

The general sample taken from this seam gave on analysis the following results :—

Fixed carbon	..	..	..	..	..	..	..	32.97
Volatile hydrocarbons	..	..	..	..	..	..	..	39.03
Water	..	..	..	..	..	..	..	13.15
Ash	..	..	..	..	..	..	..	14.85
								100.00
Sulphur	..	..	..	..	..	..	..	2.96

(m.) LOWER RETARUKE No. 2.—This seam, which is 6 ft. 2 in. thick, like the upper seam in Coal Creek, seems to have very few impure bands. The measurements from the top to the bottom show 1 ft. 3 in. of soft but fairly good coal, 3 ft. 2 in. of very hard bright coal, and 1 ft. 9 in. of clayey carbonaceous shale.

The seam dips at an angle of 8° in a south-easterly direction, and lies at an altitude of 1,612 ft.

The general sample from the seam, including stony bands, gave the following analysis :—

Fixed carbon	..	..	..	..	..	..	..	28.12
Volatile hydrocarbons	..	..	..	..	..	..	..	38.68
Water	..	..	..	..	..	..	..	9.60
Ash	..	..	..	..	..	..	..	23.60
								100.00
Sulphur	..	..	..	..	..	..	..	3.81

Undoubtedly, were the stony bands not analysed with the better-grade coal, the amount of ash would be much less than that given above.

(n.) UPPER RETARUKE A.—This seam dips in a south-easterly direction at an angle of 8°. Only about 1 ft. of the seam is exposed, consisting of coal of good quality. The seam outcrops for about 20 ft. right across the stream, but is overlain by debris on either side of the creek-bed. The outcrop is at an altitude of 1,190 ft.

The general sample, including stony bands, taken for analysis yielded the following results :—

Fixed carbon	..	..	..	..	..	..	..	32.53
Volatile hydrocarbons	..	..	..	..	..	..	..	41.39
Water	..	..	..	..	..	..	..	11.96
Ash	..	..	..	..	..	..	..	14.12
								100.00
Sulphur	..	..	..	..	..	..	..	3.48

(o.) UPPER RETARUKE B.—A coal-outcrop occurs on a very small right-hand branch of the upper Retaruke. The seam is 3 ft. 4 in. in thickness, and is of poor quality, being chiefly a highly carbonaceous shale with a few coaly partings. There is about 6 in. of fairly good coal near the bottom. The seam outcrops at an altitude of 2,285 ft., and dips in a south-easterly direction at an angle of 4°.

(p.) UPPER RETARUKE C.—At the junction of the two main branches of the upper Retaruke, at an altitude of 2,218 ft., is an outcrop of coal 3 ft. in thickness. The seam is nowhere of very good quality, and the lower part is distinctly shaly, the upper part being fair.

The sample for analysis was from the upper part only, and the result is as follows :—

Fixed carbon	..	..	..	..	..	..	..	31.10
Volatile hydrocarbons	..	..	..	..	..	..	..	42.36
Water	..	..	..	..	..	..	..	10.99
Ash	..	..	..	..	..	..	..	15.55
								100.00
Sulphur	..	..	..	..	..	..	..	3.15

(q.) UPPER RETARUKE D.—On a small right-hand branch near the head of the Retaruke is an exposure of coal 3 ft. 5 in. in thickness. The upper 1 ft. 10 in., though much weathered, appears to be of fair quality. Below this is 1 ft. of highly carbonaceous shale, with another 7 in. of fair coal to the floor. The seam dips at an angle of 7° in a south-east direction.

5. GENERAL CONCLUSIONS.

If all the analyses given under the detailed description of the various exposures of coal are examined, it will be found that the coal is in every case high in ash, high in sulphur, and high in water, which are all serious defects. For reasons stated above it is believed that the coal away from the surface will very probably contain less ash and less water, but it is very unlikely that the quantity of sulphur will diminish at all; in fact, it is more likely to increase, as, away from the influence of the air, the iron-pyrites which contains the sulphur will be less oxidized. In general, the quality of the Retaruke coal is more like that of Mokau coal than any other of the New Zealand coals. The best of the Retaruke coal, too, is not inferior to the Mokau coal. In the almost equal percentages of fixed carbon