

and analysed by the Government Geological Survey. Taking the average iron value at about 50 per cent. (which has practically been proven), it is decidedly higher in grade than the majority of American and European deposits at present being smelted.

I would strongly advise diverting the present expenditure—that is, that not employed in removing the overburden—into driving a few low-level adits to prove the deposit at depth, and more so to open up that portion of the ore-body which is not contaminated by surface debris (enclosed quartzite, &c.), and thus show what I believe would be an even better general grade of ore than is at present exposed.

With the limited time at my disposal I saw that I could not do justice to the deposit by taking a few samples, and, being thoroughly satisfied that the previous favourable reports were not in the least exaggerated, I turned my attention to the other two necessities for the treatment of the ore.

Limestone.

There are very large deposits of subcrystalline bluish limestone practically within a stone-throw of the iron-ore deposits, but these carry a considerable amount of insoluble micaceous gangue, as the following typical analysis will show:—

	Per Cent.
Lime	44.2
Carbon-dioxide	34.7
Micaceous gangue	17.8
Ferric oxide (Fe_2O_3)	1.4
Alumina (Al_2O_3)	0.8

The gangue would be decidedly prejudicial to the smelting, but the deposits are large enough to allow of selection and use of the better portions only.

About a mile to the west of the western end of the Washbourn Block, on a portion of the property known as Riley's, are some immense detached blocks of a practically pure calcite. A typical sample taken from a number of blocks returned on analysis—

	Per Cent.
Lime	55.64
Carbon-dioxide	43.72
Silica	0.25
Ferric oxide	0.24
Alumina	0.15

These boulders are particularly homogeneous, and I was assured on reliable authority that they were detached from a large deposit farther up the ridge. Their appearance certainly confirmed this, and lack of time only prevented my further investigations. I cannot speak too highly of this grade of limestone, and it would be considered absolute perfection for iron or any other smelting requiring a lime flux.

An adjacent deposit of amorphous limestone returned:—

	Per Cent.
Lime	37.00
Carbon-dioxide	29.07
Gangue	28.45
Ferric oxide	1.82
Alumina	0.43

This is distinct from the purer variety, and could easily be left separate in the quarrying.

Coal.

I visited the Oti Mataura coal-workings, up the Aorere River, and found the main drive extending about 120 ft. into the hill. The most typical section was exhibited about 75 ft. in from the mouth, and this I examined, sampled, and analysed, with the following result:—