

RAILWAY

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FOR ALL WHO ARE INTERESTED IN RAILWAYS

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TRANS-AUSTRALIAN RAILWAY

Its Centenary: Construction and early operations

NSW RAILWAYS ADMINISTRATION

Remembering 509 Pitt Street



A very clean Bo-Bo diesel-electric No.804 is about to pass under the Bakewell bridge and past the Mile End North signal cabin en route to the Mile End Diesel Depot. The two vertical yellow lines on the train designator immediately above the coupling indicate that the loco has travelled 'light engine' from Port Adelaide. ARHSNSW RAILWAY RESOURCE CENTRE, 242646. Part 2 of David Matheson's 'From Steam to Diesel and Electric' article commences on page 4.



Commonwealth Railways car ARB 13, photographed on 7 March 1969, shows the changes that occurred to these vehicles in the half century following their construction. An early photograph is presented on page 21. The end platform at the right-hand end was enclosed early in its history to enable the installation of showers, Commonwealth Railways was the first to provide this facility for passengers. The opposite end-platform was enclosed on some of these cars when they were improved during the late 1940s. This carriage retained the moulded panels above the windows which were a feature, but they were replaced with plain panels on some cars during the 1960s. This carriage has the Minden Deutz bogies which replaced the original outside equalised bogies during the 1960s. These bogies were supplied with the cars built in Germany between 1952 and 1954, being replaced with Bradken-built Commonwealth bogies obtained for the steel carriages. PHOTOGRAPH BY JOHN BECKHAUS

EDITORIAL

Part 2 of David Matheson's article leads this month's *Australian Railway History* with his detailed analysis of the changes in locomotive technology that occurred between 1955 and 1974. This story covers the Tasmanian Government Railways, South Australian Railways, Commonwealth Railways and the Department of Railways in New South Wales, backed by a range of photographs from our archives here at ARHSnsw.

It was a period in which steam locomotives were being pushed aside by diesel and electric locomotives that offered increasing power and efficiency in hauling the nation's freight and passenger trains. At the same time, the barriers to train travel across state borders—and in some instances within states—by break-of-gauge locations were gradually being overcome. Trains could travel from Brisbane to Melbourne by standard gauge from 1962 and from Sydney to Perth by February 1970, while Paul Keating's One Nation initiative saw the standard gauge line between Melbourne, Adelaide and Port Pirie formally opened on 27 July 1995.

October marks the centenary of the opening of the standard gauge Trans-Australian line between Port Augusta and Kalgoorlie and a range of commemorative events are scheduled for this month. Our contribution is an article by John Beckhaus and Ross Willson that covers construction of the line, the locomotives and rolling stock procured for the line and Trans-Australian train services between 1912 and 1920. It is illustrated with a selection of images from the ARHSnsw Railway Resource Centre archives relating to the period with a carriage photo by John Beckhaus and others of carriages and freight rolling stock from the Chris Drymalik collection. Greg Morris has contributed a short but interesting Explorer Page article on his memories of working at the New South Wales Government Railways Administrative Building at 509 Pitt Street, Sydney in the 1970s. He describes the various administrative groups within the building and the specialist carriages that served rural locations with the services provided by particular units.

Robert McKillop

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Cover Image: Commonwealth Railways 2240 kW diesel locomotive CLP13 and a sister unit departing Port Augusta with a westbound freight train in the 1980s. A WOODLAND PHOTO, ARHSNSW RAILWAY RESOURCE CENTRE, 049557

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Letters: We publish a selection of letters depending on space allowances. Letters should be kept to around 250 words and preferably be sent via email.



Storm clouds hang over Mount Wellington, but mainline Co-Co diesel-electric locomotives ZA3 and ZA2 are bathed in sunlight as they cross the lifting bridge into Bridgewater Station with a mixed freight train in the 1980s.
 J LUNT PHOTO, ARHSNSW RAILWAY RESOURCE CENTRE, 258842

FROM STEAM TO DIESEL AND ELECTRIC, PART 2

Changes in Tasmania, South Australia, Commonwealth and NSW Systems

David Matheson

Each of the Government railway systems in Australia approached the task of modernising their motive power in different ways. A range of new locomotives was ordered from various manufacturers, and each system developed a unique fleet of locomotives to meet its individual needs. As the number of diesels increased the first trains to lose steam motive power were usually passenger services.¹ Towards the end of 1966 the rostering of steam engines for passenger trains had become rare. Interstate and major goods traffic followed, leaving branch line workings and local traffic as the only train services to be regularly worked by steam. Shunting and pilot working were generally the last duties for steam motive power.

Tasmanian Government Railways

In 1950 the Tasmanian Government Railways was the first government railway system in Australia to introduce main line diesel locomotives. X Class locomotives X1 and X2 officially entered service on 13 September 1950.² They worked a goods train from Launceston to Hobart the following day, with one locomotive then operating a suburban train. A total of 32 X Class locomotives were built in England, the final two units to enter service being X30 and X31 on 11 December 1952.³ The X Class worked mostly along the main line between Hobart and Launceston, and also west to

Stanley. In the 1956–1957 financial year the units comprised only 27.8 per cent of the Tasmanian Government Railways fleet of locomotives counted as working, but recorded 71.5 per cent of the total locomotive mileage.⁴ Following the entry of all X Class members into service, they were handling most of the traffic between Hobart and Launceston.

At the same time as the X Class diesels were entering service, further steam engines were also being delivered. Eight H Class engines entered service in November and December 1951, and ten M Class engines entered service from April to October 1952.⁵ The introduction of a large number of diesels and modern steam locomotives led to the withdrawal of many older steam engines within a few years. The eight B Class engines still operating were withdrawn from 1950 to 1952, while the remaining eight A Class engines were taken out of service between 1952 and 1954.⁶ Six of the G Class Australian Standard Garratts and two CC Class engines were withdrawn in 1953 and 1954. A mixture of other classes of steam locomotives continued in service, but they were used less frequently.

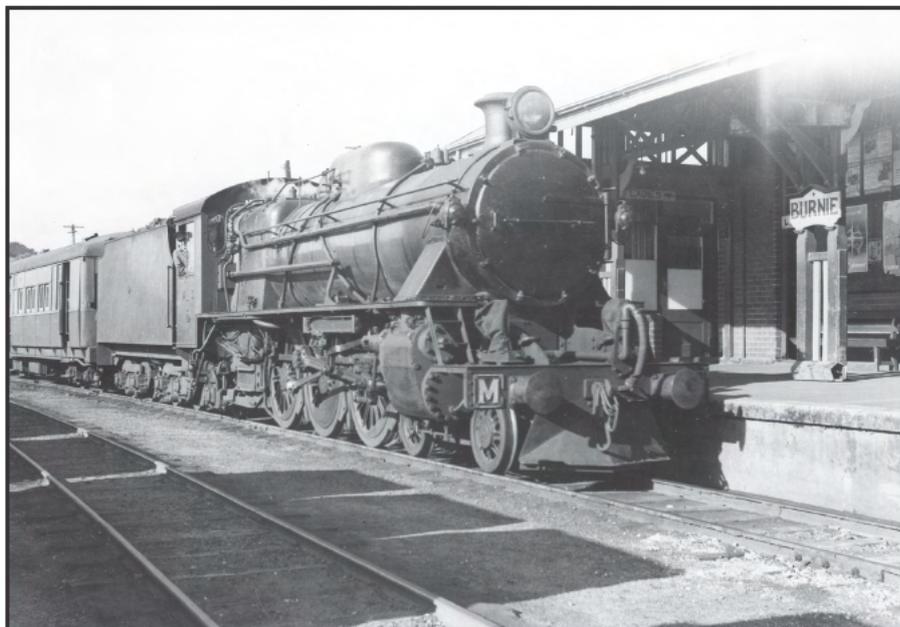
In the middle of the 1950s, steam power was widespread across Tasmania, but by this time it was generally relegated to branch line operation, slow goods and shunting work, although some peak hour passenger services in Hobart were steam-hauled.

During 1957 a reorganisation of goods train schedules

enabled more efficient usage of the X Class diesels, substantially reducing the amount of shunting required by steam engines in yards on the Western line. Around the same time some goods and local passenger services were withdrawn. By early 1958 only one regular country passenger train was steam-hauled: the Devonport-Burnie 'Workers Flyer', which was usually worked by an M Class engine. Changes in the motive power fleet led to further steam withdrawals.

In August 1962 regular steam operations had almost ceased, with only one passenger and two goods trains being regularly steam-hauled.⁷ Steam continued to be used for shunting, as well as occasional train working when diesels were not available. The Devonport-Burnie passenger train ran for the last time on 21 December 1962, hauled by Pacific locomotive M6.⁸ More steam locomotives were withdrawn from service in the last months of 1962. It appeared that regular steam operations on the Tasmanian Government Railways had ended, yet sporadic steam workings would continue for years to come. Occasional steam working occurred on local goods and passenger trains between Launceston and Western Junction, local goods trains between Devonport and Railton, on Hobart suburban services, as well as in shunting work.⁹

Following the introduction of the X Class, the Tasmanian Government Railways had no immediate need to



TGR Pacific locomotive M3 heads a school train at Burnie Station in the 1950s. M CUDDY PHOTO, ARHSNSW RAILWAY RESOURCE CENTRE, 032262A

order new diesel locomotives. Two additional V Class shunters began operating in 1955, but it was not until November 1961 that the Y Class main line diesels entered service, three of which were built at the Launceston Workshops.¹⁰ A further five members of the class were in service by the end of 1971. The initial three Y Class deliveries enabled some of the X Class diesels to take over services that had been previously steam-hauled, thus moving the system further towards complete dieselisation.¹¹ When most steam motive power had been withdrawn, a small number of the C, CC, CCS, H, Q, M and MA Classes of steam

engine were maintained in serviceable condition and kept on standby. They saw intermittent service, usually as a result of failure of diesel locomotives.

In the middle of 1963 the Tasmanian Government Railways locomotive fleet contained 22 operational steam engines.¹² Launceston had the largest allocation with ten members of the C, CCS, H and MA Classes; Hobart had five engines from the CC, M and Q Classes; there were four locomotives from the CC, H and M Classes at Devonport; Deloraine was allocated one CCS Class; Smithton one CC Class locomotive; and Herrick one MA Class locomotive. A number of other steam locomotives were stored, but towards the end of 1966 there were still 18 steam locomotives remaining in service with the Tasmanian Government Railways.¹³ These engines were involved in pilot working in the Launceston and Hobart areas, with occasional freight and passenger service. By December 1968, 11 steam locomotives continued in working condition.¹⁴ Sufficient diesel locomotives were in service to operate all train services but without any in reserve, so when there was an increase in traffic or a number of diesels required maintenance, the operable steam engines continued to be used.

