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LAUNCESTON.

July 17th.1906.

REPORT on the DARMAIN COAL Company's Sections.

by J.D.MILLEN.

ITUATION. They are situated eight miles South East from St.Marys by road, and about four and a half miles North West from Port Seymour.

REA. The property consists of four sections, viz, No. 1114 M, 100 acres, and 1115 M, 200 acres in the name of S.Pinnington; and No.5158-93 M, 200 acres, and 5343-93 M, 200 acres, in the name of C.J.Inglis. Totalling in all 700 acres.

OPOGRAPHY. The western side of the property is for the most part hilly, to the East is Mount Elephant, and between the hills is an undulating valley. To the south of the property is to be seen at a distance of about two miles the blue waters of the Pacific Ocean.

GEOLOGICAL and DESCRIPTIVE. Outside the Northern boundaries of the sections are large outcrops of Permo-Carboniferous limestone, passing by these we enter into the domain of the Mesozoic sandstone, and shortly afterwards we cross the Northern boundary of the property.

Some little distance North of here, there is an eruptive dyke of diabase, and some of the mountains in the vicinity are crowned with the same eruptive material, boulders from which are to be found on

the western side of the sections, these at first glance may be mistaken for outcrops of it, but a little investigation will soon prove the contrary.

The road enters the property at the northern end, at an elevation of about 1250 feet above sea level, decending along the road for a short distance we come to a shaft that has been put down through the sandstone a depth of 31 feet, a seam of coal was then cut having a width of four feet three inches, unfortunately owing to the boisterous conditions of the weather, we could not get down the shaft, but the coal on the dump presented a good appearance, the sandstone is soft, of a greenish grey color and felspathic in character.

Going along the road to the East for a further distance of a few chains, and decending about 60 feet more, we come to another outcrop, exposed in a bed of a blind creek, the coal here has a width of 4 feet 2 inches, and is very much similar in character to the last.

Again decending the hill, along the road, various outcrops of a coal seam were noticed, that were partially exposed during the cutting of the road. In this vicinity there is quite an amount of alluvium to be found, consisting of sandstone, granite, quartz, and diabase, so that it is probable it is the remains of a raised beach. Some little distance further we come to the present main tunnel. This has been driven S. 50° W, for a distance of 190 feet, at the 126 ft. peg a crosscut has been put in S. 35° E. for a distance of 30 feet, and a rise has also been put up exposing up to 12 feet of good coal, in two seams, with a band of clay between

them having a width of three feet 9 inches, but in the coal itself it was noticed there are no bands, the 162 foot peg another rise has been put up, showing coal of the same width, but the band decreased in size to 2 ft. 9 inches, and again at the 187 foot peg another rise has been put up, and coal of a similar width again cut and the band pinched yet further to 2 feet 6 inches so that the probability is that at a distance it may pinch out altogether.

The tunnel has been driven in the coal seam, the lower portion having a height of 6 feet 3 inches, the short rises before spoken of opened up the top seam. These seams are found to improve greatly as they go under the hill.

At the entrance of the tunnel, the coal is somewhat dull in lustre, its fracture is rectangular and uneven, and its structure dense, but as we go along the tunnel it gets more bright and the fracture becomes conchoidal, and the coal greatly improves in appearance.

The following is the assay of the coal.

Moisture	0.8
Volatile Hydrocarbons	30.7
Fixed Carbon	55.4
Ash	13.1

Coke 68.5%

COKE fairly swollen, with slight cauliflower excresences, firm and fairly lustrous. Ash fawn and flocculent.

This then forms a very highly payable seam for working, and from my investigations many thousand tons are

available from it. Going now up over a saddle to the west a distance of about 1½ miles, and decending about 60 feet on the other side there is an immense seam outcropping along what has been a creek bed having a thickness of about 30 feet altogether, and wonderfully free from bands, even at the surface, which is exposed. A few arenaceous clay seams are to be noticed in it, but many of these seam to be where the coal has opened up from atmospheric influences, and the openings have been filled with clay from the surrounding strata.

Not much work has been done on this seam so far, but there is not the slightest doubt in my mind that it will open up to be a magnificent one, and one from which enormous quantities of this fossil fuel may be taken.

This seam is covered with a sandstone covering having a yellowish colour, and the floor is composed principally of pipe clay. Samples taken from this seam gave a return on analysis of :-

Moisture	1.1
Volatile Hydrocarbons	33.4
Fixed Carbon	56.4
Ash	9.1

Coke 65.5%

Ash whitish grey, flocculent. Gas profuse.

