

## RAILWAYS.

TO the proper development of a country like Australasia, ill-supplied with navigable rivers, railway construction is absolutely essential. This has been recognised from an early period, and for the last forty years the Governments of the principal colonies have been fully alive to the importance of carrying on the work. For a long time, however, they were hampered in their efforts by the difficulty of borrowing money in London at a reasonable rate of interest ; but since the year 1871 considerable progress has been made in the work of construction ; indeed, by far the greater portion of the public debt of Australasia has been contracted for railway purposes. As the area of the seven colonies almost equals that of Europe or the United States of America, while the population numbers less than four and a half millions, it is almost needless to say that many of the lines run through districts very sparsely peopled. This is particularly the case in the colonies of Queensland, South Australia, and Western Australia, where there are vast tracts of territory in which little in the nature of permanent settlement has yet been accomplished, and in none of the colonies can it be said that the railway lines traverse thickly-settled areas. Indeed, if a fault may be found with the State policy pursued in the past, it is that in some cases expensive lines have been laid down in empty country the requirements of which could have been effectually met for many years to come by light and cheap lines, and that in consequence the railway administrators find themselves heavily burdened with a number of unprofitable lines. A few of these have been closed, but the vast majority are worked at a loss. Notwithstanding these drawbacks, however, the railways of the Commonwealth of Australia collectively yield a net return equal to 3·25 per cent., and those of Australasia 3·27 per cent. on the cost of construction.

### HISTORY OF RAILWAY CONSTRUCTION.

An agitation for the introduction of the railway into the colony of New South Wales was afoot as early as 1846, and in August of that year it was decided at a public meeting held in Sydney to survey a line to connect the capital with Goulburn. But no decided step was taken towards construction until September, 1848, when the Sydney Railroad and Tramway Company was formed for the purpose of laying down a line between Sydney and Parramatta and Liverpool, to be afterwards extended to Bathurst and to Goulburn. The first sod was turned by the Hon. Mrs. Keith Stewart, daughter of Sir Charles Fitzroy, the Governor of the colony, on the 3rd July, 1850. Although started during a period of trade depression, when there was an abundant supply of

labour, the scheme was only well under weigh when the discovery of gold caused a stampede from the city, and the company was left without workmen to carry on the undertaking. Undeterred, however, by the difficulties into which the changing conditions of the country had plunged the Sydney Railroad and Tramway Company, private enterprise in 1853 essayed the further task of constructing a line between Newcastle and Maitland; but this project proved no more successful than the other, and in the following year the Government was forced to step in and carry out the schemes for which the two companies had been promoted. From that time the work of construction was vigorously pressed forward, and on the 26th September, 1855, the line from Sydney to Parramatta, 14 miles in length, was opened to traffic; and on the 11th April, 1857, Newcastle was connected with East Maitland. The extension to Goulburn of the Sydney line was completed on the 27th May, 1869.

While the Sydney Railroad and Tramway Company was trying to surmount the obstacles that had arisen in its path, the work of railway construction was begun in the neighbouring colony of Victoria, no fewer than three private companies being promoted in 1853 for that purpose. Material assistance in the shape of land grants and guarantee of interest was afforded by the Government; and on the 13th September, 1854, the first completed railway in Australasia, a line extending from Flinders-street, Melbourne, to Port Melbourne, was opened to traffic. It had been begun nearly three years after the line to connect Sydney with Parramatta, but was only  $2\frac{1}{2}$  miles long. No further mileage was brought into operation until May 13, 1857, when the Melbourne and Hobson's Bay Railway Company, which had constructed the first line, effected communication with St. Kilda; and on the 17th June of the same year a line from Williamstown to Geelong, 39 miles in length, which had been built by another company, was declared open. Meanwhile the Government of the colony had not remained inactive. In addition to assisting private enterprise with liberal concessions, it had taken over in 1855 an unfinished line started by the third of the companies referred to, and was carrying on the work of construction on its own account. By the year 1863 it had acquired all the lines in the colony with the exception of those owned by the Melbourne and Hobson's Bay Company, which were not purchased until the year 1878.

Although a line from Goolwa to Port Elliot, 6 miles in length, over which the locomotive now passes, was opened on the 18th May, 1854, it was at that time merely a horse tramway; and the first railway in South Australia was a line connecting the city with Port Adelaide,  $7\frac{1}{2}$  miles long, which was thrown open to traffic on the 21st April, 1856. The following year saw a railway constructed as far north as Gawler; while on the 1st October, 1889, a line from Palmerston to Pine Creek, in the Northern Territory, which had been built by the South Australian Government, was opened, the length being  $145\frac{1}{2}$  miles.

The northern colony of Queensland had enjoyed the privilege of self-government for several years when, early in 1864, a line to connect

Ipswich with Grandchester was commenced, and on the 31st July of the same year it was opened.

Although the Tasmanian Parliament granted a sum of £5,000 in 1863 for the survey of a line to connect Hobart with Launceston, the first railway in the island was one between Launceston and Deloraine, 45 miles in length, which was opened on the 10th February, 1871, having been commenced three years before. It was built by a private company, to whose capital, however, the Government had subscribed eight-ninths of the total amount of £450,000, on condition that the interest should be a first charge on the net receipts, and on the 3rd August, 1872, the line passed entirely into the ownership of the State. Communication between Hobart and Launceston was effected in 1876 by the completion of a line, connecting the southern city with Evandale Junction, which was constructed by an English company. The last of the colonies comprised in the Commonwealth to introduce the railway was Western Australia, where a line from the port of Geraldton to Northampton was begun during 1874 and opened in 1878. The commencement of railway construction in New Zealand was due to an agitation on the part of the settlers of Canterbury, who were desirous of facilitating communication between the city of Christchurch and the port of Lyttelton. The first portion of the line, as far as Ferrymead Junction, was brought into use on the 1st December, 1863.

The progress of railway construction, except, perhaps, in the colony of Victoria, was anything but rapid during the earlier years. This was in a great measure owing to the sparseness of the population and the natural fear that the return would not justify the expenditure which would have to be incurred in making wide extensions of the lines. It was also due, as previously pointed out, to the low estimation in which Australasian securities were held in London, and the consequent high rate of interest at which money for railway construction had to be borrowed. Since the year 1871, however, all the colonies have made satisfactory progress. In the following table will be found the length of line opened during each year, and the total mileage at the close of the working year :—

Year.	Miles opened.					
	Total.			During each year.		
	Common-wealth.	New Zealand.	Australasia.	Common-wealth.	New Zealand.	Australasia.
1854	2½	.....	2½	2½	.....	2½
1855	16½	.....	16½	14	.....	14
1856	32½	.....	32½	16	.....	16
1857	117	.....	117	84½	.....	84½
1858	132	.....	132	15	.....	15
1859	171	.....	171	39	.....	39
1860	215	.....	215	44	.....	44

Year.	Miles opened.					
	Total.			During each year.		
	Commonwealth.	New Zealand.	Australasia.	Commonwealth.	New Zealand.	Australasia.
1861	243	.....	243	28	.....	28
1862	373	.....	373	130	.....	130
1863	395	5	400	22	5	27
1864	469	5	474	74	.....	74
1865	490	5	495	21	.....	21
1866	519	5	524	29	.....	29
1867	711	7	718	192	2	194
1868	782	7	789	71	.....	71
1869	911	7	918	129	.....	129
1870	994	46	1,040	83	39	122
1871	1,030	105	1,135	36	59	95
1872	1,168	105	1,273	138	.....	138
1873	1,353	145	1,498	185	40	225
1874	1,491	209	1,700	138	64	202
1875	1,602	542	2,144	111	333	444
1876	1,961	718	2,679	359	176	535
1877	2,493	954	3,447	532	236	768
1878	2,906	1,070	3,976	413	116	529
1879	3,222	1,171	4,393	316	101	417
1880	3,675	1,258	4,933	453	87	540
1881	4,192	1,334	5,526	517	76	593
1882	4,704	1,465	6,169	512	131	643
1883	5,107	1,480	6,587	403	15	418
1884	5,855	1,570	7,425	748	90	838
1885	6,227	1,654	7,881	372	84	456
1886	6,859	1,810	8,669	632	156	788
1887	7,657	1,841	9,498	798	31	829
1888	8,365	1,865	10,230	708	24	732
1889	9,162	1,912	11,074	797	47	844
1890	9,757	1,956	11,713	595	44	639
1891	10,163	2,011	12,174	406	55	461
1892	10,394	2,011	12,405	231	.....	231
1893	10,688	2,108	12,796	294	97	391
1894	10,974	2,168	13,142	286	60	346
1895	11,600	2,190	13,790	626	22	648
1896	11,641	2,190	13,831	41	.....	41
1897	11,970	2,185	14,155	329	(-) 5	324
1898	12,170	2,222	14,392	200	37	237
1899	12,702	2,257	14,959	532	35	567
1900	12,995	2,271	15,266	293	14	307

It will be seen from the foregoing table that the lines opened in the Commonwealth and Australasia averaged 30 miles in length during each year from 1854 to 1861; from 1862 to 1871 the annual average was 82 miles in the Commonwealth and 89 in Australasia; from 1872

to 1881, 312 miles in the Commonwealth and 439 in Australasia; from 1882 to 1891, 597 miles in the Commonwealth and 665 in Australasia; and from 1892 to 1900, 314 miles in the Commonwealth and 343 in Australasia. It is now the established policy of each colony to keep the railways under State control, and only in exceptional circumstances is that policy departed from. Excluding coal, timber, and other lines which are not open to general traffic, there are within the Commonwealth only 490 miles of private lines, equal to but 3·77 per cent. of the total mileage open; and in Australasia only 657 miles, or 4·30 per cent. of the total mileage open. In Victoria the railways are entirely in the hands of the Government; while in Western Australia there are 277 miles of private lines, or 16·97 per cent. of the total mileage of the colony; in New South Wales, 85 miles; in Tasmania, 108 miles, and in South Australia, 20 miles. The private lines of New Zealand have a total length of 167 miles. A departure from the ordinary policy of the colony has also been made in Queensland, where the construction of the railway from Mareeba to Chillagoe, a distance of about 100 miles, has been undertaken by private persons, and the work is now in progress. Except in the case of Western Australia, none of these private railways are trunk lines, the most important of them being primarily intended to facilitate the development of important mines, and not for general traffic.

The divergence of the policy of Western Australia from that pursued by the other colonies was caused by the inability of the Government to construct lines when railway extension was urgently required in the interests of settlement. Private enterprise was therefore encouraged by liberal grants of land to undertake the work of construction; but the changing conditions of the colony have modified the State policy, and on the 1st January, 1897, the Government acquired the Great Southern Railway, 243 miles in length, one of the two trunk lines in private hands. This railway, which was owned by the West Australian Land Company, Limited, was built on the land-grant system, the State concession being 12,000 acres for every mile of line laid down, of which the original concessionaire retained 2,000 acres. The total price paid by the Government for the railway, with all the interests of the company and of the original concessionaire, was £1,100,000, of which £800,000 is set down as the capital sum on which the railway authorities are expected to provide interest, exclusive of the amount invested in rolling stock. The other trunk line is the Midland Railway, 277 miles in length, owned by the Midland Railway Company of Western Australia, Limited. In this case the land granted by the State was also 12,000 acres per mile of line. In 1891 the Government granted some slight assistance to the company, and in the following year guaranteed £500,000 of 4 per cent. debentures, the security being a first charge upon the railway and its equipment, and 2,400,000 acres selected land. At three months' notice, the State may foreclose should the company be indebted to it to the amount of £20,000.

The following statement shows the gauge and length of the private railways of Australasia :—

Line.	Gauge.		Length. miles.
	ft.	in.	
New South Wales—			
Deniliquin-Moama .....	5	3	45
Cockburn-Broken Hill .....	3	6	36
Clyde-Rosehill .....	4	8½	3
Warwick Farm .....	4	8½	1
South Australia—			
Glennelg Railway Co.'s lines :			
Holdfast Bay .....	5	3	7
Victoria Square .....	5	3	7
Sidings, loops, &c. ....	5	3	6
Western Australia—			
Midland : Midland Junction-Walkaway Junction .....	3	6	277
Tasmania—			
Emu Bay-Mount Bischoff .....	3	6	80
Mount Lyell .....	3	6	21
Dundas-Zeehan .....	3	6	7
New Zealand—			
Wellington-Manawatu .....	3	6	84
Kaitangata-Stirling .....	3	6	4
Midland Railway .....	3	6	79

A proviso has been inserted in the charters of the companies owning the private lines in New South Wales, whereby after a certain date the Government can, if disposed, acquire the lines at a valuation. Similar conditions are found in most of the charters granted by the other colonies permitting the construction of private lines.

In the construction of railways during the last working year the colony of New South Wales displayed most activity. Of the 267 miles thrown open to traffic in Australasia during the twelve months ended 30th June, 1900, 64½ were opened in New South Wales, comprising the Tamworth to Manilla line, 29½ miles, and Moree to Gravesend, 35 miles.

The following table shows the extension of the railway in each colony since 1861 :—

State.	1861	1866	1871	1876	1881	1886	1891-2	1899-1900
New South Wales .....	73	143	358	554	1,040	1,941	2,266	2,896
Victoria .....	114	270	276	718	1,247	1,754	2,903	3,218
Queensland .....	0	50	218	298	800	1,433	2,320	2,801
South Australia .....	56	56	133	308	845	1,226	1,823	1,901
Western Australia ...	*	0	*	38	92	202	657	1,632
Tasmania .....	*	0	45	45	168	303	425	547
Commonwealth ...	243	519	1,030	1,961	4,192	6,859	10,394	12,995
New Zealand .....	0	5	105	718	1,334	1,810	2,011	2,271
Australasia .....	243	524	1,135	2,679	5,526	8,669	12,405	15,266

\* Railways not in existence.

In 1883 a junction was effected between the New South Wales and Victorian lines at the river Murray ; three years later direct communication was established between Victoria and South Australia ; and in 1888 the last mile of line connecting Sydney with the northern colony of Queensland was completed, thus placing the four capitals, Brisbane, Sydney, Melbourne, and Adelaide, in direct communication with each other. A few years ago proposals were made to the Government of Western Australia to construct a railway upon the land-grant system, connecting the eastern districts of the colony with South Australia. It was proposed to extend the lines to Eucla, close to the South Australian border, and when that colony had extended its railways to the same point, Perth would be connected with all the capitals of the Australian colonies. In June, 1897, the South Australian Railways Commissioner, in a report to the Commissioner of Public Works, estimated the cost of construction and equipment of a line to the Western Australian border, a distance of 553 miles, at £1,903,000. When the railways of the two colonies shall have been connected, as they will possibly be at no far distant date, the European mails will, in all likelihood, be landed at Fremantle, and sent overland to all parts of the continent.

The following table shows the length of Government railways in course of construction and authorised on the 30th June, 1900 :—

	Miles.
New South Wales .....	303
Victoria.....	74
Tasmania .....	48
	<hr/>
Commonwealth .....	425
New Zealand .....	111
	<hr/>
Australasia .....	536

Notwithstanding the energetic expansion of the railway systems throughout Australasia since 1871, there is still room for considerable extension. In the colony of South Australia construction is entirely confined to the south-eastern corner and to the extension of the Northern Line, which has its present terminus at Oodnadatta, 686 miles from Adelaide. It is proposed to eventually extend this line as far north as Pine Creek, the southern terminus of the Port Darwin line. In the course of the year 1896 offers were made on behalf of various syndicates for the construction of the Transcontinental railway, with the acquirement of the section from Palmerston to Pine Creek ; but the Government was not prepared to recommend to Parliament the acceptance of any offer based on the land grant or guarantee system. When this railway is completed, direct overland communication will be established between the northern and southern portions of the continent. The length of the gap between the terminus at Oodnadatta and that at Pine Creek is 1,140 miles on the telegraph route.

