

1896.

## NEW ZEALAND.

## GEOLOGY: GENERAL REPORT AND REPORTS OF SPECIAL EXAMINATIONS MADE DURING THE YEAR 1895-96.

BY ALEXANDER MCKAY, F.G.S., MINING GEOLOGIST.

*Presented to both Houses of the General Assembly by Command of His Excellency.*

Mr. A. MCKAY to the UNDER-SECRETARY of MINES.

SIR,—

I have the honour to report the results of the geological branch of the department as follows, and to append the various reports on special districts, which are now completed.

The first work of the season was the examination of certain outcrops of coal at the Gordon Downs, between the upper waters of the Wai-iti River and the gorge of the Motueka River, in the Nelson District.

The coal-seams and associated strata at that place were determined as belonging to the Cretaceous-tertiary formation to which belong the great bulk of the coal-measures of New Zealand. The outcrops show the strata to be highly disturbed, and so arranged that they appear to pass under the older rocks of Carboniferous date that form the mountain-ranges to the eastward. In this direction they continue but for a short distance till they are cut off by a line of fault, which, along the lower slopes of the Dun Mountain Range, has been traced from the gorge of the Motueka River to the neighbourhood of the Town of Nelson.

Owing to erosion and subsequent deposition over the western part of this coalfield, it appears doubtful whether coal-seams could be reached by sinking through the Older Pliocene gravels that occupy the surface in that direction.

Towards the south-west there is a considerable development of the coal-bearing formation, extending in that direction so as to occupy a considerable area within the limits of the Big Bush. In the opposite direction, the coal-bearing strata are traceable as far as the gorge of the Wai-iti, beyond which they are not again met with until the foot of the range between Hope and Richmond is reached, from which point they may be considered practically continuous to the valley of the Maitai River, near Nelson.

Coal outcrops are known along this part of the line, at the back of Stoke, at Jenkins's Hill, Enner Glynn, and more to the north-east, within Brook Street Valley, near the reservoir of the Nelson Water-works. Jenkins's Hill Mine, work at which was suspended as far back as the date of Dr. Von Hochstetter's examination, indicates the position of the coal to be such as described at the Gordon Downs—*i.e.*, as strata inverted or standing at high angles, and seemingly dipping under the older strata of the mountain-range to the eastward. This position of the coal rendered it difficult to work with profit, and as a consequence the works at Jenkins's Hill have long since come to a standstill.

More recently, outcrops of one or more seams have been prospected within the watershed of Brook Street Valley, and with such results that an association or company was formed in Nelson for the purpose of exploring and working the same. Local experts have pronounced favourably as regards the probable success of this undertaking, and prospecting works by shaft-sinking, and short drives therefrom on the lines of coal, have been carried to a depth of 250ft. from the surface. This work shows the coal to be standing nearly vertical, and to vary considerably in the thickness of the seam at different parts, but still traceable from the surface to the depth reached. At one place, near the bottom of the shaft, as much as 10ft. of coal was met with, and hopes are entertained that this amount or thickness will continue along the strike at that level and pay for extraction. I am not very sanguine of this, and would limit the extent of the seam in a south-west direction as scarcely exceeding a quarter of a mile from where the mine-mouth and present prospecting works are situated.

To the north-east the continuity of this seam is at an end within a lesser distance. From analysis, the coal may be regarded as a superior class of brown coal, but in no sense can it be considered as bituminous, or at all comparable with the coals mined in the Grey Valley, or on the Westport field. The Enner Glynn Mine and works were examined during the current year by Mr. Inspector Cochrane, who reports on the nature of the coal, the character and condition of the works, and, with respect to the latter, their satisfactory conditions.—(See report by Inspector Cochrane, C.-3B., p. 3.)