

Analyses of burnt limestone and of marly clay by Mr. Sidney Fry are as follows :—

	Burnt Limestone.	Burnt Marly Clay.
Silica	6.00	57.72
Alumina and iron oxides	4.10	26.87
Lime	89.90	5.09
Magnesia	4.68
Alkalies	5.64
	100.00	100.00

The suitability of the Cape Foulwind limestone and clay for the manufacture of a high-grade Portland cement is demonstrated by these analyses.

TRANSPORT.

There will be no difficulty and little expense in connecting cement-works with the Westport Harbour Board's railway. Thus coal can be conveniently delivered to the works direct from the mines and the manufactured cement cheaply transported to Westport, whence it may be easily distributed to any part of New Zealand. For an export trade to Australia, the Westport district is probably better situated than any other port of New Zealand.

GENERAL OBSERVATIONS.

If cement-works producing 30,000 tons per annum are established the raw materials in sight would suffice for a period of 150 or 160 years. Long before the end of that time the establishment of cement-works to the southward, between Addison's and Charleston, would become economically possible and advisable. The demand for cement in New Zealand cannot be fully supplied by the present manufacturing companies,* and the consumption is rapidly increasing, so that the establishment of the cement industry in a new locality will benefit not only that district, but the Dominion generally. The utilization of some of the friable coal of the Westport district in the manufacture of cement is an additional national advantage. At Cape Foulwind there are few difficulties to be overcome, and these are of a minor character, whilst the main factors are favourable. With efficient management there is no reason why Portland cement of the very best quality should not be made at quite as low a cost as in any other part of New Zealand.

3. POERUA GOLD-MINE, GREYMOUTH DISTRICT.

By P. G. MORGAN, Director.

The Poerua Gold-mine is situated on the lower slopes of a spur of Mount Alexander, near Poerua Railway-station, which is thirty-four miles from Greymouth. The mineral-outcrops that have been prospected consist of six ore-lenses striking nearly east and west, and dipping at angles near 30° to the south. These ore-lenses are known as South lode, Peter's lode, Blind Gully lode, Flaherty's lode, Homestead lode, and Farmer's lode. The first and the last of these are outside the area held by the Poerua Gold-mining Company under lease from the Crown. With the exception of Farmer's lode the ore-lenses cross obliquely the south-west to north-east line, marked on a map published some time ago as "Reef-line." There is, however, no reef or lode striking along this line, and therefore its title as given on the map is a misnomer.

Besides being alike in strike and dip, the various ore-lenses are remarkably similar in other respects. All apparently are situated along fault-planes where the country has been partly or wholly replaced by a mixture of quartz, pyrrhotite, and chalcopyrite. This material carries from a few grains to several ounces of gold per ton, with considerably more silver than is usual in the auriferous-quartz lodes of the South Island. Assays made in the Dominion Laboratory are as follows :—

	Gold per Ton. Oz. dw't. gr.	Silver per Ton. Oz. dw't. gr.	Value per Ton. £ s. d.
1 .. .	0 15 2	0 9 10	3 1 3
2 .. .	1 8 23	1 2 16	5 18 1
3 .. .	0 5 1	0 3 3	1 0 6
4 .. .	0 16 8	0 11 8	3 6 6

No. 1 contains 0.70 per cent. of copper; No. 2, 0.52 per cent.; No. 3, 0.47 per cent.; and No. 4, 0.20 per cent. No platinum was detected in any of the samples.

No. 1, from winze below No. 2 level, Peter's lode; No. 2, from Blind Gully outcrop; No. 3, from Homestead lode; No. 4, from outcrop in Peter's Gully.

It has to be noted that the samples represent only the harder quartzose ore, and are, in fact, merely "grab samples."

The country enclosing the lodes or ore-lenses is a soft mica-schist, striking north-east and dipping at high angles to the south-east. At some distance from the lenses the country is in places harder, containing much quartz, and may therefore be called quartz-schist.

The Poerua lodes on the whole bear a considerable resemblance to some of the auriferous-quartz lodes of Central Otago, but the presence of pyrrhotite is a distinguishing feature.

A good deal of exploratory work has been done on the various outcrops. At Peter's lode two levels, Nos. 1 and 2, have been driven on the course of the lode, the latter for a distance of 500 ft. to the east, and over 200 ft. to the west. The distance between the levels is 80 ft. on

* This was written in December, 1912.