	Feet.
White indurated clay	30
Sandstone	20
Conglomerate	20
Sandy clay	40
Blue clay with ironstone bands	30
Sandy clay with carbonaceous markings and lignite layers	20
Lignite	4 to 6
Gray laminated clay	8
Conglomerate	20
Slates	

This formation is of comparatively recent origin, and cannot be expected to yield any valuable mineral fuel; but five miles to the westward an older series is exposed, which appears to belong to the coal-bearing formation of the Northern District. On the west side of the Autere River, gray micaceous sandstones in thin flaggy beds occur, with plant-remains overlaid by pebble conglomerate and clay shales, which inland pass into impure limestones.

No coal seams were observed in the lower part of the series, where they might be expected; but in 1865 I received a specimen of bituminous or oil shale from the Rev. Richard Taylor, which he stated was found at the place. This shale was fully described in a previous report (New Zealand Coal Reports, 1865, p. 45), from which the following is an extract:—

From the composition of this mineral it will be seen that it approaches closely to the famous Torbanehill oil-shale in character, to which it also bears a considerable external resemblance, with the exception of being rather darker and more resinous in lustre. Its properties are as follows: Very coherent, close grained, hard and tough, almost elastic; does not show the slightest indication of laminæ or cleavage planes, having a smooth semi-conchoidal fracture in every direction.

What appears to be the exterior portion of the stratum is of a yellow colour, while the rest is of a dull black colour, and perfectly homogeneous in every part. It is exceedingly difficult to pulverize this mineral; but when a moderately-fine powder is obtained, it has a very decided brown or chocolate colour. Its specific gravity is 1·112. It ignites with ease, and bursts into a flame which is sustained for a long time with great vigour. The flame is at first very luminous and bright, but soon becomes long and smoky, and during combustion small oil-bubbles may be seen escaping.

The presence of oil to a large extent among the volatile matters, escaping at comparatively low temperatures, is best observed by heating the substance in a partially-closed test-tube to a temperature of 400° Fahr., after previously drying it at 212°. The oil is then seen to condense upon the cooler portion of the tube in considerable quantity; and when finally removed to a cold place, a large portion of the oily matters solidify to a white substance, probably paraffine.

When heated to a dull red heat in a closed crucible till no more gaseous matters are evolved, there remains about 23·00 per cent. of light, non-coherent, cellular, and slightly lustrous coke, and this in the open fire was found to burn readily to a perfectly white ash.

The chemical composition of this coal is as follows:—

Volatile matter	75·20
Carbon in coke	9·30
Hygroscopic water	1·80
Ash	13·70
Sulphur	Traces.
	100·00
Relative percentage of volatile matter	88·99
Relative percentage of fixed carbon	11·01
	100·00

I have never heard of any other samples of this interesting form of coal being found either in the Mongonui district or in other parts of New Zealand.

At Ohora Harbour, which is twenty miles to the north of Mongonui, the western side of the bluff hill known as Mount Camel is also composed of gray sandstone and shales, in which no carbonaceous layers were observed, though silicified wood occurs on the surface of the ground.

At Parengarenga and near the North Cape there is another exposure of the same sandstone, shales, and conglomerates, covering an area of several square miles. At the point on the north side of the entrance to the harbour, the formation is seen to dip to the S.S.W. The base of the formation is not seen, the lowest beds being green sandstone, containing seams of semi-bituminous coal of limited extent. From one of these about two tons of coal had been extracted, but there was no deposit of any importance to be found at the place. The greensands are covered by conglomerates, which form the sea-cliffs, in which are blocks of silicified wood of a black colour, and also particles of coal.

The harbour is bounded by terrace flats and low hills, in which, and in the sea-cliffs to the north, the following section was observed:—

1. At base, greensands with ferruginous bands, showing in the summit of an anticline that runs W.N.W.
2. On this, towards the west, rest greensands, dip 12° to S.W.—20 ft.
3. Fine-grained conglomerate—20 ft.
4. Green sandstone, with a foot of coal—40 ft.
5. Red sandstone, with pebble beds—40 ft.
6. Greensands, with ironstone nodules, containing kernels of white clay—50 ft.
7. Shale, with masses of coal and conglomerate bands—50 ft.
8. Finely laminated greensand—40 ft.