The opening of new lines to Longreach and Bell Bay in 1973-1974 required new motive power for the conveyance of logs.¹⁵ Four Z Class 1340kW diesel-electric units were delivered in late 1972 and early 1973; these were



TGR pioneer diesel-electric locomotives X2 and X1 were still in active service on 27 April 1971 when they were photographed in charge of the *Tasman Limited* train at Western Junction. ARHSNSW RAILWAY RESOURCE CENTRE, 021432



Mount Wellington dominates the background as TGR Y Class Bo-Bo diesel-electric locomotives Y7 and Y4 head a ballast train into Hobart yard on 14 October 1972. N W MUNRO PHOTO, ARHSNSW RAILWAY RESOURCE CENTRE, 450940



The six U Class diesel-mechanical locomotives were powered by a 102hp Gardiner engine, limiting them to light shunting duties. Here U5 shunts wagons for the TGR Ferry Service circa 1962. ARHSNSW RAILWAY RESOURCE CENTRE, 401329

followed by the similar ZA Class, four of which entered service from the middle of 1973, and a further two units in 1976 (see photo p4). They were supplemented by 16 former Queensland Railways 2330 and 2370 Classes of English Electric locomotives in 1987, these being classified as ZB Class by the TGR. The work of the main line locomotives was assisted by shunting units of the U, V, VA and W Classes.¹⁶

When diesels Y4 and Y5 entered service a ceremony was held at Launceston on 7 October 1964 to mark the official end of steam operations; the declaration proved to be very premature.¹⁷ Immediately afterwards steam continued to be used on goods trains between Launceston and Deloraine, and in the longer term, occasional steam working continued throughout the 1960s and early 1970s.

The last three steam locomotives to be used in regular service were CCS23, H2



H Class 4-8-2 locomotive H2 heads the special TGR Centenary train at Western Junction in February 1971. ARHSNSW RAILWAY RESOURCE CENTRE, 032290

and M3, which continued to be used in the Hobart and Launceston areas. M3 operated Hobart suburban services 48 times during the year 1973, while H2 worked these services 26 times.¹⁸

During 1974 M3 and H2 worked the feeder service to the *Tasman Limited* from Launceston to Western Junction on numerous occasions, the last steam run being hauled by H2 on 16 December.¹⁹ Steam engines also continued to haul special services. In the middle of 1975 H2 received firebox repairs and ran several trips in the Launceston area, then worked a ballast train to Relbia on 3 September, following which it was stored.²⁰ H2 is preserved by the Derwent Valley Railway at New Norfolk. Regular steam-hauled services had ended, but Tasmanian Government Railways retained several steam locomotives in operational condition. At 30 June 1975 two were maintained for standby, while another was available for special steam passenger services.²¹ A further nine engines were stored in unserviceable condition.

South Australian Railways

Diesel locomotives began to be used by the South Australian Railways initially on broad gauge tracks, and it was on these lines that the change of motive power had its initial impact. Diesel-electric locomotive number 900, *Lady Norrie*, the leader of the 900 Class, was the first main line diesel unit to officially enter service with a government railway on the Australian mainland. Ten of the class were delivered, with all of them operating by July 1953.²²

The 900 Class was followed by the



Goodwin-Alco 930 Class diesel-electric locomotive and a sister unit head *The Overland* train into Adelaide Station in the 1960s. RAILWAY TRANSPORTATION PHOTO, ARHSNSW RAILWAY RESOURCE CENTRE, 024641

930 Class Alco-powered diesel-electrics, which entered service from 1955. Early operations of the 900 and 930 Classes focused on the Adelaide–Tailem Bend section, mainly in freight service, but also on passenger trains, such as *The Overland*.²³ Ongoing diesel deliveries led to them replacing increasing numbers of steam engines. By the end of 1959, all goods traffic between Adelaide and Tailem Bend had been dieselised, while branch lines from Tailem Bend continued to be worked by steam.²⁴ The 900 and

930 Class diesels took over much of the work that had previously been the domain of some of South Australia's big power steam engine classes, most of the 500, 520, 600, 700, 710, 720 and 740 Classes, together with the 620 and 750 Class locomotives were withdrawn and condemned by the early 1960s.²⁵

At the end of 1964, there were 71 broad gauge steam locomotives in service in South Australia, comprising 44 engines of the Rx Class, eight of the F Class, six of the 520 Class, five of the 700 Class, four of the 620 Class, two

of the 710 Class, and two of the 750 Class.²⁶ At the same time there were 51 narrow gauge steam locomotives in service, comprising 47 of the T Class, three of the 400 Class, and one member of the Y Class.

The 830 Class diesel-electric locomotives entered service from 1959, mostly serving branch lines, and they began to take over much of the work of the Rx Class steam engines. Having provided lengthy service, the number of Rx locomotives in service declined throughout the 1960s as further diesels were delivered. Near the end of 1966 there were 17 Rx Class locomotives still in service, although most were limited to shunting at country depots.²⁷ There were a further 14 broad gauge steam locomotives of other classes in working condition, and these were engaged in shunting or on standby for freight service in case of diesel failures. Broad gauge steam working had declined rapidly during 1966 and large power steam engine working had become unusual.²⁸ During 1967 the steam locomotives remaining in service were withdrawn, their work being taken over by diesel shunters, and by the end of the year all broad gauge steam workings ceased. Mile End (steam) Loco Depot officially closed on 30 June 1967.

On the narrow gauge lines of South



Transition from steam to diesel on the SAR. 520 Class 4-8-4 No. 522 being placed on the turntable at Mile End by 930 Class diesel-electric locomotive 938 in the early 1960s. K BOWEN PHOTO, ARHSNSW RAILWAY RESOURCE CENTRE, 169736



SAR 900 Class diesel-electric locomotive No. 900 *Lady Norrie* on its inaugural run in September 1951. K Magor photo, ARHSNSW RAILWAY RESOURCE CENTRE, 024640



Narrow gauge SAR 830 Class Alco diesel-electric locomotive shunting a guard's van and freight wagons on dual-gauge track at Gladstone on 1 December 1977. R GRAF PHOTO, ARHSNSW RAILWAY RESOURCE CENTRE, 395661

Australian Railways the Peterborough Division was worked entirely by steam until the middle of 1963 when 830 Class diesels began operating in the area.²⁹ The 830 Class also started working in the Port Lincoln Division from March 1962 with the arrival of No. 850, gradually displacing the T Class steam engines that were the mainstay of lines in this region.³⁰ Towards the end of 1966 there were 30 narrow gauge steam locomotives remaining in service with South Australian Railways.³¹ These engines were engaged in branch line or shunting work.

The 830 Class diesels provided reliable service in the areas where they operated across South Australia. From 1963 they took over working trains to the New South Wales border, resulting in the 400 Class Garratts no longer being required. T Class steam engines continued to operate on the branch lines to Quorn

and Wilmington until these were also taken over by the 830 Class, with the



SAR narrow Gauge T Class 4-8-0 locomotive No. 241 heads a rail enthusiasts tour train of heritage carriages through Cummins on the Port Lincoln Division in April 1965. A GRUNBACH PHOTO, ARHSNSW RAILWAY RESOURCE CENTRE, 200050

first diesel-hauled train to Wilmington running on 5 August 1968.³²

Progress on conversion of the line between Broken Hill and Port Pirie to standard gauge brought an unlikely return to steam working. Some 830 Class locomotives were required to be taken out of service for conversion to standard gauge and motive power was needed for train haulage while the conversions occurred. Six of the 400 Class Garratts that had been in storage, as well as some T Class locomotives, were returned to service in 1968. They continued working from late-1969 into January 1970 when the new standard gauge line was opened.

During the era of transition from steam to diesel motive power, the South Australian Railways ordered a number of standard gauge diesel-electric locomotives in anticipation of the standardisation of the line between Port Pirie and Broken Hill. Two 600 Class Alco units entered service in 1965 and 1966, and were used on standard gauge construction trains while another five entered service in December 1969 and January 1970.³³

The last working of a broad gauge steam locomotive by South Australian Railways in regular revenue service took place on 1 December 1967 when Rx214 was in steam at Taillem Bend.³⁴ Narrow gauge steam continued for a further two years with 18 T Class engines, five 400 Class and one Y Class engine in use in the Peterborough Division in the middle of 1969, as well as a further five T Class locomotives in use in the Port Lincoln Division.³⁵



The SAR Rx Class 4-6-0 broad gauge locomotives introduced from 1909 remained in service until the end of steam, with Rx 214 being the last to operate at Tailem Bend on 1 December 1967. P LE ROUX PHOTO, ARHSNSW RAILWAY RESOURCE CENTRE, 242413

The opening of the standard gauge line between Port Pirie and Broken Hill brought the end of steam in early 1970. On 9 January the final regular passenger service to be steam-hauled in South Australia was worked by T181.³⁶ Departing Peterborough at 12.17 am, it hauled a train to Cockburn on the South Australian–New South Wales border, arriving at 6.20 am. T181 was subsequently used in salvage work by the Silverton Tramway Company and is today in the Sulphide Street Railway Museum in Broken Hill. The last run of narrow gauge steam occurred when Garratt 404 worked from Peterborough to Port Pirie and return on 9 January 1970, arriving back in Peterborough at 7.35 am on 10 January. Garratt No. 404 hauled 68 trucks over the last section from Yongala to Peterborough, a load of 676 tons [687 tonnes]. It was a spectacular end for the steam era in South Australia.

Despite the end of steam-hauled trains, some limited shunting by steam locomotives continued in the Port Lincoln Division.³⁷ T48 shunted at Thevenard on a number of occasions, the last being on 20 March 1970, before being hauled dead to Port Lincoln in May. T241 was shunting at Port Lincoln throughout the first months of 1970 until it was steamed for the last time on 10 April. The steam shunters were replaced by 830 Class diesels.

Commonwealth Railways

Of all the Government railway systems in Australia, the Commonwealth Railways was best suited to take advantage of diesel motive power. Limited

water supplies in the arid areas where Commonwealth Railways operated and the need to treat bore water presented challenges for steam engines, whereas diesel locomotives could cover long distances with little need for water. The difficulty of obtaining good quality coal and the need to transport it long distances also made the operation of steam locomotives considerably more expensive than in other parts of Australia.³⁸ An estimated 20 per cent of all traffic on the Trans-Australian Railway between Port Augusta and Kalgoorlie was made up of coal and water haulage.³⁹

Accordingly, Commonwealth Railways officials paid particular attention to available information about diesel locomotives operating in other countries and subsequently called tenders for main line diesel

locomotives around 1946.⁴⁰ Only two tenders were received and they were not considered suitable. Tenders were called again, closing on 12 April 1949, with the successful tenderer being the Clyde Engineering Company of Granville in New South Wales, which had recently secured a licence to manufacture General Motors diesel-electric locomotives.

