

REPORT ON THE RECENT DISCOVERY
OF CANNEL COAL IN THE PARISH OF
PREOLENNA, AND UPON THE NEW VIC-
TORY COPPER MINE NEAR THE ARTHUR
RIVER.

Government Geologist's Office,

Launceston, 9th November, 1901.

SIR,

ACTING on instructions received from Mr. W. H. Twelvetrees, Government Geologist, I left Launceston on the 15th of August to examine and report upon a recent discovery of coal which has been made in the Parish of Preolenna, in the County of Wellington, on the North-West Coast of Tasmania. The examination was made while I was *en route* for the West Coast, and was, in consequence, a hurried one. Since then, urgent demands have been made on my time, and I have found it impossible to forward the following Report before now.

The coal seams were discovered by a party who were engaged in cutting the new pack-track from the end of the Calder Road to the Arthur River. The distance by this route to the spot where the seams were first found is nearly 19 miles, but they have since been picked up a mile and a half nearer Wynyard, the outcrop running almost parallel with the track; as the crow flies, it is from 14 to 15 miles from the Coast. The Arthur River is about six miles beyond the coal discovery. It is very probable that the seams may yet be picked up three or four miles nearer Wynyard, in the fall towards the Inglis River, but this country has not yet been prospected.

The new pack-track from the end of the Calder Road has been cut out, and formed where absolutely necessary. It

is exceedingly steep in places, and would become boggy if much traffic passed along it. At present, it is a new track, and is very fair travelling.

Appended to this Report is an ideal section of the country between Wynyard and the Arthur River. The diagram is introduced more with the object of illustrating my remarks upon the general geological features of the district than of conveying an accurate idea of the relative distribution of the various formations. As I have already stated, my visit was a hurried one, and did not permit of an exhaustive examination; moreover, the country is very heavily timbered, and is covered by a great depth of surface-soil, so that it is often impossible, from a superficial examination, to tell the nature of the underlying rock. On the whole, however, I believe the diagram gives a fair idea of the geology of the district, and, for the purposes of the present Report, will be useful. I will now describe the various formations, in order of age.

Cambro-Silurian and Pre-Cambrian Systems.—These are the oldest rocks in the district, and are found underlying all the other formations. They consist of highly-inclined slates, quartzites, and metamorphic schists. The greater part of them belong, probably, to the Silurian system, but, as there are no fossils present, I think it best to follow Mr. A. Montgomery's example, and refer to them as Cambro-Silurian. In the valley of the Arthur River there is a highly-metamorphic quartz-schist, which, from its lithological characters, I should judge to be Pre-Cambrian. These old rocks outcrop in the bottom of all the deeper valleys of the district, such as those of the Calder and Inglis rivers, and, also, in many places along the sea-beach. As in other parts of Tasmania, where these old rocks occur, they have been proved to be mineral-bearing. Alluvial gold is pretty widely distributed throughout the district, and a considerable quantity has been won from the valleys of the Calder and Inglis rivers. At the New Victory Mine, in the valley of the Arthur River, copper ores occur, an account of which will be found in the present report. These old sedimentary rocks are penetrated in places by eruptive rocks; granite is said to be exposed in the valley of the Inglis River, some five miles south of the place where the track crosses this stream. I had no opportunity of seeing this occurrence personally, but my informant was very positive as to the correctness of the information. In the Arthur River, the New Victory Copper Mine is connected with a mass of pyroxenite; this rock will be referred to again when describing the occurrence of copper ores.

The "*Wynyard Formation*."—Next in age to these old metamorphic rocks comes what Mr. Montgomery has named the "*Wynyard Formation*." I encountered this formation in several places on my journey, but had no opportunity of studying it exhaustively. I will, therefore, quote from Mr. Montgomery's report on the "*Mineral Fields of the Gawler River, Penguin, &c.*," 1895.

