

JR 1954/121-125

On the 24th May last, Mr. A.R. Blenkhorn of Railton, in a communication to this Department mentioned a deposit of limestone from which he had obtained samples showing 96 - 98% CaCO_3 , and in which he was hoping to interest the Associated Pulp and Paper Mills Ltd. This Company had suggested that a geological survey and test boring campaign should be carried out. When I visited Mr. Blenkhorn this month, for the purpose of carrying out the former investigation, I found that some hand bores had been put down round the limestone outcrops with very disappointing results. Consequently, another deposit, known as Dally's was examined in greater detail.

GENERAL GEOLOGY:

The limestone belongs to the Gordon River beds of the Ordovician and is underlain conformably by the Caroline Creek Shales and sandstones and the West Coast Range Conglomerates of the same age. These rocks are here folded into a large syncline, whose axis courses at 320° just west of the Cement Company's quarry. Permian sediments fringe the limestone to the west and overlie it to the North. The limestone is intruded at various points by Jurassic dolerite and this rock has protected it from erosion at almost every outcrop. During the Tertiary, basalt flows covered more of the limestone and finally in Pleistocene and Recent times, debris from the West Coast Range Conglomerates and alluvium concealed much that was left of surface limestone.

Because of all this, the limestone, although underlying a large area of land, is sparse in outcrop and everywhere the rock shows at the surface, it has at one time or another been utilised, either, as at present for cement manufacture, agricultural and burnt lime, or as in the past, as many ruined kilns show, for burning.

NORTHERN OUTCROP:

This is the outcrop, originally tested by Mr. Blenkhorn and found to be of high grade, burning to a very white powder. Although it has been burnt (though on a very small scale) in the past, it does not seem to have a name. The limestone outcrops on the south east bank of a small gully and is located about two miles from Dawson's Siding (a small station on the Western Railway Line between Railton and Latrobe). A car road may be followed for about a mile and then a rough cart track to within a few chains of the outcrop. Small outcrops of the limestone may be seen over a distance of about fifty feet, but boring quite close round them showed no solid rock down to ten feet. These outcrops are the tops of steep-sided peaks and any attempt to obtain large quantities of limestone would mean the removal of an enormous amount of overburden. Less than a chain away on the opposite side of the creek is a small dolerite intrusion.

It is a pity that the quantities of stone available here are so limited, as the grade is very good. A chip sample taken across the main outcrop, on which a small cut has been put in showed :-

CaO	53%
CaCO ₃ (Calc.)	94.7%
MgO	1.3%
MgCO ₃ (Calc.)	2.3%
Insol	1.9%
Fe ₂ O ₃	0.3%
Al ₂ O ₃	0.1%
Ignition Loss	43.1%

About 25 chains east of this outcrop is another small one again protected from erosion by a dolerite intrusion. A small quantity of stone has been obtained from here and the remains of an old kiln shows that it was burnt on the spot. However, quarry facilities would be very poor here.

DALLY'S QUARRY.

As the previously mentioned deposit proved too small to consider, it was decided to investigate the old quarry known as "Dally's". This has been worked intermittently for many years, the last person to do so being Mr. Blenkhorn who opened a large quarry on the southern face of a small ridge and burnt the limestone locally.

This deposit may be reached by following a road from the Dulverton Railway Station first to the west and then to the north for two and a half miles. The last half mile beyond Caroline Creek can only be traversed by heavy trucks. In this area, two series of limestone outcrops are separated by a dolerite intrusion. The more northerly of these has been opened up by means of quarries on the south side of a small ridge and a smaller cut on the northern side. A few hundred feet further up the ridge is the fringe of the Permian sediments which overlie the limestone and Caroline Creek sediments to the west.

This deposit may now be examined under the headings of quality, quantity, overburden, ease of quarrying and accessibility.

QUARRYING METHODS.

The occurrence of the limestone in the form of a small ridge makes the approach to quarrying rather simple and no subsurface work should be necessary on this deposit for a long time.

