

THE CARBONACEOUS AND ASSOCIATED MINERAL DEPOSITS NEAR BEACONSFIELD.

In my Report on the Beaconsfield and Salisbury Mining Districts, issued in May last, it was incidentally mentioned that indications of carbonaceous strata had been observed in that vicinity, but that it was not possible then to examine the same.

I have recently been honored by instructions from the Hon. Minister of Lands and Works to resume that work ; and consequently the western side of the River Tamar has been examined from Ilfracombe to Middle Arm, Middle Arm Creek, and for a few miles south south-west of the latter watercourse towards Anderson's Creek.

As a preliminary, it may be stated that the localities so inspected exhibit geological features varying in their lithological, palæontological, and mineral character, which necessitate considerable attention and care to base opinions thereupon or to draw deductions therefrom.

The principal formations comprise the following, in their geological succession, viz. :—

- (a) Igneous and Plutonic Rocks .. Basalts : Serpentine and Greenstones.
- (b) Stratified Rocks..... Silurian : Carbonaceous
- (c) Tertiaries Auriferous and non-auriferous } Sedimentary.

At the lines of contact of the two first-named groups, transmuted or metamorphic rocks occur here and there to a limited extent.

The Silurian strata, in which the richest of gold-bearing belts of quartz lodes occur near Beaconsfield were, on a former occasion, described as underlying towards the east, or the Middle Arm of the River Tamar, the more recent Tertiaries, either marine or fluvial, beds of clay, and recent deposits of a peaty nature. At the western shores of that inlet, and at several other localities inland, older and sedimentary rocks than those Tertiaries are exposed to view, and they will form the principal part of this report.

On the western side of Middle Arm Creek, at a distance of about a mile south-east from Cabbage Tree Range, very interesting features were observed on Mr. W. Dally's farm ; there the Silurian rocks form, as it were, a promontory amongst the Carbonaceous and more recent formations, and they contain large quartz reefs at that point. (See Geological Sketch Map.)

These Silurian rocks comprise light coloured sandstones, conglomeratic beds, thin bands of slate, and a thick bed of good hard whitish limestone, having a dull appearance and exhibiting a splintery cleavage with a conchoidal fracture ; this rock, if it were less granular and more crystalline, would form a very enduring substitute for a useful class of marble. It is not certain whether this represented originally a bed of carbonate of lime, transmuted, through contact with igneous rocks probably occurring in the neighbourhood, into a kind of marble in which galenite has been observed to occur in veins, strings, and patches. These lead sulphurets were first discovered in the alluvial gravels in the banks and bed of the creek ; some lumps were found up to several pounds in weight. Since then it has been ascertained that their original deposit existed in a metalliferous vein between the

(2)

76°?

larger reef, striking N. 26° W., and the bed of limestone or marble. This vein is pretty well defined near the surface, and between slate walls it is found to be composed of iron pyrites, carbonates of iron, and galenite; the former in its decomposed state forms a black powder, and the last is of a porous nature and contains evidently a per-centage of silver,—so that, on the whole, this deposit holds out inducements for being exploited with energy to a greater depth; it should be observed that the Government Analyst also discovered traces of gold in this vein-stuff.

The quartz reefs are confined to a limited area, with the exception of the one 12 feet wide, which appears, from its general character, strike, and other features, to form the main lode, having a strike of N. 76° W., forming a junction with the one moderately interspersed with galenites. There are two or three other reefs, one or two of which, I was informed, have given prospects of gold, and they also deserve attention on that account. The two principal reefs join at nearly right angles, and it is very probable that a metalliferous deposit exists at that junction. It would appear as if there were some kind of connection between this main reef and, probably, those that occur within the Cabbage Tree belt of auriferous quartz lodes, which is rendered possible through the extensive amount of foliation and contortion of the Silurian strata enclosing the same. It was deemed necessary to give this explanation previous to the carbonaceous deposits being described, because the line of contact between the various formations at this place would give a starting point to proceed from.