"To the south of Wynyard, the formation is seen over rather an extensive area between the Inglis and the Campbell Range and Arthur River. It is to be seen best in the deep gullies of the creeks running through the district, the tops of the spurs between them being formed of more recent basalt. Beds of conglomerate are very prominent in the series, often containing large boulders of quartz, quartzite, metamorphic sandstones and slates, schist, red granite, and porphyry, with, occasionally, fossiliferous sandstones from the upper Silurian system. These boulders are usually enclosed in a mudstone matrix. Beds of mudstone (argillaceous sandstone), containing numerous small pebbles, are also common, and there are also thick beds of laminated slates and shales and of white and yellowish sandstones (freestones). Some of the shales and sandstones are very soft. On the beach, under the Eocene beds, there are very slight signs of curvature in the bedding-planes of the slate of this formation, but not more than might, perhaps, be due to slight irregularities in the original deposition of the sediments, and, generally, throughout the district, the strata lie very flat. In lithological character and bedding they very closely resemble those of our Permo-Carboniferous and Mesozoic coal measures. The material is not nearly so much indurated as that of the Dial Range formation; the joints do not cut through the pebbles in the conglomerates, as a rule, and, so far as I have observed, there is an entire absence of felsitic tuffs and other volcanic matter. The formation, however, seems remarkably destitute of fossils, not a trace of one being observed during my examination of it, though search was constantly being made for them."

Mr. Montgomery then goes on to discuss the age of the "*Wynyard Formation*," and, arguing from the general similarity of the material, and from the fact that several pieces of excellent coal had been picked up on the beach in the vicinity of Wynyard, comes to the conclusion that it may possibly form the base of the coal measures, and that "higher up in it the fossiliferous beds and the coal seam may yet be found. Both for scientific and commercial purposes, search

for them is desirable."

Mr. Montgomery's prognostications have turned out to be quite correct. Some miles inland, the "Wynyard Formation" is overlaid conformably by the fossiliferous shales and sandstones of the permo-carboniferous system (the Mersey coal measures), and the coal seam which shed the fragments has been discovered. There is now little reason to doubt that the "Wynyard Formation" forms the base of the Permo-Carboniferous system.

The Permo-Carboniferous System.—The only good exposure of the strata of this system which I found was in the bed of a creek, locally known as the Jenny Creek, an affluent of the Inglis River. It was in the bed of this creek that the coal seam was first discovered. The creek flows at right angles to the line of section taken in the diagram. I followed this creek down for about 400 feet in vertical distance, without reaching the "Wynyard Formation," or the underlying Cambro-Silurian rocks. The strata consists of shales and sandstones, for the most part firmly consolidated. Fossils are not abundant, but one bed of shale, very rich in impressions of fenestella, has been cut through in a cutting on the track, and no doubt others might be found with a little search. The extent of the formation is, at present, somewhat doubtful; it apparently extends from the valley of the Inglis to the Arthur River, as shown in the diagram. I am also inclined to think it extends westward for a considerable distance. The strike of the strata is about 30° E. of N., and the dip from 2° or 3° to 15° to the N.W.

The Eocene System.—A small but exceedingly interesting deposit of marine beds, belonging to the Eocene System, is exposed in a cliff section at Freestone Cove, near the Town of Wynyard. They are very full of fossils, and have been exhaustively studied by Mr. R. M. Johnston, who describes them at length in his "Geology of Tasmania." More recently, their palæontology has been thoroughly worked out by Mr. J. Dennant and the late Professor Ralph Tate. The deposit is small in area, and is covered by basalt, which has no doubt been the means of preserving the beds from denudation. It is probable that other patches of the same formation exist in the district, but they are either covered with later Tertiary gravels or have not yet been observed.