In New South Wales the railway extensions will be chiefly confined to perfecting the various systems already constructed. At the present time several lines of what is termed the "pioneer" class are in course of construction in level pastoral country. These are of a light and cheap kind, on which the produce of the settlers may be conveyed to the trunk lines at a reasonable speed and at a cheaper rate than carriage by road. In Queensland, with its vast expanse of partly-settled territory and extensive seaboard, the railways are being constructed in separate systems. The lines commence from each of the principal ports and run inland, but there is no doubt that not many years will elapse before these systems will become branches of a main trunk-line which, in all likelihood, will be the Brisbane-Charleville line extended as far as Normanton at the Gulf of Carpentaria. In this colony a system has been introduced by which railways are constructed under a guarantee given by the local authority on behalf of the ratepayers of the district. Details of this system are given on a subsequent page. In Victoria, Tasmania, and New Zealand the railways are well developed compared with size of territory, and any future extensions will hardly be on so large a scale as in the other colonies. In Western Australia great activity now prevails in extending the lines to the gold-fields, and in the south-western portion of the colony in the interests of permanent settlement.

#### CONTROL OF STATE RAILWAYS.

The colonies of Victoria, South Australia, New South Wales, and Queensland have found it expedient to place the management and maintenance of railways under the control of commissioners. Victoria, in 1853, was the first colony to adopt this system; four years later South Australia made the change, while New South Wales and Queensland followed in 1858. Each of these colonies appointed three officials as commissioners, and conferred upon them large executive powers, amounting to almost independent control, the object aimed at being to obtain economical management of the lines free from political interference. Subsequently Queensland, Victoria, and South Australia reduced the number of commissioners to one; but in New South Wales, where the administration has been most successful, no changes in the system have been made. The control of the New Zealand railways was also handed over to a body of three commissioners in 1857; but at the beginning of 1895 the Government resumed charge of the lines, a general manager being responsible to a Minister for Railways.

In New South Wales and Victoria an additional safeguard in railway construction prevails. All proposals for new lines are submitted to a committee selected from Members of the Houses of Parliament. These committees take evidence regarding the suitability of the route proposed, the probable cost of construction, the financial prospects of the

line, and the grades to be adopted; and thereupon advise Parliament to adopt or reject the schemes proposed. This supervision of railway development may be said to have been attended with success, although lines that are not likely to be commercially successful have been recommended by the committee and sanctioned by Parliament.

#### DIVERSITY OF GAUGE.

Unfortunately for intercolonial communication, railway construction in Australia has proceeded without uniformity of gauge, and the accomplishment of this work, which it is everywhere admitted must be secured, becomes more formidable to contemplate as the years roll on. In 1846 Mr. Gladstone advised that the 4-ft. 8½-in. gauge should be adopted for any lines constructed in New South Wales; and two years later this gauge was adopted as the standard by the Royal Commission appointed for the purpose of determining a uniform gauge for England and Scotland. In 1850, however, the Sydney Railroad and Tramway Company decided to adopt the 5-ft. 3-in. gauge, and in 1852 an Act was passed which provided that all railways in the colony should be laid down to that gauge. But in 1853 the company mentioned, having changed their engineer, altered their views on the gauge question, and applied to have the 4-ft. 8½-in. gauge substituted for the 5-ft. 3-in., succeeding in repealing the Act and in passing another which made the narrower gauge imperative. This step was taken without the concurrence of the other colonies, and feeling ran very high in Victoria in consequence, as two of the railway companies in that colony had already given large orders for rolling-stock on the 5-ft. 3-in. gauge. Until the lines of the two colonies met on the boundary no discomfort was, of course, experienced; but since then the break of gauge, with the consequent change of trains, has been a source of irritation and inconvenience. The South Australian Government adopted at the outset the 5-ft. 3-in. gauge of Victoria; but finding that the construction of lines of this gauge involved a heavier expense than they were prepared to face, the more recent lines were built on a gauge of 3 ft. 6 in. In that colony there are 507 miles laid to the 5-ft. 3-in. gauge, and 1,229¼ to that of 3-ft. 6-in., which is also the gauge of the 145½ miles of railway in the Northern Territory. The line joining Adelaide with the Victorian border, as well as several of the other trunk-lines, has been constructed on the wide gauge, so that the line from Melbourne to Adelaide is uniform. The private line which prolongs the South Australian system into New South Wales as far as Broken Hill is on the 3-ft. 6-in. gauge. All the Queensland lines are built on the gauge of 3 ft. 6 in., so that transshipment is necessary on the boundary between that colony and New South Wales. Tasmania, Western Australia, and New Zealand have adopted the 3-ft. 6-in. gauge. The first line laid down in Tasmania was on the 5-ft. 3-in. gauge, but it was soon altered to 3 ft. 6 in. On the west coast of that

island an experiment is being made in the construction of a 2-ft. gauge line, at one-fourth the cost of a line laid down to the Tasmanian standard gauge. The advisability of constructing lines of this class is also being considered in Victoria. The total length of line in Australasia laid down to a gauge of 5 ft. 3 in. is 3,725 miles; there are 2,811 $\frac{1}{4}$  miles on the 4-ft. 8 $\frac{1}{2}$ -in. gauge, and 8,072 $\frac{1}{2}$  miles on the 3-ft. 6-in. gauge.

As far back as May, 1889, Mr. Eddy urged the Government of New South Wales to take action with the object of securing a uniform gauge for the colonies, and frequently since that date the Railway Commissioners have directed attention to the urgency of dealing with this important question before the colonies incur greater expenditure in railway construction. They have suggested that the settlement of the difficult question of the adoption of a standard gauge should be approached from the standpoint of which of the two gauges, 4 ft. 8 $\frac{1}{2}$  in. and 5 ft. 3 in., can be adopted at the least cost and with the smallest amount of inconvenience to the country; and that the whole of the railways of New South Wales and Victoria, with that part of the South Australian lines laid to the 5-ft. 3-in. gauge, as well as the line to Cockburn, and all the lines in Queensland south of Brisbane leading to New South Wales, shall be altered to the standard, the cost of altering the railways and the rolling stock necessary to work them to be a national charge.

## COMPARISON OF RAILWAY FACILITIES.

The population and area of territory per mile of line open vary considerably in the different colonies. In comparison with population, Western Australia, South Australia, and Queensland—the most extensive colonies—have the greatest mileage; but in proportion to the area of territory, Victoria, New Zealand, and Tasmania take the lead. The annexed table shows the relation of the railway mileage to population and to the area of each colony for the year 1899–1900:—

State.	Per Mile of Line Open.	
	Population.	Area.
	No.	sq. miles.
New South Wales .....	468	107
Victoria .....	361	27
Queensland .....	172	238
South Australia <sup>o</sup> .....	194	475
Western Australia .....	105	598
Tasmania .....	333	48
Commonwealth .....	287	228
New Zealand .....	333	46
Australasia .....	293	201

<sup>o</sup> Including Northern Territory.

In the following table are given the average population and area of territory per mile of line open in the principal countries of the world. Of course a comparison can only be made fairly between Australasia and other young countries in process of development :—

Countries.	Length of Railway.	Per Mile of Line Open.	
		Population.	Area.
	miles.	No.	sq. miles
United Kingdom .....	21,659	1,759	6
France .....	25,728	1,497	8
Germany .....	28,637	1,826	7
Austria-Hungary .....	20,536	2,014	12
Belgium .....	2,850	2,340	4
Netherlands .....	1,899	2,672	7
Switzerland.....	2,313	1,349	7
Sweden .....	6,350	797	27
Norway .....	1,213	1,787	103
Russia (exclusive of Finland) .....	28,244	3,670	69
Spain .....	8,020	2,190	25
Italy .....	9,592	3,321	12
India (inclusive of Native States) .....	22,491	12,766	69
Canada.....	16,870	307	217
Cape Colony .....	2,357	648	94
Argentine Republic .....	9,885	400	133
Brazil .....	8,718	1,044	368
Chili.....	2,662	1,019	109
United States of America .....	186,810	335	19
Commonwealth of Australia .....	12,995	287	228
Australasia .....	15,266	293	201

#### COST OF CONSTRUCTION.

At the close of the year 1899-1900, the cost of construction and equipment of the State railways completed and open to traffic in the Commonwealth was, in round figures, £122,000,000, or 62 per cent. of the public debts of the colonies composing it, after deducting sinking funds. The construction and equipment of the railways of Australasia

cost £138,000,000, or nearly 58 per cent. of the public debt of Australasia, after deducting sinking funds. To what extent the provinces have contributed to this expenditure will be apparent from the subjoined table, showing the total cost and the average, per mile :—

State.	Year.	Length of line open.	Gauge.	Total cost of Construction and Equipment.	Average cost per mile.
		miles.	ft. in.	£	£
New South Wales .....	1900	2,811½	4 8½	38,477,269	13,687
Victoria .....	„	3,218	5 3	39,658,819	12,324
Queensland .....	„	2,801	3 6	19,320,902	6,897
South Australia .....	„	1,736½	{ 5 3 } { 3 6 }	13,014,428	7,496
Northern Territory.....	„	145½	3 6	1,155,267	7,940
Western Australia .....	„	1,355	3 6	6,856,363	5,060
Tasmania .....	1899	437¾	3 6	3,604,222	8,233
Commonwealth .....	.....	12,504¾	.....	122,087,270	9,763
New Zealand .....	1900	2,104	3 6	16,703,887	7,939
Australasia .....	.....	14,608¾	.....	138,791,157	9,500

It will be seen that the lines which have been constructed most cheaply are those of Western Australia, where the average cost per mile has only been £5,060, as compared with an average of £9,763 for the Commonwealth and £9,500 for the whole of Australasia. In that colony there have been few engineering difficulties to contend with, and the lines laid down have been of a light kind. In New South Wales, the average cost, given as £13,687, has been somewhat reduced lately, in consequence of the construction of light "Pioneer" lines, built for an expenditure of £2,019 per mile. It is proposed by the Minister for Public Works to construct several new lines by day labour, as the Railway Construction Department has had a somewhat unfortunate experience in regard to claims for extras to contracts, and expensive litigation in resisting such claims. In Victoria the average cost has been reduced from £13,153 to £12,324 since 1891. At that date it was decided to apply the "butty-gang" system to the construction of railways in the colony, and to build all new country lines as cheaply as possible, and this has been strictly adhered to. Fairly substantial permanent-way has been laid down, with reduced ballast; unless they

have been absolutely necessary, fencing and gatehouses have been dispensed with; and only a skeleton equipment for stations and water supplies has been provided. As settlement progresses and traffic is developed, it is intended to raise these lines to the requisite standard of efficiency. In Queensland construction is now proceeding, in some cases, under a guarantee from the local authorities.

It would hardly be fair to institute a comparison between the cost of construction per mile in Australasia and in the densely-populated countries of Europe, for while in Europe the resumption of valuable ground is perhaps the heaviest expense in connection with the building of railways, in the colonies this item of expenditure is not of leading importance. The cost per mile in certain sparsely-settled countries is as follows:—

Canada .....	£11,624
Cape Colony .....	10,452
United States .....	11,626
Argentina.....	10,762
Mexico .....	9,417
Chili .....	14,463
Brazil .....	14,626

while for the Commonwealth of Australia it is £9,763, and for New Zealand £7,939.

#### REVENUE AND WORKING EXPENSES.

The avowed object of State railway construction in Australasia has been to promote settlement, apart from considerations of the profitable working of the lines; but at the same time the principle has been kept in view that in the main the railways should be self-supporting, and some of the colonies have, with more or less success, handed them over to Commissioners to be worked according to commercial principles, free from political interference. With the exception of South Australia, so far as the Palmerston-Pine Creek line in the Northern Territory is concerned, in all the colonies the revenue derived from the railway traffic exceeds the working expenses. During 1898-9 the colonies of New South Wales and Western Australia derived a profit from the working of the lines; and for the year ended 30th June, 1900, the colonies of South Australia proper and Western Australia were similarly favoured. Even in New South Wales, where the Commissioners have achieved most commendable results during the term of their administration, and claim to have at last made the lines self-supporting, there is still a deficiency for the year ended 30th June, 1900, when it is borne in mind that the average price received for the loans of the colony is but £96·48 per £100 of stock, and the interest payable is calculated accordingly. The net sum available to meet interest charges

during the last two working years will be found in the following table, showing the earnings and working expenses:—

State.	Working year, 1898-9.			Working year, 1899-1900.		
	Gross Earnings.	Working Expenses.	Net Earnings.	Gross Earnings.	Working Expenses.	Net Earnings.
	£	£	£	£	£	£
New South Wales.....	3,145,273	1,690,442	1,454,831	3,103,572	1,760,520	1,394,052
Victoria .....	2,873,729	1,797,726	1,076,003	3,025,162	1,902,540	1,122,622
Queensland .....	1,373,476	734,811	588,664	1,464,399	948,091	515,708
South Australia .....	1,058,397	617,380	441,017	1,166,987	657,841	509,146
Northern Territory.....	14,758	17,375	(-) 2,617	14,709	24,340	(-) 9,541
Western Australia .....	1,004,020	712,329	292,201	1,259,512	861,470	398,042
Tasmania* .....	178,180	141,179	37,001	193,158	152,798	40,360
Commonwealth ..	9,648,432	5,761,242	3,887,190	10,287,589	6,317,200	3,970,389
New Zealand† .....	1,460,665	929,738	539,927	1,623,891	1,052,358	571,533
Australasia .....	11,118,097	6,690,980	4,427,117	11,911,480	7,369,558	4,541,922

\* Years ended 31st December, 1898 and 1899. † Years ended 31st March, 1899 and 1900.  
(-) Denotes deficiency in amount available to meet working expenses.

The proportion of gross earnings absorbed by working expenses during each of the last five years will be found below:—

State.	Percentage of Gross Earnings absorbed by Working Expenses.				
	1895-6.	1896-7.	1897-8.	1898-9.	1899-1900.
New South Wales .....	55·02	53·11	53·34	53·75	55·93
Victoria .....	64·39	59·77	66·92	62·55	62·89
Queensland .....	59·36	58·01	56·43	57·14	64·78
South Australia .....	59·10	59·92	61·31	58·33	56·37
Northern Territory .....	101·22	105·91	143·50	117·73	164·47
Western Australia .....	49·79	63·09	77·11	70·91	68·40
Tasmania* .....	80·42	74·98	77·04	79·23	79·10
Commonwealth .....	59·17	58·02	60·70	59·71	61·46
New Zealand† .....	63·51	61·35	62·30	63·26	64·80
Australasia .....	59·71	58·44	60·91	60·18	61·94

\* Years ended 31st December, 1895-9. † Years ended 31st March, 1896-1900.

It will be seen from this table that the percentage of working expenses for the colonies comprised in the Commonwealth has increased from 59·17 to 61·46 in the course of the five years; the increase for Australasia as a whole being from 59·71 to 61·94. In Victoria the working expenses during the period decreased 1·5 per cent.; in South Australia proper, 2·73 per cent.; and in Tasmania, 1·32 per cent. The

increase manifested by New South Wales was 0·91 per cent.; Queensland, 5·42 per cent.; Northern Territory of South Australia, 63·25 per cent.; Western Australia, 18·61 per cent.; and New Zealand, 1·29 per cent. At the present time the proportion of gross earnings absorbed by working expenses is smallest in New South Wales, and, setting aside the Northern Territory railway, highest in Tasmania.