GM1 ran its first trial on 24 August 1951 from Granville to Penrith and return.⁴¹ Subsequent trials continued on the Trans-Australian Railway following its arrival in Port Augusta on 22 September. At a ceremony at Port Pirie Junction station on 6 October 1951 locomotive GM1 was named *Robert Gordon Menzies* after the Prime Minister and officially commenced duties. All 11 members of the class were in service by 8 July 1952. By the end of June 1959, GM1 had covered more than one million miles in service, and by early 1965 it had completed two million miles.⁴²

The new diesel locomotives were deployed on the Trans-Australian line after their entry into service and had an immediate impact on the operations of Commonwealth Railways. From the middle of 1952 all train services on the Trans-Australian line were hauled by diesels, with only occasional shunting by steam engines.⁴³ Eleven diesel-electric locomotives had replaced around 50 steam locomotives that were operational on the line.⁴⁴ Costs were substantially lower and it was clear that investment in new motive power brought significant efficiency to the operation of Commonwealth Railways. More



Commonwealth Railways GM12 Class 1340kW locomotives GM35 and GM32 head a south-bound train of piggyback road trailers from Port Augusta on 18 October 1981. J LUNT PHOTO, ARHSNSW RAILWAY RESOURCE CENTRE, 263752

diesels were soon required to meet traffic demands and another ten GM locomotives entered service from 1955 to 1957. The newer units were more powerful and were classified as the GM12 Class, while the initial 11 GM Class locomotives then became the GM1 Class. Further GM12 units were delivered from 1962 onwards, with a total of 36 entering service by the end of 1967. Since the Trans-Australian line was already dieselised no further new diesel locomotives were ordered until increasing traffic required more units. The next diesels to arrive were 17 CL Class locomotives, which entered service from 1970 to 1972.⁴⁵

Following initial service on the Trans-Australian Railway, diesels were subsequently put to work on the narrow gauge lines of the Central Australian Railway between Port Augusta and Alice Springs, and the North Australia Railway between Darwin and Birdum. The first narrow gauge diesels to enter service were NSU 52 on 26 May 1954 and NSU 51 on 12 June 1954.⁴⁶ Together they worked the first diesel-hauled run of *The Ghan* into Alice Springs on 24 June. Steam quickly disappeared from the Central Australian Railway, but an NM Class engine was retained at Alice Springs and another at Oodnadatta on standby in case they were required during floods.⁴⁷ These engines were finally withdrawn in 1963 following the opening of a new bridge across the Finke River. The first diesel-electric locomotives to operate on the North Australia Railway were NSU 64, which was transferred north



Under private ownership, CLF/CLP Class 2240kW diesel-electric locomotives travelled widely on the standard gauge Australian network. Here CLF locomotives 3, 7 and 2 head freight trains at Sydney's Yennora Terminal.
R BRYANT PHOTO, ARHSNSW RAILWAY RESOURCE CENTRE, 332915

in August 1956, and NSU 63, which followed three months later.⁴⁸ These two locomotives replaced six steam engines in operation on the North Australia Railway.⁴⁹ Later narrow gauge diesels were 13 NT Class locomotives, which entered service from May 1965 to September 1968, and six NJ Class units commencing work in 1971.⁵⁰

Commonwealth Railways was largely dieselised by the end of 1957, although a small number of steam locomotives were retained for shunting work and on standby. At the end of June 1960 Commonwealth Railways had a fleet of 44 standard gauge and 20 narrow gauge steam locomotives on its books, but only six of these were maintained

in serviceable condition, in case of floods or other situations that prevented diesel locomotives from being used.⁵¹ On the narrow gauge North Australia Railway the final steam-hauled train ran in June 1958 when NFB97 replaced a failed diesel locomotive.⁵² Two engines were retained at Darwin on standby, and another at Katherine, but they saw no further use and were scrapped in 1964.⁵³

The last Commonwealth Railways-owned steam locomotive in service was NM34, which was retained at Quorn as a standby shunter.⁵⁴ It was withdrawn in 1967, making its last run on 8 October. NM34 is preserved at the National Rail Museum in Port Adelaide. Nevertheless, as late as 1969 Commonwealth Railways hired a T Class steam locomotive from South Australian Railways to work a goods service once a week between Quorn and Hawker.⁵⁵

Department of Railways, New South Wales

The first main line diesel-electric locomotives to enter service in New South Wales were the twenty 40 Class. Manufactured by the Montreal Locomotive Works in Canada under license from Alco. The first two units, 4001 and 4002, commenced service on 30 November 1951.⁵⁶

Their initial duties involved working freight trains between Enfield and Broadmeadow. Later they operated as far as South Brisbane, Parkes, Dubbo, Albury, Canberra and Thirroul.



The last Commonwealth Railways steam locomotive, 4-8-0 NM34 (right) and SAR 4-8-0 T199 pose together at Stirling North on the occasion of NM34 being handed over to the then Mile End Railway Museum in October 1967.

A GRUNBACH PHOTO, ARHSNSW RAILWAY RESOURCE CENTRE, 201881



Pioneer 40 Class diesel-electric locomotives 4001 and a sister unit head a Down mixed goods train at Tuggerah in the early 1950s. NSWGR photo, ARHSnsw Railway Resource Centre, 017866

Although most of the work of the 40 Class units was in freight service, they were also used on long-distance passenger trains. The introduction of diesel locomotives in New South Wales assisted the Department of Railways to determine their future plans for motive power acquisition.

Further diesels entered service in the next few years, and then in 1953 it was decided that no further steam engines would be obtained except for those that had already been ordered.

At the same time that new diesels

were entering service, numerous steam engines were being withdrawn. During the nine years from 1 January 1951 to 31 December 1959 a total of 303 steam engines were withdrawn from service.⁵⁷ The largest numbers of withdrawals were from the Standard Goods classes with 91 withdrawals from the 55 Class, 45 from the 50 Class and 30 from the 53 Class. Nevertheless, these classes had large numbers of engines and 339 Standard Goods locomotives continued in service at the start of the 1960s, mostly comprising the 50 and 53 Classes.

Passenger locomotives of the 30, 30T, 32, 35, 36 and 38 Classes had also been numerous. The number of these locomotives in service remained steady throughout most of the 1950s, but then declined rapidly during the late-1950s and throughout the 1960s. 3642 the last member of the 36 Class in service was retained for special traffic and formally withdrawn on 30 September 1969, but continued in special revenue service until December 1972. The last 38 Class in service, 3820, was withdrawn following a special run on the *Newcastle Express* on 29 December 1970; 3229 was the last 32 Class in service, was withdrawn on 31 December 1971; the last 30T Class locomotive to be withdrawn was 3090T on 1 September 1972, while 3085 was the final 30 Class in service and one of the last steam engines in service in New South Wales when it was finally withdrawn on 22 February 1973.⁵⁸

The first area of New South Wales to experience widespread dieselisation was the North Coast. From 31 August 1958 diesel locomotives hauled all passenger and freight trains along the North Coast line between Sydney and South Brisbane, although the Dorrigo and Murwillumbah branch lines continued to be served by steam.⁵⁹ Freight services south of Taree were also dieselised, although steam was rein-



Onlookers observe the arrival of AD60 Class Beyer-Garratt locomotive 6040 at Hawkesbury River Station with an Up goods train in the late 1950s. E G SKILLER COLLECTION, ARHSNSW RAILWAY RESOURCE CENTRE, 015008



Locomotive crews confer at Molong on 6 June 1964, as Beyer-Garratt locomotive 6040 has arrived in the yard with the W44 Up concentrate train from Broken Hill. Dual-control Garratt 6042 is replacing the assisting locomotive for the run to Orange as 49 Class branchline diesel-electric locomotive 4903 does some shunting on the left. N J SIMONS COLLECTION, ARHSNSW RAILWAY RESOURCE CENTRE, 061076

roduced in 1969. The use of diesels brought large reductions in running times to passenger and goods trains.

As more diesels were delivered their regular use spread to other parts of the state, with the North West and and Murwillumbah branch lines dieselised in 1959–1960. Dieselisation extended to the Parkes–Broken Hill line with the introduction of the 49 Class branchline locomotives in September

1960, and throughout the 1960s the progress of dieselisation continued.⁶⁰ Most of the southern branch lines were dieselised in 1961–1962. The Illawarra line was dieselised in 1964–1965 following the delivery of a new order of 48 Class units.⁶¹ The Main South Line beyond Goulburn experienced the end of regular steam operations by the middle of 1964, although diesel shortages led to a brief reprieve for

steam in 1967.⁶² Train services on the entire Main South were completely dieselised by the end of 1969, although steam shunters continued to operate at various depots.⁶³ By the end of 1967, the western areas of the state had been dieselised, with the exception of banking and shunting duties at some locations.⁶⁴ Dieselisation continued until the Gosford–Broadmeadow section and the coal lines around Newcastle became the last areas of regular steam working besides shunting operations.

The New South Wales fleet of diesel locomotives grew steadily during the 1950s, then more rapidly in the 1960s. By the middle of 1961 it had the largest number of non-steam locomotives on its books of all the Government railway systems in Australia, and it continued to consolidate this position with the delivery of more diesels in subsequent years. By late 1966 the Department of Railways had 14 different classes of diesel locomotives on its books.⁶⁵ The main line types were the 40, 42, 421, 43, 44 and 45 Classes; the branch line types were the 48 and 49 Classes; while the 41, 70, 72 and 79 Classes, together with X100 and X200 Class rail tractors, were used for shunting.⁶⁶ 46 and 71 Class electric locomotives were also



The British Thomson-Houston 41 Class diesel-electric locomotives were powered by two Paxman engines, but were ill-suited to Australian conditions and spent most of their time on secondary duties. Here 4102 heads a short coal train on the Campbelltown–Camden branch line circa 1961. I K WINNEY COLLN, ARHSNSW RAILWAY RESOURCE CENTRE, 161969

in service. Before the end of the steam era the 422 and 442 mainline classes and the 47 Class branchline units were added to the fleet, as well as the 73 Class diesel-hydraulic shunting locomotives.

Most of the last steam engines in regular service in New South Wales were Standard Goods engines allocated to Port Waratah depot. The work of these engines in the early 1970s mainly involved hauling trains on the coal roads between Port Waratah and East Greta. The final steam operations on coal road workings occurred on Friday, 22 December 1972 when 5069 worked No. 1055 empty coal from Port Waratah to East Greta, then returned with No. 1056 coal train to Port Waratah.⁶⁷

It had been expected that the last steam-hauled coal road workings would also be the final steam services in New South Wales, but the last runs were still to come. The last regular steam-hauled trains in Government service in New South Wales operated on 23 February 1973 when Beyer-Garratt locomotive 6042 worked two trips from the Newstan Colliery at Fassifern to Wangi Power station.⁶⁸ At the end of the final trip, 6042 ran light engine from Awaba to Broadmeadow, arriving in the depot at 5.15pm, where it posed for photographers. On 2 March a ceremony was held at Broadmeadow station to mark the end of steam in New South Wales. The Minister for Transport, Mr Milton Morris, made a speech before driving 6042 through a banner that read, 'End of Steam Era NSW 2nd March 1973'.⁶⁹

Despite the official end of steam working, a few vestiges of steam continued. In New South Wales, a total of 25 steam crane locomotives were used at various workshops and yards, and they were eventually withdrawn and scrapped along with other steam engines.⁷⁰ Nevertheless, a small number of steam crane locomotives continued to be used after March 1973, despite not being counted in official statistics. 1067, 1082 and 1083 saw occasional service at Eveleigh Workshops throughout the 1970s, with 1067 and 1082 still in use until at least 1983, a decade after the end of the steam era was declared.

These last three survivors of steam on Australian Government railways have been preserved: number 1067 was acquired by the Dorrigo Steam Railway and Museum; 1082 is now at the



0-4-0T steam crane locomotive No. 1067 shunting at Clyde wagon workshops on 1 January 1972. A GRUNBACH PHOTO, ARHSNSW RAILWAY RESOURCE CENTRE, 206645

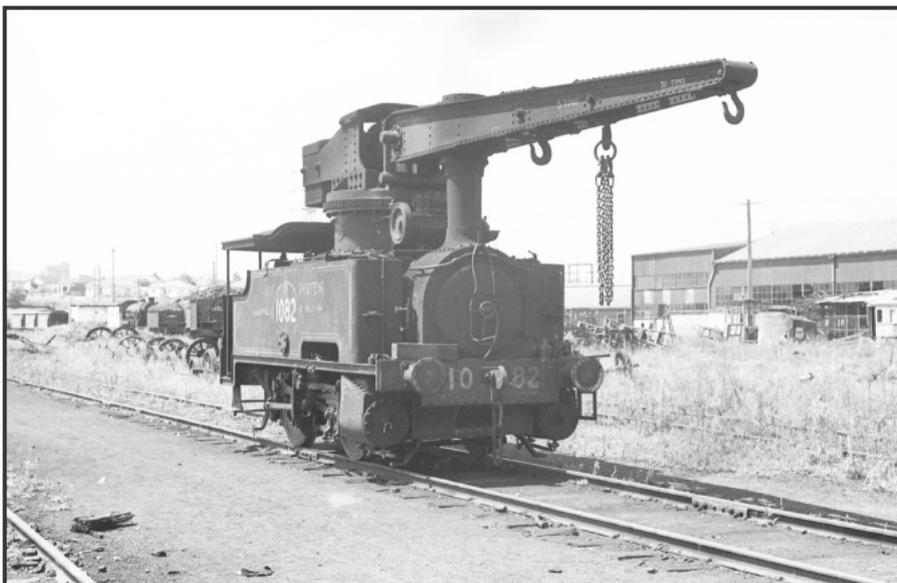
Powerhouse Museum Discovery Centre, Castle Hill; and 1083 is displayed at the Australian Technology Park at Eveleigh, where it last saw service.

