

dairy farms and small grazing farms; but I saw clearly that the country was not likely to be occupied without better communication than existed. Then there was but a bridle-track through the country. I observed that roads might be made with facility through a great part of the country. There were a number of those small valleys described by other witnesses, which admitted of roads with very little trouble or expense; but I thought then—as early as 1863—that the only way to open the country would be by a line of railway right through. I must say that my mind was led to this idea by the desire of binding the provinces together by iron bars. This brings me to the technical question. I looked at the country with a view to railway-making; and after thinking over the matter for twenty years nearly, and seeing many important railways throughout Europe, I now without hesitation affirm that there are no real engineering difficulties whatever upon the line; that the line through this country would be found as a whole exceptionally economical to make. I am now speaking of the central line which would traverse this country. The other, the coast line, would not in the slightest degree help it. The only part that impressed me at the time as likely to be costly was at what is called the Wairau Gorge; but as the extent of that is not long, even including the bare river-bed above the Wairau Gorge, which would no doubt involve some expense, the whole is insignificant in proportion to the total length of the easy parts of the line. At that time the only pass in use was Jollie's Pass. I did not examine the country with a view to the better descent of that pass. From what I observed of the country, I took it for granted that any engineer who had the duty of bringing a railway through it would find a way down from the Clarence Valley to the Waiau-waha without accepting such a line as that down the present roadway passes at Jollie's Pass. At that time my impression was that a proper route would be found by way of the Hanmer River, which, as the Commission is aware, is one of the modes of approach to the Hossack Saddle. Perhaps I may be allowed so far to criticise the action of the engineering advisers of the Government as to say that I am full of astonishment that that country should have been passed through in the perfunctory manner it was, and that it should have been left till last year to examine the Hossack Saddle, which, I am informed, had been for many years previously known to stockmen and others upon the Lyndon and Highfield Runs and other runs adjoining, and had been brought to the notice of the department in 1875. I can account for it in no way except by the belief that there was a foregone conclusion that the summit at Tarndale was too high, and that a level line must be found. I do not know the East Coast line in detail at all. On one of my visits I passed up to the head of the Conway River, and I know the character of the country on both banks. It is very plain that it cannot be passed without exceedingly rough and expensive work, and that the outlay by that way must necessarily be very great, inasmuch as, instead of following the leading valleys, it has to cross all the rivers and streams descending from the Kaikoura Range, sometimes at their widest parts. My own opinion is that, notwithstanding the greater length which would be required for the central line, the total cost would be found to be considerably less than that of the coast line. I see by the reports that Mr. Blair does not claim superior economy for his line. He states, "I think that the central line would be constructed at no greater cost." I venture to think that it would cost considerably more to construct the coast line as proposed. I wish Mr. Blair had thought it within his duty to pay one quarter of the attention to the central which he has done to the Cheviot Hills and coast lines. Had he done so, I think he would have given a less unfavourable view of the matter; but the view he appears to have taken of the country and the route was that of one who runs but does not read. He describes the country as bad, but his hasty visit must have confined him almost entirely to the main road. Even in the valleys he passed through—the Acheron, the Severn, and Tarndale—I think he might have seen sufficient to enable him to avoid the statement that the country is wholly bad. His trip through the country was exceedingly hasty, as I am informed. Some of the valleys spoken of by previous witnesses are not visible from the main line, and there is nothing to lead you to suppose that good valleys would be found inside their narrow entrances. After passing the entrances they often open out, and some of them form little basins. With reference to the cost of working the line, I think that a very exaggerated idea may be possibly adopted of the importance of the summit merely in a mechanical sense. The explanation and argument as to the injurious effects of high summit cannot conveniently be given *vis à voce*, and if I may be allowed I will put my views in writing on that subject before the Commission makes its report. I would say generally, it appears to me that the northern part of the line from Tarndale down to Blenheim will not impose any material extra cost in working, but even might cost less than the level line, inasmuch as whatever heavy traffic passes along the line will pass down hill. The same will be true of the southern side, but as there must be a considerable number of miles—probably twelve miles of a bad gradient down which a train could not possibly be allowed to run without the break—a great deal of the extra power absorbed in rising will be lost in descending. The rise of the Hossack Saddle will be undoubtedly some burden upon the working expenses of the line, but I think there will be practically no burden, but possibly even an advantage in the rise from the Wairau, inasmuch as no fuel whatever will be consumed, or barely enough to keep steam "weeping" at the safety-valve in going down from Tarndale to Blenheim, and the greater part of the way may be travelled without the use of the break. I may also say, with respect to the facilities of the central line for a railway, that in almost every part of it curves of unexceptionable character may be employed—curves I would say suited to express velocity. In my acquaintance with the South Devon Railway I had occasion to note that curves of 400 or 440 yards radius were passed daily at a speed of sixty miles an hour without accident, on the broad gauge of 7 feet, and I think with a gauge half the size we might safely say that 200-yards curves would be safe for express velocity. I merely make this observation to show that if requisite the full use and value of the gradients in descending might be obtained in the way of speed. There are a few places where probably we should have to submit to worse curves or a great expense in construction, as in the Wairau Gorge, and probably on the ascent of the Hossack Saddle, but in the latter we could never pretend, either mounting or descending, to go at express speed. I believe that the construction of the line from Blenheim to the Hanmer Plains will be done at an exceptionally low rate, almost below the average cost of the railways of New Zealand. There will be no bridges anything like the great constructions on the rivers of the Canterbury Plains, which to some extent counterbalance the general cheapness of the