**Government railway systems**

There are six separate State Government railway systems and one Commonwealth railway system. As the Commonwealth system includes mileages in South Australia and Western Australia, and the Victorian system extends into New South Wales, the system route-mileages shown in the following table do not represent mileages within each State and Territory. These are shown in the previous table. The route-mileage of each system open for traffic, according to gauge, at 30 June 1969 is shown in the following table.

GOVERNMENT RAILWAYS: ROUTE-MILEAGE OPEN, BY GAUGE AND SYSTEM
30 JUNE 1969
(Miles)

| System | Gauge | | | | | Total |
|---|---|---|---|---|---|---|
| | 5ft 3in | 4ft 8½in | 3ft 6in | 2ft 6in | 2ft 0in | |
| New South Wales | .. | (a)6,061 | .. | .. | .. | 6,061 |
| Victoria | (b)3,965 | 202 | .. | 9 | .. | 4,176 |
| Queensland | .. | 69 | 5,725 | .. | 30 | 5,824 |
| South Australia | 1,631 | .. | 829 | .. | .. | 2,460 |
| Western Australia | .. | 445 | (c)3,381 | .. | .. | 3,826 |
| Tasmania | .. | .. | 500 | .. | .. | 500 |
| Commonwealth | .. | 1,330 | 918 | .. | .. | 2,248 |
| **Australia** | **5,596** | **8,107** | **11,353** | **9** | **30** | **25,095** |

(a) Includes 270 route-miles which are electrified. (b) Excludes 202 route-miles of 5ft 3in gauge line which almost parallels the 4ft 8½in gauge line between Melbourne and the Murray River. Includes 263 route-miles which are electrified. (c) Excludes 248 miles of 3ft 6in gauge line which parallels the 4ft 8½in gauge line and 68 miles of 3ft 6in/4ft 8½in dual gauge line which are included in the 4ft 8½in gauge line.

The New South Wales system is based on Sydney and extends throughout the State. The Victorian system based on Melbourne radiates throughout the State, extending into areas of southern New South Wales. The Queensland system extends along the coast from Brisbane to Cairns in the north, while branch lines extend inland from Brisbane and the larger coastal cities of Rockhampton and Townsville. The main South Australian system is in the south-east of the State, but an isolated narrow-gauge system operates in the Eyre Peninsula area. The railway system in Western Australia is established in the south-western section of the State, but extends north to Meekatharra and east to Kalgoorlie and Esperance. In Tasmania the main line connects Hobart and Launceston, and there are branch lines along the northern coast.

The Commonwealth Railways comprises four separate railways. The Trans-Australian Railway, extending from Port Pirie to Kalgoorlie, is of 4ft 8½in gauge, as is that part of the Central Australia Railway from Port Augusta (Sterling North) to Maree. A further extension of this railway from Maree to Alice Springs is of 3ft 6in gauge, as is the North Australia Railway from Darwin to Birdum. The Australian Capital Territory Railway from Queanbeyan to Canberra is of 4ft 8½in gauge. In this chapter particulars of the four Commonwealth railways are combined; however, particulars for each railway are shown separately in the annual bulletin *Transport and Communication.*

A graph showing the route-mileages and traffic of all Government railways from 1870 to 1969 appears on plate 30 on page 354.