The coke obtained from this coal is excellent, being well swollen, with slight cauliflower like excrescences, firm and lustrous.

This is remarkably good, especially when it is remembered that the majority of the other coals in this island do not form any coke, or so indistinct, that it is a misnomer to call it so. Three chains lower down the

creek another outcrop was found, partially exposed, probably belonging to this bed.

All around the hill are to be found boulders of varying sizes of columnar diabase, and which appear to be outcrops of the rocks in situ, but as before stated, a little investigation will reveal the mistake; some of these boulders vary in size, and several are to be found weighing many tons.

A careful inspection failed to reveal any bosses of diabase in situ, and no dyke matter of any kind was found on any of the sections of the Company' s property, as none of the sandstone beds are in any way disturbed by eruptive rock.

Going on from here to the North West for a distance of about 1¼ miles, another band of coal is outcropping, having a width of 3 ft. at the surface, and about 50 ft. lower vertically than the seam at the Main Tunnel.

A tunnel has been driven on it to the south east for a distance of 75 feet.

It is overlain with greyish green sandstone, and the floor is principally slate or mudstone.

The seam is also free from deleterious bands.

This coal's lustre is somewhat dull, shining bands being found in layers. Its fracture is somewhat cubical.

The analysis gave-

Moisture	1.2%
Volatile Hydrocarbons	30.8
Fixed Carbon	58.8
Ash	9.2

Coke 68.0%

Coke well swollen, with slight cauliflower like

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exceresences, firm and lustrous. Ash reddish tinge, and flocculent.

During a search for fossiliferous remains, some imperfect impressions of the fossil plant Zeugo-phyllites elongatus were found in some shaly material, and from this, as well as from other signs, there is no doubt that these bands belong to the great Mesozoic period.

Coal measures of this period have up to the present been the only productive ones in this State.

This period immediately succeeds the Permian system of Europe, and the lower coal measures of Australia, and no satisfactory line of demarcation at any point can be drawn between the upper most members of the Permian, and the lowest members of the Mesozoic rocks, either on stratigraphical or Palaentological grounds, and many of the palaeozoid generic types, still maintain their existence through this system, as for instance the Zeugo-phyllites elongatus, before referred to.

The characteristic rocks of this period in Tasmania, are bluish and yellowish sand stones, shales, and bluish and whitish clays.

They in many other parts of the island contain coal seams, but rarely so far have exceeded 4 feet; some of them are being very profitably worked at the present time, consequently the seams already opened up and exposed on this property being of such a size, must prove to be of great commercial importance.

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In estimating the coal on this Company's property, we will have a perfectly safe and conservative estimate in striking an arbitary average of 10 ft.

as the width of the seam, this at the rate of 110 tons per inch per acre equals 13,200 tons per acre, and as the field contains 700 acres, we have an approximate content of 9,240,000 tons; if we deduct 33.3% from this on account of mining losses due to possible mining trouble, such as squeezes, benches, faults, and distortions, we still have 6,160,000 tons of merchantable coal in this field.

In making these estimates, of course, we are working somewhat in the dark on account of not being able to judge of the continuity of the seams between the several exposed localities.

However, after considering the various mines in the state, which are being worked, and ship thousands of tons every year, subject to the same faults etc. that are common to the Sedimentary Rocks of this era, it is believed that the deductions above made will leave the estimates sufficiently well guarded to cover probable losses due to various uncertainties, particularly in view of the fact that the field is practically undeveloped and the developments due to future mining may, and from all present indications will, disclose good commercial seams at present unknown.

Mining. This will not present any great difficulty, the contour of the country provides for the mining to be carried on by the easiest and simplest method, most of the coal can be won by means of tunnels or adits driven into the hill; shafts will not be required except small ventilating ones may be necessary, this then does away with a most costly

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quipment of pumps and winding machinery, to say nothing of expensive work in the sinking of shafts.

The system which the lodes would be worked by, would be in the smaller seams by what is known as the longwall method, that is no pillars of coal are left, but roads for haulage and ventilation are supported by artificial pillars of packs of stone: in the large seams however they would have to be worked by what is known as the bord and pillar system, or what is termed in England as pillar and stall, that is the whole seam of coal is cut into pillars and stalls.

As a general rule, longwall is the system employed where it is essential to get coal in large lumps, where there is sufficient packing material to build the walls or packs.