To be continued

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0-4-0T steam crane locomotive No. 1082 photographed in operation at the rear of the Enfield locomotive depot in the 1970s. It operated at Eveleigh workshops until 1983 and is now preserved at the Powerhouse Museum Discovery Centre, Castle Hill.
ARHSNSW RAILWAY RESOURCE CENTRE, 401864



The meeting of the track-laying gangs at Ooldea on 17 October 1917. There were two flat wagons R3 and R20 fitted with these crane assemblies to lay the rails on the manually laid sleepers. Wagon R3 worked westward from Port Augusta while R20 worked eastward from Kalgoorlie. TRANS-AUSTRALIAN RAILWAY POST CARD, ARHSNSW RAILWAY RESOURCE CENTRE, 446627

COMMONWEALTH RAILWAYS, 1912–1920

Trans-Australian construction /operation John Beckhaus and Ross Willson

Editor: This month will see extensive celebrations of the centenary of the opening of the Trans-Australian Railway on 23 October. A wide range of special events to mark the occasion have been scheduled during the month. John Beckhaus and Ross Willson have prepared the following article to commemorate the centenary.

The first through services across the Nullarbor Plain linking Port Augusta to Kalgoorlie occurred during October 1917. This article covers the early days of the Commonwealth Railways during the 1912-1920 construction period and the obtaining of rolling stock before the commencement of through traffic.

The second decade of the last century saw the Commonwealth Government construct a reasonably inexpensive railway to honour a federation promise. The Western Australian Government passed the *Trans-Australian Railway Enabling Act 1903* on 29 September 1903 which sought to confer power on the Commonwealth Parliament to make laws for the construction of a railway from Kalgoorlie to the border together with a branch to Eucla. The Commonwealth was to have power to take land without payment. A further inducement was an undertaking by WA to build a line to Fremantle of the gauge determined by the Commonwealth. The Act was to cease unless the Commonwealth had commenced the actual construction within five years from the passing of the WA Act. Section 51(xxxiv) of the Constitution confers on the the Commonwealth Parliament to make laws relating to railway construction in any State with the consent of that State. The Trans-Australian Railway was thus authorised by

complementary legislation in SA & WA: the *Transcontinental Railway Land Grant Act 1911* of 4 January 1912 (SA) and the *Trans-Continental Railway Land Grant Act 1911* of 9 January 1912 (WA).

The rails were 40kg/m with timber sleepers were laid at approximately 1500 per kilometre, but sections of the line was initially only ballasted with sand and or ash. Although built to standard gauge, this line only connected two state government narrow gauge lines which terminated at Port Augusta from Adelaide, with a change from broad gauge at Terowie, and at Kalgoorlie from Perth. During the first two decades of this line's operation there was very little through freight conveyed by rail so the main traffic on the railway was passengers and mail along with some livestock. The lack of freight traffic created the situation where the movement of coal and water for locomotives and provisions to supply the isolated work sites and towns across the desert became the major component of the loads conveyed on freight trains.

Perhaps the first use of the term 'Commonwealth Railways' was in the *Commonwealth Gazette* of 23 March 1912. Under the *Kalgoorlie to Port Augusta Railway Act 1911* of 12 December 1911 the line was owned by the Commonwealth as shown by the photo of K32 published in *The Locomotive* of Thursday 15 June 1916 on whose tender appears 'C. of A.'. The office of 'Commonwealth Railways Commissioner' was created by the *Commonwealth Railways Act 1917*.

CONSTRUCTION PHASE

The planning work for the railway started during 1912 and by late 1913 second-hand motive power for construction

trains along with some ballast hopper wagons and flat wagons for conveying rails and sleepers were in service. The first sod was turned at Port Augusta by the Governor-General Lord Denman on Saturday 14 September 1912 and at Kalgoorlie by the Prime Minister Andrew Fisher on Friday 12 February 1913. Construction work proceeded independently from both ends of the line with equipment delivered by ship to Port Augusta or by narrow gauge rail to Kalgoorlie. A temporary workshop had been set up at Parkeston in the eastern suburbs of Kalgoorlie along with a temporary workshop at Conwaytown near Port Augusta. The present workshops at Port Augusta were constructed in the early 1930s.

At Kalgoorlie station, standard gauge terminal platforms were built at the eastern end on the southern side of the narrow gauge platforms. The freight transfer yard was built at Parkeston adjacent to the workshops which became the motive power and rollingstock depot. At Port Augusta, the South Australian Railways were using a low-level platform narrow gauge station in Commercial Road with the railway extending through the town centre to the wharves. A new high level platform station was built on the northern side of the town with a new yard to the west of the station alongside the northern end of Spencer Gulf. This station had a through platform on the southern side for standard gauge and a terminal platform on the northern side for narrow gauge. A car depot was



Reliable fresh water was essential for the construction camps in the desert. A team of camels haul a wagon with a loaded water tank during the TAR construction period. TRANS-AUSTRALIAN RAILWAY POST CARD, ARHSNSW RAILWAY RESOURCE CENTRE, 446617

provided adjacent but at 90 degrees to the station with a triangle in front of the station providing access to the car depot and for turning rolling stock. This line continued around the southern end of the town centre to the wharves with the sidings at the wharf providing for both gauges.

Ballast for the Port Augusta end of the line was obtained from the Mundallio Quarry. A 12 kilometre branch line was constructed to the quarry off the main line eight kilometres west of Port Augusta. This line opened during June 1913.

As the two railway lines extended into the desert from both ends, mobile construction trains were needed. Two trains were set up with the Port Augusta train entering service

during July 1914 and the Kalgoorlie train entering service during August-September 1914 just as a major war started in Europe. This war was to have a great impact on the availability of labour and the supply of construction materials and later the trains. The war also delayed completion of the railway by nearly one year.

In an era before Tax File Numbers and Medicare cards a study of the employees joining Commonwealth Railways reveals the number of staff named Brown, Jones and Smith to be well out of proportion with the general population.

The two construction trains met at Ooldea on Tuesday 17 October 1917, thereby achieving a connecting railway system from Rockhampton



The Roberts tracklayer R20 working from the west advances towards the border from Kalgoorlie on the world's longest straight stretch of railway circa 1916. The wagons are loaded with steel rails and sleepers. COURTESY DAVID BURKE COLLECTION



The first Port Augusta to Kalgoorlie through passenger train during Tuesday 23 October when travelling between Barton and Cook was hauled by G 22. The section from Barton to Fisher was one of the two sections that required a water tank wagon to be attached to the train. TRANS-AUSTRALIAN RAILWAY POST CARD, ARHSNSW RAILWAY RESOURCE CENTRE, 446619

in Queensland down the east coast and around the south of Australia to Geraldton in Western Australia. Unfortunately, this was not a uniform gauge railway which would have allowed through traffic as it had five break-of-gauge stations. A proposed official opening at Wynbring on Monday 12 November was cancelled on short notice, probably because of campaigning in connection with the military service referendum of 20 December. However, the Governor-General left Port Augusta on Tuesday 13 November, arriving in Perth on Friday 16 November. He arrived back in Adelaide on Thursday 29 November.

The first train reached Port Augusta from Kalgoorlie on Thursday 19 October 1917. This train carried passengers and the composition included 4 YB Guards Vans, 3 ABP sitting cars (1-3), the construction train dining and sleeping cars, 1 HR Guards Van and three carriage underframes. The first train from South Australia to Western Australia left Port Augusta on Monday 22 October 1917, and it is the centenary of this train that will be celebrated this month.

The break-of-gauge situation meant that coastal shipping continued to play the major part of the transport function from the eastern states to Western Australia and vice versa. Virtually all freight stayed with sea transport and much of the passenger traffic stayed with sea transport until the 1960s but during the 1940s the general increase in freight traffic for the war effort resulted in the expansion of the number of freight trains on the line.

MOTIVE POWER

For construction trains, second-hand motive power was initially obtained from the New South Wales Railways. These were six 4-4-0s, converted from former Q Class 4-4-0 tank locomotives built by Beyer, Peacock in Britain in 1880. They had been rebuilt at Eveleigh Workshops in Sydney during 1910 with six-wheel tenders. They became the D Class on the Commonwealth Railways with three entering service at Port Augusta and three at Kalgoorlie.

The other second-hand locomotive was a solitary K Class 2-6-0 with a four-wheel bogie tender built by the Baldwin Locomotive Works in 1885. This became the Commonwealth Railways F Class No. 55. This locomotive had a low axle force and before the

wharves were strengthened, it was able to shunt the wharf at Port Augusta. It only remained in service until June 1916 when it was withdrawn, although it was not scrapped until 1937.

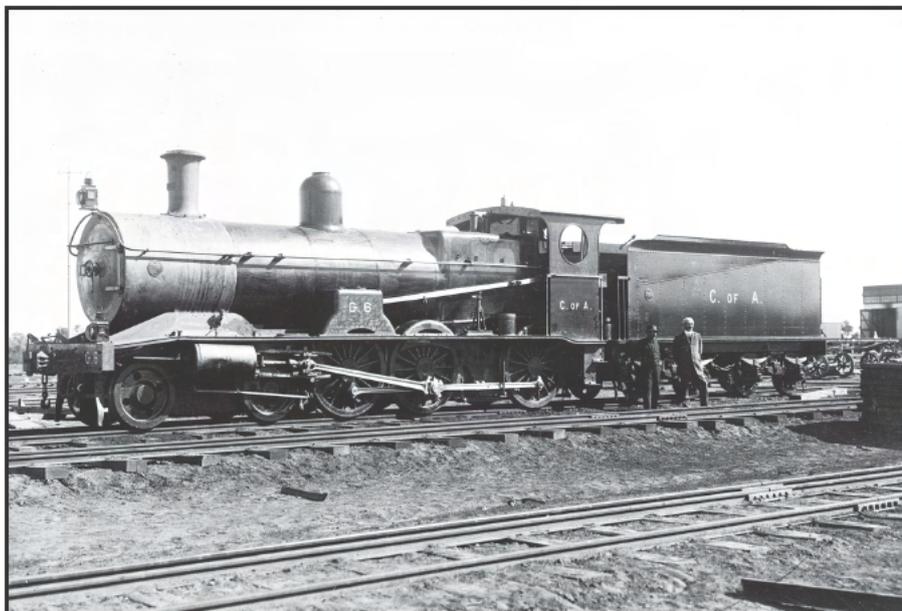
These second-hand locomotives were complemented with four new 4-6-0 locomotives with four-wheel bogie tenders based on the NSW Government Railways successful P Class. The initial locomotives were ordered from Clyde Engineering in Sydney. Those for the eastern section were shipped complete to Port Augusta, while those for the western section were shipped to Perth and transported unassembled to Kalgoorlie where they were assembled. These became the G Class which were to become the main motive power for passenger trains on the Commonwealth Railways for the next two decades.