Palæogene Strata.—Large areas of country south of Wynyard are covered by gravels and clays belonging to the later Tertiary Period. These are often interbedded with or covered by sheets of basalt. Many deposits of these gravels

are found along the North and East Coasts of Tasmania. They prove that a period, first of subsidence, and afterwards of elevation, took place after the Eocene Period, accompanied by overflows of basalt. These beds occasionally contain seams of lignite. Mr. John Broomhall showed me a specimen of lignite from Abel's Farm, five miles from Wynyard; there are, he tells me, six seams within a depth of 10 feet, the largest of which would measure 8 inches in thickness. The lignite is of no commercial value.

The Palæogene gravels and basalt are found capping the Permo-Carboniferous beds in the Preolenna district, and I think it possible that, in a north-westerly direction from the line of section of the diagram, they may be completely covered by these gravels. It is also possible that there are terrace-deposits in the valley of the Inglis River. Where they occur, these deposits would prevent the coal measures from out-cropping, and this may account for the fact that they have so long remained undiscovered.

THE NEW CANNEL COAL.

The new discovery of cannel coal was made near the nine-mile peg on the track from the end of the Calder Road to the Arthur River, in the bed of a creek flowing into the Inglis River. There are three seams exposed here, of which the upper one is the largest, and, undoubtedly, the best. The outcrops have been traced along the side of the hill for about a mile and a half, but very little work of any kind has been done upon them. It is to be regretted that at least a few days' work had not been done before my visit. Had the seams been opened up for a few feet, it would have been possible, not only to form a more accurate idea of the width of the seams, but also to obtain better and more representative samples for analysis. The upper seam, which is, I think, the only one of commercial importance, is from 20 to 22 inches in thickness. It may be a little more in places, but I think this will represent a fair average. There are two classes of coal in this seam, both of which we may provisionally call cannel coal, for they are both very rich in gas, though it is probable that neither of them will be found to conform strictly with the recognised definition of cannel coal. The first-class coal closely resembles the cannel coal which has been found in large fragments at Barn Bluff, the source of which has not yet been discovered; and it is also very closely allied to the Boghead mineral, kerosene shale, or cannel coal of New South Wales. In colour, it varies from brownish black to black; lustre, resinous to dull; fracture, conchoidal. It is extremely tough, and difficult to break

under the hammer, but only slightly sectile. The powdered mineral is dark or brownish black; it burns somewhat feebly on the application of a match, but, when heated in a fire, burns very readily, with a long flame, much smoke, and a rather faintly-bituminous odour. Sometimes it is devoid of all traces of stratification, being quite dense, and resembling pitch; other specimens show distinct lines of stratification, and these bear a stronger resemblance to an oil shale than a cannel coal. It is possible that the lines of stratification will disappear, as is the case with the New South Wales mineral, when depth is gained, as they are probably brought into prominence by weathering.

The second-class coal is jet black in colour; lustre, resinous to slightly vitrious. The colour of the powdered mineral is dark brown. It burns readily, with much flame and smoke, and with a strongly bituminous odour. Lines of stratification are distinct. It is evidently not homogeneous, and appears to be made up of laminae of slightly varying composition. The relative quantities of these two coals seem to vary in the seam. Where first discovered, the seam is mostly composed of the second-class coal, and from this place I took a bulk sample (Sample No. 1) from a couple of hundredweight of coal which had been taken out. A good deal of coal had been taken away from this heap before my visit, and, as it is only natural that the best pieces should be selected to take away, it is probable that this sample is somewhat below the average of the seam at this point. Another exposure has been found about a quarter of a mile to the north-east of the above locality; here the seam appears to consist principally of the first-class coal, though I was, unfortunately, only able to get at the upper nine inches of the seam. Of this, I took a bulk sample (Sample 2). A third exposure has been found about a mile and a half north-east of the first locality; here the seam is seen in the bottom of a small creek. I obtained a large lump from the top of the seam at this place, from which I took a third sample (Sample 3). The coal was principally of the kind I have described as second-class, with seams of the first-class coal in it.

