THE FLOWERY GULLY LIMESTONE

This limestone occurs near the head of Johnson's Creek in the Flowery Gully district. It outcrops boldly on both sides of the Flowery Gully to Winkleigh Road on the ascent of Adams Hill. The northern end of the belt is practically the recent alluvium along Johnson's Creek, although limestone outcrops at a few places in the creek bed. As seen above the limestone does not appear to the north of the alluvium and it is undoubtedly cut offby a fault. At the southern end of limestone passes below the Permo-Carboniferous strata and it must have an extension in the direction of Winkleigh, but just how far this occurs could only be proved by exploratory work such as boring.

The western boundary of the limestone is generally concealed by Permo-Carboniferous conglomerates, but at the southern and ferruginous sandstones are visible underlying it. At its eastern boundary the limestone underlies a thin series of slates and sandstones, which further east, give place to a wide belt of slates. The whole of the series of limestone and enclosing strata have a strike of north-west or north-north-west and a dip to the north-east at angles of 40° to 50°.

QUANTITY: The outcrop of the limestone at Flowery Gully is 110 chains long and with a maximum width of 20 chains. The width at the outcrop is somewhat less in places due to a covering of Permo-Carboniferous basalt conglomerates, the minimum being 12 chains. An average width of 16 chains could be taken for working purposes without involving the removal of any large thickness of overburden. (It must be remembered that it is the width at the outcrop that is 20 chains and the actual thickness of the bed at right angles to the dip would be approximately 14 chains.) The total area over which the limestone outcrops is, therefore, about 160 acres.

The altitude of the limestone at its north end is 290 feet above sea level. The surface rises along the road to Winkleigh to an altitude of 690 feet but the limestone to the east and west of the road occurs at greater heights.

The greatest height attained by the limestone is 710 feet. It is difficult to estimate the average depth of limestone available down to the depth of 290 feet in order to determine the quantity of rock which could be obtained by quarrying methods. It is safe to assume, however, that 200 feet would be a conservative estimate.

Using the above figures the quantity of limestone to be obtained by quarrying methods above the 290 foot level deducting 33 per cent for cavities, loss in working etc. would be 70,000,000 tons. In addition every 100 feet in depth over the area below the 290 foot level would add a further reserve of 43,000,000 tons.

Of the total area, 80 acres occur on the property of Mr. F. N. Beams and 30,000,000 tons would be available under the above conditions.

About 50 acres occur on the property of Mr. C. McKercher, being situated on the 100 acre block charted in the name of J. Ellis. The amount to be obtained by quarrying on this property is approximately 10,000,000 tons.

The remainder of the limestone occurs on the properties of Mr. Quigley, E. L. Douglas, A. E. Cowie etc., but the quantities are small compared with those on the above two properties.

QUALITY: The limestone is a dense bluish-grey type with veins and bunches of white crystalline calcite which, however, form only a small part of the rock. Except for the veins of calcite, the rock appears to be of a very uniform nature and composition.

The following analyses taken from the report by the late W. H. Twelvetrees (Mineral Resources No. 2 1917) show the composition of it.

	Total	Calcium Carbonate	Magnesium Carbonate	Oxides Of Iron And Aluminium	Silica of Insoluble	Moisture
Lutwyche's Quarry	99.98	95.40	1.22	1.79	1.44	0.13
Caves	99.97	95.65	0.83	1.70	1.61	0.18
Quigley's Quarry	99.91	94.75	1.17	2.81	0.98	0.20
Main Outcrop	100.00	95.45		1.65	1.85	1.05
Outcrop at Face	100.00	94.00		3.15	0.98	1.87
Outcrop over Caves	100.00	93.72		0.55	5.53	0.20

These analyses prove that the limestone contains 93 to 96 per cent of calcium carbonate and is therefore a very high grade one. As far as appearances go the rock should maintain this composition over the greater part of its outcrop. At several localities, however, it contains impurities in the form of veins of white quartz and black chert. The white quartz veins were observed at one place only, viz. along the road cutting near the foot of Adams Hill. They are not numerous and would only have a small effect on the quality of the limestone in that vicinity. A few chert veins also occur at the above locality.

At the south end of the limestone outcrop the chert veins are very numerous. They are exposed in road cuttings near the top of the hill at the head of Flowery Gully, and pieces are strewn over the surface in that vicinity. In a small quarry for road metal south of the road junction on the hill between Flowery Gully and Winkleigh, the chert veins occur to the almost total exclusion of limestone. Pieces of limestone on the dump at the north end of the tunnel also contain veins of chert. Where the veins are plentiful, as indicated above, large quantities of the limestone would be useless owing to its high silica content. The western side of the limestone appears to be free from the outcrop and would be of the usual high wuality, but care would have to be exercised that quarries were not opened up in the portions containing the chert veins.

WORKING FACILITIES: The conditions over the whole of the area are suitable for working the limestone by quarrying methods.

The best point to commence would be at the northern end where the altitude of the surface is lowest, thus making available the greatest depth of rock. This commencement point would be on the property of Mr. F. N. Beams on which the greatest amount of limestone is available.

Quarrying operations could also be commenced on Mr. V. McKercher's property (100 acre block) from the road level, but a smaller "face" would be obtained.