NOTES ON BORING OPERATIONS IN SEARCH OF COAL IN TASMANIA, 1884. (*Continued.*)

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[*Read November* 16, 1885.]

In continuation of the short paper read last year on the works then in operation at Cascades, Hobart, and at Tarleton, I now lay before the Society the records of boring with the diamond drills, together with a few remarks on the results. I have, on several occasions, pointed out the extreme improbability of the discovery of coal in either locality, but there were many who held a different opinion, and it was well that the question should be set at rest

The work at the Cascades was much impeded by the "jointy" character of the rock, which from the surface downwards showed unmistakeable signs of disturbance, such as might be expected from the presence of great faults crossing the valley on both sides and from the proximity of eruptive rocks. Circumstances prevented me from visiting the place from the beginning of March until after the works had been stopped, but I was informed from time to time of what was being done. In the month of August I was informed that the drill had struck "granite," and a glance at a core, sent to me by order of the Minister of Lands, enabled me to report that the trap rock had been reached, and that further exploration was useless. After the stoppage of the work I ascertained, by inquiry and by examination of the cores which had been preserved, that the igneous rock, which is the common diabase or "greenstone" of the neighbourhood, had been first struck by the drill between 509 and 519ft. from the surface, and had therefore been penetrated to a depth of about 100ft. before its true character was recognised. That it is here an intrusive rock, and therefore newer than the Upper Palæozoic beds, which are in contact with and partly overlie it, I have no doubt at all; the superficial evidence of local disturbance, the joints and fissures filled in with calcite and pyrites, the alteration noticeable in various bands, which differs according to their lithological character, and is in exact conformity with that which is always associated with the presence of intrusive rocks, point unmistakeably to this conclusion. I regret to find that on this point I am compelled to disagree entirely with my friend, Mr. Johnston, who, in a paper recently read before the Society, cites this as an instance of the priority of the igneous rock to the sedimentary beds with which it is associated.

The records of the boring at Tarleton call for little remark. The coal measures proper were found to continue to a depth of a little over 200ft. below the seam of coal, being succeeded by Upper Palæozoic marine beds apparently conformable to them and reaching to a further depth of 105ft., where, at 370ft. 6in. from the surface, the Silurian limestone easily recognisable by anyone acquainted with the district was struck, and the question of the existence of another seam of coal definitely settled there at least. It may be well to note the circumstance of the absence from the records of any mention of the marine beds usually found overlying the Mersey coal seam. These beds, as was first pointed out by Mr. Hainsworth, are never found nearer the coal than 50ft., and, therefore, would not be met with in a section which begins only 41ft. 9in. above the seam.

In my former notes on this subject I gave a brief sketch of the possible relations of the coal measures of Tasmania to those of New South Wales, in which I ought, perhaps, to have pointed out that the presence of *Gangamopteris* in the Mersey beds suggests a comparison with the Bacchus Marsh sandstone, and that the *Thinnfeldia* and *Equisetaceæ* of the upper coal measures of Tasmania indicate some relationship between them and the Wianamatta beds of New South Wales, or even the upper coal measures of Victoria and Queensland. Until, however, the order of succession and the continuity of our own rock system has been more thoroughly investigated and determined, and the fossil *fauna* and *flora* of its various formations more fully identified and described, there will be no sufficient basis for any satisfactory geological comparison; and this defect will not be adequately remedied until the Geological Survey of Tasmania is again taken in hand.

ABSTRACT OF RECORDS OF BORING IN UPPER PALÆOZOIC BEDS AT CASCADES, HOBART, 1884.

DESCRIPTION OF ROCK.	DEPTH IN FEET.
Surface soil, about 2ft., and limestone, full of joints, with conglomerate band 3ft. thick at 13ft. 6in....	32·11
Limestone and mudstone, changing from hard and brittle to soft, latterly very hard	125
Limestone and mudstone, at 151ft. very changeable from hard to soft for 5ft.; very hard bar of limestone 22in. thick at 161ft. 6in.	180·7
Very changeable, soft soapy band 1ft. thick at 200ft.	202
A few fossils, very changeable; last 10ft. full of veins of pyrites	255·3
Full of pyrites; struck water at 265ft.; country latterly more regular	298·10
Country changeable, much pyrites, fossils rare; water, 300gals. per hour, and getting stronger...	336·6
Changeable; much jointy rock, bad to bore; hard limestone at 356ft.	358
Hard and brittle; fossils at about 370ft.; finished in soft limestone	384
Hard and regular, changing to brittle, and then soft band full of pyrites...	428
Hard and brittle; 3ft. of fossils at 448ft.	458·9
Very hard and brittle; no fossils last 15ft.	488
Very hard; at 496ft. went through 5ft. 6in. of marble; left off in dark grey stone without fossils showing; water about 700gals. per hour ...	519
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Total depth	612·1

* [NOTE.—The remaining portion of the records, which were evidently written under a misconception as to the nature of the rock passed through, is omitted. The "dark grey stone without fossils," which is subsequently described as "limestone," is a fine grained crystalline diabase passing in the ordinary way into a coarser variety noted as "very coarse rock like granite." This rock must have been struck between 509 and 519 feet from the surface.]

ABSTRACT OF RECORDS OF BORING IN COAL MEASURES AT TARLETON, MERSEY, 1884

	Strata.	Ft.	In.	Depth in Ft.	In.
	Clay...	15	0		
				15	0
	Sandstone	33	9		
				48	9
	Conglomerate and Pyrites ...	3	0		
	Shale	5	0		
	Coal...	1	6	58	3
	Sandstone	36	6		
				94	9
	Conglomerate	2	0		
	Dark Sandstone	6	6		
	Shale	2	0		
	Sandstone	2	6		
	Shale	5	0	112	9
	Marl	32	3		
				145	0
	Sandstone	2	0		
	Pebbly Marl	8	6		
				155	6
	Pebbly Marl, with thin veins of Carbonaceous Matter at 175 and 182 feet	32	6		
				188	0
	Pebbly Marl, with Sandstone, showing Carbonaceous Matter at 265 feet	77	3		
				265	3
	Pebbly Sandstone, with Marine Shells	20	9	286	0
	Conglomerate with Shells ...	36	0		
				322	0
	Conglomerate Sandstone, with Shells changeable	30	9		
				352	9
	Conglomerate	17	9		
				370	6
	Silurian Limestone	30	6		
	Total Depth	...	...	401	0