The development of the diesel locomotive was only in its infancy, but the Commonwealth Railways engineers realised that the nature of the Nullarbor Plain would result in high costs for the operation of steam motive power as had been experienced on other desert railways. Nevertheless, this high cost on desert railways was still far more economical than other forms of transport. Accordingly, the desert areas along this route were developed by the railway, with reliable roads not built until the 1960s.

When plans for Trans-Australian through trains were underway, diesel-powered locomotives were only in the early experimental stage, but correspondence took place between



Following their use on construction trains, the six ex-NSWGR 4-4-0 D Class locomotives saw limited use on shunting and locomotive depot duties. Here an unidentified member of the class pushes BAS Class four-wheel bottom discharge hopper wagons over the coal unloading ramp at Port Augusta locomotive depot. NATIONAL RAILWAY MUSEUM, AN8804201-03



Baldwin-built G Class 4-6-0 G6 photographed at Port Augusta locomotive depot presented a smart appearance prior to entering service on 29 May 1914.
 Courtesy NATIONAL RAILWAY MUSEUM,, 14-219-D80-631

Commonwealth Railways and Diesel-Klose-Sulzer in Switzerland and Hawthorn Leslie in Britain regarding the possible use of these locomotives on the Trans-Australian Railway. Diesel-Klose-Sulzer was developing a four-cylinder 800kW direct drive diesel locomotive for the Königlich Preussische Eisenbahn-Verwaltung (Royal Prussian State Railways). This locomotive operated trial trips in Switzerland during September 1912, but it required excessive water for engine cooling, which posed a major problem for a railway crossing a desert. The Hawthorn Leslie mainline locomotive failed to materialise, although in the 1920s a shunting locomotive was produced. It was to take 40 years before diesel power would haul Commonwealth Railway trains. *The Gazette* of 7 February 1914 indicated that tenders had been invited for four Diesel Locomotives. *The Age* newspaper of 8 January 1915 reported that the Commonwealth Government had decided to call tenders for 12 steam locomotives and rejected the obtaining of diesel locomotives. The South Australian Railways had attempted to introduce non-steam locomotives on the Eyre Peninsula and in May 1913 received from Ruhrthaler Maschinenfabrik Schwarz and Dyckerhoff GmbH of Mülheim am der Ruhr in Deutschland a 75 kilowatt internal combustion locomotive. It had a two-cylinder horizontal engine with geared drive to the axle under the cab and side rod drive to the other

two axles. The locomotive had many problems during acceptance testing and while it was sent to Port Lincoln, it only had a short working life. The jetty railway in Broome in Western Australia, also obtained an internal combustion locomotive from Ruhrthaler during 1914. This locomotive was much smaller, providing 26 kilowatts of power, the usual capacity of locomotives built by this firm at this time.

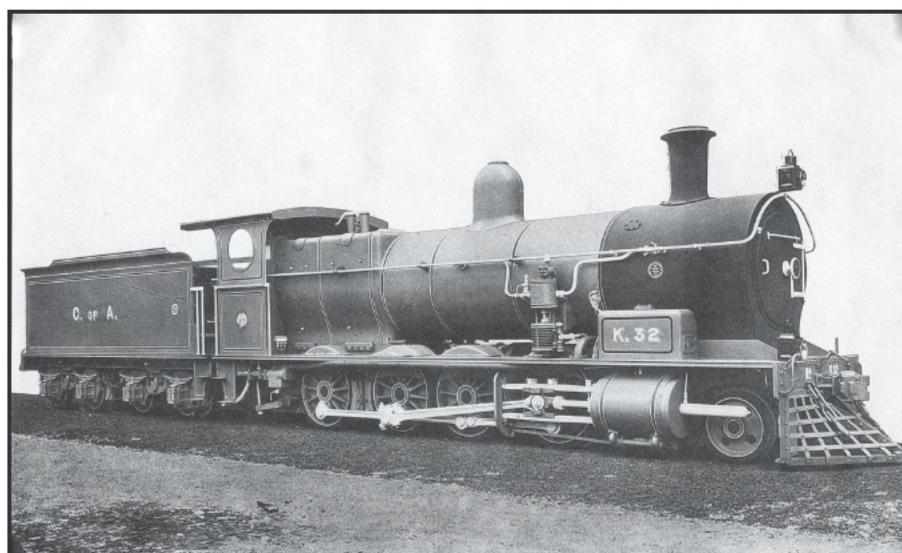
Along with these locomotives, the Victorian Railways obtained two McKean petrol railcars in 1912 and the following year the Queensland Railways obtained five of these cars. All suffered major problems and had relatively short lives as railcars.

As delivery of the Clyde Engineering locomotives was running late, two

orders were placed for a further four and eight G Class 4-6-0 locomotives with the Baldwin Locomotive Works in the USA. These was followed by another two orders for eight and two G Class locomotives from Toowoomba Foundry and the Railway Rollingstock Manufacturing Co. Limited at Toowoomba in Queensland in 1916–1917. The Baldwin and Toowoomba Foundry locomotives had larger tenders than the Clyde Engineering locomotives. The NSW P class tenders and those of G1 to G4 held 16,600 litres, while the tenders for locomotives G5 onward carried 22,050 litres. The coal capacity was 2.5 tonnes more, and with 5.4 tonnes more water, the tenders weighed nearly eight tonnes more.

As the axle bearing size was the same for both tenders, and the bogie suspension was not compensated when built, the Commonwealth Railways had problems with bearings overheating, particularly on the westbound train on 22 October 1917. Although the design was 20 years old at the time of ordering, these G Class locomotives were to haul Commonwealth Railway passenger trains for the next 20 years before more powerful locomotives were placed in service.

For freight motive power, initially the New South Wales Railways T Class 2-8-0 with four-wheel bogie tender was chosen when it was realised that the locally built K^A class would not arrive in time for the opening of the line. Eight locomotives fitted with Robinson superheaters (rather than the Schmidt pattern used in NSW) were ordered in March 1915 from the North British company in Britain and became the



North British builder's photo of 2-8-0 K Class locomotive K32.
 COURTESY NATIONAL RAILWAY MUSEUM, CKS09158



A K Class 2-8-0 heads a 'Tea and Sugar' supply train during construction of the Trans-Australian Railway, circa 1916.
COURTESY NATIONAL RAILWAY MUSEUM, 14-219-G80-894

Commonwealth Railways K Class. The CR locomotives operated at a lower boiler pressure than used on the NSWGR superheated prototype locomotive T 938. The K class also

had a steel inner firebox rather than copper in the NSW locomotives.

The following month, April 1915, Commonwealth Railways ordered 20 locomotives from Walkers Limited at Maryborough in Queensland and six from Perry Engineering at Gawler in South Australia. These had the same wheel arrangement and the same dimensions but were based on the NSW TF class freight locomotive instead of T class. The Perry locomotives built during the war were completed without superheaters owing to the British Government restricting the sale of superheaters during 1916, although this was later reversed. Commonwealth Railways coded the new locomotives K^A. They were about four tonnes heavier than the K class. Due to the wartime shortages of employees and materials delivery of the K^A class locomotives did not commence until late 1918 after the through railway had opened and continued into 1919.

The G Class were used on passenger trains while the K and later K^A Class were used on the freight and supply trains although these could also be worked by the G Class locomotives. While the D Class had been obtained for construction trains with the intention to dispose of them once construction was complete, they were to continue as shunting locomotives at Port Augusta and Kalgoorlie. They retained their New South Wales numbers and were not renumbered into the Commonwealth Railways locomotive roster.

Fourteen of the K^A class were obtained for construction of the proposed 'Boomerang Line'. This was a strategic railway scheme from Port Augusta curving around to Brisbane, hence the name. The proposal was in discussion during late 1914-early 1915, but due to the war effort never progressed. The report of the Commonwealth Public Accounts Committee of 1919 quotes evidence from Commissioner Norris Garrett Bell that the K^A locomotives then being



The first K^A Class 2-8-0 locomotive built by Perry Engineering at Gawler, South Australia, K^A 56 was photographed at Port Augusta in 1918. This locomotive was not withdrawn from service until April 1950. NATIONAL RAILWAY MUSEUM, CKS08318

Steam Locomotive Fleet 1920							
Wheel Type	Whytes Notation	Class	No. in Service	Fleet Numbers	Builder	Ordered	In Service
2'B 3	4-4-0	D	6	158 - 163	ex-NSWGR		April - July 1913
2'C 2'2'	4-6-0	G	4	1 - 4	Clyde Engineering NSW	Feb-13	March - June 1914
2'C 2'2'	4-6-0	G	4	5 - 8	Baldwin USA	Sep-13	May - June 1914
2'C 2'2'	4-6-0	G	8	9 - 16	Baldwin USA	Jan-14	June - August 1914
1'C 2'2'	2-6-0	F	1	55	ex NSWGR		July 1915 (limited service)
1'D 2'2'	2-8-0	K	8	27 - 34	North British Britain	Mar-15	March - June 1916
2'C 2'2'	4-6-0	G	8	17 - 24	Toowoomba Foundry Qld	Mar-14	June 1916 - September 1917
2'C 2'2'	4-6-0	G	2	25 - 26	Toowoomba Foundry Qld	May-14	October 1917
1'D 2'2'	2-8-0	K ^A	20	35 - 54	Walkers Ltd Qld	Apr-15	August 1919 - June 1920
1'D 2'2'	2-8-0	K ^A	6	56 - 61	Perry Engineering SA	Apr-15	Nov 1918 - Sept 1919

delivered were not for passenger traffic, but were heavy freight locomotives which were obtained for ballasting work. The Government had ordered 14 K^A class locomotives in excess of the 12 Commonwealth Railways had asked for and advertised in the *Gazette* on 30 January 1915. The *Gazette* on 6 March had tenders for 20. When the whole of the 20 engines ordered from Walker Limited were delivered, Commissioner Bell indicated that there would be more than required until construction of further lines commenced or freight traffic increased. He also mentioned that he had approached both the NSW and other British Empire governments to take some of them.

During 1918 work was progressing planning the extension of the standard gauge railway from Port Augusta to Adelaide. Unfortunately this project also did not proceed, although the standard gauge and the broad gauge railways were extended to Port Pirie in the mid 1930s. While this introduced a new break of gauge station, this time with all three track gauges, it did bypass the narrow gauge railway between Terowie and Port Augusta and reduce the number of break-of-gauge stations by one.

The through passenger trains were relay worked with the locomotive changed at Tarcoola, Cook and Rawlinna. The four distances were 414, 412, 488 and 318 kilometres. Water gins were attached to the trains on some sections but coaling and servicing was carried out at the intermediate depots.

PASSENGER CARS

As with the motive power initial passenger rolling stock orders were placed for construction trains along with some cars for local trains.

Two construction trains were built along with seven passenger cars and 24

guards vans. These worked local trains from Port Augusta and Kalgoorlie to the railheads and to the service settlements as they opened up along the railway.