#### INTEREST RETURNED ON CAPITAL.

In establishing the financial results of the working of the lines, it is the practice of the railway authorities to compare the net returns with the nominal rate of interest payable on the railway loans outstanding, ignoring the fact that many loans were floated below par and that the nominal is not the actual rate of interest. A true comparison, of course, is afforded by taking the rate of interest payable on the actual sum obtained by the State for its outstanding loans. This information is not obtainable for New Zealand; but for the other colonies it is to be understood that the figures in the second column of the following table represent the actual rate of interest payable, ascertained in the manner last described. On this basis, the only colonies whose lines paid their way during the year ended 30th June, 1900, were Western Australia, where the activity in gold-mining has resulted in a net profit of 2·35 per cent. on the railway lines of the colony after defraying the interest charge on the capital expenditure, and South Australia proper where the net profit was 0·04 per cent. In New South Wales, where the Commissioners have announced a profit after paying interest on the invested capital, there is still a deficiency of 0·14 per cent., but it may be expected that this will be extinguished at an early date:—

State.	Interest returned on Capital.	Actual rate of Interest payable on outstanding Loans.	Average Loss.
	per cent.	per cent.	per cent.
New South Wales .....	3·62	3·76	0·14
Victoria .....	2·83	3·95	1·12
Queensland .....	2·67	4·01	1·34
South Australia .....	3·91	3·87	*0·04
Northern Territory ...	(—) 0·82	4·09	4·91
Western Australia.....	5·81	3·46	*2·35
Tasmania.....	1·12	3·80	2·68
Commonwealth ...	3·25	3·85	0·60
New Zealand .....	3·42	3·79	0·37
Australasia .....	3·27	3·84	0·57

\* Average gain.

The rate of return on capital which is shown in the foregoing table represents the interest on the gross cost of the lines. In some cases the nominal amount of outstanding debentures is less than the actual expenditure on construction and equipment, owing to the fact that some loans have been redeemed; but as the redemption has been effected by means of fresh loans charged to general services, or by payments from the general revenue, and not out of railway earnings, no allowance on this account can reasonably be claimed.

The table given below shows the rate of interest returned on the capital expenditure for each of the last five years, with the sum which such return falls short of the actual rate of interest payable on cost of construction. In the case of New Zealand, only the nominal loss is shown; the actual loss was somewhat higher:—

State.	1895-6.	1896-7.	1897-8.	1898-9.	1899-1900.
	Per cent.				

INTEREST RETURNED ON CAPITAL EXPENDITURE.

New South Wales .....	3·44	3·78	3·74	3·83	3·62
Victoria .....	2·24	2·74	2·49	2·75	2·83
Queensland .....	2·63	2·37	2·92	3·15	2·67
South Australia .....	3·21	3·26	2·98	3·42	3·91
Northern Territory .....	(-)-0·02	(-)-0·09	(-)-0·53	(-)-0·22	(-)-0·82
Western Australia .....	11·48	9·05	4·62	4·55	5·81
Tasmania* .....	0·83	1·16	1·09	1·03	1·12
Commonwealth .....	3·01	3·36	3·11	3·31	3·25
New Zealand .....	2·80	3·19	3·24	3·29	3·42
Australasia .....	2·98	3·34	3·12	3·31	3·27

NET LOSS IN WORKING LINES.

New South Wales .....	0·42	0·03	0·05	+0·05	0·14
Victoria .....	1·84	1·26	1·50	1·20	1·12
Queensland .....	1·40	1·16	1·11	0·88	1·34
South Australia .....	0·91	0·79	1·05	0·53	+0·04
Northern Territory .....	4·14	4·14	4·56	4·17	4·91
Western Australia .....	+7·64	+5·45	+1·03	+1·01	+2·35
Tasmania* .....	3·05	2·71	2·75	2·79	2·68
Commonwealth .....	1·01	0·61	0·80	0·57	0·60
New Zealand .....	1·14	0·73	0·65	0·52	0·37
Australasia .....	1·03	0·63	0·80	0·57	0·57

\* Years 1895 to 1899.

† Net profit.

In 1881 the New South Wales railways yielded 5·31 per cent.—a higher rate of interest on the capital cost than was ever reached before or since. In the same year the Victorian lines yielded a return of 4·04 per cent., which is the highest on record in that colony, with the exception of 4·18 in the year 1886. The decline in the net profits was largely due to the extension of the lines in sparsely-populated districts; but with the adoption of a more prudent policy in the matter of construction, largely dictated by the severe financial pressure to which the colonies were subjected, and with more careful working, the returns, as will be evident from the foregoing table, are again showing improvement.

## EARNINGS AND EXPENSES PER MILE.

The gross earnings, expenditure, and net earnings per average mile worked during the last two years were as follow :—

State.	Gross Earnings.		Expenditure.		Net Earnings.	
	1898-9.	1899-1900.	1898-9.	1899-1900.	1898-9.	1899-1900.
	£	£	£	£	£	£
New South Wales..	1,163	1,153	625	645	538	508
Victoria .....	920	949	576	597	344	352
Queensland .....	506	523	289	339	217	184
South Australia ...	614	674	358	380	256	294
Northern Territory	102	102	119	167	(—) 17	(—) 65
Western Australia.	791	930	561	636	230	294
Tasmania* .....	400	434	317	343	83	91
Commonwealth	796	827	468	508	328	319
New Zealand .....	712	774	450	501	262	273
Australasia...	784	819	466	507	318	312

1898 and 1899

For the colonies comprised in the Commonwealth the gross earnings per average mile worked during 1899-1900 were £31 more than in the previous year, and the working expenses were increased by £40, leaving the net earnings at £319 in 1899-1900, as compared with £328 in 1898-9. For the whole of Australasia the gross earnings per average mile worked during 1899-1900 were £35 more than in the previous year, and the working expenses were increased by £41, leaving the net earnings at £312 in 1899-1900 as against £318 in 1898-9. Below will be found a table giving the returns per train mile. In all the colonies there was an increase in the train mileage

run during 1899-1900. The increase in Western Australia was nearly a million miles :-

State.	Gross Earnings.		Expenditure.		Net Earnings.	
	1898-9.	1899-1900.	1898-9.	1899-1900.	1898-9.	1899-1900.
	d.	d.	d.	d.	d.	d.
New South Wales...	85·72	85·36	46·07	47·75	39·65	37·61
Victoria .....	71·00	71·83	44·41	45·17	26·59	26·66
Queensland .....	56·62	51·69	32·35	35·43	24·27	19·26
South Australia ...	65·14	67·02	38·00	37·78	27·14	29·24
Northern Territory	115·53	114·53	136·02	188·37	(-)20·49	(-)73·84
Western Australia.	74·01	71·70	52·48	49·04	21·53	22·66
Tasmania* .....	56·17	57·50	44·50	45·49	11·67	12·01
Commonwealth	71·71	71·23	42·81	43·74	28·90	27·49
New Zealand.....	89·00	93·00	56·22	60·31	32·78	32·69
Australasia ..	73·92	73·58	44·28	45·52	29·64	28·06

\* 1898 and 1899.

## FINANCIAL RESULTS OF FOREIGN RAILWAYS.

The interest on capital cost, the proportion of working expenses to the gross revenue, and the returns per train mile for the railways of some of the principal countries of the world are given below. The figures for the countries other than Australasia refer either to the year 1898 or 1897 :-

Country.	Capital Cost.			Working Expenses : Proportion to Gross Revenue.	Per Train Mile.		
	Total.	Per Mile Open.	Return Per Cent.		Gross Revenue.	Working Expenses.	Net Revenue.
	£	£	p. cent.	per cent.	d.	d.	d.
United Kingdom .....	1,134,468,462	52,378	3·55	58·14	60·7	35·3	25·4
France .....	635,920,000	27,726	4·30	52·08	68·3	35·6	32·7
Germany .....	580,187,000	20,260	6·06	55·68	75·9	41·8	34·1
Belgium .....	59,526,012	29,886	5·71	60·06	56·7	34·0	22·7
United States .....	2,089,407,000	11,626	4·32	61·44	65·5	47·0	18·5
Canada .....	196,193,549	11,624	2·19	65·54	57·2	38·4	18·8
Cape Colony .....	20,800,212	10,452	4·63	65·53	84·3	55·2	29·1
Commonwealth of Aus- tralia .....	122,087,270	9,763	3·25	61·40	71·2	43·7	27·5
Australasia .....	138,701,157	9,500	3·27	61·87	73·5	45·5	28·0

The figures given above for the Cape Colony are for State lines only, and the return on the invested capital is exclusive of the share of the Orange Free State in the profits.

## COACHING AND GOODS TRAFFIC.

The following table shows the number of passengers carried on the lines of the various colonies during the years 1881, 1891-2, and 1899-1900. It will be seen that during the last few years the number of journeys on the Victorian lines has fallen off enormously, although the traffic has again taken an upward movement. Nearly all the colonies, however, experienced the effects of the diminished spending power of the people; but in the majority of cases a recovery has taken place. The number of passenger journeys in Tasmania in 1899 was still small compared with the 1891 returns:—

State.	Passengers carried.		
	1881.	1891-2.	1899-1900.
New South Wales .....	6,907,312	10,918,916	26,486,873
Victoria .....	18,964,214	55,148,122	49,332,899
Queensland* .....	247,284	2,370,219	4,395,841
South Australia .....	3,032,714	5,744,487	7,416,506
Northern Territory .....	No lines	4,541	3,374
Western Australia .....	67,144	456,631	6,225,068
Tasmania .....	102,495	704,531	640,587
Commonwealth .....	29,321,163	84,347,447	94,501,148
New Zealand .....	2,911,477	3,555,764	5,468,284
Australasia .....	32,232,640	87,903,211	99,969,432

\* Exclusive of journeys of season ticket-holders.

The amount of goods tonnage is shown in the subjoined table. In the period from 1881 to 1891 there was an increase of about 102 per cent., varying from 44 per cent. in New Zealand to 747 per cent. in Tasmania. Since the latter year the tonnage has increased by 43 per cent. :—

State.	1881.	1891-2.	1899-1900.
New South Wales .....	tons. 2,033,850	tons. 4,296,713	tons. 5,531,511
Victoria .....	1,366,603	2,720,886	2,998,303
Queensland .....	161,008	768,527	1,688,635
South Australia .....	646,625	1,337,859	1,485,976
Northern Territory .....	No lines.	2,633	3,009
Western Australia .....	27,816	135,890	1,384,040
Tasmania .....	21,043	178,224	312,446
Commonwealth .....	4,256,945	9,440,732	13,403,920
New Zealand .....	1,437,714	2,066,791	3,127,874
Australasia .....	5,694,659	11,507,523	16,531,794

The percentage of receipts from coaching traffic to the total receipts is somewhat less in the Australasian colonies than in the United Kingdom, where for the year 1899 the coaching receipts formed 45·63 per cent. of the total obtained from goods and passenger traffic. The figures for each colony are given below :—

State.	Coaching Traffic.	Goods Traffic.
	per cent.	per cent.
New South Wales .....	38·80	61·20
Victoria .....	48·59	51·41
Queensland .....	34·52	65·48
South Australia .....	29·73	70·27
Northern Territory .....	26·98	73·02
Western Australia .....	27·90	72·10
Tasmania .....	40·46	59·54
Commonwealth .....	38·78	61·22
New Zealand .....	32·51	67·49
Australasia .....	38·00	62·00

AVERAGE WEIGHT OF TRAIN LOAD.

The useful comparisons that may be made between the railway systems of the various colonies are very limited, and greater uniformity in the presentation of the railway reports is extremely desirable in view of the provisions in the Commonwealth Act for the possible control of the railway systems by the central government. An example of want of uniformity in an important particular is the absence of information which would enable the average train load to be ascertained. This information can only be given for two States—South Australia and New South Wales—and for the latter colony in a perfect manner for one year only. The figures for South Australia show a decided increase in the average weight during the last five years. The figures quoted do not include the business of the Northern Territory :—

Year.	Goods mileage.	Ton mileage.	Average weight of train.
1896 .....	2,089,911	134,846,696	tons. 64·52
1897 .....	2,265,277	159,454,588	70·34
1898 .....	2,273,537	157,143,651	69·11
1899 .....	2,426,477	191,041,569	78·73
1900 .....	2,569,958	197,079,956	76·68

The average tonnage for goods trains is, therefore, 72 tons, which is 4 tons higher than in New South Wales, the only other system with which a comparison can be made. The New South Wales figures, with the exception of those for the year 1900, are unsatisfactory, inasmuch as the goods mileage relates to the year ended 30th June, while the ton mileage is for the year ending 31st December following. No figures can be quoted for 1899 :—

Year.	Goods mileage.	Ton mileage.	Average weight of train.
1896	4,001,164	255,621,932	63·9
1897	4,244,385	273,400,624	64·4
1898	4,260,368	314,996,969	73·9
1900	4,610,343	320,364,852	69·5

The average for the period was 68 tons. The figures for New South Wales and for South Australia compare very favourably with the returns of the British railways, but are very far behind those of some of the great American lines, as the following figures show :—

#### British Railways, 1900.

Company.	Goods mileage.	Ton mileage.	Average weight of train.
Lond. North-Western .....	22,668,940	1,311,000,000	57
Midland .....	27,270,791	1,377,000,000	50
Great Western .....	23,096,578	1,056,000,000	46
North-Eastern .....	17,565,768	1,055,000,000	60
Great Northern .....	12,027,759	534,000,000	44½
Lancashire and Yorkshire	6,681,695	450,000,000	67
Great Eastern .....	8,564,851	322,000,000	37½
Great Central.....	8,328,551	360,000,000	43
Total .....	126,204,933	6,465,000,000	51

The New York Central shows to great advantage compared with the British lines ; the average weight of train for the years quoted was :—

	tons.
1894 .....	249
1895 .....	252
1896 .....	268
1897 .....	270
1898 .....	299
1899 .....	322

## ROLLING STOCK.

The following table gives the different classes of rolling stock in the possession of the several Australasian Governments at the end of the year 1899-1900, and, considerable as are the numbers of each class, they could with advantage be largely increased in most of the colonies :—

State.	Engines.	Coaching Stock.	Goods Stock.
New South Wales .....	489	1,025	9,880
Victoria .....	522	1,436	9,317
Queensland .....	335	388	6,141
South Australia .....	347	407	6,154
Northern Territory .....	6	7	134
Western Australia .....	233	260	4,777
Tasmania .....	67	218	1,125
Commonwealth ...	1,999	3,741	37,528
New Zealand .....	304	577	10,295
Australasia .....	2,303	4,318	47,823

## RAILWAY ACCIDENTS.

The persons meeting with accidents on railway lines may be grouped under three heads—passengers, servants of the railways, and trespassers; and the accidents themselves might be classified into those arising from causes beyond the control of the person injured, and those due to misconduct or want of caution. The following table shows the number of persons killed and injured on the Government railways during 1899-1900 in those colonies for which returns are available :—

State.	Passengers.		Railway Employés.		Trespassers, &c.		Total.	
	Killed.	Injured.	Killed.	Injured.	Killed.	Injured.	Killed.	Injured.
New South Wales .....	5	44	18	181	13	30	36	255
Victoria .....	2	129	9	336	27	73	38	538
South Australia .....	1	.....	5	27	4	3	10	30
Northern Territory* .....	.....	.....	.....	.....	.....	.....	.....	.....
New Zealand .....	2	18	8	237	6	66	16	321

\* No accidents.

