

EXTRACTS compiled from SEVENTH ANNUAL REPORT of BOARD of RAILROAD COMMISSIONERS,  
Commonwealth of Massachusetts.

*Railroad Reports, Year ending 30th September, 1875.*

Name of Company.	No. of Engines.	Total Train-mileage, including Gravel Trains and Shunting.	Average Train-mileage per Engine per Annum.	Speed in Miles per Hour.			
				Passenger Express.	Passenger Accommodation.	Freight Express.	Freight Accommodation.
Boston and Albany ... ..	239	4,909,216	20,541	33	25	12	...
Boston and Lowell ... ..	42	912,424	21,724	30	25	18	12
Boston and Maine ... ..	73	1,576,575	21,597	30	24	...	12
Boston and Providence ... ..	42	800,269	19,054	38	22	22	10
Eastern ... ..	95	2,082,732	21,923	28	20	15	10
Fitchburg ... ..	54	997,093	18,465	26	22	10	8½
New York and New England ... ..	29	660,056	22,761	25	20	15	10
Old Colony ... ..	63	1,387,481	22,024	33	23	16	10
Average ... ..	637	13,325,846	20,920	...	...	...	...
Cheshire ... ..	31	633,277	20,428	25	22	12	10
Connecticut River ... ..	18	329,552	18,308	29	24	15	8
New Haven and Northampton ... ..	20	371,561	18,578	28	25	12	12
New York, New Haven, and Hartford ... ..	92	2,004,062	21,783	30-35	28	...	15
Norwich and Worcester ... ..	21	371,284	17,680	30	22-25	17	15
Providence and Worcester ... ..	29	546,720	18,852	28	20	16	12
Springfield, Athol, and North-Eastern ... ..	4	99,158	24,790	25	20	...	12
Worcester and Nashua ... ..	21	311,953	14,855	30	23	15	10
Average ... ..	236	4,667,567	19,778	...	...	...	...

On some recent trials of the single Fairlie engines by Mr. A. V. Macdonald, General Manager of the Auckland Section, the following result was attained on 1 in 40 ascending grade, combined with 6-chain curves, dead start: Weight of engine in steam, 27 tons; state of rails, wet; cylinders, 12½ in. x 16 in.; 6-coupled drivers 36 inches diameter; working boiler pressure, 140 lb.; load in nine vehicles, 81 tons 12 cwt.; average speed, 10 miles an hour. Adopting the American method of computation, with resistance 12 lb. per ton for the engine, and 5 lb. a ton for the vehicles, both on the level and straight, and ½ lb. per ton for each degree of curvature, the total resistances are found to work out to 8,291 lb. for the curved portion of the line, which would require an effective steam pressure of 124.3 lb. in the cylinders to overcome. It is probable, however, that these resistances are somewhat high for the New Zealand single buffer stock. Time does not admit of my recording more extended experiments with these engines, which have been made, but at some future time they will be put on record.

Mr. G. Ashcroft, General Manager of the Wellington section, informs me that, in testing one of these single Fairlie engines, he took a load of 74 tons 7 cwt., in nine vehicles, up 112 chains of 1 in 35 grade combined with 5 chains reverse curves, at a very slow speed, with the object of determining the utmost capacity of the engine. The steam was above the normal working pressure of 140 lb. at times, and I must regard the feat as exceptional, and not one to be obtained under ordinary working conditions. The load was carefully ascertained.

The preceding data show that the American engines in New Zealand do not give results entitling them to pre-eminence in economical working, though they exhibit very good results. The much-abused Fairlie engines show results superior to the American in economical working on analysing the returns. The data obtained from the American Commissioner's reports shows that at any rate there are very large and important sections of railways in the United States which give results in locomotive working altogether different from what is shown by the pamphlet, the writer of which would lead us to infer that the somewhat inflated figures he quotes represent the ordinary American practice.

J. P. M.

## APPENDIX.

A LETTER by W. W. EVANS, being a Commentary on Mr. MAXWELL's Criticisms.

SIR,—

New York, 14th February, 1880.

I have the honor to lay before you a few comments on parts of a 'parliamentary document sent to me from New Zealand headed *English and American Locomotives*.

This document contains a long and able letter by Mr. R. M. Brereton, late Engineer-in-Chief of the Great India Peninsula Railway, a letter written by myself to Mr. Higinbotham, Engineer-in-Chief of the Railways of Victoria, Australia, and not intended for publication; a criticism on the above letters by Mr. J. P. Maxwell, of New Zealand; and some opinions on engines by Messrs. Neilson and Co., of Glasgow, and the Vulcan Foundry of Lancashire. As the letter of Mr. Maxwell contains some errors of fact as well as opinion, I beg permission to offer, in as brief a manner as possible, a few comments on his criticisms.

To combat ignorance and prejudice is a very thankless and unsatisfactory duty to perform, as it appears to be an inherent principle in the brain of man "to try to believe what he wishes to be true." Mr. Maxwell undertook a duty that he was sadly incompetent to perform, simply because he had never seen an American locomotive and knew nothing about them, and being a civil engineer he could not be expected to know much about locomotives of any kind. He has, however, written a long letter, stated some things that are not based on facts, and jotted down a considerable amount of special pleading and fallacious argument. Most American civil engineers would "come to grief" if they attempted to write on English locomotives, for the simple reason that they know nothing about them. Mr. Brereton has written a long and very able letter in connection with railway economy, and deserves credit instead of severe criticism. He has given piles of facts and valuable data, and expressed opinions that any unprejudiced mind was sure to arrive at with such