THE COLLIE COAL.

This field has been opened by two shafts, the one near the range striking a 3ft. seam, whilst the one five miles further East struck 13ft. of coal, but did not go through it owing to the quantity of water met. It is a Mesozoic coal, of first class quality.

From the Government Geologist to the Honorable Commissioner of Crown Lands.

SIR,—

I have the honor to forward you, herewith, the section of my Report—"The Collie Coal." I shall now start the "Greenbushes Tinfield," which I hope to be able to forward you in a day or two.

I have, &c.,
HARRY PAGE WOODWARD,
Government Geologist.

Albany, 21st May, 1891.

THE COLLIE RIVER COAL.

THE DISCOVERY.

About the end of the year 1889, when coal was attracting considerable attention in this Colony, Mr. David Hay, of Bunbury, became possessed of information which led him to believe that coal existed in the bed of the Collie River, at no great distance from Bunbury; for this, he set out to prospect with a party of men, and was rewarded by the discovery of some fragments of coal on the rocky bars, at the lower end of a pool; as no sign of an outcrop occurred above, it was naturally inferred that the seam was to be found in the bed of the water-hole, and as a dark patch could be seen from the bank, some men were sent into the water to dive, who brought up good samples of coal. Mr. Hay and his whole party then went in and collected coal in this way, until some hundred-weight or so was raised. This was the first sample taken into Bunbury, which was burnt publicly on the occasion of the visit of His Excellency Sir Frederick Broome.

THE COLLIE RIVER.

The Collie River is somewhere about 70 miles in length, taking its rise in the table-land to the Eastward of the Darling Range, at about 50 miles from the coast.

For the first 35 miles of its course it flows over a sandy and swampy elevated plain, with here and there sandstone and gravelly ridges; for the next 25 miles it flows in a deep channel or gorge through the Darling Range, the rocks being all hard crystalline schists and granite.

From this gorge it emerges on the plains a little above the Collie Bridge, on the Perth-Bunbury Road, below which it flows over clay, sandy and swampy flats to its mouth.

At Australind, near its mouth, it joins the Brunswick River, and then together they discharge themselves into Leschenault's Estuary, about five miles to the North-East of Bunbury, which town is situated at the mouth of this estuary.

The Situation of the Coal Seams.

There are two seams which outcrop in the bed of the river, the first or Western one being situated just on the Eastern side of the range, and must be very near the junction of the coal-bearing formation with the older crystalline rocks, but no junction is visible as most of the surface is covered by ferruginous sandstones and nodular clay-stones (gravel). The second seam is situated about five miles higher up the river to the Eastward, or between 20 and 25 miles nearly due East of Bunbury.

Workings.

At the first discovery a shaft has been sunk on the edge of the water-hole; it is now full of water, but just showing above the water at the Eastern end a seam of coal is visible, overlaid by white sandstone beds. This seam also outcrops in the bed of the pool, but below the water level, and dips at an angle of about 20° to the Westward; proving that the greater elevation has taken place to the Eastward in this district since the deposition of these beds.

Two or three other shafts have also been sunk about here, but owing to the large quantity of water met with in sinking it was impossible to proceed.

At the second seam a shaft has also been sunk on the edge of the pool and which, like the first, is now full of water. In this 13ft. 7in. of coal is said to have been sunk through, but further prospecting was stopped by the large quantities of water which made in this shaft. A shaft has been sunk further from the river to a depth of 35ft., through sandstone and shale, but no coal seam has yet been met with; but this is not strange, as the seam here is dipping to the Westward, in which direction from this first shaft the new one is situated, so that when the distance and the dip are taken into consideration it will prove to be here some 50 or 60ft. from the surface.

The coal here is of a rather better quality than the first seam, which, added to the size of the seam and distance from the Crystalline rocks, would point this out as the best place to start testing the seams in depth.

Testing.

It is almost impossible to sink shafts any depth in this country without pumping machinery, owing to the large quantities of water met with in depth. Therefore, the best mode of testing this field would be with a drill, which should be one suitable for sinking at least 500 feet.

Prospects in Depth.

The seams already discovered are sufficiently good to encourage further prospecting; and as coal seams very rarely occur singly, it is highly probable that many more will be met with in depth, some of which may be much better in quality.

Quality.

This coal, as will be seen from the following assays, is of a very good quality; only it is useless for gas-making, as it is a non-caking coal.

It is clean to handle, solid, and will travel well without forming much dust and smalls. It has a very high heating power when burnt in a sharp draft, but will burn slowly until all is consumed but ash, if the draft is cut off. It forms no clinkers or slag, gives off little smoke, and the quantity of ash is small; so that it should be a very suitable coal for furnace purposes.