The railways of Australasia have been as free from accidents of a serious character as the lines of most other countries. In order to obtain a common basis of comparison it is usual to find the proportion

which the number of persons killed or injured bears to the total passengers carried. There is, however, no necessary connection between the two, for it is obvious that accidents may occur on lines chiefly devoted to goods traffic, and a more reasonable basis would be the accidents to passengers only compared with the number of passengers carried. The data from which such a comparison could be made are wanting for some countries. As far as the figures can be given they are shown in the following table, which exhibits the number of passengers killed and injured per million carried. The figures are calculated over a period of ten years and brought down to the latest available dates:—

Country.	Number of Passengers.		Average per million passengers carried.	
	Killed.	Injured.	Killed.	Injured.
Germany.....	470	1,906	0·1	0·4
Austria-Hungary.....	104	1,280	0·1	1·4
Belgium.....	127	1,209	0·1	1·3
Sweden.....	18	29	0·1	0·2
France.....	653	3,207	0·2	1·1
Norway.....	6	5	0·1	0·1
Holland.....	21	92	0·1	0·4
Switzerland.....	168	582	0·4	1·5
Russia.....	403	1,532	0·8	3·1
United Kingdom.....	1,173	14,280	0·1	1·6
Spain.....	140	858	0·6	3·4
Canada.....	145	700	1·1	5·1
New South Wales.....	74	444	0·3	2·1
Victoria.....	29	1,165	0·1	2·5
South Australia.....	13	24	0·2	0·4
New Zealand.....	39	170	1·0	4·2

#### NEW SOUTH WALES.

The progress of railway construction during the twenty years which followed the opening of the first line was very slow, for in 1875 the length of line in operation had only reached 435 miles. From 1876 to 1889, greater activity prevailed, no less than 1,748 miles being constructed during this period, but this rate of increase was not continued, inasmuch as only 14 miles were opened during the next three years. Subsequently there was renewed activity, and the length of line opened to 30th June, 1900, was 2,811½ miles, the amount expended thereon for construction and equipment being £38,477,269, or at the rate of £13,687 per mile.

The railways of the colony are divided into three branches, each representing a system of its own. The southern system, which is the most important, serving as it does the richest and most thickly

populated districts, and placing Sydney, Melbourne, and Adelaide in direct communication, has several offshoots. From Culcairn, a line connects with Corowa on the Murray River; from Junee a branch extends as far as the town of Hay in one direction, and Finley in another, and places the important district of Riverina in direct communication with Sydney. From Cootamundra a line branches off in a southerly direction to Gundagai, and another in a north-westerly direction to Temora; while from Murrumburrah a line has been constructed to Blayney, on the western line, thus connecting the southern and western systems of the colony. Nearer the metropolis, the important town of Goulburn is connected with Cooma, bringing the rich pastoral district of Monaro into direct communication with Sydney. Another line that forms part of the southern system has been constructed to Nowra, connecting the metropolis with the coastal district of Illawarra, which is rich alike in coal and in the produce of agriculture. The western system of railways extends from Sydney over the Blue Mountains, and has its terminus at Bourke, a distance of 503 miles from the metropolis. Leaving the mountains, the western line, after throwing out a branch from Wallerawang to Mudgee, enters the Bathurst Plains, and connects with the metropolis the rich agricultural lands of the Bathurst, Orange, and Wellington districts. Beyond Dubbo it enters the pastoral country. At Blayney, as before stated, the western line is connected with the southern system by a branch line to Murrumburrah; at Orange a branch connects that town with Forbes on the Lachlan River, and from Parkes, one of the stations on this branch line, an extension to Condobolin on the Lachlan River has been constructed. Further west, on the main line at Nevertire, a short line extends to the town of Warren, and at Nyngan a branch line connects the important mining district of Cobar with Sydney. The western system also includes a short line from Blacktown to Richmond on the Hawkesbury River, and branch lines are in course of construction from Dubbo to Coonamble, and from Byrock to Brewarrina. The northern system originally commenced at Newcastle, but a connecting line has been constructed, making Sydney the head of the whole of the railway systems of the colony. This connecting line permits of direct communication between Adelaide, Melbourne, Sydney, and Brisbane, a distance from end to end of 1,808 miles, or altogether between the terminus of Oodnadatta, in South Australia, and Cunnamulla, in Queensland, there is one continuous line of railway, 3,100 miles in length. The northern system comprises a branch from Werris Creek to Gravesend, which is now being extended to Inverell, thus placing the Namoi and Gwydir districts in direct communication with the ports of Newcastle and Sydney. A portion of the North Coast railway has also been constructed from Murwillumbah, on the Tweed River, to Lismore on the Richmond River. A short line branches off the main northern line at Hornsby, and connects with the north shore of Port Jackson at Milson's Point.

Up to October, 1888, the control of the railways was vested in the Minister for Works, the direct management being undertaken by an officer under the title of Commissioner. It was, however, recognised that political influence entered unduly into the management of this large public asset, and, as a consequence, the "Government Railways Act of 1888" was passed, with the object of removing the control and management of the railways from the political arena, and vesting them in three railway Commissioners, who were required to prepare for presentation to Parliament an annual report of their proceedings, and an account of all moneys received and expended during the preceding year. While the avowed object of state railway construction has been to promote settlement apart from consideration of the profitable working of the lines, still the principle has been kept in view that in the main the railways should be self-supporting. It will be seen, from the subsequent pages, that the present management, despite the fact that they are hampered by a large number of unprofitable lines, have succeeded in placing the railways of the colony in a satisfactory financial position.

*Revenue and Working Expenses.*

The net sum available to meet interest charges during the last decennial period is set forth in the following table, and the returns show that the Commissioners have achieved most important results during their term of administration, and may reasonably claim to have at last made the lines almost self-supporting, as there is only a matter of £54,000 between the net earnings and the interest charge:—

Year.	Gross Earnings.	Working Expenses.	Net Earnings.	Proportion of Working Expenses to Gross Earnings.
	£	£	£	Per cent.
1891 .....	2,974,421	1,831,371	1,143,050	61·57
1892 .....	3,107,296	1,914,252	1,193,044	61·60
1893 .....	2,927,056	1,738,516	1,188,540	59·39
1894 .....	2,813,541	1,591,842	1,221,699	56·58
1895 .....	2,878,204	1,567,589	1,310,615	54·46
1896 .....	2,820,417	1,551,888	1,268,529	55·02
1897 .....	3,014,742	1,601,218	1,413,524	53·11
1898 .....	3,026,748	1,614,605	1,412,143	53·34
1899 .....	3,145,273	1,690,442	1,454,831	53·75
1900 .....	3,163,572	1,769,520	1,394,052	55·93

In the foregoing table will be found ample evidence of the economical working of the State railways under their present management, inasmuch as the net earnings for the financial year ended 30th June, 1900, were 44·07 per cent. of the total earnings, as against 33·31 per cent. when the Commissioners took office. The net earnings, exhibited in the last

year of the table, are a considerable improvement on those shown for the first year. The financial depression of 1893, which brought about a considerable change in the character of the coaching traffic, and the continued unfavourable character of the seasons, greatly affected the earnings of several years; the fall in earnings, however, was met by a reduction in working expenses, so that the financial result of the railway management was not greatly affected. The year 1900 compares somewhat unfavourably with the three years immediately preceding. This is due to the fact that, notwithstanding a much larger tonnage carried, the merchandise and live stock traffic show a decrease in freight earned, clearly indicating that the traffic from these sources has been carried at less profitable rates than hitherto. The traffic in wool and hay also showed a large falling off, and it appears very probable that owing to the serious droughts of the past years and the consequent enormous loss of sheep, no material increase in this traffic may be expected in the immediate future. The outlook with regard to grain and agricultural products, mineral and general traffic, is more encouraging than it has been for years, and it is anticipated that the revenue will be maintained. No reduction in the percentage of expenditure to earnings is practicable, inasmuch as the Commissioners will have to provide for concessions in connection with the carriage of starving stock, and for the renewal of a number of old engines and the carrying out of extensive repairs on others, as well as for the replacing of a large mileage of iron rails on the main northern line by steel. The proportion of working expenses to earnings is less in New South Wales than in any other part of Australia, as the following figures, which are the average of the five years 1896-1900, will show:—

New South Wales .....	54·23
Victoria.....	63·30
Queensland .....	59·14
South Australia .....	59·01
Western Australia .....	65·86
Tasmania .....	78·15
New Zealand .....	63·04

#### *Interest returned on Capital.*

In establishing the financial results of the working of the lines it is the practice of railway authorities to compare the net returns with the nominal rate of interest payable on the railway loans or on the public debt of the colony. An accurate comparison can only be made by taking the average rate of interest payable on the actual sum obtained by the State for its outstanding loans. On this basis, the lines of the colony have met the interest on construction and equipment during four years only, viz., 1881, 1882, 1883, and 1899. In 1899 the lines

yielded a net sum of £19,000 after paying working expenses, interest, and all charges, and 1900 only fell short of this desirable condition by £54,000. The following table, covering a term of ten years, indicates the average loss for each year during the period :—

Year.	Interest returned on Capital.	Actual Rate of Interest payable on Outstanding Loans.	Average Loss.
	per cent.	per cent.	per cent.
1891.....	3·60	3·81	0·21
1892.....	3·58	3·82	0·24
1893.....	3·48	3·96	0·48
1894.....	3·46	3·97	0·51
1895.....	3·58	3·94	0·36
1896.....	3·44	3·86	0·42
1897.....	3·78	3·81	0·03
1898.....	3·74	3·79	0·05
1899.....	3·83	3·78	°0·05
1900.....	3·62	3·76	0·14

\* Average gain.

A factor in the fluctuation of the profits is found in the extension of the lines in sparsely-populated districts ; but with the adoption of a more prudent policy in the matter of construction largely dictated by the severe financial pressure to which the colony has been subjected, and with careful working, the returns are showing improvement. As showing the handicap against which the railway management has to struggle, it is worth noting that there are sixteen branch lines on which about eleven millions and a half sterling have been expended which do not pay their way, the loss on these lines being about £250,000 per annum.

#### *Earnings and Expenses per Mile.*

Two important facts which demonstrate the financial position of the railways and the character of the management are the earnings per train mile and per average mile open. Although the returns now being realised cannot be compared with those of 1875, when the net earnings per train mile fell little short of 52d., and per mile open of £775, the present earnings are in every way encouraging. Under the control of the Commissioners the net return per train mile has increased from 27·4d. to 37·6d., or 37·2 per cent. ; while per mile of line open for traffic

the advance has been from £374 to £508, or 35·8 per cent. The gross earnings, expenditure, and net earnings per train mile for the past ten years are shown in the following table:—

Year.	Gross Earnings per average mile open.	Expenditure per train mile.	Net Earnings per train mile.
	d.	d.	d.
1891 .....	84·88	52·26	32·62
1892 .....	89·25	54·98	34·27
1893 .....	93·60	55·59	38·01
1894 .....	94·18	53·29	40·89
1895 .....	90·96	49·54	41·42
1896 .....	87·68	48·24	39·44
1897 .....	88·99	47·26	41·73
1898 .....	87·10	46·46	40·64
1899 .....	85·72	46·07	39·65
1900 .....	85·36	47·75	37·61

The gross earnings, expenditure, and net earnings per average mile open for the past ten years, were as follow:—

Year.	Gross Earnings per train mile.	Expenditure per average mile open.	Net Earnings per average mile open.
	£	£	£
1891 .....	1,363	839	524
1892 .....	1,423	877	546
1893 .....	1,264	750	514
1894 .....	1,159	656	503
1895 .....	1,144	623	521
1896 .....	1,114	613	501
1897 .....	1,171	622	549
1898 .....	1,138	607	531
1899 .....	1,163	625	538
1900 .....	1,153	645	508

In many cases the railways of the colony pass through heavy and mountainous country, involving steep gradients. For the more expeditious and economical working of the traffic, important deviations have been and are being carried out to secure better grades and to ease the curves. While much has been done in this direction, much more remains to be done, as many of the lines have been constructed with an unusual proportion of steep gradients, of which the worst are on the trunk lines, and are so situated that the whole of the traffic must pass over them. In the southern system, the line at Cooma reaches an altitude of 2,659 feet above the sea level; in the western, at the Clarence station, Blue Mountains, a height of 3,658 feet is attained;

while on the northern line the highest point, 4,471 feet, is reached at Ben Lomond. In no other colony of Australasia do the lines attain such an altitude. In Queensland the maximum height is 3,008 feet; in Victoria, 2,452 feet; in South Australia, 2,024 feet; in Western Australia, 1,522 feet; and in New Zealand, 1,252 feet. Where heavy gradients prevail, the working expenditure must necessarily be heavier than in the colonies where the surface configuration is more level.

*Coaching and Goods Traffic.*

The following table shows the number of passengers carried on the lines of the colony during the year 1881, and for the last ten years, together with the receipts from the traffic, and the average receipts per journey:—

Year.	Passengers carried.	Receipts from Coaching Traffic.	Average Receipts per journey.
	No.	£	d.
1881 .....	6,907,312	488,675	16·97
1891 .....	19,037,760	1,177,037	14·84
1892 .....	19,918,916	1,189,231	14·33
1893 .....	19,932,703	1,115,042	13·43
1894 .....	19,265,732	1,047,029	13·04
1895 .....	19,725,418	1,022,901	12·45
1896 .....	21,005,048	1,043,922	11·93
1897 .....	22,672,924	1,098,696	11·63
1898 .....	23,233,206	1,126,257	11·63
1899 .....	24,726,067	1,158,198	11·22
1900 .....	26,486,873	1,227,355	11·12

It will be seen that the years 1896 to 1900 show far larger numbers of passenger journeys than preceding years, but less satisfactory results in the way of average receipts per journey. This does not so much arise from curtailment of long-distance travelling as from the change of a large body of travellers from first to second class—a result due to diminished means, and doubtless to some extent to the more comfortable carriages now provided for second-class passengers. A return to prosperous times should show an increase in first-class travellers, but it frequently happens that the removal of the original impelling cause is not followed by a return to previous habits, so that the railways may not altogether recover the revenue lost by the change on the part of the travelling public.

The amount of goods tonnage from 1881 to 1900 is shown in the following table:—

Year.	Tonnage of Goods and Live Stock.	Earnings.
	tons.	£
1881 .....	2,033,850	955,551
1891 .....	3,802,849	1,797,384
1892 .....	4,296,713	1,918,065
1893 .....	3,773,843	1,812,014
1894 .....	3,493,919	1,766,512
1895 .....	4,075,093	1,855,303
1896 .....	3,953,675	1,776,495
1897 .....	4,567,041	1,916,046
1898 .....	4,630,564	1,900,491
1899 .....	5,248,320	1,987,075
1900 .....	5,531,511	1,936,217

The subdivision of the tonnage of goods and live stock for the year ended 30th June, 1900, into a general classification is set forth in the subjoined statement. Particulars of the tonnage are given under nine broad classes, while the table also shows the average distance goods of each class were carried, and the average earnings per ton per mile. The last figure, however, does not include the terminal charges, which would probably increase the revenue per ton per mile by about 0·20d., from 1·26d. to 1·46d. The "miscellaneous" traffic comprises timber, bark, agricultural and vegetable seeds, in 5-ton lots; firewood, in 5 ton lots; bricks, drain pipes, and various other goods. "A" and "B" classes consist of lime, fruit, vegetables, hides, tobacco leaf, lead and silver ore, caustic soda and potash, cement, copper ingots, fat and tallow, mining machinery, ore tailings, leather, agricultural implements in 5 ton lots; and various other goods.

Description of Traffic.	Tons carried.	Average number of miles each ton of traffic is carried.	Earnings per ton per mile.
		miles.	d.
Coal, coke, and shale .....	3,406,769	15·93	0·60
Firewood .....	204,820	28·95	0·79
Grain, flour, &c. ....	361,052	169·95	0·56
Hay, straw, and chaff .....	118,631	176·39	0·34
Miscellaneous .....	525,503	70·07	0·67
Wool .....	84,678	247·30	2·33
Live stock .....	188,595	243·88	1·54
"A" and "B" classes.....	354,908	95·99	1·33
All other goods .....	286,555	139·78	3·34
Terminal charges .....	5,531,511	57·92	1·26
Total .....	5,531,511	57·92	1·46

The charge for carrying goods one mile along the lines of the colony in 1872 was 3·6d. per ton, while after an interval of twenty-eight years, it has fallen to 1·46d. The decrease, however, is to some extent more apparent than real, inasmuch as it represents a more extensive development of the mineral traffic than of the carriage of general merchandise ; but, when due allowance has been made on this score, it will be found that the benefit to the general producer and consumer has been very substantial, and it may safely be taken as indicating generally the lessened cost of carriage to persons forwarding goods by rail.

