

still thinner and dirty. In Charming Creek valley Nos. 1 and 5 bores each show 20 ft. of coal, the top of the coal in No. 1 bore being 91 ft. and in No. 2 bore 75 ft. below the surface. No. 8 bore, lately drilled, has passed through 21 ft. 9 in. of coal. In No. 6 bore, however, the main seam is represented by 2½ ft. of coal only, pierced at a depth of 234 ft. In several other bores the main seam was not found, apparently owing to its completely thinning out.

In Coal Creek valley there are various outcrops of a seam varying in thickness from 5 ft. to 32 ft.* This lies immediately below the marine portion of the coal-measures, and therefore may be in a different horizon from either the upper or the lower seam. Since, however, no underlying seam, except a 7½ ft. seam reported to have been found by boring to lie 18 ft. below the 32 ft. outcrop in Coal Creek, is known to exist, it is possible that the Coal Creek seam ("Hut seam") corresponds to the main seam of the State mine, notwithstanding the difference in the overlying beds. Again, it may represent a local thickening of the "upper seam."

Near Seddonville and along the course of Chasm Creek the floor of the main seam is usually shale, which passes downwards into sandstone and grit. In places only a few feet of these rocks intervenes between the coal and the basement granite or gneiss. The roof is generally grit or sandstone. The floor of the seam near Coal Creek consists of a little shale, followed downwards by grit. The roof is grit or sandstone, but the outcrops in Coal Creek itself show that the marine mudstone almost immediately follows.

The coal of the main seam is in general of good quality, though, as already noted, much of it is friable, and therefore unsaleable at a profit under present economic conditions. Dirt or stone bands appear in some places, but seldom to such an extent as to render the seam unworkable. There are also some irregular inclusions of sandstone and shale ("floaters").

The following analyses show the general composition and quality of the coal:—

	(1.)	(2.)	(3.)
	Per Cent.	Per Cent.	Per Cent.
Fixed carbon	58.97	51.12	52.27
Hydrocarbons	32.42	42.24	41.20
Water	7.30	4.36	4.65
Ash	1.31	2.28	1.88
	100.00	100.00	100.00
Total sulphur	n.d.	4.94	4.99
Calories per gram, by calorimeter .. .. .	..	7,402	7,354
British thermal units per pound .. .. .	..	13,324	13,237
Theoretical evaporative power, in pounds of water at 212° Fahr. .. .. .	..	13.81	13.73
Practical evaporative power, assuming 60 per cent. efficiency .. .. .	..	8.29	8.24

(1.) Average of seven analyses (probably by Skey) of outcrops near Coal Creek. Analyses given by Sir James Hector in Rep. G.S. during 1886-87 (Vol. 18), p. 159.

(2.) From State coal-mine, Seddonville: solid working-face [near] Chasm Creek Bridge. Seam, 8 ft. thick.

(3.) From State coal-mine, Seddonville: solid working-face [near] Grant's Face. Seam, 20 ft. thick.

Analyses (2) and (3) (by Messrs. W. Donovan and L. Andrew) are quoted from Dr. J. S. MacLaurin's "Report on Analyses of New Zealand Coals," 1907.

The upper seam, where present, occurs in a horizon 37 ft. to 50 ft. above the lower seam, and varies in thickness from a few inches to 3 ft. In a shaft sunk on the flat-topped ridge above the main tunnel of the State coal-mine it has its greatest-known thickness of 3 ft. In Charming Creek there are numerous outcrops from 10 in. to 2 ft. thick. Near Watson's Sawmill what may be the upper seam is 14 in. in thickness.

The upper seam has a grit or sandstone roof. The floor may exhibit a few inches of shale, or the coal may rest practically immediately upon grit or sandstone.

The hard coal, of which the upper seam nearly everywhere consists, is in many places more or less stony. The following analysis of a sample taken from a cut in the seam where it crosses Charming Creek a short distance below No. 1 bore shows that it is here of good quality, except that it contains a somewhat high percentage of sulphur, much of which is probably combined with the carbonaceous constituents:—

	Per Cent.
Fixed carbon	49.22
Volatile hydrocarbons	46.59
Water	1.74
Ash	2.45
	100.00
Total sulphur	5.73

* At this outcrop was the entrance to the mine worked by the now defunct Mokihinui Company and later on by a co-operative party of miners, but, owing to mining operations and the effects of a fire caused by spontaneous combustion, the outcrop has disappeared.