These three samples were submitted to Mr. W. F. Ward, Government Analyst, for analysis, with the following results:—

| | Moisture. | Ash. | Gases lost at red heat. | Fixed Carbon. | Character of Coke. |
|-----------------|-----------|------|-------------------------|---------------|--------------------|
| Sample No. 1... | 1·2 | 5·8 | 42·0 | 51·0 | Firm. |
| " No. 2... | 2·2 | 3·5 | 65·8 | 28·5 | Rather tender. |
| " No. 3... | 1·1 | 8·8 | 47·9 | 42·2 | Tender. |

Gases lost at red heat include half the sulphur present in the coal, the remainder being volatile hydro-carbons. The sulphur content was not estimated, but it is not likely to be high. In the Barn Bluff cannel it amounted to only 0.7%, and it is probably not greater in this coal. These results may be regarded as very satisfactory, especially that of No. 2 sample. The valuable constituents of these coals consist in the volatile hydro-carbons. They may be used in two ways, firstly, in the manufacture of gas, where they are of great value to mix with other poorer coals, in order to increase the illuminating power of the gas; or, secondly, in the manufacture of quite a number of products, such, for example, as illuminating oils, paraffin, benzine, aniline dyes, &c. Of these, the second is the highest use to which coal of this class can be put, but their application to either of these uses can only be determined by experiments carried out on considerable quantities of the product by a qualified expert. In New South Wales, where there is a considerable industry in mining these oil shales, the product is used for both purposes. The highest-grade material is shipped to Great Britain, there to be treated for the various oil-products. A large quantity is also treated locally for oils, &c., and a third portion is used for increasing the illuminating power of ordinary coal gas.

With the object of affording a comparison of the Preolenna cannel with other high-grade coals, the following Table is introduced. It is taken from Liversidge's "Minerals of New South Wales," and the analyses of the Barn Bluff and Preolenna coals have been added:—

| Locality. | Moisture. | Volatile Hydro-Carbons. | Fixed Carbon. | Ash. | Sulphur. | Specific Gravity. |
|--------------------------------|-----------|----------------------------|---------------|--------|----------|-------------------|
| Joadja Creek, N.S.W. | 0.44 | 83.861 | 8.035 | 7.075 | 0.589 | 1.054 |
| Hartley Vale, " | ... | 82.50 | 6.50 | 11.0 | ... | ... |
| Joadja Creek, " | 0.04 | 82.123 | 7.160 | 10.340 | 0.337 | 1.229 |
| Hartley Vale, " | ... | 82.24 | 4.97 | 12.79 | ... | 1.052 |
| Joadja Creek, " | 0.41 | 77.07 | 12.13 | 10.27 | 0.12 | 1.098 |
| Joadja Creek, " | 1.16 | 73.364 | 15.765 | 9.175 | 0.536 | 1.103 |
| Cannel, Mold Flints, England | ... | 72.08 | 21.91 | 6.01 | ... | ... |
| Murrurundi, N.S.W. | 1.165 | 71.882 | 6.467 | 19.936 | 0.549 | ... |
| Torbanite, Scotland..... | ... | 71.17 | 7.65 | 21.18 | ... | 1.170 |
| Cannel Coal " | ... | 69.77 | 10.45 | 19.78 | ... | ... |
| Torbanite, " | 0.720 | 69.695 | 9.045 | 20.540 | ... | 1.316 |
| Greta, N.S.W. | 0.48 | 61.18 | 25.13 | 13.21 | ... | ... |
| Albertite, New Brunswick..... | ... | 57.490 | 42.086 | 0.424 | ... | 1.105 |
| Greta, N.S.W. | 1.475 | 53.798 | 27.946 | 15.870 | 0.911 | 1.130 |
| Cannel Coal, Wigan, England | 1.464 | 45.900 | 45.519 | 7.117 | ... | 1.259 |
| Barn Bluff, Tasmania..... | 0.2 | 52.8 | 42.4 | 4.3 | 0.7 | 1.13 |
| Preolenna, Tasmania, No. 1 ... | 1.2 | 42.0 | 51.0 | 5.8 | ... | ... |
| Ditto, ditto, No. 2 | 2.2 | 65.8 | 28.5 | 3.5 | ... | 1.13-1.2 |
| Ditto, ditto, No. 3 | 1.1 | 47.9 | 42.2 | 8.8 | ... | ... |