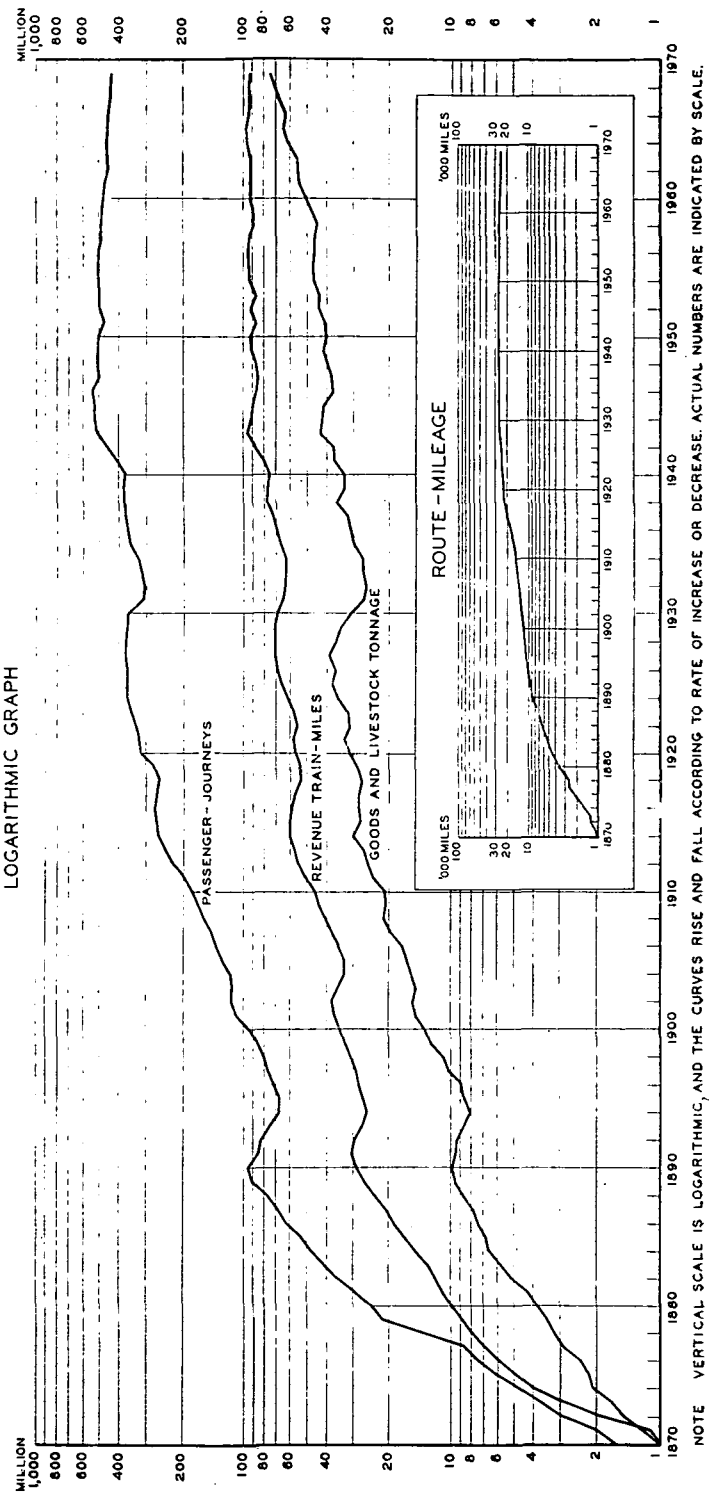
## Standardisation of railway gauges

**Introduction**

The completion of the standard gauge line from Broken Hill to Cockburn in November 1969 saw the final step in the standard gauge link between Fremantle (Western Australia) and Sydney (New South Wales). The first through freight services to operate between Sydney and Fremantle commenced on 12 January 1970 and the new passenger service over the same route was inaugurated on 23 February 1970. This passenger service has been named the *Indian-Pacific* after the oceans it links.

# GOVERNMENT RAILWAYS: AUSTRALIA, 1870 TO 1968-69

## ROUTE MILEAGE AND TRAFFIC




NOTE VERTICAL SCALE IS LOGARITHMIC, AND THE CURVES RISE AND FALL ACCORDING TO RATE OF INCREASE OR DECREASE. ACTUAL NUMBERS ARE INDICATED BY SCALE.