#### VICTORIA.

Railway operations in Victoria began with the opening of the line from Flinders-street, Melbourne, to Port Melbourne. In the early years the lines constructed were chiefly in the vicinity of the metropolis, and up to the year 1865, that is in ten years, only 274 miles were laid down ; during the next decennial period a further length of 312 miles was constructed. As in the case of other colonies, more energy was manifested during the decade ended 1885, when no less than 1,092 miles were constructed ; during the next ten years the rate of progress was maintained, and a further length of 1,444 miles was opened. The length of line open for traffic on 30th June, 1900, was 3,218 miles, upon which the sum of £39,658,819 has been expended for construction and equipment, or an average of £12,324 per mile.

The railways of the colony are grouped under seven systems—the Northern, North-Eastern, Eastern, South-Eastern, North-Western, South-Western, and Suburban lines. The Northern system extends from Melbourne to Echuca ; the North-Eastern stretches from Kensington to Wodonga, and is the main line connecting Melbourne with Sydney ; the Eastern connects Prince's Bridge, Melbourne, with Bairnsdale ; the South-Eastern runs from Lyndhurst to Port Albert ; the North-Western, joining Laverton with Serviceton, is the main line connecting Melbourne with Adelaide ; the South-Western runs from Breakwater to Port Fairy ; and the suburban system makes provision for the requirements of the population within a distance of about twenty miles from the metropolis. Included in the seven systems are no less than eighty-five main, branch, and connecting lines. With the exception of the eastern and extreme north-western portions of the colony, where settlement is sparse, the railway facilities provided are in advance of those of any other colony, in so far as the length of the line open for traffic is concerned.

Victoria, in 1883, was the first colony of the group to adopt the system of placing the management and maintenance of the railways under the control of three Commissioners. From the 1st February, 1884, to the end of 1891 the construction as well as the working of the lines was vested in this body ; but on the 1st January, 1892, the duty

of construction was transferred to the Board of Land and Works under the provisions of the "Railways Act, 1891." During 1896 the number of commissioners was reduced to one.

*Revenue and Working Expenses.*

The net earnings, that is the sum available to meet interest charges during the last decennial period, are shown in the following table:—

Year.	Gross Earnings.	Working Expenses.	Net Earnings.	Proportion of Working Expenses to Gross Earnings.
	£	£	£	per cent.
1891.....	3,298,567	2,310,645	987,922	70·05
1892.....	3,095,122	2,138,139	956,983	69·08
1893.....	2,925,948	1,850,291	1,075,657	63·30
1894.....	2,726,159	1,635,419	1,090,740	59·99
1895.....	2,581,591	1,543,393	1,038,198	59·77
1896.....	2,401,392	1,546,475	854,917	64·39
1897.....	2,615,935	1,563,805	1,052,130	59·77
1898.....	2,608,896	1,646,054	962,842	66·92
1899.....	2,873,729	1,797,726	1,076,003	62·55
1900.....	3,025,162	1,902,540	1,122,622	62·39

It will be observed that the gross earnings for the opening year of the decade are larger than those of the year just closed, but the net earnings for 1900 show a decided improvement over those of the year 1891, while the proportion of working expenses to gross earnings was also considerably larger during the last-mentioned year. The intervening years show similar fluctuations to those of the other colonies comprised within the Commonwealth, due to a variety of causes, among the principal of which are—the financial crisis, the drought that has uniformly affected the whole of Australasia for some years past, and the fact that Victoria adopted the construction of a number of branch "cockspur" lines, which had to be worked at absolute loss. In many instances the lines did not even pay working expenses, apart from interest. Continued losses resulted in the closing to traffic of some of these lines during 1896 and subsequent years, and the Report for the year ended 30th June, 1900, shows that the interest charges debited to the Department in connection with them, and the expenditure on general surveys of lines which have not been completed, amounts to about £27,000 per annum, while the average loss per annum on non-paying lines is over £301,000. The net revenue shows a gradual tendency to improvement during the last five years, the fall in 1898 in comparison with the previous year being due to the fact that in 1897 the receipts were swollen by the exceptional traffic occasioned by the Jubilee celebrations. In 1898 additional expenditure, arising from increases of pay to the lower-grade employees, and from improvements

and renewals of permanent-way works and rolling stock caused a large inflation in working expenses. The proportion of working expenses to gross earnings shows a decided improvement; and notwithstanding extensive renewals of way, repairs and renewals of stock, and the extra price paid for coal under new contracts now stands much lower than it did at the commencement of the decennial period, and is unmistakably indicative of greater economy in the management of this large State asset.

*Interest returned on Capital.*

Continuing the basis adopted in the case of New South Wales of taking into consideration the absolute interest paid on the loans of the colony and comparing this with the net earnings, the following table furnishes a review for the past ten years, and shows the average loss for each year of the period :—

Year.	Interest returned on Capital.	Actual Rate of Interest payable on Outstanding Loans.	Average Loss.
	per cent.	per cent.	per cent.
1891 .....	2·71	4·00	1·29
1892 .....	2·58	3·99	1·41
1893 .....	2·87	4·02	1·15
1894 .....	2·88	4·04	1·16
1895 .....	2·73	4·02	1·29
1896 .....	2·24	4·08	1·84
1897 .....	2·74	4·00	1·26
1898 .....	2·49	3·99	1·50
1899 .....	2·75	3·95	1·20
1900 .....	2·83	3·95	1·12

The earning power of the Victorian lines is largely impeded by the necessity of working fifty-five of the lines upon which there is an annual loss of £301,000. The fluctuations in net profits are due to the opening of new lines in sparsely-settled districts and the effect of the drought upon the traffic. A gradual improvement is, however, manifest in the returns of the past five years, and the concluding year shows a substantial increase over the opening one of the period.

*Earnings and Expenses per Mile.*

While the present returns bear no comparison with those of 1872, when the net earnings per train mile were 73·29d. and per mile open £1,342, they show a decided improvement per train mile on the figures for 1891, although the net earnings per mile open are lower than those

shown for that year. The gross earnings, expenditure, and net earnings per train mile for the past ten years are set forth in the following table :—

Year.	Gross Earnings per train mile.	Expenditure per train mile.	Net Earnings per train mile.
	d.	d.	d.
1891.....	64·63	45·27	19·36
1892.....	62·91	43·46	19·45
1893.....	65·17	41·21	23·96
1894.....	64·49	38·69	25·80
1895.....	64·76	38·72	26·04
1896.....	64·11	41·29	22·82
1897.....	68·03	40·67	27·36
1898.....	67·77	42·76	25·01
1899.....	71·00	44·41	26·59
1900.....	71·83	45·17	26·66

The gross earnings, expenditure, and net earnings per average mile open for the past ten years were as follow :—

Year.	Gross Earnings per average mile open.	Expenditure per average mile open.	Net Earnings per average mile open.
	£	£	£
1891.....	1,245	872	373
1892.....	1,094	756	338
1893.....	998	631	367
1894.....	914	548	366
1895.....	837	500	337
1896.....	769	495	274
1897.....	837	500	337
1898.....	835	527	308
1899.....	920	576	344
1900.....	949	597	352

The tables indicate that while the gross earnings are gradually improving, the strictest economy will be necessary in the matter of expenditure, for the improvement in the revenue has so far been almost wholly neutralized by an increase in the working expenses, and the net earnings per train mile are little better than those for 1895.

#### *Coaching and Goods Traffic.*

The following table shows the number of passengers carried on the lines of the colony during the year 1881, and for each of the last ten

years, with the receipts from coaching traffic and the average receipts per journey :—

Year.	Passengers carried.	Receipts from Coaching Traffic.	Average Receipts per journey.
	No.	£	d.
1881.....	18,964,214	770,617	9·75
1891.....	57,996,039	1,706,803	7·06
1892.....	55,148,122	1,644,315	7·16
1893.....	46,520,784	1,508,867	7·78
1894.....	40,880,378	1,359,675	7·98
1895.....	40,210,733	1,259,609	7·51
1896.....	40,993,798	1,264,219	7·40
1897.....	42,263,638	1,328,687	7·55
1898.....	43,090,749	1,325,062	7·38
1899.....	45,805,043	1,372,000	7·19
1900.....	49,332,899	1,469,910	7·15

The number of passengers carried on the railways of Victoria reached its maximum in 1890, when no less than 58,951,796 persons made use of the lines. The reaction following on the banking crises of 1893 considerably affected the traffic, and in 1895 the number of passengers was reduced to 40,210,733; a gradual improvement has since, however, been manifest in the returns. Victoria occupies the leading position among the colonies as regards the number of passengers carried, the latest figures being as follow :—New South Wales, 26,486,873; Victoria, 49,332,899; Queensland, 4,395,841; South Australia, including the Northern Territory, 7,430,155; Western Australia, 6,225,068; Tasmania, 640,587; and New Zealand, 5,468,284. The superiority of the Victorian figures results from the large number of passengers carried on the suburban railways, the Melbourne system effectively serving the population within a distance of twenty miles from the centre, and carrying upwards of 90 per cent. of the total passengers. The magnitude of the suburban traffic is evidenced by the fact that the average receipts per journey during the last year are shown to be 7·15d., as against 11·12d. in New South Wales; 27·60d. in Queensland; 11·02d. in South Australia, including Northern Territory; 13·00d. in Western Australia; 27·40d. in Tasmania; and 20·83d. in New Zealand.

The amount of goods and live stock tonnage in 1881, and for each of the ten years from 1891 to 1900, is shown in the following table:—

Year.	Tonnage of Goods and Live Stock.	Earnings.
	Tons.	£
1881.....	1,366,603	894,592
1891.....	3,262,427	1,591,764
1892.....	2,720,886	1,450,807
1893.....	2,558,378	1,417,081
1894.....	2,455,811	1,366,484
1895.....	2,435,857	1,321,982
1896.....	2,163,722	1,137,173
1897.....	2,383,445	1,287,248
1898.....	2,408,665	1,283,834
1899.....	2,779,748	1,501,729
1900.....	2,998,303	1,555,252

The table indicates a gradual increase in the tonnage carried and earnings therefrom during the last five years. The figures for 1900 must be considered highly satisfactory, especially when it is remembered that the harvest conditions generally were not so good, and that substantial reductions in rates had been made during the year. Particulars of the subdivision of the tonnage of goods and live stock into a general classification are not available, and no information is furnished that will admit of a comparison being made in order to determine how far the cost of carriage per mile has been reduced during the period under review.

#### QUEENSLAND.

The progress of railway construction in Queensland for the first ten years after the opening of the Ipswich to Grandchester line was somewhat slow, only 268 miles having been constructed. In the decade ending in 1885, more energy was displayed, inasmuch as a further length of 1,167½ miles was constructed, and during the quinquennial periods ending in 1890 and 1895, further lengths of 712 and 250 miles were constructed. The length of line open on 30th June, 1900, was 2,801 miles, and the amount expended thereon for construction and equipment was £19,320,902, or at the rate of £6,897 per mile.

The railways of the Colony may be grouped into three divisions, comprising eight systems. The southern division extends from Brisbane to Wallangarra in a southerly direction, to Cunnamulla in a westerly direction, and to Gladstone northerly along the coast, and has fifteen branch lines connected with it. The central division extends from Archer Park to Longreach, and has five branch lines connected with it. The northern division comprises the line from Mackay to Eton and Mirani; the line from Bowen to Wangaratta; the line from Townsville

to Winton, with a branch to Ravenswood; the line from Cairns to Maruba; the line from Cooktown to Laura; and the line from Normanston to Croydon.

For many years the construction, maintenance, and control of the railways were carried out by a branch of the Public Works Office, and subsequently by a separate Ministerial Department with a Secretary responsible to Parliament and administering the details of the office in a manner similar to any other Crown Minister. The "Railways Act of 1888," however, while leaving the Minister in charge of the Department, vested the construction, management, and control of all Government railways in three Commissioners, of whom one was to be Chief Commissioner. The number was subsequently reduced to two, and later a single commissioner was appointed holding the authority formerly vested in the three. In undertaking railway construction the State is guided by other considerations than those which would direct the action of private investors, and is content, for a time at least, to recoup the expenditure in an indirect form. The construction of railways in a colony like Queensland has the effect of largely increasing settlement, and a perusal of the subsequent pages will show that the interest returned on capital cost is increasing each year, and the period is approaching when the colony will be in a position to meet all interest charges.

*Revenue and Working Expenses.*

The net sum available to meet interest charges during the last decennial period is shown in the following table:—

Year.	Gross Earnings.	Working Expenses.	Net Earnings.	Proportion of Working Expenses to Gross Earnings.
	£	£	£	per cent.
1891 .....	908,704	645,597	263,107	71·05
1892 .....	1,052,536	639,502	413,034	60·76
1893 .....	1,022,677	638,889	383,788	62·47
1894 .....	955,747	598,403	357,344	62·61
1895 .....	1,025,512	581,973	443,539	56·75
1896 .....	1,085,494	644,362	441,132	59·36
1897 .....	1,179,273	684,146	495,127	58·01
1898 .....	1,215,811	686,066	529,745	56·43
1899 .....	1,373,475	784,811	588,664	57·14
1900 .....	1,464,399	948,691	515,708	64·78

The foregoing table shows a gradual tendency for earnings to increase, especially of late years, but there have been considerable fluctuations in the proportion of working expenses to gross earnings. The net earnings for the year ended 30th June, 1900, were 35·22 per cent. of the total earnings, as against 36·33 per cent. when the railways were placed under their present control. It will be observed that the result secured for the past year is considerably lower than those of the preceding two years, and is due to the fact that the railways have been compelled to carry very large numbers of starving stock and large quantities of fodder at unremunerative rates. There were also heavy disbursements to replace and increase the stock of locomotives, and in carrying out works which, though improving the equipment of the railways and ensuring safe running, have not been of a reproductive character, while during the year substantial increases in pay have been conceded to all classes of railway employees. There was consequently a large increase in expenditure which was not accompanied by a corresponding improvement in the earnings, but there can be no doubt that these changes will have a beneficial effect on the receipts of future years.

*Interest returned on Capital.*

The financial results of the working of the lines are exhibited in the following table which covers a period of ten years :—

Year.	Interest returned on Capital.	Actual Rate of Interest payable on Outstanding Loans.	Average Loss.
	per cent.	per cent.	per cent.
1891 .....	1·74	4·05	2·31
1892 .....	2·57	3·93	1·36
1893 .....	2·37	4·18	1·81
1894 .....	2·18	4·17	1·99
1895 .....	2·68	4·12	1·44
1896 .....	2·63	4·03	1·40
1897 .....	2·87	4·03	1·16
1898 .....	2·92	4·03	1·11
1899 .....	3·15	4·03	0·88
1900 .....	2·67	4·01	1·34

A fair proportion of the railway construction of recent years has been in country of a purely pastoral character, and it is manifest that a sufficient traffic to prove remunerative cannot be looked for immediately from localities possessed of only a scattered and limited population; but it is confidently expected that these lines will ultimately pay interest on their construction. Unfortunately, Queensland like all the other provinces, suffers from the construction of lines of railway not warranted by existing or prospective traffic, and which will always be a handicap to successful management.

