

part of the line placed immediately under the cliffs, of which Mr. Rochfort reports that it will involve the tunnelling of several headlands and some miles of sea-wall. The latter works must be very costly and a constant source of anxiety. Cement or hydraulic lime must be brought from a distance, and it may not be possible to use the stone found on the site of the works. The masonry in such works must not only be of the first class but also massive, and the foundations always carefully watched.

There is another economical aspect of the question as important as the comparative cost of the two schemes proposed for the trunk line. Mr. Blair has sketched a comprehensive plan for the service of all the northern district, a plan which, with some modification, will certainly be executed sooner or later. This plan includes, of course, the coast trunk line, but it also includes an important section—little less than half of the central line. The substitution of the central line for the coast line would therefore diminish the mileage of the plan as a whole, as well as the cost per mile.

<i>Original Proposal.</i>		<i>Modified Proposal (Difference, 46 miles).</i>	
	Miles.		Miles.
Coast line (Waipara-Awatere) ...	125	Central line (Red Post to Blenheim) ...	146
Red Post-Brunnerton (Christchurch-Greymouth) ...	95	Hanmer-Brunnerton (Christchurch-Greymouth) ...	83
Ahaura-Belgrove (Nelson-Greymouth) ...	120	Ahaura-Belgrove (Nelson-Greymouth) ...	120
Roundell-Blenheim (Picton-Greymouth) ...	65	Roundell-Tophouse (Picton-Greymouth) ...	10
Blenheim-Awatere ...	15	Blenheim-Awatere ...	15
	420		374

The lengths in Mr. Blair's proposal have been here modified to agree with the advance of the constructed line since the date of his report. The new figures exhibit the mileage required to complete the system.

The excess of mileage to be constructed on Mr. Blair's scheme will obviously include the costly part of the coast line, and may be reasonably—perhaps too modestly—estimated at half a million of money. But this is not all. There are differences in the services in favour of the cheaper scheme. The latter omits Kaikoura and Flaxbourne, but substitutes for them all the country between the Hanmer Plain and the Tophouse, and affords a direct line from Nelson to Christchurch, for which Mr. Blair's scheme makes no provision.

4. In reference to condition as to the character of curves, gradients, &c., the Engineer-in-Chief having reported (D.-1, page 61, Surveys) that "it is possible to get a railway with workable gradients right through the middle of the Island from Nelson to Canterbury," it may seem only necessary to add that it is equally possible to get a line from Picton. On the latter, which is now the matter under discussion, there is only one passage, that from the Waiau-uwha to the Clarence by the Hossack Saddle, at which the gradient of 1 in 50—accepted on the Cheviot scheme and in use in most parts of the colony—will be required. Here it will be necessary over about twelve miles. It can be conveniently worked by many of the engines now on our lines. Its concentration on this one section makes it unnecessary for the heavy engine to travel further than between the Waiau and Clarence Valleys, a distance of twenty-four miles. It will be here and in the Wairau Gorge also, if anywhere, that the accepted limit of sharpness in curves will be touched. Elsewhere both gradients and curves will be moderate.

The subject of the economical importance of the high summit, which has been objected to in general terms, is discussed, with other objections, in the Appendices to this statement. (Appendix C-1, 2, and 3.) The Appendices are in the nature of fuller rejoinders to various doubts and difficulties suggested by opponents of the central line: they contain illustrations too lengthy to form part of the general statement. They have been contributed by Mr. Richmond. Enough, the Committee hope, has been advanced to enable the Commission to decide that the route here advocated possesses all the essentials of a trunk line, and most of them in a higher degree than the alternative proposals; and that it adds to these the qualities of a colonizing line.

APPENDIX A-1.

FITNESS OF NORTHERN DISTRICT FOR SETTLEMENT.—CLIMATE.

The inducements presented by its greater cheapness, and by the wider utility of the central line to the present population, and the facility of valuable connections hereafter which it offers, are such that the Commission can have no difficulty in deciding in its favour, unless the disparaging view of its opponents respecting the value of the territory as regards climate and soil has impressed them with the idea that the narrow strip served by the East Coast line is destined to carry a larger population than can be hoped for in the valleys of the Wairau, Clarence, Waiau-uwha, &c. The importance of such a conclusion would be great, since a condemnation of the northern uplands as unfit for settlement would involve fully three-fifths of the whole South Island, which are of no better quality. That the Commission is asked to decide in this sense justifies the expenditure of some further time in discussing the probability of the disparaging view. The question of climate as affecting the efficiency of a railway is discussed separately. It will be here attempted to bring the light of physical geography and a wider local experience to bear on the evidence of the residents who have spoken on the question of habitableness. The territory northwards of the River Waiau-uwha lies between the 41st and 43rd parallels of south latitude—that is to say, about the same distance southwards of the equator as Central Italy from Naples to Florence, or as the northern parts of Spain and Turkey. But the climate, of the great oceanic hemisphere in which we lie is more equable than that of the northern or continental hemisphere. The summer here is less hot, the winter less cold, than in like latitudes in the North. Snow, which in the North sometimes falls at the sea-level on the Tropic of Cancer, 23° north latitude, is unknown in this hemisphere nearer the equator than 32° south (Sir J. Herschel, Phys. Geog., § 276)—a difference of 8½° in favour of a New Zealand winter as compared with central Italy and northern Spain and Turkey. This would lead us to expect that the winter-climate of this