



Office of Mines, Hobart, 31st December, 1883.

SIR,

IN compliance with your verbal instructions of the 20th instant, to examine into the character of the New Town Coal deposits as a field for the advantageous employment of the diamond drill, I have the honor to state that I have made a geological examination of about sixteen square miles of country around New Town, and I beg to enclose herewith my Report thereon, with plan and section.

I have the honor to be,

Sir,

Your obedient Servant,

F. W. KRAUSE.

The Hon. N. J. BROWN, Minister of Lands, &c., Hobart.

GEOLOGICAL SURVEYOR'S Report on the New Town Carbonaceous Deposits.

My instructions to advise the Hon. the Minister of Lands on the expediency or otherwise of employing the diamond drill in search of workable coal seams at New Town, necessarily conditioned the examination of a somewhat more extended area than that occupied by the so-called New Town coal basin, the very limits of which could not, indeed, be determined without proper enquiry into the disposition of the bordering rocks. The result of this enquiry is laid down on the accompanying geological plan and section and the descriptive notes there inserted. I may therefore in this place confine myself to state the practical outcome of the enquiry.

At the outset, it should be stated that so far no seam of true coal has been discovered at New Town. The material raised and sold as such is a carbonaceous shale. The better sample is finely laminar, and some of its laminæ, often less than $\frac{1}{100}$ part of an inch in thickness, are made up of a non-bituminous coal (anthracite and mineral charcoal), the amount of which, however, rarely exceeds 5 per cent. of the bulk of the material.*

For the purpose of this enquiry it is sufficient to speak of the shales, sandstones, and intercalated carbon beds as "coal measures," without implying a relationship with the carboniferous beds of Europe. On the contrary, the pecopteris and zamites shales, as well as the lithological character of the whole of the upper beds, bear a marked resemblance to the oolitic coal-bearing rocks of Western Port and Cape Otway in Victoria, while the lower fenestella beds are of upper palæozoic (permian?) type.

The thickness of these upper coal measures does not exceed 435 feet, and the area occupied by them is somewhat under three-quarters of a square mile (420 acres). There are six "coal" seams known to exist, having an aggregate thickness of 11 feet 8 inches. The greater number of these seams extends over portion of the field only. Assuming that no faulting or thinning out interfere with the observed dimensions, the total quantity of "coal" at New Town, including what has been already raised, will amount to about 3,800,000 cube yards, equal to about 4,000,000 tons of coal shale. This is the utmost capacity of the field, and there is no prospect whatever of true coal (either anthracite or bituminous) being found at a reasonable depth.

* The term *anthracite* for the New Town fuel is quite inappropriate. Anthracite implies the existence of *coal* which at a later stage was deprived of its bitumen. But in this case the material originally deposited was not a coal, but a bituminous shale which plutonic action deprived of its hydro-carbons and converted into *carbon-shale*.

A shaft on the Government farm would strike Parson's seam at a shallow depth; beyond that depth no workable seam will be met with, unless it be the faulted portion of Dr. Benjafield's seam, which is, however, problematical. The whole field is so well laid open by natural and artificial sections that a bore sunk on the basset of the highest beds,—say the upper adit near the south-east corner of the Orphan Asylum reserve,—might be sunk to a depth of 2380 feet without disclosing features other than what can be "read" on the surface and in existing pits. Supposing all the members of the series to be represented, the following would be a section of the rocks bored through:—

	Depth of Strata.	Depth of Bore.	
UPPER COAL MEASURES.	Carbonaceous shale (crops out at upper adit on Bedford's land, No. 1 seam).....	1 0	1 0
	Shale and sandstone	21 0	22 0
	Coal shale (No. 2 seam), struck in adit near S.E. corner of the Orphan Asylum Reserve	1 6	23 6
	Clay shale and sandstone.....	78 0	101 6
	Carbon shale ("Rosetta," or No. 3 seam)	3 0	104 6
	Clay shale	1 9	106 3
	Sandstone, with nodules of pyrite, and fern impressions ...	98 0	204 3
	Carbon shale (part of No. 4 seam)	1 6	205 9
	Clay shale replete with pectopteris (two species), zamites, &c.....	1 3	207 0
	Carbon shale (part of No. 4 seam).....	1 0	208 0
	Shale and sandstone	215 0	423 0
	Carbon shale (worked in Parson's shaft)	1 10	424 10
	Blue and grey shale and sandstone.....	10 2	435 0
GREY AND YELLOW POST.	False-bedded sandstone with fern impressions; also thin shale layers	850 0	1285 0
	Sandstone, exposed in shaft and bore at Upper Park-street.	155 0	1440 0
	Sandstone, largely quarried for building, with occasional false bedding and ripple marks. A few fern impressions.	350 0	1790 0
CLAY ROCK.	Light grey indurated clay shale	300 0	2090 0
	Breccia and conglomerate of fragments of quartz, quartzite, granite, and slate in a claystone base	10 0	2100 0
FOSSILIFEROUS LIMESTONE.	Sandy limestone and calcareous shales and sandstones, containing an abundance of marine shells and coralloids (spirifer, three species, productus, fragments and casts of univalves, and numerous fenestellidæ.) The beds become nearly horizontal with increasing depth	280 0	2380 0

I have already stated that no coal of reasonably good quality need be expected in the upper coal measures. Similarly the grey and yellow post, the clay rock, and the fossiliferous limestone have all proved barren of coal and coal shale, and it therefore remains but to explore the rocks which lie beneath the latter. I have been unable to find an exposed section to aid the enquiry beyond a certain point, as the lower beds abut everywhere against the diabase. It is here, then, that the drill must be resorted to, and the only prospect of meeting with workable coal deposits is by boring below the lowest outcropping fenestella beds.

I recommend as such a site the upper part of the western branch of M. Robie's Gully, or a corresponding position in Guy Fawkes Rivulet; and I am of opinion that this mode of exploitation, besides being of the highest scientific interest, must practically decide the question whether or not this and other parts of the Island of similar physical and geological structure are destined to become economically important coal fields.

F. M. KRAUSÈ.

Office of Mines, Hobart, 31st December, 1883.



Geological Sketch Map
of Country around
NEW TOWN
Scale 6 inches to the mile

F. M. Kneissel
F. G. S. London
OFFICE OF MINES, HOBART
December 31st 1883

REFERENCE

- | | | | |
|--|--|--|---------------------------------------|
| 1 NEWER PLEISTOCENE AND POST PLEISTOCENE
Clay, gravel & shingle, raised beaches etc. | 2 MEEVER VOLCANIC
Bedrocks of tabular & concretionary structure. The decomposed rock is rich in botryoidal limonite. | 3 MIDDLE PLEISTOCENE (or older)
Clays, limestone with land and freshwater shells, etc. | 4 DIABASE ORIGINALLY ABERNETHY |
| 5a Sandstone, calcareous shale with thin laminae of anthracite. Large nodules of pyrite in sandstone. Shale rich in "pacapera" etc. | 5b White, grey, yellow and brown sandstone, with a few shale beds. | 5c Clay shale and quartz pebble limonite, silicified mud etc.; Sandstone of subordinate extent. | |
| UPPER PALAEOZOIC (BASE ?)
5d Calcareous sandstone with spirifer, productus, fenestellida, frag. ants of univalves etc., grey indurated shale. | | | |

