average bearing of 192° to Mangatiwainui, at 195° to Piri Piri, thence 207° to Tahoraiti. In doing so the steep spurs from the Ruahine, which are crossed by the present track, have been avoided, and only few low very wet places have been met with.

The whole line as far as Tahoraiti is nearly level, and the only difficulties are the crossing of the watercourses, which have been worn out very deep and precipitous in the Ruahine gravel. The Manawatu, Mangatiwainui, the Mangatiwaiiti, the Whakaroa, and the Mangatera are all from 115 to 150 feet deep, and require long side cuttings for a road. For a railway they would require timber viaducts, as over the canons on the Sierra Nevada. The greater part of the line to Tahoraiti could be utilized for railway. About 80 chains of corduroy work, 22 bridges, 18 to 24 feet span, and 45 culverts, will be required on this portion of the line.

From Tahoraiti to Pukerangi, at Matahiwi, the line will run over level and undulating open country (about a quarter of a mile east of present track), with the exception of two belts of bush of two miles in the aggregate. Four small bridges and 20 chains side cuttings are required on this portion.

From Pukerangi a line is being now cut, bearing about S.S.W., so as to strike the upper end of the Manawatu Gorge, which will be distant about ten miles. I was induced to do so as, upon examination of the country conjointly with Mr. Stewart, who is well acquainted with the country about the gorge, we came to the conclusion that the only practicable line for road or railway to the West Coast can only be obtained by following the Manawatu Gorge.

The present track runs over the saddle at Te Ahua te Turanga, rising from Matahiwi about 800 feet, and from the Puhanga, on the West Coast, about 1,150 feet. This rise should not appear an insuperable difficulty, and would, under ordinary circumstances, be overcome; but the face of the hill on both sides is so broken that, to obtain the gradient of 1 in 13, a great many dips will be unavoidable, bringing up the aggregate rise to little under 2,000 feet, necessitating many bridges or viaducts over dry gullies, and several miles of side cuttings.

On the other hand, a very easy gradient appears to be obtainable from Matahiwi to the entrance of the gorge—no difficulties of any moment, as far as we could judge on viewing the line from a commanding position. The line would strike the Manawatu at the Mangahua, about 100 yards above the upper entrance of the gorge. The gorge is a fissure in the range, averaging about 60 yards in width at the bottom (in some places only 36 yards), nearly six miles in length, with general bearing of about west, through which the Manawatu flows with great velocity, over many rapids (one with 4 feet fall in 40 feet). The sides are Ruahine sandstone, from 200 to 600 feet high, with an average angle of about 25° from the perpendicular, but in many places like walls, and even overhanging. The sides are covered with scrub, fern, and scanty timber, very little soil being in crevasses and on shelves for larger growth. The rise of the river in heavy freshes seems to reach 24 feet in narrow parts. The west side (proper right bank of the river) being broken by five gullies, it would be necessary to make use of the east side for road or railway. This would necessitate a bridge of about 170 feet above the gorge, and one below the gorge; but as that below the gorge, under all circumstances, would be required for the line from Wairarapa, and as, in addition to this, probably the Puhanga would have to be crossed, the difference between a bridge over the Puhanga and that over the Manawatu above the gorge will only be required, which will be very trifling.

The line for the road would, for the most part, have to be cut into the solid, about forty feet above ordinary water level; and in some places, especially where the rock is overhanging, large masses will have to be removed, the greater part of which will have to be blasted. This necessarily will make the work expensive, and no dray road can be carried along the gorge under £10,000. Large as the amount may appear, it should be considered that the line, with improved curves, will do for the railway, and that the work will be a permanent one, requiring very little in the shape of maintenance, and that not unlikely the line from Wairarapa will have to be carried down the valley between the Puketoi and the Tararua, and will have to join the line above the gorge; the expensive work thus serving both lines. A line over Te Ahuaturanga, necessarily about eight miles in length, would, with bridges and side cuttings, probably cost £800 per mile, and would, when completed, be of very little use.

Practically the "Mountain" would be a barrier between both coasts, as very few teams would favour an up-hill pull of four miles. Nature has shown here the way, and although she may be an expensive guide in this instance, she is the only safe one.

The length of bush on Line 1 is about twenty-eight miles to the gorge. The soil along the bush line varies very much, from rich loam to poor shingle, the greater part being of very fair quality, and well suited for agriculture. The timber consists principally of rimu, totara, matai, white pine, black and white birch. Rimu is generally prevalent, while totara is principally in patches, but abundant. The trees are well grown, and underwood is generally light. The bush is well watered, running streams being rarely more than a mile apart. The larger streams carry heavy timber when flooded, and seem to be blocked up frequently by masses of large trees.

The road can cross the shingle-beds, but a centre span of about 100 feet will be required for a railway. This will make the viaducts across the wide gullies perfectly safe. All small watercourses have as a rule, soft bottoms, and require bridges.

In conclusion I may add that very rarely a dividing range will be crossed with less difficulties than that between the East and West Coasts by the line proposed.

I have, &c.,

CHARLES WEBER.

John Blackett, Esq., Acting Engineer-in-Chief,
Wellington.

Enclosure 2 in No. 55.

SPECIFICATION for Falling Timber and clearing it away, &c., of about Twenty-eight Miles of the Road through the Tamaki (Manawatu) Bush, between Takapau and the Manawatu Gorge.

THE work to be done has been divided in twelve contracts, as follows, viz:—

1. From entrance at Takapau, about three miles east nearer Mr. Grant's than the old road, to the open land at the small clearing, Tawhiti (the clearing not measured in), about two miles.