With regard to the Carbonaceous, *i.e.*, non-coal bearing, in contradistinction to Carboniferous or coal-containing rocks in this region, I have come to the conclusion that the former are here very generally represented, and have every appearance of their belonging to a similar geological horizon as those marine beds at the Mersey, and those which over-lie the coal-seams at Hamilton and at Fingal. The resemblance is considerable, but there are, at the same time, considerable exceptions, because, in the first place, no coal has yet been found in this fringe of carbonaceous rocks, and secondly, the metamorphic limestones, as at the Mersey, is here missing as forming the base of the system, and, lastly, though the fossiliferous beds of limestone, *i.e.*, calcareous mudstones, occur as at Fingal, they are not here, as in that vicinity, overlaid by true coal-bearing strata; and here there are at least two of such calciform-fossiliferous beds at elevations two or three hundred feet apart. The question as to the comparative geological age of each of the three localities mentioned requires much more time to enquire into and study or theorise upon than what is at my disposal, as I deal more with the practical work of examination of the indications of mineral or metalliferous deposits, or, where these have been proved to exist, to ascertain their commercial value and the probability or otherwise of their permanency. I would mention, however, that in these West Tamar beds of fossiliferous limestone some fossils were observed not found either in the Fingal or Hamilton series, and having some doubts as to their proper classification, steps will be taken to confirm, or otherwise, by competent authorities, my definition for place. At Bowen's Jetty, Middle Arm, crinoidal sandstones, alternating with mottled greenish mud-shales, observe a dip to N. 4° E.; the next higher beds consist of coarse conglomerates, consisting chiefly of semi-rounded pebbles of quartz, blue slate, sandstones, and quartzites. Towards Middle Creek the direction of this dip varies as it becomes more easterly. The whole group does not dip on an average more than six to nine degrees to the horizon, denoting, if nothing else, a very considerable regularity in their original deposition, and may be a shallow depression only. Near the point where the old smelting-works were erected some years ago (or south of Bowen's Jetty), the marine beds consist of fine-grained light-coloured sandstones, mostly below high water-mark. Wavy lines, formed of black carbonised vegetable substances, are interspersed, as at the Mersey, horizontally throughout this series; and this is the first and only instance where carbonised matter was observed to occur. The sandstones of this group evidently extend over considerable areas, because I observed them, together with a still higher bed of fossiliferous limestone, between five and six miles to the south and south-west,* retaining in that distance their regular dip, although, in the west, they would meet, at a short distance only, the asbestiferous serpentines, with the heavy deposits of iron ores, on their boundary. Whether those plutonic rocks (serpentine) were in position before the deposition of the sedimentary series now under view is scarcely open to doubt, because, otherwise, the latter would, in that case, have exhibited more acute angles in their dip, and a greater amount of irregularity in their occurrence.

On the opposite side of Middle Arm, or immediately east of the upper end of that marine inlet, an old lime-kiln had been built years ago by the Government of the day, and close by a considerable stratum or bed of fossiliferous limestone (mudstone) occurs—in places from 8 to 15 feet thick—with a strike of N. 16° E. More accurately speaking, these beds consist of a greenish conglomeratic sandstone in which an over abundant congregation of petrifications are embedded to such percentage as to render the whole of so highly calciferous a character as to have made it profitable to quarry the whole for lime-burning purposes. This is principally due to the fossils having retained their original calciform character, so that "casts" are the exception and not, as elsewhere, the rule. These quarries were worked, I am informed, until Mr. W. Dally discovered his much purer silurian and non-fossiliferous limestone deposits.

The carbonaceous formations that were examined cannot be less than 4 to 500 feet in thickness above high water-mark, and these marine beds, in which in many cases petrifications were

* Lots 571, 713, 456, 458, and others.