**PLATE 30**

At this stage all mainland capital cities, except Adelaide, are linked by the standard gauge system. This system now extends from South Brisbane to Sydney via Kyogle (New South Wales); from Sydney to Melbourne via Albury (New South Wales); from Sydney to Cockburn (on the South Australia/New South Wales border) via Parkes and Broken Hill; from Cockburn to Port Pirie (South Australia); from Port Pirie to Kalgoorlie (Western Australia) via Port Augusta (South Australia); and from Kalgoorlie to Fremantle via Koolyanobbing, Merredin and Northam (Western Australia). Although the task of linking Australia by standard gauge was commenced in 1912 with the beginning of construction of the standard gauge line between Port Augusta and Kalgoorlie it took almost sixty years to complete. Major factors contributing to the delay in construction were a lack of funds and the failure of successive State and Commonwealth Governments to agree on matters concerning the introduction of the standard gauge.

**Benefits**

With the opening of the line from the east coast to the west coast of Australia it was possible for freight and passengers to travel for the first time in the one vehicle for the whole journey. In the past it had been necessary for rail freight consigned across the continent to be transhipped, or bogie exchanged, three times with consequent delays, damage and losses. Similarly passengers had to change trains five times on the journey between Sydney and Perth.

The major benefits of standardisation are the saving in time and costs due to the elimination of the multiple handling of goods and the trans-shipment of passengers at points of break-in-gauge. The through freight services between Sydney and Perth will take 3½ days compared with the 8 to 10 days which applied previously. Similarly passenger services have been improved and travelling time cut from about 80 hours to 65 hours. Further improvements will follow as the new track settles down and higher operating speeds become possible.

**Historical background**

The historical background to the standardisation of railway gauges was described in detail in Year Book No. 53, pages 440–445, and therefore will receive only a brief mention in this article. At Federation in 1901 there were three main gauges in operation in the various States. As early as 1846 the British Secretary of State for the Colonies recommended a uniform gauge of 4ft 8½in for railway construction in the Australian colonies. The main purpose of this recommendation was to avoid the problems encountered in England where different gauges were employed. In 1850 the chief engineer of the Sydney Railway Company recommended a gauge of 5ft 3in, the gauge in use in Ireland. The Secretary of State for the Colonies agreed, notified the States of Victoria and South Australia which accepted the gauge of 5ft 3in as the standard for Australia. However, in 1854 the next chief engineer of the Sydney Railway Company advised that a gauge of 4ft 8½in be used, the gauge in use in England and Scotland. This gauge was adopted in New South Wales but Victoria and South Australia did not conform as orders had been placed for 5ft 3in rolling stock. The adoption of 3ft 6in gauge by Queensland, Western Australia and Tasmania and the subsequent use of this gauge for certain lines in South Australia appears to have been based on geographical, financial and economic considerations. It is also likely that the possibility of links between States was considered to be remote.

The difficulties of the railways in providing satisfactory interstate travel and freight transport services were greatly emphasised during both world wars when serious delays occurred in the movement of troops and equipment. A Royal Commission, set up in 1921 to investigate the standardisation of gauges, recommended the conversion of the entire Victorian and South Australian networks to standard gauge and the construction of standard gauge links between Fremantle and Kalgoorlie (Western Australia), Port Augusta and Adelaide (South Australia), and Kyogle (New South Wales) and South Brisbane (Queensland). It recommended the adoption of 4ft 8½in gauge as the standard gauge because of its carrying capacity, speed tolerance, and, more importantly, because the relative cost of converting lines and rolling stock to 4ft 8½in was considerably less expensive than a similar conversion to 5ft 3in. The 4ft 8½in gauge was accepted as the standard gauge at a Premiers' Conference in November 1921. However the only practical result of the 1921 Commission was the extension of the standard gauge from Kyogle (New South Wales) to South Brisbane, which was completed in 1930, with the cost being borne by the Commonwealth Government.

In 1935 an agreement was reached between the Commonwealth and South Australian Governments for the Commonwealth to extend the standard gauge from Port Augusta to Port Pirie (South Australia). This project was completed in 1937.