Both construction trains had eight vehicles mounted on 19.86 metre long underframes. Each train consisted of an office car, a store car, a kitchen car and a hospital car, along with two sleeping accommodation cars and two sitting cars. All the bodies for these cars were wooden framed with corrugated steel panelling and they had peaked roofs. The underframes for the Port Augusta train came from Barbat and Sons in Ipswich, Queensland, while those for the Kalgoorlie train came from Westralia Ironworks in North Fremantle WA. The bodies for each train were constructed at the railway workshops in Port Augusta and Kalgoorlie.

Passenger Trains

While New South Wales motive power was adopted because it was standard gauge and required no gauge redesign work, this did not apply to the passenger cars and guards vans. Where the original design was of a broad-gauge car the change required little alteration to the bogie design or to the under-

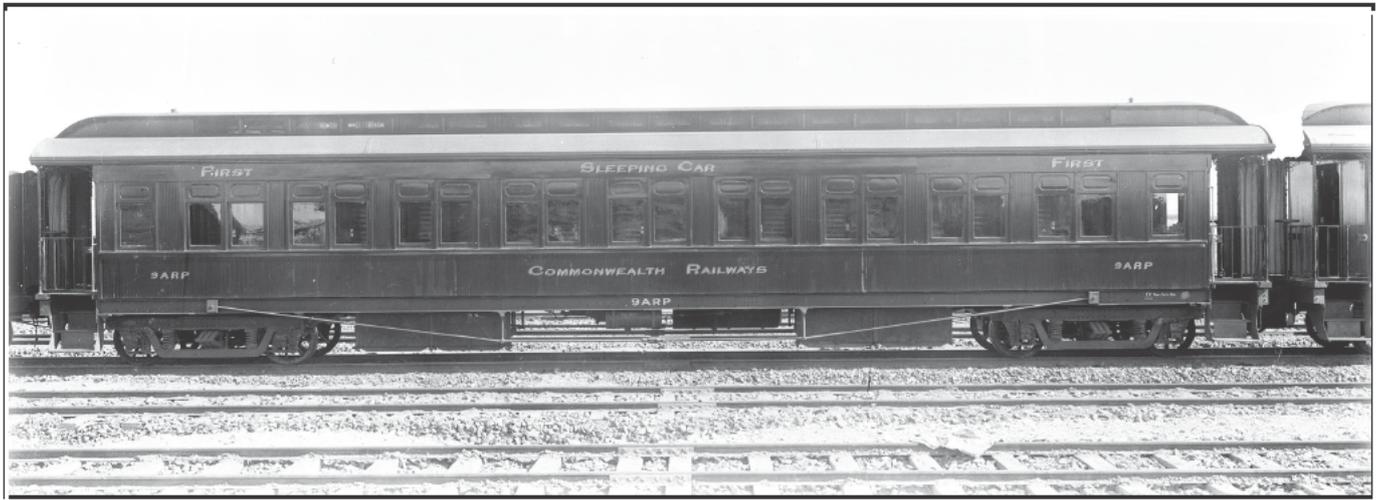
frame of the six and four-wheel, fixed wheel base vehicles.

Commonwealth Railways adopted Victorian Railway designs for the passenger cars following the clerestory roof and body styling of the E Type cars (brought to Victoria from the Canadian Pacific Railway by Sir Thomas Tait) but with the vehicle ends redesigned to allow for end platforms as steps were required for the low-level platforms used at all stations except Port Augusta and Kalgoorlie. This was a return to the Canadian design.

Seven clerestory-roofed composite cars were obtained from Clyde Engineering in Sydney. These cars had a side corridor past the three First Class compartments and two Second Class compartments with a centre-aisle saloon with walk-over seating also for Second Class at the end of the car. They enabled a passenger service to be provided from each end to the respective railheads. Unlike the Victorian cars, which had six wheel bogies, Commonwealth Railways used four wheel outside equalised bogies for its passenger cars. These cars were coded ABP and numbered 1-7 with cars 1-3 sent to Kalgoorlie and 4-7 sent to Port Augusta. The *Western Mail* on Friday 23



Lounge carriage AF24 was photographed about the time of the opening of the line. The lounge cars had wide windows with a long moulded wooden panel above each window. As they had to use existing R^A flat wagon underframes which while lengthened were shorter than the underframes used for the other passenger cars, the lounge cars had only end doors to adjacent cars but no side doors. PHOTOGRAPH CHRIS DRYMALIK COLLECTION.



First Class Sleeping Car ARP9 photographed around the time of the opening of the line. The car is in the original red livery which was used until the early 1920s when both the endplatforms were in place. This was not one of the cars that had one endplatform enclosed to enable the installation of showers. In the 1910s passenger cars lettering followed Victorian Railway practice placing the car number in front of the code. PHOTOGRAPH CHRIS DRYMALIK COLLECTION

April 1915 refers to passenger services between Kalgoorlie and Zanthus while the *Daily Herald* of Monday 7 June 1915 refers to Port Augusta to Tarcoola passenger services commencing the next day. The service from Kalgoorlie was extended from Zanthus to Rawlinna on Tuesday 8 May 1917.

Guards Vans

The fixed wheel base, six-wheel arched roof guards vans followed the Victorian Railways Z Class vans. Eight with end cupola lookouts were built during 1914 by Collins and Company at Maylands in Perth. Commonwealth Railways also coded these cars Z, and they were numbered 1–8 in the separate guards vans roster. During 1917 they were rebuilt as four-wheel vehicles and recoded YS.

Eight further fixed wheel base, six-wheel arched roof vehicles without a cupola were built during 1915 by the Meadowbank Manufacturing Company at Meadowbank in Sydney. Also coded Z, they were numbered 9–16, but when delivered 12–16 became stores vans and were coded VS and renumbered in the 730s in the freight wagon roster. Number nine and 11 became breakdown vans and were recoded X and were renumbered 731 and 732 in the wagon roster, while 10 became a retail stores van being recoded VS also renumbered in the 730s. All were altered to four wheels during 1917.

Clyde Engineering supplied eight semi-elliptical-roofed bogie guards vans during 1916 of a similar design to the shorter LHG freight guards vans of the NSWGR, later coded SHG. On the NSWGR these guards vans were mainly

intended for the use of drovers on live-stock trains. The CR cars were coded YB and numbered 17–24 in the guards van roster. As well as the guards and parcel compartment, these vehicles had two side-door passenger compartments.

Steel-bodied trains

In December 1915 Malcolm Henderson, the CR Chief Mechanical Engineer, visited the USA and Great Britain to obtain steel passenger cars or material for the construction of steel trains in Australia. It was initially proposed to have these trains constructed in the USA, but this was rejected by the government. Unfortunately, due to the war, expenditure on new Pacific locomotives as well as new passenger cars for the through trains was cancelled. Commonwealth Railways then had to purchase or construct new wooden bodies for mounting on the existing underframes. The construction of steel cars was then a recent innovation in the USA while the general construction of steel cars in Europe did not

occur until the 1920s.

Malcolm Henderson, born at Dunfermline on 21 April 1861, joined Victorian Railways on 13 June 1887. From 1 January 1911 he was an engineering assistant on a salary of £400. The *Barrier Miner* of 31 July 1914 reported his appointment as Chief Mechanical Engineer of the Commonwealth Railways. By November 1915 as CME of the CR Mechanical Engineering Branch, he received a salary of £750. He died at Lake Road, Blackburn in Melbourne during November 1933.

During June 1916, the rolling stock contracts for CR through trains were placed. Meadowbank Manufacturing Company in Sydney supplied ten clerestory-roofed eight compartment double bedroom end-platform sleeping car bodies for first class passengers. These were coded ARP and numbered 8–17. This style of first class sleeping compartment had been introduced on the Melbourne–Adelaide train during 1908 and was to become the



Guard / Crew Van HR29 was also photographed about the time of the opening of the Trans-Australian Line. Originally a guards van with two passenger compartments, they were rebuilt to provide crew accommodation when the through line opened (see p22). PHOTOGRAPH CHRIS DRYMALIK COLLECTION

PASSENGER FLEET 1920				
Car Type	Passengers	Code	Fleet Numbers	Notes
First Class Double Bedroom Sleeping Car	16 berth	ARP	8 - 17	12-17 fitted with showers
Second Class Four Berth Sleeping Car	28 berth	BRP	6, 7, 18, 19	
Second Class Sleeping and Sitting	20 berth, 18 seat	BRPF	1, 2, 4, 5	
Second Class Sitting Car	54 seats	BPF	3	
Dining Car	30 Diners	D	20 - 23	
Lounge Car	34 seat	AF	24 - 26	
Guards and Crew Sleeping Van		HR	28 - 32	Semi-elliptical roof
Mail Van		M	35 - 38	Semi-elliptical roof
Temporary Sitting Car	54 seat	TBP	39	Construction train style
Temporary Sitting Car	47 seat	BP	40	Construction train style
Temporary Sitting Car	46 seat	TBP	41	Construction train style
Temporary Sitting Car	42 seat	TBP	42	Construction train style
Special Service Car		AFR	27	

most common type of sleeping car in Australia. Meadowbank also built two clerestory-roofed seven compartment four-berth Mann style end platform sleeping car bodies for second class passengers. These were coded BRP and numbered 18 and 19.

Port Augusta Workshops carried out the rebuilding work on the seven ABP cars to provide further second class sleeping cars. Four cars, 1, 2, 4 and 5 retained the open saloon for sitting passengers and were recoded BRPF with five four berth compartments while Nos. 6 and 7 were rebuilt as seven four berth compartment BRP sleeping cars. Number 3 retained its original layout as a sitting car, but was altered to all second class and was recoded BPF. It was rebuilt to an additional BRP second class sleeping car during 1922.

Pengelly & Company at Edwardstown

in Adelaide supplied four clerestory roofed dining car bodies. They were coded D and numbered 20–23. These cars had a kitchen at one end and sat 30 diners in the dining saloon at tables for four diners on one side and for two on the other. The ten ARP, the two BRP and the four D bodies were mounted on the sixteen 19.86 metre underframes originally only intended for the construction trains.

Port Augusta Workshops also supplied four clerestory-roofed lounge car bodies. These were mounted on 15.60 metre lengthened underframes which had been intended for RA flat wagons. Three vehicles entered service as lounge cars coded AF and numbered 24–26 but the fourth, No. 27, was fitted out as a special service car for VIP use. Being short these four cars had no side entrance doors and required access

from adjacent cars. These passenger cars were mostly ready for service when the through line was opened. AF 27 was included on the inaugural train on 22 October 1917.

An interesting feature of the lounge cars was the lack of a bar. This is said to have occurred as King O'Malley, the Minister for Home Affairs in the Andrew Fisher Labor Government, was a teetotaler. It was not until the late 1960s that Commonwealth Railways served alcohol and lounge cars included a bar. The *Commonwealth Railways Act 1954* inserted a new provision (section 33A) which empowered the Commissioner to sell 'refreshments' which was defined to include alcoholic liquor. Section 6 of the Seat of Government (Administration) Ordinance 1910 provided that: "No license to sell intoxicating liquor in the Territory shall be granted". That provision did not prohibit people bringing liquor into what is now the Australian Capital Territory.

Five of the YS bogie guards vans (Nos., 21, 22, 23, 24 and 17), subsequently had the passenger area rebuilt to provide crew sleeping accommodation. When altered, they were recoded HR and renumbered into the passenger car roster as 28–32.

During 1918, the Port Augusta Workshops built four semi-elliptical roofed mail van bodies which were also mounted on underframes intended for RA flat wagons. They had a large mail compartment with two double swing-doors and a smaller luggage compartment with sliding doors. There was also a coffin compartment at the van end.