(3)

observed equivalent to those existing at the Mersey, Hamilton, Ouse, and Fingal coal basins, include very probably higher and more recent beds, as evidenced by the petriographical occurrence of well preserved organisms not found with the coal deposits referred to. Owing to the enormous extent of denudation discernible, the lowest exposed strata exhibit no change in the angles of inclination, consequently the evidence on the west side of the river is in favour of a comparatively shallow basin only. It is at the same time quite probable of the corresponding strata on the east side exhibiting a greater inclination westwards, which would complete the required synclinal section for a basin, and therefore it is submitted that the examinations should at some future time be continued, in order to include the country lying between the Fourteen Mile Creek to George Town and back to the Tippagory Hills and to the Lefroy silurian formations. This region so confined would embrace all that is necessary for the purpose of ascertaining whether the upturned edges of the carbonaceous group would exhibit stronger indications of underlying coal-bearing strata than on the opposite or west side of the river.

The under-mentioned groups of strata were observed in successive rotation below the upper fossiliferous limestones; viz.—

1. Dense grey fossiliferous limestones with "fenestella," "favosites fibrosa?"
2. Coarse-grained sandstones.
3. Fine-grained sandstones with black partings caused by carbonised vegetable matter, &c.
4. Blackish shales finely laminated.
5. Coarse sandstones.
6. Conglomerates.
7. Fossiliferous sandstones (alumniferous and efflorescing).
8. Dark bluish shales.
9. Calcareous greenish sandstones, highly fossiliferous, used for lime-burning at Government kiln.
10. Light grey shales.
11. Crinoidal sandstone.
12. Mottled greenish shale.

The following Palæozoic (marine) fossils were observed; viz:—

Producta, Spirifera, Fenestella, Pectenidæa, Gasteropoda, and others not yet sufficiently examined for place or classification.

So far as the examination of the country situate in the immediate vicinity of Middle Arm and towards the south west have shown, the same marine (palæozoic) formations exist here as elsewhere in Tasmania, and the question arises whether these marine beds overlay, as at the Mersey, Hamilton, and Fingal, true coal-bearing strata. It cannot be said that the indications for same are altogether unfavourable or sufficiently so as to enable inferences to be drawn in opposition to the occurrence of those most valuable deposits.

As repeatedly recommended, I consider that the large Diamond Drill should be employed at Middle Arm first, in order to test the contents of the strata underlying the lower limestones, as it would be judicious to ascertain the same, as at Fingal, whether they form the base of carboniferous rocks, which has been held to be the rule in Tasmania, and which it would be both important and judicious to have confirmed or otherwise.

G. THUREAU, F.G.S., Geological Surveyor.

Launceston, 29th October, 1883.

APPENDIX.

List of minerals discovered near Beaconsfield, with report of the Government Analyst attached; viz:—

1. Stalactitic hematite from a deposit about four miles south south-west from Beaconsfield, upon A. Douglas's farm.
This contains no chromium.
2. Iron, smelted, from the bottom of the old furnace, about two miles south of Bowen's Jetty; the deposit of ore comprising concretionary layers is situate one mile west of the furnace.
Iron from furnace bottom contains no appreciable quantity of chromium.

(4)

3. A dark brown carbonaceous substance found in the quartz reef of the Moonlight G. M. Co., exhibiting filagree native copper.

This contains distinct traces of gold.

4. Pyrites from the Little Wonder G. M. Company's reef.

These contain traces of gold.

5. Pyrites from the same mine.

These are chiefly arsenical pyrites, which are doubtless the cause of the imperfect amalgamation complained of.

6. Raw cast-iron.

The per-centage of chromium was not determined, as there is no possible chance of its competing with "chrome iron ore," containing 40 to 50 per cent. of chromium oxide.

7. Galenite from W. Dally's lot, as described in Report.

This galena contains fifty (50) per cent. of metallic lead, and is almost entirely free from silver.

