

LETTER

FROM

MR. T. E. HARRISON, C.E.,

ON THE SUBJECT OF

BROAD AND NARROW GAUGES FOR RAILWAYS IN VICTORIA.

PRESENTED TO BOTH HOUSES OF THE GENERAL ASSEMBLY, BY COMMAND OF
HIS EXCELLENCY.

WELLINGTON.

—
1872.

LETTER FROM MR. T. E. HARRISON, C.E., TO THE RIGHT HONORABLE H. C. E. CHILDERS, M.P., ON BROAD AND NARROW GAUGES FOR RAILWAYS IN VICTORIA.

1, Westminster Chambers, Victoria Street,
Westminster, S.W., 18th April, 1872.

SIR,—

With a view of reporting to you on the various points of difference of opinion with reference to the gauge to be adopted for the railways in the Colony of Victoria, as set forth in the letter of the 29th December, 1871, from Mr. Francis Longmore to yourself, I have carefully studied the documents bearing on the subject which you have sent to me, and I have thus been able to obtain a general knowledge of the nature and extent of the expected traffic on the lines proposed, as also of the traffic on the lines already constructed.

Having been actively engaged for forty years, not only in the construction of railways, but in their management and working, being Engineer-in-Chief of the North-Eastern Railway, in length 1,325 miles, with every variety of traffic, gradient, and mode of working upon it, I am enabled to form an opinion as to the nature of the railway requisite for the traffic of your Colony. The main point in difference is—first, whether the gauge, hitherto in use on the Government lines, viz., 5 ft. 3 in., or a lesser gauge of 3 ft. 6 in., should be adopted. It is quite obvious, from the limited nature of the expected traffic on the proposed lines, that a cheaply constructed railway is a necessity, and my experience tells me that such a line of railway may be constructed on the 5 ft. 3 in. gauge.

One of the earliest lines I constructed, thirty-eight years ago, was a light line, with rails only 40 lbs. to the yard, and everything else in proportion.

A portion of that line formed for some time the route between London and Edinburgh, and express trains ran over it; and when first relaid, the rails were increased to 60 lbs. per yard, and when again relaid, to 82 lbs. per yard. During the first period the construction of the permanent way was quite sufficient for the then traffic, and the same during the second period; and at the present time the traffic over it is one of the largest in the Kingdom.

About twenty years ago I constructed twenty-two and a half miles of railway in Yorkshire, at a cost, including stations and in every way complete, of under £4,500 per mile, the permanent way being in every way light, but quite equal to the traffic; but with a largely increasing traffic, this line is now being relaid with heavier materials throughout.

I am just on the point of constructing for the North-Eastern Railway, in an agricultural district, a line on this cheap principle, with a very light permanent way, and on which only light engines will run, the gradients and other works being all considered and determined by the expected traffic.

A line is now being constructed in the South-west of England, where the gradients are 1 in 37, and 1 in 40, and the weight of the engines now being constructed will be twenty-four tons when in working order, with six wheels all coupled, and the weight equally distributed on all the wheels, or only four tons on each wheel, and one of these engines calculated to take 100 gross load independent of its own weight, up these gradients. I mention these circumstances because it has been, I may almost say, a popular delusion, that a cheap railway is incompatible with ordinary gauge; but if you are prepared to limit the weight of your engine, and to be satisfied with a reasonable speed, there is no reason why a railway, fitted in every way for the anticipated traffic of the Colony, should not be a cheap railway on the gauge of 5 ft. 3 in. And I quite concur in the opinion expressed by Mr. Higginbotham, that the difference in the cost of a line on 5 ft. 3 in. gauge and one on the 3 ft. 6 in. gauge capable of doing the same amount of work, ought not to exceed £300 per mile, having reference to the generally light nature of the works shown on the sections submitted to me.

The question then arises, what are the advantages to be gained by adopting the 5 ft. 3 in. gauge at an additional expenditure, on all future railways in the Colony, of £300 per mile over that which would be incurred by adopting a 3 ft. 6 in. gauge?

The railways now constructed and at work in the Colony are in length 271 miles, and the expenditure has been £9,000,000, and the traffic a very good one. To adopt now the 3 ft. 6 in. gauge for new lines would be to introduce the break of gauge, for it would be absurd for one moment to suppose that the existing lines ought to be reduced to the 3 ft. 6 in. gauge.

The evils of the break of gauge have been given in the evidence of Mr. Higginbotham, and I do not consider them exaggerated, and they would grow with the growth of the Colony; and they may be summed up as being: the necessity for having a larger amount of rolling stock; the impossibility on any emergency of transferring its use from one portion of the system to another; the additional cost of transshipping stations, and of transshipping; delay in the transmission of goods; and loss, breakage, and damage; which, if all capitalized, would outweigh the extra £300 per mile.

If, on the other hand, it should be found hereafter necessary to mix the gauges, then you introduce a large additional outlay, a most complicated system of railways, and most expensive to maintain, and with many elements of danger. And having been constantly consulted on matters for various companies, where the results of the break of gauges have been the subject-matter of inquiry, I am prepared to give my opinion, in the most unqualified terms, that no greater evil could befall the future of the railways of the Colony than the adoption of two gauges. It has been stated that the 3 ft. 6 in. gauge could be worked more cheaply than the 5 ft. 3 in., but I am confident that such would not be the case; and I can also imagine a state of things, with a large increase of traffic, that would render the 3 ft. 6 in. gauge much more expensive of the two.

Although I should not recommend the 5 ft. 3 in. gauge as the best for the Colony, were the question to be decided on its own merits, without taking into account the large expenditure already incurred on the existing railways, I am not now prepared to advise any alteration in the gauge which is now in use.

The Right Hon. H. C. E. Childers, M.P.,
Agent-General of the Colony of Victoria.

I have, &c.,
THOS. E. HARRISON.

