7th October, 1924

Dear Sir,

At the request of the Honourable the Minister for Mines I have pleasure in presenting the following account of the more important outcrops of limestone in the Northern quarter of the island.

Limestone of Ordovician age, only are discussed as they are the most important. They occupy regional synclinoria developed in older formations and appear in them again and again at intervals of many miles, the axes of the anticlines embracing the larger intervals and developing the inferior metamorphosed beds consisting of quartzites, schists etc. which form the prominent mountain features of the country.

Many of the synclines and in fact the anticlines are completely covered with younger formations. It is only where the older formations have been denuded of these younger rocks that the limestones appear at surface. The several outcrops occur at the points of greatest erosion.

Chudleigh - Limestones are exposed in large areas in the neighbourhood of Chudleigh, notably at Mole Creek where there are extensive caves traversed by the creek over a mile. Great chambers also occur at a place called the New Caves which have at a former period been produced by ancient watercourses. The following analysis is representative of the average grade of the material:-

Carbonate of Lime	91.5 per cent
Carbonate of Magnesia	1.2
Carbonate of Iron	1.5
Alumina and silica	5.0
Organic matter	0.8

These beds are easily accessible from the railway.

Circular Marshes - Outcrops in this district are not prominent but the presence of the rock underneath the cover of superficial drift is indicated by numerous circular cavities caused by underground drainage into the subterranean channels of the limestone.

Quamby Bluff - Many years ago an open cut was made in a large outcrop of limestone at the base of Quamby Bluff. The limestone was burned in kilns, and the lime product of the operation found a ready market at Deloraine.

Quamby Brook - On Robinson's property in the valley of this stream a quarry was opened on a large body of limestone of excellent quality by one James Scott of Deloraine. The rock was used in the manufacture of lime for cement and manural purposes.

Ilfracombe, West Tamar - At Ilfracombe in the vicinity of Beaconsfield the Ordovician limestones like those of Chudleigh are pierced by extensive channels and caves. They were worked years ago to a very considerable extent.

In the vicinity outcrops occur at Beaconsfield and Blue Tier.

Flowery Gully - It has been known for many years that enormous quantities of high-grade limestone exist in the Flowery Gully district. The limestone has been used for flux in connection with the iron smelting operations and also burnt for quicklime at several localities. At present two kilns are in operation and are producing considerable quantities of quicklime.

The following analysis show the composition of the rock:-

	Carbonate of lime	Magnesia Carbonate	Alumina Ferric Oxide	Silica	Moisture
Lutwyche's Quarry	95.40	1.22	1.79	1.44	0.13
Caves	95.65	0.83	1.70	1.61	0.18
Quigley's Quarry	94.75	1.17	2.81	0.98	0.20
Main Outcrop	95.45		1.65	1.85	1.05
Outcrop at Face	94.00		3.15	0.98	1.87
Outcrop over Caves	93.72		0.55	5.53	0.20

Gunns Plains - In this area and on both sides of Leven River limestone of Ordovician age occurs in very extensive deposits. It occupies the slopes of the hills on the west side of Leven River and has a similar position on the east side of the Plains. A small lime-burining industry was established here some years ago and the lime which was of excellent quality, found a ready market at Ulverstone. Extensive caves are found on the formation. The rock is used for metalling the roads in this district.

Railton - At Railton are the very important works of the Tasmanian Cement Company, Blenkhorn's large quarries and lime works and the smaller quarries on Langmaid's Dally and Ramsdale's lands. Railton station and the country a mile east and north are underlain by limestone, which has been bored to a depth of 550 feet. The greater part of the area is occupied by Quaternay gravels, but the limestone in the flat country is only a few feet below the surface.

Chemical Composition:

Recently an investigation of the limestone deposit at Railton was made by W.L.D. Reid, Government Chemist, and the writer to ascertain whether this material, with the associated clays, was suitable or not for the manufacture of Portland Cement. The results of the analyses of representative samples obtained for that purpose are give hereunder:-

Sample Number	Silica %	Ferric Oxide %	Alumina %	Calcium Carbonate %	Magnesia %	Silica Ration Alumina & Ferric Oxide
No. 1 (No. 1 Quarry)	7.40	1.72	4.20	85.39	1.45	1.25
No. 2 (No. 1 Quarry)	8.80	2.00	4.12	82.21	2.39	1.44
No. 3 (No. 1 Quarry)	7.00	1.50	3.10	87.91	1.16	1.52
No. 4 (No. 2 Quarry)	3.00	0.64	1.32	94.61	1.59	1.53
No. 5 (No. 2 Quarry)	3.00	0.57	1.63	93.44	1.45	1.36
No. 6 (No. 2 Quarry)	3.68	1.79	2.17	90.41	1.81	0.93
No. 7 (No. 2 Quarry)	3.00	0.43	1.17	94.61	1.30	1.87
No. 8 (No. 2 Quarry)	3.68	0.86	1.90	92.64	1.45	1.33
No. 9 (No. 2 Quarry)	3.52	1.07	1.73	93.06	1.23	1.25
Average of sample from No. 1 Quarry	7.73	1.74	3.81	85.17	1.66	1.39
Average of Samples from No. 2 Quarry	3.30	0.89	1.65	93.13	1.47	1.30
Sample of clay from No. 2 Quarry	65.48	8.87	16.63	0.93	2.25	2.57
No. 10 (between the Quarries).	25.72	2.37	4.56	60.87	1.81	

No. 1 Quarry deposit, purchased lately by the Tasmanian Cement Company, is near the western edge of the formation, and No. 2, owned by James Blenkhorn, is near the eastern edge. The analyses show a marked difference in composition between the material from these quarries, but both sets of samples reveal material of high grade. The large deposits of associated clay represent the insoluble residue from the dissolution of the lime constituent of the rock. This clay contains silica and alumina in the desired proportions for its utilisation in the manufacture of Portland Cement. Sample No. 10 was taken from a shaft sunk on the western side of Railton-Latrobe Road between the quarries. This represents a low-grade variety of limestone (similar in appearance to the high grade) which occurs in comparatively thin bands. From observation it appears that the lower beds represented in the two quarries are the richer.

Melrose - The deposits at Melrose are owned by the Broken Hill Proprietary Co. Over 50,000 tons per annum of limestone is quarried and shipped to Newcastle for use as a basic flux in the smelting of iron ore.

Onna - Two miles farther along the railway from Melrose the same formation outcrops boldly in hills on both sides of the line. The material here is of the same excellent quality, and the occurrence affords every facility for economical mining and transportation.

Dial Range - The formation crops up again in the valley of Leven River near Dial Range. It is not easy of access.

Burnie - A little beyond Burnie the rock lies below a great thickness of basalt and Tertiary sediments. Here it cannot be mined economically.

These remarks relate generally to outcrops only, but many other occurrences under cover of later rocks are known to the Geological Survey. Those only of economic importance have been mentioned.

Yours faithfully,

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GOVERNMENT GEOLOGIST.

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