(B)

21/16

From the above Table, it will be seen that Sample 2, the first-class Preolenna cannel, is only beaten, as far as its contents in volatile hydro-carbons are concerned, by the high-grade kerosene shale of New South Wales (the richest coal in the world), by the Torbanite of Scotland, and by one English cannel, that of Mold Flints. It is higher by 13% than the Barn Bluff cannel, which Mr. A. Montgomery has described as "one of the very best cannel coals for gas-making purposes in the whole world."

The actual value of the coal, both for gas-making and oil-making purposes, can only be determined by very exhaustive experiments on considerable amounts of the material. These have not yet been made for the Preolenna cannel, but they have, in part, been carried out in the case of the Barn Bluff coal, with very satisfactory results. Considering the great similarity in the two coals, I think we are quite safe in assuming that the composition of the hydro-carbons will be essentially the same in both cases, *i.e.*, the valuable products contained in it will probably be equal in quality and greater in quantity than the Barn Bluff coal. As giving an idea of the market value of the coal, it will be interesting to quote the estimate which Mr. Cleminshaw, of Launceston, made for Mr. A. Montgomery of the market value, in Launceston, of the Barn Bluff coal, when used for gas-making purposes, without any consideration of the by-products. This estimate amounted to 50s. a ton. As the Preolenna coal contains 13% more volatile hydro-carbon than the Barn Bluff sample, we may presume that its value will be even higher than this, and there is a further possibility that its value for oil-making may exceed its value for gas-making.

The second-class cannel, though it cannot be classed among the high-grade cannels, is still a very valuable coal. It would probably not pay to export this coal for the manufacture of oils, supposing it to be adapted for that purpose, as the freight would be too heavy; but it would probably find a ready sale for the purpose of increasing the illuminating power of ordinary coal-gas, or it might pay to erect works locally for the extraction of the oils. These points can only be determined after the coal has been examined by specially-qualified experts. As a coking coal it may also have a considerable value. I could not form any idea of the relative quantities of the two classes of coals in the seam. The proportion probably varies considerably at different points, and it will be only after the seam has been opened up at a number of places that this can be determined. In one of the three places where the seam was exposed there was certainly nine

inches of first-class cannel, and there is probably more. The total width of the seam at this place was 22 inches.

The seam should first be opened up at a number of places, with the object of determining the relative proportions of the two qualities of coal present. Short tunnels should be made into the seam in order to determine accurately its size, and several small parcels should be got out and sent to a qualified expert, with the object of ascertaining the quantity and value of the various products contained in them. At the same time prospecting should be vigorously carried on in the district along the line of outcrop of the seam. It probably varies both in size and quality, and it is unlikely that the richest spot should be that which was first discovered. It is very possible that the seam may be picked up in the valley of the Inglis River, in which case it will be several miles nearer the seaport than where it is now uncovered. The dip of the seam appears to be towards the north-west, at varying angles, from 2° or 3° up to 15° . In this direction the country does not fall nearly so rapidly as it does towards the south-east, so that the seam may be expected to live for a considerable distance in this direction before out-cropping. The country is covered with very dense scrub, a lot of bauera and horizontal being present, so that prospecting in this direction will be a difficult matter. Still, the possibilities of a valuable discovery being made are amply sufficient to warrant the work being undertaken.

As already pointed out, the country in this direction may be covered by Tertiary gravels or basalt. In that case, the seams will not outcrop, and their existence below the surface can only be determined by boring. This work should not be undertaken until an accurate geological survey has been made.