In the past limestone has been largely won from a south facing quarry. Now the direction of hill slope is about the same as the strike of the limestone (320°) and as the planes of cleavage are so accentuated, the breaking of the stone can be facilitated by making the face of the quarry parallel to the cleavage, that is, parallel to the hill slope. Mr. Blenkhorn had commenced opening a face in this direction in the southern quarry.

Although the hill-slope is a little steeper on the southern side, it is recommended that if a large quarry is to be opened, it should be from the northern slope. For better working conditions it is always preferable to have a north facing quarry so that the sun can shine on the face. In winter, the sun would never reach a south-facing wall.

Thus the ideal approach would be to open a

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face a little to the east of the northern cut and gradually turn it until it faced north-east. A long face (240 feet) could then be worked between the two quarries and parallel to the strike.

QUANTITY

Having in mind this face of 240 feet, and supposing a height of sixty feet, as at the southern quarry, then for every yard in depth about 3000 tons of rock should be obtainable, allowing about 10% loss for cracks and overburden. There is no reason why a width of several hundred feet should not be quarried before it would be necessary to go further down the hill.

QUALITY

The typical dark blue Gordon River limestone here shows much greater shearing than normal. So much so, that the rock is almost schistose and the cleavage at 320° and nearly vertical entirely masks the bedding.

It is assumed that, as elsewhere, these two directions are almost parallel. Calcite is common both in bunches and rather regular veins and this weathers slower than the limestone and sticks out, giving a false impression of bedding planes.

A continuous sample, divided into 5 individual samples, was taken for seventy five feet horizontally across the main quarry face and another for twenty feet across the north quarry face. The results of analyses show an extraordinary similarity in all the samples; so much so that were it not for the sample taken from the northern face, it might be thought that they were all taken from the one bed, that is that the bedding is at right angles to the cleavage. The quality of the rock, although not spectacular is universally good, averaging 92% CaCO_3 and 1% MgCO_3 , and no sample being more than 0.4% from the mean. Fe_2O_3 (0.5%) and Al_2O_3 (0.2%) are also uniformly low and acid insoluble averages 5.6%. Details of the six samples are given below and the positions of each are shown on the attached plan.

unreliable
cracks.

Sample No.	CaO	CaCO (Calc)	MgO	MgCO ₃ (Calc)	Insol	Fe ₂ O ₃	Al ₂ O ₃	Ignit Loss
1	51.2	91.6	0.5	1	6.3	0.5	0.2	41.1
2	51.6	92.1	0.5	1	5.5	0.4	0.3	41.6
3	51.7	92.3	0.5	1	5.6	0.5	0.1	41.4
4	51.2	91.6	0.6	1.1	6.1	0.5	0.3	41.3
5	51.6	92.1	0.6	1.1	5.5	0.5	0.3	41.4
6	51.2	91.6	0.7	1.3	5.5	0.6	0.2	41.4

OVERBURDEN

At the peak of the south quarry there is practically no overburden and if this quarry is extended to meet the northern one, there should be little soil on top of the rock. As quarrying extends up (or down) the ridge however, more dirt may be expected. The various openings made in the limestone in the Railton District have shown that the rock has been severely eroded and the commonest form of it is a series of steep sided peaks having much alluvial wash and clay (both alluvial and residual) packed between them.

ACCESSIBILITY

This deposit lies within three miles of an existing station on a main railway line. A good road extends most of the way and little work need have to

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be done to put the remainder in order. Timber is now being carted from within a few chains of the deposit.

CONCLUSION.

Although there is nothing new about this deposit, a closer study of it has revealed that a good even grade limestone may be easily quarried, although if large tonnages are obtained the problem of overburden must be considered. At the same time it must be pointed out that this is only a superficial examination and in order to obtain definite information as to grade, quantities and overburden, a drilling campaign would have to be undertaken.

(Sgd.) Terence D. Hughes

GEOLOGIST

Department of Mines,
HOBART.

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