Given the length of the journey, it



An interior view of a D Class dining car in the condition that it entered service. The two and one across seating provided for only 30 passengers and was insufficient so in 1920 the dining saloon was changed to two and two across providing for 40 diners.

ARHSNSW RAILWAY RESOURCE CENTRE, 446623

had been decided that through second class passengers would be provided with sleeping accommodation. At this time, only Queensland Railways provided second class sleeping cars which had had six berth compartments. To provide a second class sleeping service to connect with the Commonwealth Railways train at Kalgoorlie, the Western Australian Railways converted their side-corridor second class AR sitting cars to six berth compartment ARS sleeping cars instead of the four berth compartments of the Commonwealth Railway's second class sleeping cars. The Western Australian Railways also built further cars of this type as ARS sleeping cars.

As no major stations existed along the route, the Trans-Australian trains were provided with full dining cars. At this time, dining car operation in Australia was limited to the Perth–Kalgoorlie, Melbourne–Mildura and Melbourne–Albury routes and had been recently introduced on longer distance trains in Queensland.

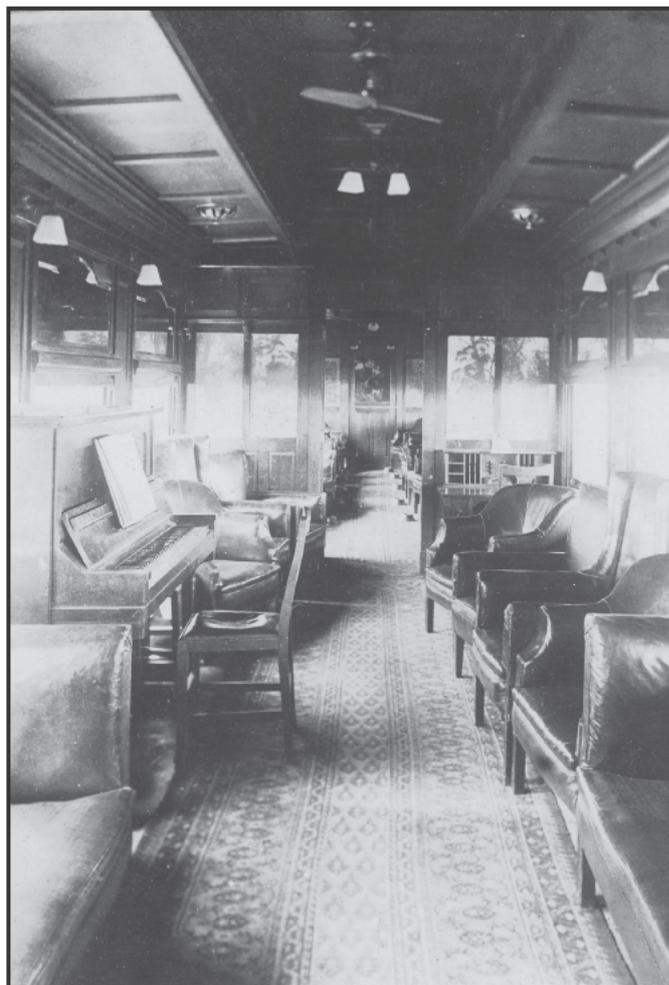
A significant passenger development introduced by the Commonwealth Railways for first class passengers was the lounge car. The lounge car had been included on a growing number of trains in North America since the 1880s. However, in Australia the Melbourne–Albury train and the Brisbane–Wallangarra (Sydney) train had parlour cars. These had been introduced in 1908 and 1909 respectively. A feature of the Mann Boudoir and the E Type sleeping cars on the Adelaide–Melbourne train and later on the Mildura line was a small lounge compartment.

To provide additional sitting cars for local travel on the mixed trains, four RA flat wagon underframes had corrugated steel bodies fitted of the style of the construction trains. Identified by their peaked roofs, these 'temporary sitting cars' were numbered 39–42. They entered service between August 1916 and July 1918 and enabled the Port Augusta based Clyde Engineering built wooden bodied cars to be released for rebuilding for the through train.

Commonwealth Railways passenger cars and guards vans before the 1920s had the body sides in Indian red. Their roofs were timber and for waterproofing a canvas sheet was drawn over the roof sections and secured at the ends and edges and covered with a thick paint-like material known as 'navy dressing', which was usually a mustard brown colour. The exact colour, especially on the roof when new, was of little consequence because the use of steam locomotives meant the colour quickly darkened to a dark brown, and eventually to a very dark matt grey. The carriages were generally only cleaned on the sides, and no attention was given to the roof until repairs were required. The car lettering was a buff or gold colour

The wooden-bodied cars entered service in their new format for the opening of the railway. During 1918 six of the first class sleeping cars had one end platform enclosed to enable the installation of a shower compartment. This innovation placed Commonwealth Railways as a world leader in providing this passenger comfort. Outside Australia access to showers, even for first class passengers, generally did not occur until late in the 20th century.

Before the M type mail vans were constructed to provide temporary mail vans, two of the YB bogie guards vans (19 and 20), were recoded M 33 and 34 and used for the mail traffic. They were released from the mail traffic by June 1918 and converted back to guards-crew vans receiving their former code and number. Four months later YB 19 was



An interior view of the piano room of an AF Class lounge car. Three of the four AF cars entered service as lounge cars with the fourth car altered to provide a special service car, which did not become a lounge car until the 1940s. ARHSNSW RRC, 446622

altered for use as a pay car.

Commonwealth Railways was an early user of the automatic knuckle couplers on its standard gauge trains and the passenger cars were built with electric lighting. Electric power was obtained from axle generator units charging batteries when the train was moving. The Western Australian Railways had used electric light on its corridor trains from 1904 and South Australian Railways had commenced fitting electric light to its narrow-gauge fleet in 1907.

Commencement of Through Services

The first through west bound train to open the line departed Port Augusta 33 minutes late at 21:33 on Monday 22 October. The late departure was due to delays in transshipping luggage and mail. The train was relay worked by G class locomotives, namely G21 Port Augusta to Pimba, G12 Pimba to Wirraminna, G24 Wirraminna to Tarcoola, G23 Tarcoola to Barton, G22 Barton to Cook, G26 Cook to Hughes and G25 Hughes to Loongana, G19 Loongana to Rawlinna, G16 Rawlinna to Zanthus, G8 Zanthus to Golden Ridge, 171 kilometres east of Kalgoorlie, with G16 hauling the train into Kalgoorlie. G16 had to come from Zanthus which accounted for 142 minutes of the total delay. The load was 321 tonnes for most of the journey except between Pimba and Wirraminna and Barton and Fisher when a bogie water gin was attached increasing the train mass to 378 tonnes. The composition of the train for most of the journey was a temporary mail van (a YB brake van), two second class sleeping cars, D class dining

car, AF 27 special service car, three ARP first class sleeping cars and a HR guards-crew van.

As well as the late departure from Port Augusta, the large number of locomotive tender hot box problems further delayed the train. The overheating of the axleboxes on the locomotive tenders was largely due to using the same bearings as the NSWGR 16,600 litre tenders but with 22,050 litre tenders which also could carry 2.5 tonnes more coal. Even in spring this was enough to overheat the bearings. Tenders were swapped with a cold locomotive at Wyalring, between Tarcoola and Barton, incurring a delay of 93 minutes. These hot box problems increased the late running to 445 minutes with the intended arrival in Kalgoorlie at 06:30 on Wednesday 24 October not occurring until 14:55. Some rain was encountered during the early part of the trip. It had been announced in Kalgoorlie that the train was running late and from 11:00am people had been gathering along the railway into Kalgoorlie to await the train. On this day the booking office at Kalgoorlie Station sold over 1000 platform tickets.

A limited number of passengers were conveyed on this train which was referred to as a: "trial run to test the whole of the East-West line" in the *Express* and *Telegraph* newspapers of Wednesday 17 October. Ordinary passengers were first conveyed on the service leaving Kalgoorlie on Thursday 25 October and Port Augusta after Saturday 27 October.

Timetable June 1918

	Westbound Read Down Tue Thur Sat	Eastbound Read Up Thur Sat Mon
Adelaide	1045	1537
Terowie	1536	1115
	1600	1056
Port Augusta	2152	0500
	2230	0100
	Wed Fri Sun	Wed Fri Sun
Tarcoola	0718	1609
	0733	1554
	Thur Sat Mon	Tue Thur Sat
Rawlinna	0307	1825
	0327	1810
Kalgoorlie	1020	1000
	1740	0915
	Fri Sun Tue	Mon Wed Fri
Perth	0945	1700

Berths and Meals

The Commonwealth Railways charges for berths and meals during this period were as follows. The journey covered two nights with five meals provided.

First class	Berths	one pound
	Meals	thirteen shillings six pence
Second class	Berths	ten shillings
	Meals	eleven shillings

The South Australian Railways portion of the journey was a day train service. The westbound portion of the journey required lunch at the Railway Refreshment Rooms at Riverton and dinner in the Railway Refreshment Rooms at Quorn. Eastbound an early breakfast was provided at the Railway Refreshment Rooms at Port Augusta before the narrow-gauge train departed with lunch on the broad gauge train provided at the Riverton Railway Refreshment Rooms. The Western Australian Railways portion of the journey in both directions

was overnight with dinner and breakfast provided in the dining car.

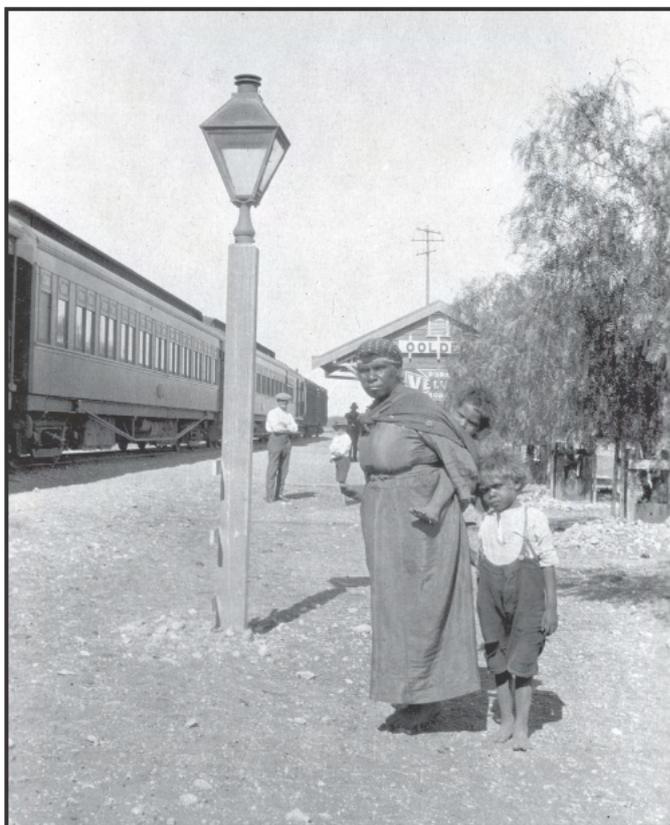
OPERATION

When the railway was originally planned, it was intended that it would be ballasted throughout. The ballasting work was not fully implemented resulting in slower train running speeds. It had been envisaged that the running time would be about 24 hours with an average running speed of 70km/h. Commonwealth Railways had to timetable the passenger train for a 37-38 hour trip with an average running speed of only 45km/h. The ballasting of the TAR was completed during 1939/40.

