to the East and West, with lines of reef of the same description, which may be the legs of a saddle whose cap has been denuded. On the cap of this reef a large body of stone is exposed mixed with fragments of the bed rock. This stone is sometimes white, solid, and granular, but usually it is more like a gossan and contains hematite, iron and copper pyrites, and chlorite, and shows much bright, coarse, free gold in the solid stone; in the gossan and on the faces of the small ferruginous veins some very fine specimens have been obtained, which will make the first crushings very much richer than those that will follow, for this gold is only the alluvial deposit which is generally met with in the caps of auriferous reefs, and does not continue in depth.

A shaft has been sunk, a little to the South of the paddock, to a depth of forty feet; it cut the reef at twenty-four feet, where it was found to be much more settled; it dipped to the East and had a course a little to the West of North, and was about three feet six inches wide. At the bottom of the vertical shaft, thirty-two feet below the surface, a level was driven twenty feet North and South following the course of the lode, and from this another eight feet was sunk. The stone from the