In March 1944 the Commonwealth Government requested Sir Harold Clapp, Director-General of Land Transport, to submit a report and recommendations regarding the standardisation of Australia's railway gauges on the basis of a 4ft 8½in gauge. As well as making recommendations

similar to those made by the Royal Commission in 1921, the Clapp Report recommended the construction of standard gauge links between Bourke (New South Wales), Dajarra and Townsville (Queensland); and between Dajarra and Birdum (Northern Territory); conversion to standard gauge of the lines between Birdum and Darwin (Northern Territory); and acquisition and conversion of the Silverton Tramway Company's line between Broken Hill (New South Wales) and Cockburn (South Australia); for further details *see* Year Book No. 53, pages 442–3. Following the Clapp Report an agreement was reached in 1949 between the South Australian and Commonwealth Governments providing for the conversion of the South Australian railway network, except for the narrow gauge in the Port Lincoln Division, to standard gauge. As an interim measure the Commonwealth Government agreed to the conversion of the narrow gauge in the south-east of South Australia (Bordertown-Naracoorte–Mt Gambier and branches) to broad gauge pending conversion to standard gauge when required. This work was completed in 1958.

Another Committee in 1956 under the direction of Mr W. C. Wentworth, M.P., modified the proposals of the Clapp Report and formed a more acceptable plan to standardise the main trunk lines from Albury (New South Wales) to Melbourne (Victoria), from Broken Hill (New South Wales) to Adelaide via Port Pirie (South Australia) and from Kalgoorlie to Fremantle (Western Australia). Except for the standard gauge link between Adelaide and Port Pirie this plan has been achieved.

**Highlights of capital city standard gauge rail link-up**

| | |
|---|---|
| September 1930 | Kyogle to South Brisbane standard gauge line opened. |
| March 1945 | Clapp Report on Gauge Standardisation. |
| October 1956 | Wentworth Report on Gauge Standardisation. |
| January 1962 | Melbourne–Albury standard gauge line opened. |
| November 1962 | Work started on Western Australia standard gauge project. |
| April 1963 | Work started on South Australian standard gauge project |
| November 1966 | First section of Western Australian standard gauge (Merredin to Fremantle) opened. |
| April 1967 | First iron ore train from Koolyanobbing to Kwinana. |
| August 1968 | Western Australian standard gauge line linked with Trans-Australian Railway at Kalgoorlie. |
| November 1968 | First through Port Pirie–Perth freight train. |
| March 1969 | Port Pirie–Cockburn standard gauge line completed. |
| June 1969 | Through passenger service, Port Pirie–Perth inaugurated. |
| November 1969 | Cockburn–Broken Hill standard gauge line completed. |
| January 1970 | First through Sydney–Perth freight service. |
| February 1970 | Official inauguration of *Indian-Pacific* passenger express. |

**Sydney–Melbourne standard gauge**

Sydney and Melbourne were linked by standard gauge in January 1962 when the line from Sydney to Albury was extended to Melbourne in parallel with the existing Victorian 5ft 3in gauge. This line links the two most populous and highly industrialised States and is the busiest interstate rail route in Australia. Since the standard gauge line was opened, rail freight traffic between New South Wales and Victoria has increased by about two-thirds.

To enable work on this project to commence in 1957, an agreement was reached between the Commonwealth, Victorian and New South Wales Governments whereby the Commonwealth advanced the funds and accepted responsibility for 70 per cent of the cost, with the Victorian and New South Wales governments being equally responsible for repaying the remaining 30 per cent plus interest over a 50 year period.

**The *Indian-Pacific* (Perth to Sydney) Route**

The following describes the standardisation of each section of the route followed by the *Indian-Pacific* service and the work undertaken to establish the 2,461 miles of uniform high grade track needed for a fast and efficient freight and passenger train service between Sydney and Perth.

*Sydney to Parkes* (277 miles). This section has always been of standard gauge. It involves the complicated grades, curves and tunnels required to cross the Blue Mountains. Electric motive power is used as far as Lithgow. The track is of a high standard although clearances are limited through the Blue Mountains.

*Parkes to Broken Hill* (422 miles). This line was originally opened in 1927. Although of standard gauge it was built as a developmental line with light rails and only earth ballast. To enable it to handle fast interstate traffic, an upgrading programme was devised. The work included replacement of sleepers and ballasting, and improvement of grades, curves and bridges, at a total cost of about $12 million, of which $10 million was provided as a direct grant by the Commonwealth Government. The immediate programme did not include the provision of new rails, and the New South Wales Government has agreed to do this work at its own cost as it becomes necessary.