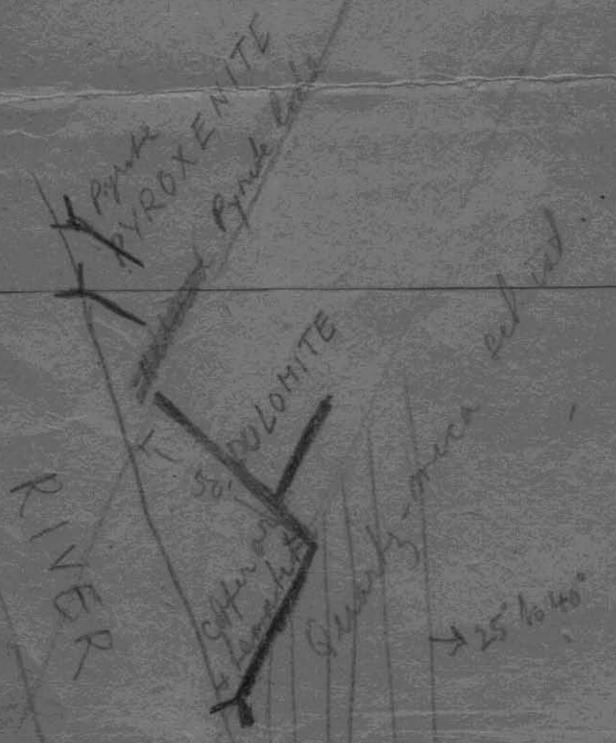
Should the seam open up favourably, there would be no difficulty in connecting the field with the seaport of Wynyard. A tramway route could be got along the valley of the Inglis River, and would reach Wynyard in a distance of about 18 miles. In this respect the district is exceptionally favourably situated.

I think the discovery is a very important one, and may be the means of adding another valuable mining field to Tasmania.

THE NEW VICTORY COPPER MINE.

This mine is situated in the valley of the Arthur River, about six miles south-west of the coal discovery. The river flows at this place a little west of north, and the mine is situated on the eastern bank of the river.

Half a mile north
several hundred



The most striking feature in the mine is a massive belt of white crystalline dolomite (carbonate of lime and magnesia), striking about 30° east of north, and forming the contact between a mass of pyroxenite and highly-laminated quartzschist. The dolomite does not cross the river, though it comes down to the water's edge. Here it is some 50 or 60 feet in thickness, but half a mile further north it has widened out to a mass many hundreds of feet in thickness. How far it extends in a northerly direction I did not learn. To the west of the dolomite there is a mass of pyroxenite, a heavy, dark-green, massive rock, consisting essentially of pyroxene. This is one of the ultra-basic eruptive rocks, and compared with other eruptive rocks, is characterised by a very low percentage of silica and alumina, and a high percentage of magnesia. In the vicinity of the dolomite, this rock is in a highly-decomposed condition, and is only recognisable as the altered pyroxenite by a gradual passing over from the one to the other, and by occasional patches of less decomposed rock, which occur in the altered zone. The most highly decomposed portions of the rock consist of bands of yellow, red, and brown kaolin and clayey matter, much oxide of iron, and patches of a fine white powdery substance, which I take to be amorphous silica. The pyroxenite is often highly charged with iron pyrites, and I think there can be no doubt that the origin of the dolomite is directly connected with the eruptive rock. Crystalline dolomite of a similar nature occurs in several other localities in Tasmania, associated with similar rocks. Among these may be mentioned the belt of dolomite at the Comet and South Comet Mines, at Dundas, associated with serpentine; the dolomite gangue of the lode at the Magnet Mine in websterite; and the dolomite gangue of the old Madam Melba and Kapi mines, in serpentine and gabbro, at North Dundas. In all these instances we have a similar crystalline dolomite associated with ultra-basic rocks, rich in magnesia.

