The sedimentary strata so far mentioned are evidently of younger age than the true coal-measures of Nelson, and the prospect of finding workable coal in them is practically nil. The numerous drifted lumps of carbonized wood and the poorly carbonaceous seams of claystone or shale in these rocks are not trustworthy indications of the presence of coal.

A great fault or fault-zone, which may be called the Hope fault, bounds the western side of the Hope Valley. It continues northward over Tadmor Saddle, and some years ago was observed west of Kaka Railway-station by Dr. J. Henderson.

After my visit to Glenhope a small piece of carbonaceous shale from a point some distance south of Lamb Valley was sent to me. This was highly slickensided, and I expressed the opinion that it might be associated with actual coal-measures. That this was the case seems to be shown by the fact that the discovery of a seam of bituminous coal in the neighbourhood has since been reported. The accounts of the size of this seam are conflicting. It is said to be situated about 150 yards east of the coach-road, at a point two miles south of Glenhope Railway-station.

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13. SUPPOSED OIL-SHALE NEAR MANGONUI, NORTH AUCKLAND.

(Summary of Report by H. T. Ferrar.)

The writer arrived at Mangonui on the 15th December, 1920, and on the same day examined the lignite at Cooper's Beach. During the next two days he examined the shale-outcrops on Section O.L.C. 9* (J. Matthews), and Section 7, Block VIII, Rangaunu Survey District, which are being prospected by the Mangonui Coal-prospecting Syndicate. The surrounding country was also explored.

The shale-exposures which were specially inspected are south of Lake Ohia, and eight or nine miles west of Mangonui. They occur on the northern side of a flat-topped ridge 100 ft. to 150 ft. high, with a length from east to west of about a mile and a half, and a width of half a mile. The greater part of the ridge consists of black carbonaceous mudstone or shale, with a brown streak. Several samples were collected for further examination, and three of these were sent to the Dominion Laboratory for analysis. Dr. Maclaurin's report is as follows :—

Oil-shale from Mangonui.—Proximate Analysis.

	No. 3.	No. 4.	No. 5.
Fixed carbon	5·86	5·85	4·35
Volatile hydrocarbons	14·28	13·06	12·06
Water	1·32	1·09	1·13
Ash	78·54	80·00	82·46
	100·00	100·00	100·00
Sulphur (per cent.)	2·18	1·69	1·88

For distillation equal weights of each sample were taken, and the mixture distilled with the following results :—

	Gallons per Ton.
Total crude oil	5·5
Yielding (fractionation) :—	
Light oil up to 100° C.	2·20
100°–300° C.	0·88
300° C.	1·32
Residue, tar, &c.	1·10
	5·50

Although the Mangonui shale is far too low-grade to be worked as an oil-shale, yet such material is a possible source of petroleum—not, of course, in the locality where it outcrops, but in areas where it is buried in contact with a suitable oil-reservoir rock, and where the structure is favourable for the accumulation of oil. It may be pointed out that extensive deposits of carbonaceous or so-called "bituminous" shale occur in other parts of North Auckland, which deserve consideration when detailed examination of those areas comes to be made.

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14. OAMARU HARBOUR DISTRICT.

(Summary of Report by J. Marwick.)

During the early part of May, 1921, the writer examined numerous localities in the Oamaru district with a view to finding deposits of stone suitable for harbour-works.

(1.) *Near Peebles.*—On the summit of Big Hill, south of Peebles, is a band of quartz-pebble conglomerate with a ferruginous cement. The same conglomerate caps other hills in the neighbourhood. Its thickness is probably from 15 ft. to 20 ft. Owing to the height of the conglomerate-outcrops above the Waitaki Valley plain, and the steepness of the 700 ft. slope below them, transport will be difficult. Waste material will have to be kept out of the Oamaru Borough water-race, which runs at the foot of the slope.

* O.L.C. = Old land claim.