The coal forms a dense hard coke. The ash is grey in colour.

By comparison with similar coals, the evaporative power should be, approximately, 14 lb. per

Conditions of Deposition.—Deposition of the coal-measure strata began under fluviatile conditions. These were maintained until the coal-seams had been formed. Then, owing to gradual sinking of the land, marine conditions supervened. As might be expected, the marine sediments were in general much finer than the fluviatile sediments, so that they consist almost wholly of mudstone, with a little fine sandstone in the lowest horizon, and in places some limestone.

It is evident that deposition of the Mokihinui coal-measures began in a basin-like area, probably entirely bounded by higher ground to the east, north, and west. To the south the land was lower, but even here there was a low ridge, and there were also hills of granite and gneiss within the basin. As deposition continued, however, the inequalities of the surface were removed, and after the sea had invaded the area the transgression of the upper beds over the lower became very pronounced. It thus follows that the marine beds are found over a very much larger area than the lower coal-bearing strata. Again, for reasons that cannot be positively stated, coal-seams are not continuous through the fluviatile beds, though the explanation is doubtless connected with the mode of formation, and could be deduced from this if it were certainly known.

There are, however, some blanks in the coal easily explained as caused by the hills within the basin mentioned above. These rose above the area in which coal was being deposited. It has been the custom to speak of these hills as "granite intrusions," a term that gives an entirely wrong impression, for the granite or gneiss was in existence long before the coal was deposited.

Mode of Formation.—Reference to this matter will aid in a comprehension of the reason why the coal-seams do not extend through the whole area containing beds of coal-measure age. In the Mokihinui section of the Buller Coalfield, as in many other parts of New Zealand, the available evidence favours the "drift" theory of coal-formation, or more probably some modification of it. The time-honoured hypothesis of a buried forest is entirely inapplicable to this, or for that matter to any New Zealand coalfield known to the writer. The "peat-bog" theory may possibly be made to apply. It seems best to suppose that the coal has in the main been formed from quick-growing aquatic plants that had no fixed roots, and were therefore capable of transportation by water. These, it may be supposed, accumulated in quiet, shallow ponds and lakes.

Conditions affecting Development of Coal-seams. — In most parts of the Seddonville-Charming Creek coal-area the coal-measures have a dip not exceeding 18°, or, say, 1 in 3. As a rule, the dip is considerably less, and may average 10°. The beds are somewhat irregularly crumpled, so that the directions of strike and dip vary much. It has already been explained (under "Physiography") that from the Ngakawau River to Charming Creek the beds dip north, from Charming Creek to near Chasm Creek the dip is on the whole southerly, and from the neighbourhood of Chasm Creek the dip is again

to the north.

The greater part of the coal is level-free—that is, can be drained by adits, and therefore pumping machinery is not required except for a limited portion of the field. Owing to numerous faults and the deep stream valleys, the coal is cut into a number of blocks, so that development is expensive.

Spontaneous Combustion.—The liability of the Seddonville coal to spontaneous combustion places considerable restrictions on the methods of working. Hitherto no system of panel working has been adopted, and therefore considerable pillars must be left in order to prevent crushing and extensive falls of the roof. Were this not done, the resulting masses of crushed and broken coal would soon heat, and finally reach the ignition-point. The coal in the old Cardiff Mine has been on fire since January, 1900, and is still burning strongly. At Coal Creek the old Mokihinui Mine workings are also on fire. The fire, however, now appears to be dying out. The area affected is not more than 6 or 7 acres.

On the south side of Chasm Creek, west of Dove's Drive, the coal over an area of several acres has been burnt, or, rather, coked. It was presumably set on fire by lightning or other natural agency. The

resulting coke is of a very impure character.

Areas worked.—The areas hitherto worked are mainly on the north-east side of Chasm Creek, west and south of Seddonville. The old Cardiff Company worked a small area on the western side of Chasm Creek, and another small area has been worked by the State. Near Coal Creek a few acres were exploited by the old Mokihinui Coal Company and by co-operative parties of miners.

Areas remaining to be worked.—Neighbourhood of Seddonville: From Seddonville to the eastern side of Coal Creek is low country underlain by coal-measures. That coal exists in this area may be regarded as entirely probable, and that north of the Mokihinui River it would thin out is, unfortunately, also probable. No hores having ever been put down, the extent of coal, its thickness, quality, &c., are unknown. West of the lower part of Chasm Creek there are various coal-outcrops in an area formerly included in what was known as Patten's Lease. Some of the outcrops show hard, clean-looking coal of workable thickness, but the coal-bearing area, as shown by survey, is not great.

An analysis of a sample taken from a 7-ft. outcrop, which is exposed in a trench at a barometric height of 915 ft. above sea-level, is as follows:

Fixed ca Volatile Water	hydrocarl		••	••	••	••	••	••	52.08 43.60
water		• •	• •	• •	• •	• •		• •	3·1 0
Ash	• •	• •	••	• •	••	• •	• •	• •	1.22
									100.00
Total sulphur . Calories per gram, b			••		••		• •		7.26
		, by	calorimeter		•			• •	7,382.00