*Earnings and Expenses per Mile.*

While the results now secured cannot be compared with those of 1880, when the net earnings per train mile were a little over 43d., and per mile open £222, there is cause for congratulation on a review of the condition of earnings shown in the subjoined tables. It will be seen that the net earnings per train mile, as well as the net return for each mile of line open, have been fairly well sustained. The fall in 1900, as compared with the previous three years, is due to the fact that the continuance of the drought and the consequent loss in sheep have operated against the revenue from the carriage of wool, while the increased traffic which was obtained consisted largely of the removal of starving stock from and the carriage of fodder to drought-stricken districts, a class of traffic which had to be undertaken at unremunerative rates. The gross earnings, expenditure, and net earnings per train mile for the past ten years are shown in the following table:—

Year.	Gross Earnings per train mile.	Expenditure per train mlie.	Net Earnings per train mile.
	d.	d.	d.
1891 .....	57·75	41·00	16·75
1892 .....	63·69	38·70	24·99
1893 .....	65·35	40·83	24·52
1894 .....	64·18	40·18	24·00
1895 .....	62·82	35·65	27·17
1896 .....	54·91	32·59	22·32
1897 .....	57·30	33·24	24·06
1898 .....	58·27	32·88	25·39
1899 .....	56·62	32·35	24·27
1900 .....	54·69	35·43	19·26

The gross earnings, expenditure, and net earnings per average mile open for the past ten years were as follow:—

Year.	Gross Earnings per average mile open.	Expenditure per average mile open.	Net Earnings per average mile open.
	£	£	£
1891 .....	424	301	123
1892 .....	458	278	180
1893 .....	428	268	160
1894 .....	402	252	150
1895 .....	431	245	186
1896 .....	455	270	185
1897 .....	486	282	204
1898 .....	470	265	205
1899 .....	506	289	217
1900 .....	523	339	184

*Coaching and Goods Traffic.*

The number of passengers carried on the lines of the colony during the year 1881, and for the last ten years, together with the receipts from the traffic, and the average receipts per journey, are set forth in the following table:—

Year.	Passengers carried.	Receipts from Coaching traffic.	Average Receipts per Journey.
	No.	£	d.
1881 .....	247,284	113,490	110·14
1891 .....	2,730,860	337,272	29·64
1892 .....	2,370,219	348,199	35·25
1893 .....	2,120,163	318,730	36·08
1894 .....	2,024,450	307,430	36·44
1895 .....	2,054,416	308,025	35·98
1896 .....	2,274,219	324,790	34·27
1897 .....	2,633,556	359,811	32·79
1898 .....	2,742,108	391,270	34·24
1899 .....	3,716,425	447,123	28·87
1900 .....	4,395,841	505,536	27·60

It will be seen that the years 1899 and 1900 show a far larger number of passenger journeys than preceding years; this was largely due to an extraordinary expansion in the suburban passenger traffic. The average receipts per journey showed a decline, which may be expected to continue as the suburban traffic expands, so that in a few years the receipts per person carried will approximate closely to the average for the rest of Australia, viz., one shilling per journey.

The amount of goods tonnage for a similar period is shown in the following table :—

Year.	Tonnage of Goods.	Earnings.
		£
1881 .....	161,008	235,100
1891 .....	890,973	571,432
1892 .....	768,527	704,337
1893 .....	720,587	703,947
1894 .....	785,475	648,317
1895 .....	900,591	717,487
1896 .....	1,026,889	760,704
1897 .....	1,243,603	819,462
1898 .....	1,323,782	824,541
1899 .....	1,684,858	926,352
1900 .....	1,688,635	958,863

In the foregoing statement the tonnage of live stock is not included, inasmuch as particulars in respect thereof are not available, but the earnings shown include the revenue derived from this class of traffic. The general traffic is divided into eight classes, particulars of which, for the year ended 30th June, 1900, together with the receipts for each class, are shown in the subjoined table. No information is available as to the average number of miles each ton of traffic is carried, or the earnings per ton per mile.

Description of Traffic.	Tons carried.	Receipts from traffic.
		£
General merchandise.....	295,358	388,251
Agricultural produce .....	351,026	119,404
Wool .....	32,472	111,256
Coal .....	417,601	53,512
Minerals other than coal .....	161,154	20,701
Timber .....	431,024	89,949
Live stock .....	.....	167,153
Non-paying .....	.....	8,637
Total.....	1,688,635	958,863

*Guaranteed Railways.*

Four railways, having a total length of 28 miles 34 chains, have been constructed to 30th June, 1900, under "The Railways Guarantee Act of 1895," by which the local authority, representing the ratepayers of a district, agrees to pay up to one-half of the deficiency in working expenses with interest during the first fourteen years after opening, the sum to be raised by means of a rate not exceeding 3d. in the £ of value of ratable lands. Should the operations of any year provide a surplus, half of this is retained by the Government and the other half paid to the Local Authority for distribution among the ratepayers in return for the payments made on account of the deficiency in previous years. When the line has been payable for three years, the Government may cancel the agreement. The results of the working of three out of the four railways do not afford much encouragement to apply the provisions of the Act to other lines which may be projected in the future. The working of the Pialba branch showed a loss for the years 1898 and 1899 of £2,366 and £2,038 respectively, and for 1900 of £1,589: as the interest payable amounted to £1,762, there would appear to have been an excess of earnings over working expenses during 1900 to the extent of £173. As this line has shown an improvement each succeeding year, it may be reasonably anticipated that eventually the guarantors will be relieved of all responsibility. The Allora branch shows a loss of £630 for the year 1900, being considerably in excess of the deficit of the previous two years, when the shortage was £146 and £308 respectively. The Ennogera branch exhibits a loss of £3,165 for the year ended 1900, as against £1,138 for the five months during which it was open for traffic in the previous year. The Mount Morgan branch which up to the 30th June, 1899 yielded a net profit of £4,080, after providing for working expenses and interest on the cost of construction, returned a net profit of £5,785 for the year 1900.

## SOUTH AUSTRALIA.

While the beginning of railway construction in South Australia dates as far back as 1854, very little progress was made in the subsequent twenty years, and in 1874 the total length of line in operation was only 234 miles; in 1880 this was increased to 627 miles; in 1890 to 1,610 miles; and in 1895 to 1,722 miles. The length of line in use on 30th June, 1900 was 1,736½ miles, and the amount expended thereon for construction and equipment, £13,014,428, or at the rate of £7,496 per mile.

The railways of South Australia proper for the purposes of management are divided into five systems. The Midland system, constructed on the 5ft. 3in. gauge, has a length of 236½ miles, and extends from Adelaide to Terowie in a northerly direction, and to Morgan, on the

Murray River, in a north-easterly direction. The Northern system has a total length of 1,008 $\frac{1}{4}$  miles, 1,003 of which are 3 ft. 6 in. gauge and 5 $\frac{1}{4}$  miles 5ft. 3in. gauge. This system includes that portion of the transcontinental line which extends to Oodnadatta, a distance of 550 miles from Adelaide; the line to Cockburn, which provides for the requirements of the Broken Hill district of New South Wales; and branches to Port Augusta, Port Pirie, Wallaroo, and Port Wakefield. The Southern system comprises a length of 265 $\frac{1}{4}$  miles on a gauge of 5ft. 3in., and includes the main line connecting Adelaide with Melbourne, and branches—Wolseley to Naracoorte and from Naracoorte to Kingston, Mount Gambier, and Beechport. The line from Port Broughton to Barunga has a length of 10 miles.

During 1887, the control of the railways was confided to three commissioners; in 1895, however, the number was reduced to one, who is responsible to Parliament.

*Revenue and Working Expenses.*

The net sum available to meet interest charges is set forth in the following table:—

Year.	Gross Earnings.	Working Expenses.	Net Earnings.	Proportion of Working Expenses to Gross Earnings.
	£	£	£	£
1891.....	1,223,999	617,179	606,820	50·42
1892.....	1,213,290	652,941	560,349	53·82
1893.....	1,007,059	640,122	366,937	63·56
1894.....	999,707	569,592	430,115	56·98
1895.....	960,155	568,973	391,182	59·26
1896.....	986,500	583,022	403,478	59·10
1897.....	1,025,035	614,254	410,781	59·92
1898.....	984,228	603,474	380,754	61·31
1899.....	1,058,397	617,380	441,017	58·33
1900.....	1,166,987	657,841	509,146	56·37

The foregoing table shows that the gross earnings in the opening year of the decade were larger than in any subsequent year, while the proportion of working expenses to gross earnings was the lowest for the same period. The net earnings secured during the year 1900 are the highest for the last eight years and the proportion of working expenses to gross earnings the smallest for a like period. The failure of the harvest and the succession of adverse seasons which South Australia laboured under during part of the decennial period are the causes of the falling off in the railway revenue in some years. No other railway system in Australia depends so much upon the carriage of agricultural produce

for its traffic as does the South Australian, and years of shrinkage in the railway revenue are always years of harvest failure. The increase in working expenses during the last two years was due to the renewal of rolling stock, the relaying of portion of the permanent way, and additional outlay arising from the improved revenue. The results secured may be looked on as satisfactory, having regard to the fact that the management is burdened with some very unproductive lines, notably that from Hergott Springs to Oodnadatta, which barely pays working expenses, and entails an annual payment of about £44,000 in interest.

*Interest returned on Capital.*

The following table exhibits the financial results of the working of the lines during the last ten years :—

Year.	Interest returned on Capital.	Actual rate of Interest payable on Outstanding Loans.	Average Loss.
	per cent.	per cent.	per cent.
1891.....	5·32	4·08	1·24 <sup>o</sup>
1892.....	4·78	4·08	0·70 <sup>o</sup>
1893.....	3·07	4·28	1·21
1894.....	3·54	4·27	0·73
1895.....	3·12	4·22	1·10
1896.....	3·21	4·12	0·91
1897.....	3·26	4·05	0·79
1898.....	2·98	4·03	1·05
1899.....	3·42	3·95	0·53
1900.....	3·91	3·87	0·04 <sup>o</sup>

\* Represents profit.

It will be observed that the interest returned on capital during the past year was the best secured since 1892, and exceeded by a slight amount the interest rate on the debt of the province. South Australia possesses one advantage not shared by any other province, namely, a large and steady long-distance traffic from a neighbouring state. The Broken Hill traffic is a very important factor to the state railways, as the greater portion of the line connecting the mines with the sea ports runs through South Australian territory. The extent of the Broken Hill traffic will be found mentioned on page 682.

*Earnings and Expenses per Mile.*

The net earnings now secured are very much below those of 1891 when the net earnings per train mile were 38·64d., and £370 per mile open; a gradual improvement is, however, noticeable during recent years. The gross earnings, expenditure, and net earnings per train mile for the past ten years are shown in the following table:—

Year.	Gross Earnings per train mile.	Expenditure per train mile.	Net Earnings per train mile.
	d.	d.	d.
1891.....	77·94	39·30	38·64
1892.....	69·69	37·50	32·19
1893.....	65·85	41·86	23·99
1894.....	69·14	39·39	29·75
1895.....	67·90	40·24	27·66
1896.....	68·57	40·53	28·04
1897.....	66·95	40·12	26·83
1898.....	63·57	38·98	24·59
1899.....	65·14	38·00	27·14
1900.....	67·02	37·78	29·24

The gross earnings, expenditure, and net earnings per average mile open for the past ten years are set forth in the following table:—

Year.	Gross Earnings per average mile open.	Expenditure per average mile open.	Net Earnings per average mile open.
	£	£	£
1891.....	747	377	370
1892.....	730	393	337
1893.....	606	385	221
1894.....	601	342	259
1895.....	558	331	227
1896.....	573	339	234
1897.....	595	356	239
1898.....	571	350	221
1899.....	614	358	256
1900.....	674	380	294

It will be seen that there was a substantial fall in the net earnings per train mile for 1893. An improvement was, however, manifest in the succeeding year, for while the gross revenue was smaller than that of 1893, the proportion of working expenses was considerably reduced. The results for the past year may be viewed as satisfactory from the point of management, taking into consideration the fact that the maximum number of train miles run for the decennial period occurred during the past year. The present earnings per train mile are well above the average of the Commonwealth as a whole, although the return per mile of line does not compare so favourably.

*Coaching and Goods Traffic.*

The following table shows the number of passengers carried on the lines of the Colony during the year 1881, and for each of the last ten years, together with the receipts from the traffic, and the average receipts per journey:—

Year.	Passengers carried.	Receipts from Coaching Traffic.	Average Receipts per Journey.
	No.	£	d.
1881.....	3,032,714	151,867	12·01
1891.....	5,295,991	333,772	12·31
1892.....	5,744,487	336,501	14·05
1893.....	5,434,047	299,128	13·21
1894.....	5,260,079	274,243	12·51
1895.....	5,224,854	263,448	12·09
1896.....	5,435,956	288,594	12·73
1897.....	5,789,297	297,026	12·31
1898.....	6,050,189	291,411	11·56
1899.....	6,171,081	297,207	11·56
1900.....	7,416,506	337,723	10·93

The table indicates an improvement each year in the number of passengers carried; the average receipts per journey have, however, gradually lessened—the year 1892 showing the highest rate. The figures for 1891 and 1892 are somewhat lower than the true average for those years in consequence of travellers over several systems being counted as distinct persons on each system passed over.

The amount of goods tonnage for the same period is shown in the following table :—

Year.	Tonnage of Goods and Live Stock.	Earnings.
	No.	£
1881.....	646,625	222,184
1891.....	1,427,123	842,089
1892.....	1,337,859	827,857
1893.....	970,805	660,371
1894.....	1,014,010	694,724
1895.....	1,000,408	666,600
1896.....	1,056,963	670,961
1897.....	1,146,293	700,269
1898.....	1,189,095	664,348
1899.....	1,403,727	731,156
1900.....	1,485,976	798,231

The falling off in the tonnage of goods carried in some years since 1892 is more apparent than real. Prior to 1893 the railway statistics for each section were kept distinct from those of other sections, and goods passing over more than one section were counted as additional tonnage on each section. The volume of traffic secured by South Australia from the Barrier District of New South Wales amounted to 647,069 tons out of the total of 1,485,976 tons, and the total receipts from all traffic passing through Cockburn to £450,019 out of a total revenue of £1,166,987.

The following table shows a classification of the goods carried during 1900, and the amount received for carriage. It would have been interesting to have also shown the charge for haulage of each description of goods during the last ten years, but no information is available which will enable such particulars to be compiled. There has been a general reduction in freight charges, and the average charge per ton per mile for all goods has fallen from 1.05d. in 1897 to 0.97d. in 1900 :—

Description of Traffic.	Tons Carried.	Receipts from Traffic.
		£
Minerals .....	793,998	340,811
Grain .....	126,027	41,398
Wool .....	19,196	23,910
Goods other than above .....	517,345	329,114
Live stock .....	29,410	62,998

#### NORTHERN TERRITORY.

Railway construction in the Northern Territory has been confined to the line from Palmerston to Pine Creek, opened on the 1st October, 1889, and the returns for the past five years show that the traffic does not even pay working expenses.

*Revenue and Working Expenses.*

The gross earnings, expenditure, and net earnings, with the proportion of working expenses to gross earnings of the line are set forth in the following table, which covers a period of ten years :—

Year.	Gross Earnings.	Working Expenses.	Net Earnings.	Proportion of Working Expenses to Gross Earnings.
	£	£	£	per cent.
1891.....	15,310	13,910	1,400	90·86
1892.....	15,221	11,665	3,556	76·64
1893.....	15,668	11,704	3,964	74·90
1894.....	16,193	11,403	4,790	70·42
1895.....	14,722	11,477	3,245	77·96
1896.....	15,105	15,289	(—) 184	101·22
1897.....	17,908	18,966	(—) 1,058	105·91
1898.....	14,124	20,268	(—) 6,144	143·50
1899.....	14,758	17,375	(—) 2,617	117·73
1900.....	14,799	24,340	(—) 9,541	164·47

(—) Denotes loss.

The experience of the past five years offers no encouragement to any further extension of railways in the Northern Territory. The actual results of working have not been quite so unfavourable as would appear from the foregoing table, as the year 1900 was charged with the payment of an instalment of £10,000 towards the reconstruction of the jetty destroyed in 1896, as narrated on the next page, and on this account shows a larger deficit than any of the previous years.