The rock forming the eastern wall of the belt of dolomite is a highly metamorphic crystalline quartz-mica schist. It strikes about north and south, and dips to the east at angles varying from 25° to 40° . Much of this country is highly charged with mineral matter, and some large gossan formations are to be seen on the surface, but nothing has, so far, been done to prove their value. The deposit of copper ore is situated on the eastern bank of the Arthur River. It is associated with some bands of black crystalline hematite, and, apparently, forms a contact lode between the dolomite and the schist. The copper ores consist of malachite, chalcopryrite, and bonite and chalcocite, distributed through the

dolomite gangue of the lode. Assays of the ore have been very satisfactory; one sample, tested at the Zeehan School of Mines, yielded 22.4% of copper, 8 ozs. 3 dwts. 8 grs. silver, and 10 dwts. 4 grs. gold. Several other assays have been obtained, with similar results, the gold contents being especially satisfactory. Unfortunately, the length of the shoot was very small, for nearly all the copper ore was broken down in the entrance to the tunnel, which was put in at the contact, in order to explore the deposit. At this point the country is very much broken to the east of the dolomite, and the tunnel was driven in the broken country, for about 30 feet, in preference to the harder dolomite. The course of the tunnel was then turned to the west, with the object of intersecting the lode. The dolomite was entered, and the seams of crystalline hematite cut; apparently, there was no copper in the lode at this point, for it was passed through unheeded, and the tunnel was continued as a crosscut across the dolomite. Presently, a vugh in the dolomite was intersected, and this was followed for a considerable distance, apparently under the impression that it was the lode. Unfortunately, I was not able to see the veins of hematite where they were cut in the tunnel, for the latter was closely timbered at this point, but I understand they were cut close to the margin of the dolomite. There seems to be no reason for thinking that the hematite does not form part of the lode, and, this being the case, the veins of hematite should have been followed when cut in the tunnel, whether copper was present or not; certainly, the vugh which was followed by the tunnel has no connection with the lode. The dolomite is probably traversed in all directions by such vughs as this. They are formed by the dissolving action of water travelling through what were once small cracks, but which have been gradually widened until they have now become cavities of considerable dimensions. A curious feature, which should be mentioned, is the presence of a warm spring which was cut in the tunnel. The water is about blood-heat, and evidently contains much carbonate of lime and carbonic acid; it contains no sulphides in solution. The water has evidently travelled for a considerable depth underground, through the vughs in the dolomite, hence, its high temperature.

The work which has been done, so far, has proved very little. It has proved that the shoot which has been discovered was very limited in length, but, practically, nothing has been done to ascertain if other shoots of ore occur on the same line of lode. Lodes at the contact of soluble rocks, such as limestone or dolomite, are often patchy, but they also often contain big bonanzas of very valuable ore; and, con-

sidering that we have here a contact lode, proved to contain, at least, some rich ore, I think it is well worth a fair trial. The possibility of striking a good lode along the contact is considerably strengthened when we take the surrounding circumstances into consideration. The whole country is very highly mineralised, but the mineral matter in the country is not concentrated. Before we can have a payable ore-deposit, the metals must be found in a much more highly concentrated form than we find them in the country, and the question arises—Where is the most likely place for concentrations to take place? There can be no doubt as to the answer to this question. The most likely place lies at the contact of the dolomite with less soluble rocks. Such concentrations we know to have taken place to some extent along the contact of the dolomite and the schist, and it remains for the miner to prove whether other larger and richer deposits exist on the same line of lode. I think it is well worth while driving along the contact of the dolomite and schist from the present tunnel; at the same time surface work should not be neglected. I should recommend a series of trenches to be put across the contact of the dolomite and schist for a considerable distance up the hill, at distances of from 50 to 100 feet apart. These would probably cut any shoot which lived up to the surface, and, for the same expenditure, a greater length of the contact could be explored. On the other hand the underground work is the more thorough, and the shoot, when cut, is more likely to be rich in valuable metals than when cut in a trench on the surface. Underground work, therefore, must by no means be neglected.