*Broken Hill to Port Pirie* (247 miles). Previously this line was operated in two parts. The first 35 miles, which were in New South Wales, were owned and operated by a private company The Silverton Tramway Company Limited, and were built under an 1886 Act of the New South Wales Parliament. From the South Australian border (Cockburn to Port Pirie) the line was owned and operated by the South Australian Railways. Both these sections were of 3ft 6in gauge. However, the standardisation project, financed by the Commonwealth Government under the Railway Standardisation (South Australia) Agreement of 1949, covered construction of a new standard gauge railway between Cockburn and Port Pirie. A new railway was constructed in New South Wales between Broken Hill and Cockburn on a more direct route than that operated by The Silverton Tramway Company. The latter work required a new agreement between the Commonwealth, New South Wales and South Australian Governments, resulting in the Railway Agreement (New South Wales and South Australia) of 1968. This railway is owned and operated by the South Australian Railways. The Silverton Tramway Company has ceased mainline operations but is continuing to operate the mine sidings in Broken Hill. Generally, the South Australian section follows the old narrow gauge route.

The project also included provision for extensive marshalling complexes at Broken Hill, Peterborough, Gladstone, and Port Pirie. A short 14 mile section of narrow gauge line between Terowie and Peterborough was converted to broad (5ft 3in) gauge to give a direct link from Adelaide without the previous transfer at Terowie. There are bogie exchange facilities at Port Pirie and Peterborough for transfers between broad (5ft 3in) and standard (4ft 8½in) gauges, and other transfer facilities have been provided at these locations and at Gladstone, where breaks of gauge still exist.

The total cost of the Broken Hill/Port Pirie work, including rolling stock, was about $52.5 million, all of which was provided by the Commonwealth Government, with 30 per cent to be repaid by South Australia over 50 years.

*Port Pirie to Kalgoorlie* (1,108 miles). This section is known as the Trans-Australian Railway, which is operated for the Commonwealth Government by the Commonwealth Railways. That part of the line from Port Augusta to Kalgoorlie was opened for service in 1917, and that from Port Augusta to Port Pirie in 1937. The Trans-Australian Railway has always been of standard (4ft 8½in) gauge, but until recently the track was not of a very high grade. An upgrading programme is in process involving replacement of the old 80 lb per yard rails with new continuously welded 94 lb per yard rails, and improved sleepers and ballasting. About 300 miles remain to be completed. The total cost of the upgrading work will be about $15 million, all of which will be provided by the Commonwealth Government.

*Kalgoorlie to Perth* (407 miles). Previously all Western Australian railways were of narrow (3ft 6in) gauge and interstate traffic had to be transhipped at Kalgoorlie (bogie exchange techniques being not suitable for narrow gauge operations). The old narrow gauge line had severe operating restrictions, particularly across the Darling ranges, east of Perth.

This project involved the construction of a new standard gauge railway between Kalgoorlie and the Perth area. The route passes through Koolyanobbing to serve the iron ore traffic from that point. In the Perth area there are connections to a passenger terminal at East Perth, the wharves at Fremantle, the grain terminal at Leighton, the industrial area at Kwinana, and to a major marshalling and servicing complex at Kewdale-Forrestfield which will replace several existing narrow gauge yards in the Perth area.

It also includes a new 64 mile section of track through the Avon Valley. This section is of double dual gauge (i.e. two separate tracks, each with three rails, enabling them to carry both 4ft 8½in and 3ft 6in gauge trains). This section replaces the old narrow gauge line across the Darling Ranges.

The project is financed under the Railway Agreement (Western Australia) of 1961. Of the total cost of about $130 million, $110 million will be provided initially by the Commonwealth. The State Government has undertaken further works in conjunction with the project and these are estimated to cost a further $30 million.