*Interest returned on Capital.*

The following table shows the average loss for each year during the last ten years, after the interest on cost of construction has been deducted from the net earnings :—

Year.	Interest returned on Capital.	Actual Rate of Interest payable on Outstanding Loans.	Average Loss.
	per cent.	per cent.	per cent.
1891.....	0·12	4·08	3·96
1892.....	0·31	4·08	3·77
1893.....	0·34	4·08	3·74
1894.....	0·42	4·08	3·66
1895.....	0·28	4·22	3·94
1896.....	(—) 0·02	4·12	4·14
1897.....	(—) 0·09	4·05	4·14
1898.....	(—) 0·53	4·03	4·56
1899.....	(—) 0·22	3·95	4·17
1900.....	(—) 0·82	4·09	4·91

(—) Denotes loss.

From the outset there was very little prospect that the traffic on this line would meet the interest on the cost of construction and equipment; and although for the first five years there was a margin after paying working expenses, the results of the past five years show that even working expenses have not been met. The deficiency is in part due to heavy expenditure necessitated by the ravages of the teredo in the sub-structure of the jetty at Palmerston, and by the terrific cyclone which struck Port Darwin in the early part of 1897. Fluctuations in the volume of traffic assist the deficiency created by the expenditure just referred to.

*Earnings and Expenses per Mile.*

The gross earnings, expenditure, and net earnings per train mile for a period of ten years are shown in the following table:—

Year.	Gross Earnings per Train Mile.	Expenditure per Train Mile.	Net Earnings per Train Mile.
	d.	d.	d.
1891.....	116·76	106·08	10·68
1892.....	117·46	90·02	27·44
1893.....	121·93	91·08	30·85
1894.....	125·14	88·12	37·02
1895.....	115·10	89·73	25·37
1896.....	114·28	115·67	(—) 1·39
1897.....	137·28	145·38	(—) 8·10
1898.....	112·97	162·12	(—) 49·15
1899.....	115·53	136·02	(—) 20·49
1900.....	114·53	188·37	(—) 73·84

(—) Denotes loss.

The gross earnings, expenditure, and net earnings per average mile open for the last decennial period were as follow:—

Year.	Gross Earnings per average mile open.	Expenditure per average mile open.	Net Earnings per average mile open.
	£	£	£
1891.....	105	95	10
1892.....	104	80	24
1893.....	108	80	28
1894.....	111	78	33
1895.....	101	79	22
1896.....	104	105	(—) 1
1897.....	123	130	(—) 7
1898.....	97	139	(—) 42
1899.....	102	119	(—) 17
1900.....	102	167	(—) 65

(—) Denotes loss.

The gross earnings show little variation from year to year, but the expenditure was increased through the series of accidents at the terminal port, to which reference has already been made.

*Coaching and Goods Traffic.*

The following table shows the number of passengers carried on the Palmerston to Pine Creek Line since its opening, together with the receipts from the traffic and the average receipts per journey :—

Year.	Passengers carried.	Receipts from Coaching Traffic.	Average Receipts per journey.
	No.	£	d.
1890 (nine months) .....	4,567	4,330	227·54
1891 .....	4,515	4,693	249·45
1892 .....	4,541	4,159	219·80
1893 .....	6,169	4,007	155·89
1894 .....	4,076	3,820	224·91
1895 .....	2,950	3,755	305·48
1896 .....	2,901	3,772	312·04
1897 .....	3,080	4,055	315·97
1898 .....	3,126	3,556	273·01
1899 .....	3,191	3,173	238·64
1900 .....	3,374	3,556	260·48

The table shows an increase in the number of passengers carried during 1893 ; but the promise of the year was not sustained, and the traffic fell away by more than one-half during the following years, although the earnings did not decline in anything like the same proportion. The receipts per journey indicate that a large proportion of the traffic is of a long-distance character.

The amount of goods tonnage for a similar period is shown in the following table :—

Year.	Tonnage of Goods and Live Stock.	Earnings.
	Tons.	£
1890 (nine months) .....	2,114	7,499
1891 .....	2,426	9,035
1892 .....	2,633	9,267
1893 .....	2,328	9,470
1894 .....	2,524	10,260
1895 .....	2,053	8,643
1896 .....	2,493	9,149
1897 .....	3,150	11,222
1898 .....	2,678	8,570
1899 .....	3,187	10,091
1900 .....	3,009	9,626

The average receipts per ton per mile during the year 1900 were 7·65d., as against 8·43d. in 1896.

#### WESTERN AUSTRALIA.

The first railway constructed in Western Australia was that from Geraldton to Northampton, a length of 34 miles 17 chains, opened for traffic on the 26th July, 1879. Between that date and the close of 1885, a further length of 91 miles 55 chains was constructed. To the end of 1890, only 200½ miles were constructed, and on the 30th June, 1895, there were 57½ miles open for traffic. Railway construction received a considerable impetus subsequent to 1895, and on the 30th June, 1900, there were 1,355 miles open for traffic, at a cost of £6,856,363 for construction and equipment, or at the rate £5,060 per mile.

The State railways of Western Australia are comprised in four systems. The Eastern system has a total length of 572 miles 38 chains, and includes the line from Fremantle to Kalgoorlie, with branches to Boulder, Menzies, Kanowna, Newcastle, Beverley, Greenhills, Perth Racecourse, and Owen's Anchorage, and the Mahogany Creek deviation; the South-western system comprises the line from East Perth to Bunbury, with branches to Colliefields, Bridgetown, Busselton, and Canning and Bunbury Racecourses, and has a length of 234 miles 22 chains; the Northern system includes the line from Geraldton to Cue, with branches to Walkaway and Northampton, and a total length of 305 miles 45 chains; and the Great Southern system from Beverley to Albany, a length of 243 miles.

The control of the State railways is vested in the Commissioner for Railways, as member of the Government, but the active management is undertaken by an officer with the title of General Manager.

*Revenue and Working Expenses.*

The net sum available to meet interest charges during the last ten years is shown in the following table :

Year.	Gross Earnings.	Working Expenses.	Net Earnings.	Proportion of Working Expenses to Gross Earnings.
	£	£	£	per cent.
1891 .....	64,034	63,536	498	99·22
1892 .....	94,201	90,654	3,547	96·23
1893 (half-year).....	54,668	47,069	7,598	86·10
1894 .....	140,564	103,973	36,591	73·96
1895 .....	296,000	182,046	113,954	61·50
1896 .....	529,616	263,704	265,912	49·79
1897 .....	915,483	577,655	337,828	63·09
1898 .....	1,019,677	786,318	233,359	77·11
1899 .....	1,004,620	712,329	292,291	70·91
1900 .....	1,259,512	861,470	398,042	68·40

From the foregoing statement it will be seen that the gross earnings have increased from £64,034 in 1891 to £1,259,512 in 1900. The rush to the gold-fields of Western Australia has brought an enormous amount of traffic to the railways of that colony, and the lines stand in a position which it is impossible for those of any other province to attain, except under similar circumstances. The proportion of working expenses to gross earnings during the decade has been reduced from 99·22 per cent. to 68·40 per cent., the intervening years showing considerable irregularity. The rates for the carriage of merchandise are so low that the revenue derived from the traffic is hardly sufficient to pay for working it, and with a view to economy during 1899 the train service was considerably curtailed, and trains previously confined to passenger traffic were converted into mixed trains, conveying both passengers and goods, the result being a substantial reduction in working expenses proportionately to the gross earnings.

*Interest returned on Capital.*

The following is a statement of the average interest earned by the railways on the money invested in them, and affords a comparison with the interest paid on the public debt of the colony :—

Year.	Interest returned on Capital.	Actual Rate of Interest payable on Outstanding Loans.	Average gain.
	per cent.	per cent.	per cent.
1891 .....	0·05	4·21	*4·16
1892 .....	0·37	4·09	*3·72
1893 (half-year) .....	0·79	4·09	*3·30
1894 .....	3·12	4·09	*0·97
1895 .....	5·45	4·09	1·36
1896 .....	11·48	3·84	7·64
1897 .....	9·05	3·60	5·45
1898 .....	4·62	3·59	1·03
1899 .....	4·55	3·54	1·01
1900 .....	5·81	3·46	2·35

\* Average loss.

The railways of Western Australia have not only met working expenses during the past six years, but have left a margin after making provision for the payment of interest on capital expenditure. In the construction of these railways, few engineering difficulties were met with, and the lines, which are of a light character, were constructed at a cheaper rate than those of any other colony. This fact, together with the enormous increase in coaching and goods traffic, due to the development of the gold-fields, has been instrumental in securing such a favourable return.

*Earnings and Expenses per Mile.*

The gross earnings, expenditure, and net earnings per train mile for the last ten years are shown in the following table :—

Year.	Gross Earnings per train mile.	Expenditure per train mile.	Net Earnings per train mile.
	d.	d.	d.
1891 .....	49·37	48·98	0·39
1892 .....	55·62	53·52	2·10
1893 (half-year) .....	55·87	48·10	7·77
1894 .....	52·59	38·90	13·69
1895 .....	71·22	43·79	27·43
1896 .....	82·44	41·05	41·39
1897 .....	86·59	54·64	31·95
1898 .....	67·72	52·22	15·50
1899 .....	74·01	52·48	21·53
1900 .....	71·70	49·04	22·66

The gross earnings, expenditure, and net earnings per average mile open for the past ten years were as follow :—

Year.	Gross Earnings per average mile open.	Expenditure per average mile open.	Net Earnings per average mile open.
	£	£	£
1891 .....	315	313	2
1892 .....	464	447	17
1893 (half-year) .....	269	232	37
1894 .....	438	324	114
1895 .....	538	331	207
1896 .....	913	455	458
1897 .....	1,103	696	407
1898 .....	1,047	807	240
1899 .....	791	561	230
1900 .....	930	636	294

While the gross earnings per train mile have increased from 49·37d. in 1891 to 71·70d. in 1900, the net earnings show a greater improvement during the period, having risen from 0·39d. in the former year to 22·66d. in the latter. The causes that have led up to this have already been indicated. It will be observed that the expenses per train mile have been reduced since 1897, and this has been secured by the adoption of the system of mixed trains. The volume of coaching and goods traffic carried during 1898 was larger than in previous years, but the net earnings per average mile open show a marked reduction. The increased traffic, of course, necessitated extra expenditure; and being accompanied by a reduction in rates, had the temporary effect of reducing the net earnings. It is estimated that the adoption of the new rates, as compared with the old, involved a loss during 1898 of at least £232,000 in the working of the Northam, Southern Cross, Coolgardie, and Kalgoorlie railways, but the wisdom of the railway policy of the country is justified by the results of the following two years.

*Coaching and Goods Traffic.*

The following table shows the number of passengers carried on the State lines of the colony during the year 1887, the earliest for which particulars are available, and for the last ten years, together with the receipts for the traffic, and the average receipts per journey :—

Year.	Passengers carried.	Receipts from Coaching Traffic.	Average Receipts per Journey.
	No.	£	d.
1887 .....	173,656	19,032	26·29
1891 .....	277,997	26,750	23·08
1892 .....	456,631	33,693	17·70
1893 (half-year) .....	286,520	16,967	14·20
1894 .....	617,080	47,804	18·59
1895 .....	1,022,248	107,278	25·17
1896 .....	1,679,816	150,597	21·51
1897 .....	3,607,486	303,124	20·16
1898 .....	5,669,444	345,174	14·61
1899 .....	5,872,200	312,685	12·78
1900 .....	6,225,068	342,468	13·00

The statement shows a large increase in the number of passengers carried each year ; the gradual reduction in the average receipts per journey shows the expansion of the suburban and local traffic.

The amount of goods tonnage for a similar period is shown in the following table :—

Year.	Tonnage of Goods.	Earnings.
		£
1887 .....	52,151	20,380
1891 .....	96,498	34,940
1892 .....	135,890	56,350
1893 (half-year) .....	86,004	34,641
1894 .....	204,686	80,669
1895 .....	255,839	181,695
1896 .....	435,757	352,597
1897 .....	858,748	572,715
1898 .....	1,203,911	646,695
1899 .....	1,148,252	655,863
1900 .....	1,384,040	884,843

It will be seen that the increase in the goods traffic has been considerable, the tonnage in 1898 being nearly double that of 1897, and in 1900 about 60 per cent. in excess of 1898 ; but owing to reduction in the charges for carriage, the earnings have not shown so considerable an expansion.

## TASMANIA.

The progress of railway construction in Tasmania has been somewhat slow, for owing to the fact that the island is small and possesses numerous harbours, the railways have had to face severe competition with sea-borne traffic. As stated earlier in the chapter, the line from Launceston to Deloraine, 45 miles in length, was opened on 10th February, 1871, and though an agitation long existed for the construction of a railway between the principal centres, Hobart and Launceston, it was not till the 1st November, 1876, that it was opened for traffic. No further extension was made until 1884, when an increase of 48 miles was made, and up to 1890 the total mileage opened was only 398, of which 48, opened in 1884, were constructed by a private company. The length of State railways opened to 30th June, 1900, was 437 $\frac{3}{4}$  miles, at a cost of £3,604,222 for construction and equipment, or at the rate of £8,233 per mile.

The lines of State railway in operation in Tasmania are the Western, from Launceston to Ulverstone, with branch to Chudleigh; the Main line from Hobart to Launceston, with branches from Launceston to Scottsdale, Parattah to Outlands, Conara Junction to St. Mary's, Bridgewater to Glenora, and Brighton Junction to Apsley; the Sorell line, from Bellerive to Sorell; and the West Coast line, from Strahan Wharf to Maestris.

The control of the railways is vested in the Department of Lands and Works, the active management being undertaken by an officer with the title of General Manager.

*Revenue and Working Expenses.*

The net sum available to meet interest charges in connection with the railways of the colony for each of the years during the last decennial period was as follows:—

Year.	Gross Earnings.	Working Expenses.	Net Earnings.	Proportion of Working Expenses to Gross Earnings.
	£	£	£	£
1890 .....	106,232	86,220	20,012	81·16
1891 .....	169,050	147,944	21,106	87·51
1892 .....	176,926	161,586	15,340	91·32
1893 .....	152,083	136,468	15,615	89·73
1894 .....	144,488	122,850	21,638	85·02
1895 .....	149,642	120,351	29,291	80·42
1896 .....	162,932	122,171	40,761	74·98
1897 .....	166,834	128,544	38,290	77·04
1898 .....	178,180	141,179	37,001	79·23
1899 .....	193,158	152,798	40,360	79·10

The year 1890 should be omitted from any comparison with recent years, as it was in that year that the State took over the main line from the company by which it was previously owned. The cost of working the Tasmanian railways is comparatively high—much higher than in any other Australasian system, and, like the New Zealand lines, the railways have to face severe competition with sea-borne traffic, while there are no large inland centres that could support railways. There is a marked decrease year by year in the Australian traffic *via* Launceston, which is attributed to the great improvement in the direct steamer service between Melbourne and Hobart.

*Interest returned on Capital.*

The following table shows the average loss on the working of the Tasmanian railways for each year during the last ten years :—

Year.	Interest returned on Capital.	Actual rate of Interest payable on Outstanding Loans.	Average Loss.
	per cent.	per cent.	per cent.
1890 .....	0·68	4·11	3·43
1891 .....	0·68	4·19	3·51
1892 .....	0·43	3·23	2·80
1893 .....	0·44	3·23	2·79
1894 .....	0·61	3·96	3·35
1895 .....	0·83	3·88	3·05
1896 .....	1·16	3·87	2·71
1897 .....	1·09	3·84	2·75
1898 .....	1·03	3·82	2·79
1899 .....	1·12	3·80	2·68

The foregoing table shows that there has been a slight improvement in the condition of the railway revenue during the past five years. The competition already referred to, together with the heavy initial cost of the railways themselves, especially of the main line connecting Hobart with Launceston, for which the price paid by the Government on its resumption was at the rate of £9,069 per mile, as against an average of £8,233 per mile for the lines of the colony generally, render it extremely difficult, even with the most careful management, to effect any considerable diminution in the average loss. Even in the case of the Western line from Launceston to Ulverstone, which passes through the finest tract of agricultural land in the colony, the return, after paying working expenses for the year ended 30th June, 1900, was only 1·95 per cent. on the cost of construction and equipment.

