

line from Sydney at the Hawkesbury River, thirty-six miles from Sydney. This last link was, however, completed on the 1st May, 1889, by the opening of the Hawkesbury River bridge, 2,900 feet in length, and railway communication was thus established between the four capital cities, Brisbane, Sydney, Melbourne, and Adelaide.

By the opening of the Trans-Australian railway, to which reference has already been made, Western Australia is now linked to the other States, and an unbroken line of communication established from one side of the continent to the other. The construction, moreover, of lines decided upon, and in some cases already made, connecting Victoria with the Riverina district in New South Wales and with the wheat-growing districts of South Australia, will undoubtedly facilitate interstate exchange and will allow the produce of inland areas to find its natural outlet at the nearest port.

7. Unification of Gauge.—The question of the unification of gauge in the several States has been under consideration for several years, and numerous conferences on the subject have been held from time to time between the several Railway Commissioners and between the Premiers of the States concerned. Reference to these conferences have been made in previous issues of the Year Book (see No. 11, pp. 657–8, and No. 14, pp. 563–4).

In July, 1920, a conference took place at Melbourne between the Commonwealth and State representatives of three Governments, and a decision was arrived at under which a committee, consisting of two experts from abroad and an Australian representative not connected with the railways, was to consider the whole question of gauge unification, and report to the various Governments concerned as to the best course to be adopted.

On 8th February, 1921, the Governor-General appointed a Royal Commission, consisting of two railway engineers—one civil and one mechanical—together with an independent commissioner to inquire into and report on the question of the unification of gauges. The Commission was constituted as follows:—Chairman, Mr. John James Garvan; Civil Engineer, Mr. Rustat Blake; Mechanical Engineer, Mr. Frederick Methven Whyte; with Mr. E. Simms as Secretary.

The result of the Commission's work was a recommendation that the gauge of 4-ft. 8½-in. be adopted as the standard for Australia; that no mechanical, third rail, or other device would meet the situation, and that uniformity could be secured by one means only, viz., by conversion of the gauges other than 4-ft. 8½-in.

The matter was discussed at a Conference of the Prime Minister with the Premiers in Melbourne, November, 1921, when it was decided to adopt 4-ft. 8½-in. as the standard gauge for Australia. At this Conference it was also resolved that the adoption of a uniform gauge is essential to the development and safety of the Commonwealth.

The scheme advocated by the Royal Commission as the first step will provide a standard 4-ft. 8½-in. gauge railway between Brisbane and Fremantle, and the conversion of the whole of the broad-gauge lines of Victoria and South Australia, at an estimated cost of £21,600,000, spread over a period of approximately eight years.

The details of the estimate of £21,600,000 for providing a main trunk line between Fremantle and Brisbane, and converting the 5-ft. 3-in. gauge lines of Victoria and South Australia are as shewn in the following table, which also includes an estimate of the cost within each State and the Commonwealth Territory together with the quota from each State and the Commonwealth, in terms of the allocation of cost agreed upon:—

State.	Alterations to existing railways and structures.	New Lines necessary.	Adjustments of Rolling Stock.	Total cost of work within the State.	Quota.
	£	£	£	£	£
New South Wales	800,000	857,000	..	1,657,000	7,094,388
Victoria	5,246,000	..	3,078,000	8,324,000	4,939,349
Queensland .. .. .	..	1,250,000	598,000	1,848,000	2,535,868
South Australia	1,706,000	1,646,000	1,322,000	4,674,000	1,632,292
Western Australia	1,260,000	3,120,000	650,000	5,030,000	1,078,103
Commonwealth .. .. .	..	..	67,000	67,000	4,320,000
Total	9,012,000	6,873,000	5,715,000	21,600,000	21,600,000

The estimated cost of conversion of the whole of the lines in the States concerned is £57,200,000, made up as follows:—

(a) Alterations to existing railways and structures ..	£48,355,000
(b) Construction of any new lines necessary ..	£2,596,000
(c) Adjustment of rolling stock ..	£6,249,000

This estimate includes the 3-ft. 6-in. lines in isolated parts of Western Australia and the independent lines of Northern Queensland, those of South Australia on the Eyre Peninsula, and those Commonwealth Government lines running to Oodnadatta and from Darwin to Emungalan. All of these lines will probably be worked as at present for some considerable time. The cost of conversion of rolling stock at present in use is not included.

8. Rolling Stock Gauges.—Allied to the question of the gauges of the railways of Australia is that of the rolling stock gauges which are in use, the rolling stock gauge being the maximum transverse dimensions to which the rolling stock may be constructed. In the following table will be found particulars of the rolling stock gauges, together with maximum length and weights of vehicles, at present in use on the Government railways. State and Federal:—

STATE AND FEDERAL GOVERNMENT RAILWAYS.—ROLLING STOCK GAUGES IN USE, 1921.

PASSENGER ROLLING STOCK.

Railway.	Gauge of Track.	Maximum Rolling Stock Gauge.			Maximum Tare.
		Width.	Height above Rail Level.	Length over all.	
New South Wales	4 8½	10 6	14 0	74 4½	44 2 1
Victoria	5 3	10 0	14 2	74 1½	47 16 0
”	2 6	7 0¼	10 4¼	31 8	8 11 0
Queensland	3 6	9 4	12 9	55 5	26 17 0
”	2 0	6 3½	10 0	22 0	3 0 0
South Australia	5 3	10 4¼	14 1¾	74 1¼	40 11 0
”	3 6	9 4¾	12 1	62 6	24 18 0
Western Australia	3 6	8 10	12 7	61 9	31 10 0
Tasmania	3 6	9 6	12 5	64 0	30 0 0
”	2 0	6 6	10 0	30 2	5 10 1
Federal—					
Trans-Australian	4 8½	10 6	14 6	78 11½	48 0 0
Northern Territory	3 6	9 4	12 9	39 0	12 0 0
Oodnadatta	3 6	10 2	12 4	39 0	12 0 0

GOODS ROLLING STOCK.

Railway.	Gauge of Track.	Maximum Rolling Stock Gauge.			Maximum—		
		Width.	Height above Rail Level.	Length over all.	Tare.	Carrying Capacity.	
						t. c. q.	t. c. q.
New South Wales	4 8½	9 8	13 6	60 11	20 10 3	40 0 0	
Victoria	5 3	9 7½	13 7¾	55 4½	20 13 1	30 0 0	
”	2 6	6 5½	9 7¼	27 3¾	7 12 2½	10 0 0	
Queensland	3 6	8 9	12 0	45 5	14 16 0	21 8 0	
”	2 0	6 6	9 0	22 0	4 10 0	16 0 0	
South Australia	5 3	10 0¼	12 10¾	52 1	23 10 0	30 0 0	
”	3 6	8 6	12 5¼	52 9	22 0 0	25 0 0	
Western Australia	3 6	8 8	12 6	44 9	17 18 0	27 0 0	
Tasmania	3 6	8 6	11 0	40 10	12 5 0	30 0 0	
”	2 0	6 0	6 6	27 0	5 15 2	20 0 0	
Federal—							
Trans-Australian	4 8½	10 6	14 6	47 6½	15 0 0	40 0 0	
Northern Territory	3 6	9 4	12 9	34 6	9 10 0	12 0 0	
Oodnadatta	3 6	10 2	12 4	18 0	5 0 0	12 0 0	

In the above tables the transverse dimensions given are not necessarily those of one particular vehicle, but are the greatest employed on any vehicle.