On the west side of the dolomite there is another lode. It consists of a pyrites formation, about 14 feet in width, consisting of bands of iron pyrites and country rock. Assays of some of this pyrites are said to have gone as high as 12 dwts. of gold per ton, but the sample which I took from here, and which was assayed by Mr. W. F. Ward, Government Analyst, only yielded a trace of gold. Two tunnels have been driven through the decomposed rock on the west side of the dolomite, apparently, with the object of cutting this formation, but neither of them has been continued far enough, as the contact has not been reached in either case. As the country is very soft here, and driving is cheap, I think it would be worth while to extend one of these tunnels up to the contact of the dolomite; this would prove the character of the lode in a very short time.

In conclusion, I may say that, although the results so far obtained have been of a very disappointing nature, I cannot

regard the work done as having affected the prospects of the mine to any considerable extent, for the reason that it has been expended principally in the wrong direction. The indications are, in my opinion, very favourable, and, if work is carried out on the lines I have indicated, I think there is a good chance of payable deposits being discovered.

I have the honour to be,

Sir,

Your obedient Servant,

GEORGE A. WALLER,

Assistant Government Geologist.

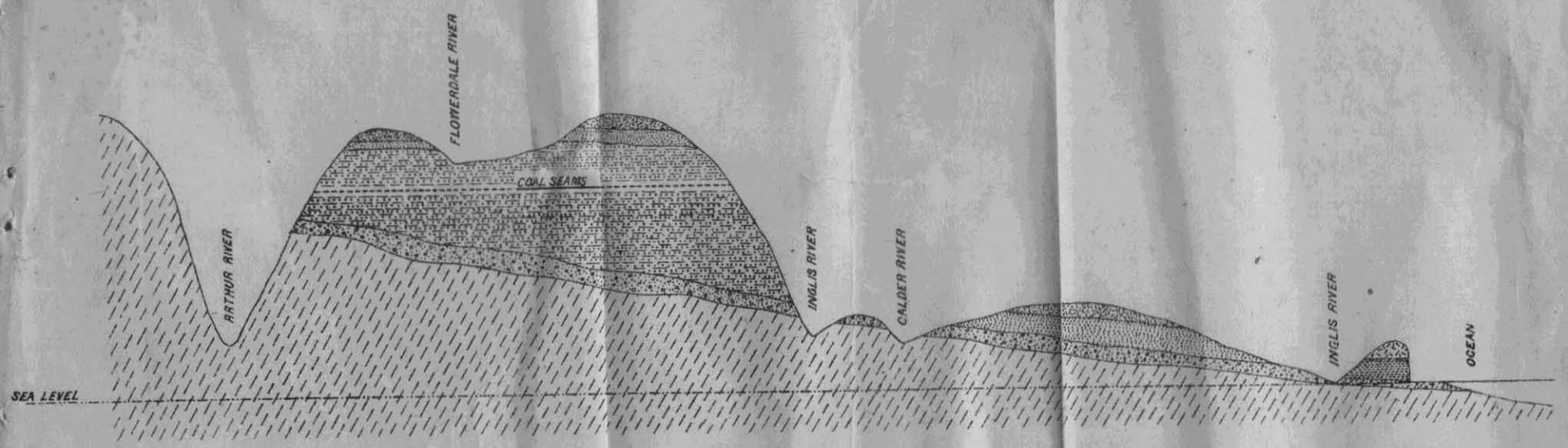
W. H. WALLACE, *Esq.*,

Secretary for Mines, Hobart.

IDEAL SECTION FREESTONE COVE TO ARTHUR RIVER

BEARING 30° WEST OF NORTH

Geo. A. Waller
Asst. Prof. Geologist



Cambro-Silurian
and Pre-Cambrian

Myapard Formation

Permian Carboniferous

Eocene
boise

Palaeozoic
Palaeogene

Tertiary Basalt

Vertical scale of feet
0 500 1000

Horizontal scale of miles
0 1 2 3 4 5

5 cm