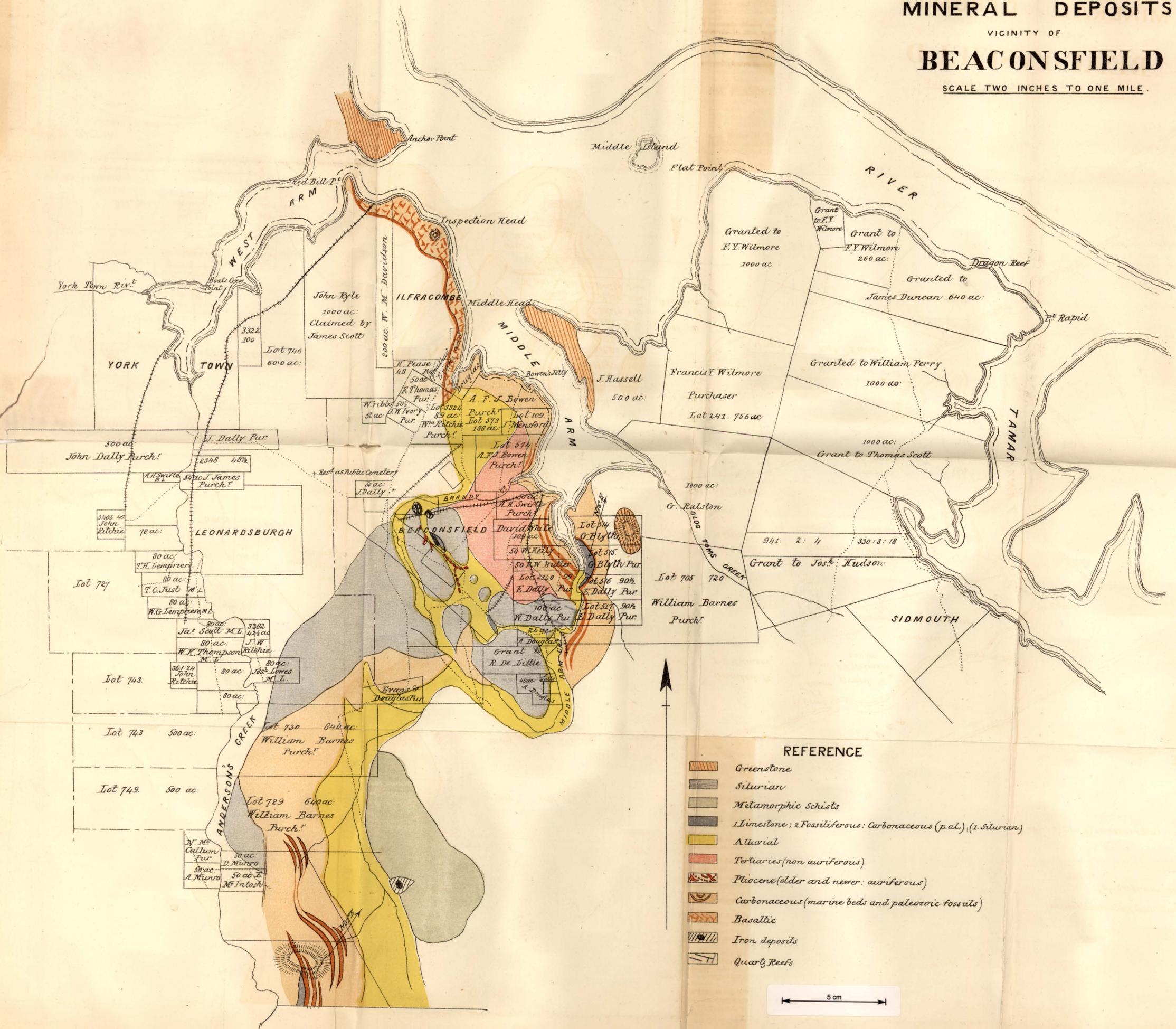
APPENDIX

WILLIAM THOMAS STRUTT,
GOVERNMENT PRINTER, TASMANIA.

GEOLOGICAL SKETCH MAP

OF THE CARBONACEOUS AND ASSOCIATED MINERAL DEPOSITS VICINITY OF BEACONSFIELD

SCALE TWO INCHES TO ONE MILE.



REFERENCE

- Greenstone
- Silurian
- Metamorphic Schists
- Limestone; Fossiliferous: Carbonaceous (p.al.) (i. Silurian)
- Alluvial
- Tertiary (non auriferous)
- Pliocene (older and newer: auriferous)
- Carbonaceous (marine beds and paleozoic fossils)
- Basaltic
- Iron deposits
- Quartz Reef's

5 cm