

time. This stream is a branch of the Inangahua River, on which the alluvial diggings were first worked which led to the discovery of the reefs in this vicinity. The creek has a short course of about three miles, and at its upper third cuts through a bed of fine coal, not less than 20 feet thick, and perhaps more. The seam dips to south-east at 10° , and rests on a floor of brown sandy shales and tough sandstone, which again rest unconformably on the green and grey slaty sandstones which form the matrix of the quartz reefs. The coal seam is covered with thick beds of grit and sharp quartz sandstone, like that on Mount Rochfort. This coal is now excavated for supplying the steam quartz mills. Its quality is excellent, as shown by Mr. Skey's analysis of two different specimens:—

Fixed carbon	...	...	...	...	...	(a) 54.52	(b) 54.94
Hydro-carbon	...	...	...	...	...	39.31	33.70
Water	...	...	...	...	...	4.98	10.38
Ash	...	...	...	...	...	1.19	.98
						100.00	100.00

(a.) Is a compact coal, with a bright lustre and splintery fractures, resembling some of the Mount Rochfort coal, but to which it is inferior in the smaller proportion of carbon, and not forming so coherent a coke.

(b.) Has more the fracture of a brown coal, and looks like jet.

The Murray Creek coal must be considered as intermediate in value between the pitch coal and the bituminous coal of the Brunner mine.

Mount Rochfort Plateau.

This is a basin-shaped area, having an extent of about fifteen square miles, and included between Mount Rochfort (3,270 feet altitude) on the south, Mount William (3,400 altitude) on the east, and Mount Frederic (3,000 feet altitude) on the north-west.

To the north-east it slopes gradually to a low saddle between the Orikaka and Mokihiui Rivers. It also slopes, but very abruptly, towards the west through the depression between Mount Rochfort and Mount Frederic, and also towards the south-west to Ngakawau.*

The arrangement of the coal formation is very irregular on this plateau, but, disregarding minor inequalities, it appears to be as follows:—A syncline, or rather a trough-like valley, the axis of which is inclined to the north, commences at the saddle between the heads of the south branch of the Waimangaroa and the streams flowing south to the Buller, and between Mount Rochfort and Mount William, and, passing to the east of Mount Frederic, reaches the coast above the Ngakawau. This trough appears to carry the heaviest seam of coal, but its dimensions and extent are not yet ascertained.

Lying to the west, and somewhat parallel to the above, the remains of a second synclinal exist, the eastern side of which is represented by a patch of the formation which dips south-west from Mount Frederic, and the western side by the strata towards the base of the seaward slope of Mount Rochfort, which dip to the eastward. The summit of Mount Rochfort itself, which is a barren mass of conglomerate without coal seams, may be looked on as the anticlinal ridge between these troughs; but north towards the Waimangaroa Gorge the coal formation has been denuded, and granite and slate appear at the surface, completely cutting off the extension of the coal seam across the plateau.

To the west of this outcrop of the underlying rock only a 16-inch seam of coal has yet been found. In using the above terms to describe the above arrangement of the strata, it must be understood that these troughs have arisen in a great measure from original inequalities of the surface on which the coal formation was deposited, probably as a great lacustrine drift, so that a coal seam found in one depression will not necessarily extend into an adjacent one, and this is shown by the manner in which the upper grit beds, which overlie the coal, thin out against the slate patch in the centre of the plateau.

The disturbances that have affected the formation since its deposit are so abrupt as to have more of the nature of faults than plications, a point of great importance in the practical working of the coal field. A most remarkable instance of this is offered by Mount William, on the top of which (of 3,400 feet altitude) the coal and accompanying strata, 200 feet thick, are found dipping at 15° to the north, while due west, at a distance of 60 chains, and 1,800 feet less elevation, the same strata again occur dipping 10° to the north, resting on vertical slates that strike east and west, which form also the intervening mountain slope.

The nearest seam of coal on the plateau to Westport, of sufficient thickness to be worked, is at an altitude of 1,800 feet, and twelve miles distant in a direct line, and is that which was discovered, in 1861, by Dr. Haast, at Coalbrookdale, one of the sources of the Waimangaroa. The coal appears on both sides of a shallow upland valley as a 10-foot seam that crops out in some of the perpendicular cliffs in a very conspicuous manner. The quantity of coal available for mining at this place was carefully ascertained by the late Mr. Burnett to be about 750,000 tons (Nelson Provincial Government *Gazette*, 1862, p. 77). He proposed a railway by which this coal might be taken to Westport, the dip, at 1,400 feet from the edge of the plateau, to be overcome by an incline with a stationary engine. The cost of this line, which was to be fourteen miles in length, together with other preliminary expenses, he estimated at £100,000. The proposed line was again surveyed and reported upon by Henry Wrigg, Esq., C.E., (Nelson *Gazette*, 1868, p. 159.) and his estimate for a locomotive line, without an incline, to reach Westport in nineteen and three-quarter miles, together with other works which he recommended, was £133,336. Such a large expenditure would be obviously quite out of proportion to the amount of coal that has been proved actually to exist at Coalbrookdale, and within reach of the proposed line; but it was anticipated that the coal would be found distributed more generally throughout the plateau, and especially towards the west, and that five different seams existed in some places, having a total thickness of 38 feet of coal.

I have not, however, been able to satisfy myself of the existence of more than one important seam in the different parts of the plateau; and, moreover, have ascertained that the coal at Coalbrookdale

* Ngakuwaho on the map; but according to the Maoris Whangakawau, or shortly, as above.