In thick seams of coal however, in the ordinary course of working there is little or no dirt for the building of packs, pillar and stall is then generally employed. This system takes a longer time to get an output, and the cost of production becomes greater together with increased labor, whilst in the longwall system supervision is easy, ventilation can be arranged more simply than in the bord and pillar system, on account of the draining of gas from adjoining pillars into the narrow bords, for in the longwall the drainage is proportional to the tonnage of coal gotten, at all stages in the life of the colliery; then again all the roads in this system lead through the goaf, and thus there is no large unventilated area in the mine, the coal being extracted leaving no pillars, the superincumbent strata subside and close up entirely the opening made by the extraction

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of the coal, except where gates have been made, and in the vicinity of the working face.

Unfortunately this system cannot be adopted in working a wide seam, because the weight naturally comes along the line of the wide work face, and when this is continuous it is very expensive to maintain, besides becoming dangerous to life and limb.

Consequently both systems could be adopted with advantage in this property, the longwall as before stated in the narrower seams, and the bord and pillar in the wider ones.

The tunnel at present opening up the 12 ft. seam could with advantage be abandoned, and a working tunnel started afresh about 10 or 12 chains to the south of the present one, here the coal could easily be dumped into a hopper from the skips; and trucks on the proposed railroad to the port, could readily be brought underneath.

Another working tunnel should also be started on the big seam at a point where connection could be made with the railroad. I would also strongly recommend that the colliery be worked with one of the many varieties of coal cutting machinery, as this would tend greatly to its most economic production, which of course will greatly increase the scope for obtaining markets for the product.

Timber. There are a number of varities of excellent trees to be found on the property, such as the undermentioned ones:-

Stringy Bark, -Eucalyptus oblicua-

In appearance the wood is something like English oak

It is a timber suited for all sorts of constructive work, such as the construction of wharves, bridges, mining purposes, and for railway sleepers.

Peppermint,-Eucalyptus amygdalina-

This is one of the most durable woods in the state. It is specially used for sinking in the ground, and fence posts in districts where it can be obtained are always specified to be from this tree.

Blue Gum,- Eucalyptus globulus-

It is specially esteemed for piles, owing to its great durability, and comparative immunity it enjoys from the attacks of the Teredo. It is also used for the superstructure of wharves, and bridges; a sample of bridge decking of this wood was exhibited in Hobart, that had been in use for 50 years under foot traffic, and which was still hard and sound. And a piece of this timber was also exhibited which had been in a punt built in 1818, and in sawing and plaining showed no signs of decay. The life of wharf piling in Hobart, piles 80 feet long, and driven in 40 feet of sea water, where they are subject to the attacks of the Teredo, is reported to be 25 years.

There is an ample number of these varities of trees on on the property, to do all the mining and constructive work for many years to come.

Means of Transit. Railway. This will require to be constructed from the mine to Port Seymour, a distance of 4½ to 5 miles.

A good track can be obtained, with a very fair grade averaging about 1 in 40, all in favour of the load going down from the mine to the port of shipping.

Material for ballast can be obtained adjacent to

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the routes.
and as already stated, excellent timber suitable for sleepers, bridges, culverts etc. is to be obtained along the track or close to it.
The engineering difficulties are slight, one or two small bridges will be required, and as there will be few curves, the cost of construction will be reduced to a minium.

Jetty. This will require also to be constructed at Port Seymour where a very good site can be obtained. I am informed from one of the most experienced of our coast captains, that if the jetty be so built that the nose of the boat is pointing seawards, vessels up to 3000 or 4000 tons register can lie there in all weathers, e especially if a system of spring piles is adopted, whereby the vessel will be absolutely saved from bumping against the wharf or jetty.
This harbour will then be capable of accommodating and sheltering large ocean crafts at all times.

Capital Required. I estimate the amount of capital required for building the railway, procuring the necessary rolling stock, constructing the jetty, and fully equipping the mine, with all necessary machinery, surface works &c., will be £35,000.
This will provide everything essential for the most economical production of the coal.

Markets for the Coal. In conclusion it may be of interest to note the markets open to the Dalmain Coal.
If coal cutting machines are installed, the coal ought to be landed at the ship's side for about 2/6d

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per ton, the freight to Melbourne or Adelaide will be about 4/6d per ton, so that the coal will be in an excellent position to face all competitors in either of the states.

A large quantity will no doubt also be disposed of in Tasmania, where a coal of this quality will be much sought after, especially as it could be retailed at a very much less cost than the ones at present in vogue. Thus it will be seen that a good margin of ~~m~~ profit awaits the introduction of the Dalmain Coal into the ports of this and other states .

From the foregoing it will be seen that, as a mining venture, it is in the field of a safe investment, rather than that of speculation.

(Sgd.) J.D. Millen.