*Earnings and Expenses per Mile.*

The following tables indicate the gross earnings, expenditure, and net earnings per train mile and per mile of line open. It will be observed that the net earnings per train mile reached 13d. in 1896, a point beyond which it does not seem likely there will be much expansion. This compares very unfavourably with the results of other parts of Australia.

Year.	Gross Earnings per train mile.	Expenditure per train mile.	Net Earnings. per train mile.
	d.	d.	d.
1890.....	46·13	37·44	8·69
1891.....	44·64	39·07	5·57
1892.....	46·73	42·68	4·05
1893.....	45·63	40·94	4·69
1894.....	45·83	38·96	6·87
1895.....	49·36	39·69	9·67
1896.....	52·85	39·63	13·22
1897.....	52·34	40·33	12·01
1898.....	56·17	44·50	11·67
1899.....	57·50	45·49	12·01

The earnings and expenditure per average mile open were as follows :—

Year.	Gross Earnings per average mile open.	Expenditure per average mile open.	Net Earnings per average mile open.
	£	£	£
1890.....	425	345	80
1891.....	458	401	57
1892.....	424	387	37
1893.....	356	319	37
1894.....	338	287	51
1895.....	350	281	69
1896.....	381	286	95
1897.....	386	297	89
1898.....	400	317	83
1899.....	434	343	91

The peculiar position of Tasmania has already been referred to. The portions of the lines at first constructed were within the more densely populated districts, and the later extensions were projected into the more thinly-peopled areas, which were without sufficient production to afford a payable traffic. In comparison with the other colonies the proportion of expenses to gross earnings is extremely high, and while the last five years show an improvement, it does not seem possible under present conditions to reduce expenditure.

*Coaching and Goods Traffic.*

Particulars in respect of the number of passengers carried on the State lines of Tasmania during the year 1881, and for the last ten years, together with receipts from the traffic and the average receipts per journey, are set forth in the following table:—

Year.	Passengers carried.	Receipts from Coaching Traffic.	Average Receipts per Journey.
	No.	£	d.
1881.....	102,495	10,396	24·34
1890.....	464,064	52,725	27·26
1891.....	725,724	92,209	30·49
1892.....	704,531	87,506	29·80
1893.....	546,671	64,428	28·28
1894.....	514,461	58,070	27·09
1895.....	526,814	57,947	26·39
1896.....	542,825	59,771	26·43
1897.....	603,539	62,447	24·88
1898.....	617,643	68,317	26·54
1899.....	640,587	73,147	27·40

It will be seen that during the years 1891 and 1892 a large increase is shown in the number of passengers carried. This was due to the resumption of the main line connecting Hobart with Launceston, the returns for the years in question being swollen by the traffic over the increased length of line. The increase, however, was not sustained, for in the subsequent year a large diminution in the number of persons making use of the lines was recorded. There has since been a revival of traffic, and there are good grounds for supposing that this improvement will be continued. The average receipts per journey do not vary to any considerable extent, the amount of suburban traffic properly so-called being very small.

The amount of goods tonnage for a similar period is shown in the following table :—

Year.	Tonnage of Goods and Live Stock.	Earnings.
		£
1881	21,043	8,332
1890	141,327	42,826
1891	161,141	65,856
1892	178,224	76,182
1893	164,982	73,490
1894	174,457	73,639
1895	204,480	78,797
1896	229,707	85,780
1897	229,620	86,941
1898	235,096	93,620
1899	312,446	107,661

No information is available showing the subdivision of the tonnage of goods and live stock for the year into a general classification. The average distance each ton of goods was carried was 38·33 miles, and the average receipts per ton per mile 1·81d.

#### NEW ZEALAND.

The continuance of the native war in New Zealand, militated against the rapid extension of the railways, and at the close of the war in 1870 there were only 46 miles in operation. In 1875 the length of line opened for traffic had increased to 542 miles; in 1885, to 1,613 miles; in 1890, to 1,842 miles; and in 1895 to 2,014 miles. The length of line opened to 31st March, 1900, was 2,104 miles, at a cost of £16,703,887 for construction and equipment, or at the rate of £7,939 per mile.

The railway system of the Colony is divided into eleven sections. The Kawakawa and Whangarei sections, in the extreme north of the North Island, are short lines to coal-fields, and the Kaihu section was built for the purpose of tapping large timber areas inland. The Auckland section forms the northern portion of the North Island main trunk railway, which, when complete, will terminate at Wellington, on the shores of Cook's Strait. The Wellington-Napier-New Plymouth section comprises the group of lines which serve the southern portion of North Island. In the northern portion of Middle Island, the Grey-Brunner, the Grey-Hokitika, Westport, Nelson, and Picton sections form only the first link in the chain of through communication. On the East Coast of Middle Island, the actual working portion of the main trunk line is to be found. The present terminus is at Culverden, from whence extension will be made northward. This is known as the Hurunui-Bluff section, and includes the service to Christchurch, Dunedin, Invercargill, and the Bluff.

The management of the railways of New Zealand was placed in the hands of three Commissioners in 1887, but early in 1895 the Government resumed charge of the lines, the active control being vested in an officer with the title of General Manager, who is responsible to the Minister for Railways.

*Revenue and Working Expenses.*

The net sum available to meet interest charges during each year of the last decennial period is set forth in the following table:—

Year.	Gross Earnings.	Working Expenses.	Net Earnings.	Proportion of Working Expenses to Gross Earnings.
	£	£	£	£
1891	1,121,701	700,703	420,998	62·47
1892	1,115,432	706,517	408,915	63·34
1893	1,181,522	732,142	449,380	61·97
1894	1,172,733	735,359	437,434	62·70
1895	1,150,851	732,160	418,691	63·62
1896	1,183,041	751,368	431,673	63·51
1897	1,286,158	789,054	497,104	61·35
1898	1,376,008	857,191	518,817	62·30
1899	1,469,665	929,738	539,927	63·26
1900	1,623,891	1,052,358	571,533	64·80

The foregoing table shows that the serious fluctuations that at times characterise the returns of the colonies on the mainland of Australia are absent from those of New Zealand, the configuration of the islands and their higher latitude rendering them to a very great extent immune from the periodical droughts to which the other colonies are so subject. The proportion of working expenses to gross earnings does not vary to any considerable extent, and the increase during the past two years is attributed to the payment of an increased rate of wages to employees, replacing old engines with new, heavy repairs due to the increased age of the stock, and the relaying of a portion of the permanent way with heavier rails. The outlook is considered so satisfactory that substantial reductions in passenger fares and freight for domestic products are contemplated.

*Interest Returned on Capital.*

The basis employed in the case of the colonies comprised within the Commonwealth for ascertaining the net interest payable on the railway debts cannot be adopted for New Zealand, the necessary data not being

available. The nominal loss is, therefore, shown in the following statement, the actual loss being somewhat higher :—

Year.	Interest Returned on Capital.	Average rate of Interest payable on Outstanding Loans.	Average Loss
	Per cent.	Per cent.	Per cent.
1891	2·95	4·22	1·27
1892	2·79	4·16	1·37
1893	3·05	4·42	1·37
1894	2·88	4·42	1·54
1895	2·73	4·10	1·37
1896	2·80	3·94	1·14
1897	3·19	3·92	0·73
1898	3·24	3·89	0·65
1899	3·29	3·81	0·52
1900	3·42	3·79	0·37

The foregoing table indicates that the railways are approaching the stage of being self-supporting, the interest returned on capital cost for the past six years showing an improvement each year.

#### *Earnings and Expenses per Mile.*

The gross earnings, expenditure, and net earnings per train mile for the past ten years are shown in the following table :—

Year.	Gross Earnings per train mile.	Expenditure per train mile.	Net Earnings per train mile.
	d.	d.	d.
1891	93·00	58·09	34·91
1892	88·75	56·32	32·43
1893	94·50	58·53	35·97
1894	90·25	56·69	33·56
1895	85·75	54·54	31·21
1896	85·75	54·53	31·22
1897	90·50	55·55	34·95
1898	90·00	56·11	33·89
1899	89·00	56·22	32·78
1900	93·00	60·31	32·69

The gross earnings per train mile have varied very little during the ten years, the lowest point touched being 85½d., and the highest, 94½d., while the expenditure has varied even less. The expenditure during the last year was higher than in any other year during the decennial period, and the net earnings show a slight but gradual reduction during the past four years. The results, however, compare very favourably with the other colonies, and are only exceeded by those of New South Wales.

The gross earnings, expenditure, and net earnings per average mile open for the past ten years are as follow :—

Year.	Gross Earnings per average mile open.	Expenditure per average mile open.	Net Earnings per average mile open.
	£	£	£
1891 .....	609	380	229
1892 .....	598	379	219
1893 .....	626	388	238
1894 .....	613	384	229
1895 .....	585	372	213
1896 .....	592	376	216
1897 .....	638	391	247
1898 .....	673	420	253
1899 .....	712	450	262
1900 .....	774	501	273

The foregoing table indicates that the gross earnings have increased from £609 per average mile open to £774, and the net earnings from £229 to £273, the return for last year being the highest secured during the decennial period—evidence of the fact that the extensions in recent years have been judicious, and that the volume of traffic has been maintained.

*Coaching and Goods Traffic.*

The following table shows the number of passengers carried on the lines of the Colony during the year ended 31st March, 1882, and for the last ten years, together with the receipts from the traffic, and the average receipts per journey :—

Year.	Passengers carried.	Receipts from Coaching traffic.	Average Receipts per Journey.
	No.	£	d.
1882 .....	2,911,477	329,492	27·16
1891 .....	3,433,629	333,122	23·28
1892 .....	3,555,764	342,563	23·12
1893 .....	3,759,044	367,594	23·47
1894 .....	3,972,701	378,480	22·89
1895 .....	3,905,578	360,243	22·14
1896 .....	4,162,426	359,822	20·74
1897 .....	4,439,387	378,684	20·47
1898 .....	4,672,264	399,262	20·51
1899 .....	4,955,553	438,367	21·23
1900 .....	5,468,284	474,793	20·83

It will be observed that there was a falling off during the decennial period in the average receipts per journey. Taking the returns for the year ended 31st March, 1884, as a basis, it has been found that those

for 1900 show an increase of only 22 $\frac{1}{2}$  per cent. in the number of passengers who travelled first-class, while the increase in those who travelled second-class was not less than 79 $\frac{3}{4}$  per cent. While the marked prosperity of the past two years has induced more passengers to travel first-class, it is none the less evident that the tendency is towards one class of carriage, as already exists in the case of tramways.

The amount of goods tonnage for a similar period is shown in the following table :—

Year.	Tonnage of Goods exclusive of Live Stock.	Earnings.
		£
1882 .....	1,437,714	491,057
1891 .....	2,086,011	690,779
1892 .....	2,066,791	671,469
1893 .....	2,193,330	707,786
1894 .....	2,060,645	686,469
1895 .....	2,048,391	683,726
1896 .....	2,087,798	698,115
1897 .....	2,368,927	774,163
1898 .....	2,518,367	837,590
1899 .....	2,624,059	882,077
1900 .....	3,127,874	985,723

The large increase in the tonnage of goods carried during the past year over preceding years was caused by the bountiful harvest in the Middle Island, which was carried at freight rates averaging 20 per cent. below those ruling in the previous year.

The subdivision of the tonnage of goods and live stock for the year ended 31st March, 1900, is shown in the following table. Particulars of the goods traffic are set forth in seven classes, but the average distance for which goods of each class were carried, cannot be given, and there are no data available showing the average earnings per ton per mile.

Description of Traffic.	Tons carried.	Number carried.
Lime and Chaff .....	77,292	.....
Wool.....	104,620	.....
Firewood .....	92,126	.....
Timber .....	334,677	.....
Grain .....	764,033	.....
Merchandise .....	536,428	.....
Minerals .....	1,218,698	.....
Cattle .....	.....	65,063
Sheep .....	.....	2,523,787
Pigs .....	.....	36,049

## TRAMWAYS.

In all the Australasian colonies tramways are in operation, but it is chiefly in Sydney and Melbourne, the inhabitants of which numbered at the latest date 438,300 and 477,790 respectively, that the density of settlement has necessitated the general adoption of this mode of transit.

In New South Wales the three systems of electric, cable, and steam traction are in vogue. Within the metropolitan area, however, it has been decided to substitute electric for steam power, and the conversion is now being made. The length of line under electric traction on the 30th June, 1900, was  $20\frac{1}{4}$  miles, comprising  $10\frac{1}{4}$  miles at North Sydney;  $1\frac{1}{4}$  mile from Ocean-street, Woollahra, to Rose Bay; 3 miles 19 chains on the George-street-Harris-street tramway; and  $5\frac{1}{2}$  miles to Marrickville, Dulwich Hill, and St. Peters. The only line worked by cable traction is that from King-street, Sydney, to Ocean-street, in the suburb of Woollahra, a distance of  $2\frac{1}{2}$  miles. On the remaining lines steam motors are still used. The length of Government tram lines open to 30th June, 1900, was  $71\frac{1}{2}$  miles, which had cost for construction and equipment £1,924,720. The receipts for the year were £409,724, and the working expenses £341,127, leaving a profit of £68,597, or 3.56 per cent. on the invested capital. The number of passengers carried during 1900 was 66,244,334.

In Victoria the cable system is in operation in the metropolitan area, the lines having been constructed by a municipal trust at a cost of £1,705,794. The tramways are leased to a company, and the receipts for the year ended 30th June, 1900, were £456,654. The number of passengers carried during the year was 41,661,580. The miles of track operated on were  $43\frac{1}{2}$  cable and  $4\frac{1}{2}$  horse lines, or 48 miles of double track.

In Queensland there is a system of electric trams controlled by a private company. No information regarding liabilities is available since 30th September, 1895, when they were set down at £166,218, and the assets to 30th September, 1896, the latest date available, were shown at £131,542. The receipts for the year ended 30th September, 1897, the latest available, were £30,299; and the expenses, including depreciation, £26,304. The length of the tramways is  $22\frac{1}{2}$  miles, or 36 miles of single line. The company owned fifty-eight electric cars, and during the year ended 30th September, 1899, 9,938,307 passengers were carried.

In South Australia there are no Government tramways, but horse trams are run in the principal streets of Adelaide by private companies. No particulars have been collected respecting the length of the lines, nor of the returns therefrom. A proposal is under consideration for the substitution of electric traction on these lines.

The Western Australian Government owns a line of horse tramway on a 2-foot gauge between Roeburne and Cossack, a length of  $8\frac{1}{2}$  miles,

constructed at a cost of £23,352. For the year ended 30th June, 1900, the gross earnings were £2,131, and the working expenses £2,889, leaving the loss on working expenses at £758.

In Hobart there is an electric tramway about 9 miles in length, owned by a private company. The cost of construction and equipment was £90,000 ; and the company possesses 20 cars, of which the average number in use is 12. For the year ended 31st December, 1899, the receipts amounted to £12,459, and the working expenses, excluding directors' fees, to £8,940. The passengers carried during the twelve months numbered 1,284,552. There is also a steam system 2 miles in length, constructed at a cost of £3,212. No information is available as to the receipts for the year ended 31st December, 1899, but the working expenses were £1,948. The number of passengers carried during the twelve months was 24,219.

There are also tramways in existence in New Zealand under private management, but no particulars in regard to them are at present available.