**Future developments in standardisation**

The Commonwealth Government has announced its intention to finance a standard gauge connection between Adelaide and the new standard gauge railway. Details of the connection have yet to be decided. When this link is forged all mainland state capital cities will then be connected to the interstate standard gauge network. However, the most direct link between Adelaide and Melbourne will still be broad gauge (5ft 3in).

The Commonwealth Government has also announced the intention to build a new standard gauge railway between Port Augusta and Whyalla (South Australia). This will be 47 miles long and will be owned and operated by Commonwealth Railways. It will connect Whyalla with the interstate standard gauge network. In addition to general goods and passenger traffic, it will be used for the carriage of considerable quantities of steel products which are at present transported by road between Whyalla and Port Augusta (for rail transport to Melbourne and Sydney).

The Commonwealth Government is also considering proposals for a new standard gauge railway, about 522 miles long, between Tarcoola on the Trans-Australian Railway, and Alice Springs. This would replace the existing narrow gauge railway between Marree and Alice Springs.

The Western Australian Government is considering the possibility of converting to standard gauge the existing narrow gauge railway between Kalgoorlie and Esperance, a distance of about 258 miles.

## Operations of Government railway systems

Particulars of train-mileages, passenger-journeys, passenger-miles, freight tons carried, and freight ton-miles included in this section refer only to operations for which revenue is received.

**Summary of operations**

GOVERNMENT RAILWAYS: SUMMARY OF OPERATIONS, SYSTEMS, 1968-69

| | *N.S.W.* | *Vic.* | *Qld* | *S.A.* | *W.A.* | *Tas.* | *Cwlth* | *Aust.* |
|---|---|---|---|---|---|---|---|---|
| Train-mileage ('000)(*a*)— | | | | | | | | |
| Suburban passenger | 10,226 | 8,139 | 1,909 | 2,013 | 1,327 | 113 | .. | 23,727 |
| Country passenger | 10,045 | 4,741 | 3,578 | 1,526 | 890 | 211 | 758 | 21,749 |
| Goods(*b*) . . | 17,930 | 6,809 | 11,622 | 2,637 | 5,684 | 873 | 2,801 | 48,356 |
| *Total* . . | *38,201* | *19,689* | *17,109* | *6,176* | *7,901* | *1,197* | *3,559* | *93,832* |
| Passenger-journeys ('000)(*c*)— | | | | | | | | |
| Suburban . . | 233,211 | 140,788 | 25,771 | 13,760 | 9,832 | 838 | .. | 424,200 |
| Country(*d*) . . | 15,257 | 4,078 | 2,395 | 664 | 338 | 207 | 298 | 23,237 |
| *Total* . . | *248,469* | *144,866* | *28,165* | *14,423* | *10,170* | *1,045* | *298* | *447,437* |
| Passenger-miles ('000)(*e*)— | | | | | | | | |
| Suburban . . | n.a. | 1,263,823 | n.a. | 112,039 | n.a. | 5,567 | .. | n.a. |
| Country . . | n.a. | 368,139 | n.a. | 84,633 | 67,627 | 11,322 | 125,612 | n.a. |
| *Total* . . | *n.a.* | *1,631,962* | *n.a.* | *196,672* | *n.a.* | *16,889* | *125,612* | *n.a.* |
| Freight— | | | | | | | | |
| Tons carried ('000)(*d*) | 31,871 | 11,316 | 12,975 | 5,003 | 8,934 | 1,242 | 4,401 | 75,742 |
| Net ton-miles (million)(*f*) . . | 4,942.4 | 1,903.0 | 2,617.5 | 803.7 | 1,525.8 | 117.2 | 1,216.3 | 13,125.9 |

(*a*) One train (i.e. a complete unit of locomotive and vehicles, electric train set, or rail motor) travelling one mile for revenue purposes. (*b*) Includes mixed train-mileage. (*c*) Based on ticket sales making allowances for periodical tickets. Tickets sold at concession rates are counted as full journeys (*d*) Inter-system traffic is included in the total for each system (including each Commonwealth railway) over which it passes. (*e*) One passenger travelling one mile. (*f*) One ton carried one mile.