There is a rocky gorge in the Otira at the road-hut, at an elevation of about 2,080 ft. From this point, by a drive about 7,000 ft. long, water could be taken to a point on the Rolleston spur, where a small service reservoir could be cut in the solid rock to hold water enough for one or more train-journeys, as deemed best. About 1,000 ft. of pipes would take the water to a power-house a short distance below the lower end of A 4 tunnel. Fully 500 ft. effective head should be available here. A minimum flow in the Otira of about 40 cubic feet per second would suffice without a reservoir to just work the traffic' or with a reservoir, about 20 cubic feet per second. A recent gauging of the Otira gave over 60 cubic feet per second. This was after five days' frost. In addition, there was water apparently flowing in quantity under the boulders. A gauging of the Rolleston under the same conditions gave 39 cubic feet per second, and also water was flowing under the boulders in the bed of the creek that could not be measured. The streams were not at their lowest at the time of the gauging, but even allowing for this, there should not be any lack of water.

There is a rock gorge on the Rolleston at practically the same level as that in the Otira. Both are about 40 ft. wide, and could easily have weirs built across them. A length of about 8,000 ft. of drive would be required to take the water from the Rolleston gorge to the pipe-head. The Otira scheme could be augmented in this way if at any time it was decided to extend the length of electrically worked line.

The reservoir, in combination with another settling-tank at a suitable location on the race, would be utilised for clearing the water from grit.

The water can also be taken from the Otira just below the junction of Pegleg Creek, and from there carried in a drive to a suitable point on the hillsides above the Rolleston Spur. There is a difference of level between the Pegleg junction and a power-station on the Rolleston below A 4 tunnel of nearly 1,200 ft. The measured flow of the Otira would give about 6,000 b.h.p at this station. The direct distance between Pegleg and the power-station is 2 miles 55 chains. The conduit-length would be longer, say 2 miles 70 chains, or perhaps more. I do not think there is any chance of getting a storage-reservoir, however small, on this alternative, except by cutting chambers in the rock, which would be too expensive. This scheme can be reinforced by taking the Bealey water into the Otira by a drive under Arthur's Pass. By doing this about 10,000 b.h.p. should be obtainable at the Rolleston power-station. This would be sufficient (and more) to electrify the line from Rolleston to Greymouth.

Water can be taken from the Bealey River in a pipe under the sleepers in the tunnel, to the lower end of the tunnel. This would be more expensive, and give less power than the last scheme, the total fall obtainable being only about 860 ft., and the volume of water perhaps less.

Kanieri Lake.

This lake lies at a level of 422 ft. above sea-level. Its drainage-area is sixteen square miles, and the lake area 5·6 square miles. The rainfall at Hokitika averages about 120 in. a year, and is probably greater on the hills from which the streams feeding the lake flow. In a distance of six miles a fall of 314 ft. is obtained, probably giving about 270 ft. effective head. With the probable flow from the lake about 2,800 b.h.p. would be obtainable for twenty-four hours a day continuous working, or, say, 5,500 for twelve hours a day full power. The lake-level could easily be raised 25 ft. This would provide a large storage-volume.

The Whitcombe River has a fall of just over 200 ft. per mile for four miles, starting about four miles from the divide. It flows in a rock-bound gorge, and carries 250 cubic feet of water per second. This would give about 16,000 b.h.p. if a conduit was carried along this length of gorge. In this country probably a drive would be the only safe conduit. A series of schemes should be possible, giving a very large amount of power.

The Kakapotahi passes through an old lake-bed easily dammed, and at this point has an elevation of 580 ft. above the sea. Below this lake-bed the stream flows down a deep chasm for several miles, over several large falls. The low-water flow is given as 100 cubic feet per second. From Mr. Roberts's description there appears every possibility of getting a fairly cheap and reliable scheme of some thousands of horse-power within about twenty miles of the mining centre of Ross.

The Wanganui and Wataroa Rivers, from Mr. Roberts's description, would be sufficient to give very large amounts of power. If it is possible to take the water from the Millpond to Hende's, 30,000 to 40,000 b.h.p. would be got (usually very much more) from the Wanganui, and in the Wataroa ; taking the water from the lowest gorge to the road, with a fall of 700 ft., 70,000 to 80,000 b.h.p. should be available. The country here is not the friable slate of the main range.

A considerable amount of power could be got from the Haast River by utilising the fall between the Wills and the Burke's junction. This could be transmitted over Burke's Pass to Central Otago.

Perusal of Mr. Roberts's report (which would only be spoiled by any attempt at condensing) shows that a very large amount of power is available from the Westland rivers, but, having to be got by carrying the water in conduits parallel to the river-valleys generally for considerable distances, the cost for development would, as a rule, be relatively great, and more especially so when the rivers are in slate-rock country, with the hillsides covered with *débris* from the mountain-tops.

The following table gives information regarding power obtainable from falls in Westland. All the information is from Mr. Roberts's reports, but I have added the brake horse-power in each case :—