To the north of the present workings there is still a block of untouched coal, from the traffic level, for 4 chains on the rise to the point on the plan marked Isaac's Camp, which is 1,060 feet above the sea level, and at the top of a vertical precipice that rises 316 feet above the foot of the fall. To get at this coal from the present mine, will require the putting in of a drive at a cost of about £150, to pass under the level of the north branch of the creek, at a safe distance to avoid tapping it.

The above-mentioned works have been constructed by a company chiefly consisting of working shareholders; and the accompanying statement, supplied at my request by the legal manager, shows the manner in which the funds have been applied; and I have no hesitation in stating that all the works have hitherto been carried out in a most substantial and yet economical manner, and that they display a very great amount of enterprise. From the account of the receipts and expenditure, it however appears, that no return has hitherto been made on the capital employed, and that the sale of the coal has merely paid working expenses. It is therefore important that in any fresh extension of the mine a more economical system of working it should be adopted.

The supply of coal available by the present method of working being almost exhausted, the first step will be to lay open a fresh area of the seams; and the consideration of how this can be most advantageously effected, requires a statement of the geological conditions under which the coal occurs.

In following up the bed of the stream to the foot of the fall, and also along the incline and tramway cutting up the side of the valley, a section of the rocks which underlie the coal measures is obtained. They consist first of clay schist containing mica and a little quartz, the apparent bedding of which dips at 40° to W.S.W., or into the body of the hill. This is probably not the original stratification of the rock, but rather a foliated structure which has been superinduced; for both in the bed of the creek at 300 feet altitude, and in the tramway cutting about 5 chains from the top of the incline, a bed of blue, red, and white crystalline limestone about 80 feet thick occurs, that appears to be more nearly vertical, but is at the same time traversed by thin layers of mica that have a moderate dip to the west. These mica layers are hardly perceptible in fresh fractured surfaces, but, when the limestone has been weathered, they stand out in high relief, and have complicated contortions like those usual in mica schist.

This limestone is an important feature in the geology of the district, as it can be traced along the eastern face of the hills towards Pakawau, and in several places is associated with graphite shale and talcose slate. Red and blue clay schists, containing mica and quartz, then follow, in the bed of the stream, the section along the tramway being obscured by slipped ground.

The coal measures commence in the tram-cutting 5 chains before reaching the shoots, and the junction is also very well marked by a rock parting stained with iron, which crosses the precipice at the vertical fall, about 40 feet from its base, the lower part consisting of brown mica schist, with an apparent dip of 40° to N.W.

1. The lowest bed of the coal measures, resting on the above, is a blue-gray breccia of angular fragments of schist and slate, together with angular and rounded masses of quartz, the surface on which this breccia rests dipping 30° to W. 10° N.—thickness, 35 ft.

2. Conglomerate of well-rolled quartz, quartzite, and crystalline sandstone, cemented with gray sand—20 ft.

3. Grey sandstone that weathers red and contains patches of fine-grained breccia, of flakes of slate and quartz—50 ft.

4. Tough brown and green argillaceous sandstone and carbonaceous shales, in thick beds, with layers of grits and coal seams, of which six are known. Average strike, N. 15° W., dip from 25° to W., but getting flatter into the hill—250 ft.

The coal seams already discovered in this part of the formation are as follows, in descending order:—

No. 1. Exposed in face of fall on the north branch above Isaac's Drive—coal, 1 ft.

No. 2. Upper seam, which is worked—coal, 2 ft. 5 in. This seam contains a stone band, of variable thickness, the coal below the band being generally the most regular. About one-third of the stuff excavated from the seam has to be rejected.

No. 3. Lower seam worked—coal, 3 ft. Contains a single stone band, which has shown a tendency to thin out towards the S.W. corner of the workings, being from 6 to 16 inches thick.

No. 4. Cut in the first drive made in Isaac's Creek—coal, 2 ft. Has a 2-inch stone band. In the first creek, north of Isaac's Camp this seam has 2 ft. 8 in. of clear coal.

No. 5. In the creek below the old workings, but so mixed with stone as to make 2½ ft.—coal, 1 ft.

No. 6. In the waterfall on Isaac's Creek, beside the shoot, 4 ft. thick, but very inferior, not showing more than 6 inches of pure coal. This is the lowest seam, and is about sixty feet from the base of the brown sandstone group.

The remainder of the section to the top of the hill has been very imperfectly observed, on account of the thick bush. At 200 feet above the highest coal seam known, I found a light-brown micaceous shale, full of the same fossil leaves which are abundant at Pakawau (dicotyledonous leaves, ferns, &c.); and at a still greater altitude, the bearing being S. 20° E., hard brown carbonaceous sandstone, also with fossil leaves, N. 10° W., dip 35° to W.

It is thus pretty certain that the greater part of the hill above the mine is composed of the sandstones belonging to the coal measures; but Mr. Marshall informed me that on the top of the range, about two miles back, there are blocks of sandy limestone of quite a different kind from that cut in the lower part of the hill, and resembling the fossiliferous limestone on the coast at Wanganui Inlet. Four miles W. by N. from the top of the range above the mine, is the House-roof Hill, a sharp-topped cone which I ascended from West Wanganui Inlet in 1866, and found to be an isolated boss of granite 1,750 feet high, and surrounded to the height of 1,000 feet by sandstones containing thin coal seams, like the uppermost beds above described. The country between House-roof Hill and the top of the range is a slightly depressed plateau (as shown in section ), so that the coal measures must either lie tolerably flat, or have small undulations. This has an important bearing on the future works for developing the coal, which I shall have to discuss, as it affords strong evidence that the coal seams will not continue with the high dip which they have at the outcrop. This is also confirmed by the actual workings in the coal, in which both seams at the outcrop dip at 1 in 3 (or 19°), and in the