ASSAY.

		1	2	3	4
Volatile	Water	15·20	10·87	11·70	12·75
	Gases, &c., ...	32·46	31·47	21·83	37·04
	Sulphur	2·23	2·23	2·99	0·71
Coke	Fixed Carbon ...	45·03	52·87	54·17	46·70
	Ash	5·08	2·56	9·31	2·80

No. 1 being from the first sample obtained which was from the bed of the river itself; No. 2 from a depth of 17ft. close by; No. 4 from an intermediate depth, the seam being 3ft. thick; No. 3 from a shaft 5 miles further East.

Nos. 1, 2, and 3 were made by Mr. Bernard H. Woodward, F.G.S., Government Analyst, and No. 4, by Mr. Richard Smith, Instructor in Assaying, R.S.M., S. Kensington, London.

GEOLOGICAL AGE.

The age of these beds is impossible to determine at present, as no fossils have yet been found, but to judge from its chemical composition it is probably an old Mesozoic coal as it is more like a lignite than a bituminous coal.

ASSOCIATED ROCKS.

The rocks with which it occurs are very similar to those associated with the other coal seams of this Colony, viz.:—white sandstones, ferruginous sandstones, micaceous sandstones and clays, and dark shales.

EXTENT.

This belt of country appears to run in a North and South direction at the back or to the Eastward of the Darling Range, though it probably does not extend very far towards the North but will probably be found to cross the Murray. To the Southward it appears to extend at first in a more South-Easterly direction, crossing the Blackwood from 10 to 20 miles to the Eastward of Jayes, and so on in the direction of the Franklin River, where it is cut off and turned to the South-West by a bold mass of crystalline rock through which this river has cut its channel.

From this point it follows down the Tone, crossing the Warren, and so on to Fly Brook, where it has been opened up.

Coal seams may not extend for any great distance over this area, but it is highly probable that they do. Anyhow, it is worth prospecting.

After crossing the Franklin at Yeriminup another belt of very similar country is met with, which extends for a distance of 20 miles; whether or not coal seams exist in this belt of country it is impossible to say, from the surface indication, until this country has been examined more in detail; but should any seams be discovered here they would be of great value, as there would be no difficulty in carrying a branch from the Great Southern Railway, a distance of 15 or 20 miles.

MEANS OF EXPORT.

The nearest port is Bunbury, but this harbor would have to be considerably improved before any quantity of coal could be shipped from it. The road is good

for 15 miles to the Collie Bridge, after which it has to cross the high rough Darling Range (about 1,000ft.), but no doubt a much better road could be found). There would be considerable engineering difficulties in the way of constructing a railway to the Westward, whilst there would be hardly any in making a line to the Eastward, over the Table-land, to the Great Southern Railway.

Timber and Water.

Timber suitable for mining purposes is in great abundance, as near the field some of the finest tracts of jarrah country in the Colony are to be met with.

As to the question of water, it is in such abundance that it will probably be a great source of trouble in deep workings.

The Future.

There is not the least doubt but that this will be an extensive and important field in the future, but its present development is hindered by many things—1st the great lack in this Colony of capital, and secondly, a market for the coal when raised, as the quantity that will be used in this Colony for many years to come will be too small to make a mine pay.

But both these may be overcome, as it is reported that a large and influential syndicate are in treaty with the Government for the reservation of a considerable area, which they will guarantee to test thoroughly; after which they will make a selection, paying the Government either a royalty for all coal raised, or rent for the area taken up.

This seems a very good plan, if the syndicate are prepared to give the Government a sufficient guarantee of their *bonâ fide* intention.

As the present holders of the land have no means to test the field, this seems (without the Government do it themselves) the only prospect of having the area tested; and without something of the kind is done this field will be like so many more properties in this Colony, simply held in the hope that it will some day be of great value, its fictitious value increasing from year to year, until it becomes quite beyond anyone's means to buy.

HARRY PAGE WOODWARD,
Government Geologist.

21-5-91.

From the Government Geologist to the Honorable the Commissioner of Crown Lands.

Sir,—

I have the honor to report, in reply to your questions *re* water supply for the tinfields, that it is *perfectly unnecessary*, and that all the men now at work are *perfectly satisfied* with the supply they have; of course if the Government will supply them with a good stream of water for nothing, they will use it, but they will not pay for it, as they can all raise water so easily on their own claims.

Water conservation is next to impossible, as this is the highest point in the district.

The Blackwood, at Jayes, is 300ft. below the field, so it would have to be brought from a great distance to get it to the level of the field.

Pumping from the river is out of the question.