The normal composition of the three trains which were required to work this timetable was:-

Vehicle	Class
Locomotive	G
Bogie water gin	
Mail van	M
Second class	BRP
Second class	BRPF
Dining car	D
Lounge car	AF
First sleeping	3 x ARP
Crew/guards van	HR

The spare vehicles were a M mail van, a BRP and a BRPF second class sleeping car, a D dining car, an ARP first sleeping car and two HR crew/guards vans. The HR vans were also used on freight and supply trains. The fourth lounge car at this stage was the special service car. During 1920 for the visit of Prince Edward, the Prince of Wales, to Australia Port Augusta Workshops built a new VIP car, SS 44, which provided an offi-



An Aboriginal woman with children at Ooldea observes an early Trans-Australian passenger train. WILLIAM REGE MANN PHOTO, ARHSNSW RAILWAY RESOURCE CENTRE, 446565

Commonwealth Railway Wagon Contracts 1912-1920						
Code	Fleet Numbers	No. Built	Builder	Date in Service	Length	Description
R	1-100	100	Clyde Eng. NSW	8.1913 - 7.1914	10.06m	Flat Wagon
B	101-190	90	Gray Brothers Vic & SA	1.1914 - 9.1914	9.14m	FWB Ballast Open Wagon
T ^A	191-200	10	Kelly & Lewis Vic	12.1913 - 1.1914	m	Water Tank Wagon
T ^A	201-210	10	Kelly & Lewis Vic	2.1914 - 4.1915	m	Water Tank Wagon
BW	211-240	30	A. Goninan NSW	3.1913 - 4.1913	m	FWB Ballast Hopper Wagon
R	241-290	50	Gray Brothers Vic & SA	8.1914 - 9.1914	10.67m	Flat Wagon
C	291-300	10	J.S. Bagshaw & Sons SA	12.1914	10.67m	Cattle Wagon
C	301-305	5	Westralian Ironworks WA	8.1914 - 9.1914	10.67m	Cattle Wagon
S	306-325	20	J.S. Bagshaw & Sons SA	12.1914 - 1.1915	10.67m	Sheep Wagon
S	326-335	10	Westralian Ironworks WA	10.1914 - 3.1915	10.67m	Sheep wagon
R	336-360	25	Gray Brothers Vic & SA	9.1914 - 2.1915	10.67m	Flat Wagon
R	361-385	25	Westralian Ironworks WA	1915 - 1915	10.67m	Flat Wagon
B	386-455	80	Gray Brothers Vic & SA	8.1914 - 2.1915	5.49m	FWB Ballast Open Wagon recoded BS
B	456-485	20	State Implement & Engineering WA	5.1915 - .1915	5.49m	FWB Ballast Open Wagon recoded BS
TD	486-505	20	Kelly & Lewis Vic	10.1914 - 1915	9.14m	Water Tank Wagon 35600 L
BAS	506-565	60	Westralian Ironworks WA	3.1916 - 7.1916	5.49m	FWB Ballast Hopper Wagon
BAS	566-630	65	Gray Brothers Vic & SA	11.1915 - 3.1915	5.49m	FWB Ballast Hopper Wagon
R ^A	631-670	40	State Implement & Eng WA	5.1916 - 11.1919	13.72m	Flat Wagon
TS ^B	671-700	30	Westralian Ironworks WA	11.1916 - 2.1918	5.64m	FWB Water Tank Wagon 17800 L
TS ^B	701-730	30	Pery Engineering SA	4.1916 - 8.1916	5.64m	FWB Water Tank Wagon 17800 L
XS	731-732	2	Meadowbank Manufacturing NSW	5.1915	7.32m	FWB Guards Van Z 9, Z 11; 9.1916 to X Breakdown Van
VS	733-738	6	Meadowbank Manufacturing NSW	5.1915	7.32m	FWB Van Z 10, Z 12 Z 16.1915 to VZ Store Van

cers inspection car, allowing the former VIP car to become an additional lounge carriage.

FREIGHT WAGONS

Commonwealth Railways from 1912 placed contracts for 730 wagons. Initially these were for construction work flat wagons for conveying rails and large items, hopper wagons for ballast and coal, and water tank wagons for locomotive use as well as for drinking and washing water for the construction camps and developing settlements along the railway. For livestock traffic cattle and sheep wagons were also obtained.

Unlike the contemporary state railway systems, the wagon fleet was mostly bogie with 445 bogie wagons and 285 four-wheel fixed wheel base (FWB) vehicles. This proportion of bogie wagons was far higher on Commonwealth Railways than the state government systems. Unlike the state railways, the Commonwealth Railways did not have separate freight wagon and service wagon rosters. The wagon fleet was not to receive any new vehicles until the CB cattle wagons entered service during 1936

As construction progressed the intended use of the wagons was not always followed and as the flat and livestock wagons were the same length it was possible for the workshops at

Port Augusta and Parkerton to construct bodies as required or in the case of the livestock wagons, not to assemble them and use the underframes for other uses mostly for covered, open and flat wagons. Covered van and open wagon bodies were also constructed and placed on available fixed wheel base wagon underframes. As the deliveries to Port Augusta and Kalgoorlie were spread out, some of the conversions were only temporary until the required wagon was received. The earlier conversion reverted mostly to its original intended form. Many of these temporary conversions were to water tank wagons. In 1920 the freight wagon fleet totalled 687 with

the service fleet 34. No hopper wagons were obtained for the conveyance of coal for locomotive use. For the towns and settlements requiring coal, some of the ballast wagons were used for this traffic. This tabulation shows the various types of wagons separated into the wagon's underframe origins.

POST 1920

Although there had been proposals for new motive power when the line opened, no additional locomotives were obtained until 1938 when eight C Class 4-6-0 locomotives with six-wheel bogie tenders were introduced. Built by Walkers Limited in Maryborough Queensland, they were based on a



R^A 639 was one of the 40 flat wagons which were built by the State Implement and Engineering Company of Western Australia. They were ordered and delivered towards the end of the construction of the line. At least 14 were not placed into service as flat wagons, but subsequently had their underframes lengthened and the bogies replaced by outside equalised bogies to provide the underframes for some passenger vehicles.

PHOTOGRAPH CHRIS DRYMALIK COLLECTION

Wagon Fleet 1920									
Type	In Service 1920	Road Numbers	Type	In Service 1920	Road Numbers	Type	In Service 1920	Road Numbers	
Covered Vans			Open Wagons			Ballast Wagons			
V	15	243, 246, 248, 287, 310, 317, 322, 348, 354, 356, 360, 365, 375, 379, 380	G	5	12, 30, 43, 47, 99	BS (FWB)	78	101, 103 - 122, 124, 125, 127 - 130, 132 - 160, 164, 166 - 175, 178, 180 - 184, 186 - 190	
VS (FWB)	1	102	G	18	242, 244, 252, 254, 256, 259, 260, 262, 263, 265, 273, 275 - 277, 282, 283, 285, 286,	BS (IFWB)	68	386 - 394, 396 - 412, 414 - 425, 427 - 455	
Total Covered	16		G	11	339 - 342, 345, 359, 366 - 368, 383, 384	BS (FWB)	29	456 - 482, 484 - 485	
Louvre Vans			G	17	631, 634 - 636, 639, 642, 646 - 648, 651, 653 - 657	BAS (FWB)	60	506 - 565	
LS (FWB)	4	201 - 203, 206	Total Open			51	BAS (FWB)	65	566 - 630
Total Louvre	4		Flat Wagons			Ballast Wagons			
Explosives Vans			R	89	1 - 11, 13 - 16, 18 - 22, 24, 26 - 29, 32 - 42, 44 - 46, 48 - 49, 51 - 56, 58 - 76, 78 - 92, 94 - 98, 100	BW (FWB)	18	215, 218 - 224, 226 - 227, 229, 234 - 240	
PWS (FWB)	6	211 - 213, 230 - 232	Total Flat			114	Total Ballast	318	
Total Explosives	6		Cattle Wagons			Guards Vans			
Cattle Wagons			R Temporary	1	50	Guards Vans			
R Temporary	1	50	C	15	291 - 305	BW (FWB)	2	216 - 217	
C	15	291 - 305	Total Cattle			16	YS (FWB)	8	1 - 8
Total Cattle	16		Sheep Wagons			Guards Vans			
Sheep Wagons			S	25	306, 307, 309, 311 - 316, 319 - 321, 323 - 335,	YB (FWB)	2	18 - 19	
S	25	306, 307, 309, 311 - 316, 319 - 321, 323 - 335,	Total Sheep			25	Total	12	
Total Sheep	25		Flat Wagons			Guards Vans			
Flat Wagons			R	14	266, 270, 271, 290, 336, 338, 351, 353, 355, 369, 371, 373, 378, 381	Guards Vans			
Flat Wagons			R ^A	11	632, 633, 637, 640, 641, 644 - 645, 649, 650, 660, 670	Guards Vans			
Flat Wagons			Total Flat			114	Guards Vans		

NSWGR design, its C36 Class. They were fitted with 12-wheel tenders and had a newer design of boiler and therefore did not suffer the problems the 36 Class had when they were built. During the 1920s, the passenger fleet did obtain nine further cars along with further carriages obtained in the 1940s to both increase the size of the trains and enable more trains to be run. The later dining and sleeping cars had longer bodies although the lounge car was of the same length as the original

lounge cars. All the post 1920 cars differed externally with their semi-elliptical roof and enclosed vestibules, but generally they provided the same facilities and retained the wooden body of the original fleet.

CR NARROW GAUGE

By a proclamation made by the Governor-General on Thursday 22 December 1910 under the *Northern Territory Acceptance Act 1910*, that

Act commenced and the Northern Territory became a Commonwealth territory under section 122 of the Constitution, on Sunday 1 January 1911. Thereafter the Darwin to Pine Creek line was operated by the Commonwealth under the aegis of the Administrator of the NT as the "Northern Territory Railway Department". This line did not come under Commonwealth Railways control until Monday 1 July 1918. However, during 1917 the North Australia Railway rolling stock fleet was recoded and renumbered to the Commonwealth Railways system. By then the North Australia Railway also included second hand vehicles obtained from Queensland.

The Central Australian Railway from Port Augusta to Quorn and Oodnadatta was managed and worked under a fresh agreement of 23 December 1913 with the South Australian Government from Thursday 1 January 1914. During 1913, tenders were invited for 1067 mm gauge locomotives and rolling stock but this contract did not proceed. The Central Australian Railway was taken over by Commonwealth Railways from Friday 1 January 1926 when new rolling stock was obtained with many of the new wagons built to earlier SAR designs.

In the 1910s there was a daily service from Port Augusta to Quorn with a thrice weekly mixed train to



As the railway was only completed between Port Augusta and Kalgoorlie, there was very little through freight traffic. Coal and water for locomotives and other uses at the depots and towns along the line were the main loads conveyed. T⁵⁰⁵ was one of 20 water tank wagons built by Kelly and Lewis in Victoria. In line with most Commonwealth Railways tank wagons, the water tanks were rectangular in shape. An interesting feature of this wagon is the confusion on the part of the person doing the wagon lettering. The small letter in codes should be superscript. This lettering practice continued until 1960.

PHOTOGRAPH CHRIS DRYMALIK COLLECTION

Type	In Service 1920	Road Numbers	Type	In Service 1920	Road Numbers
Water Tank Wagons			Service Vehicles		
R 16 Water Tanks	1	23	E Pay Car	1	31
R 28500L	2	25, 77	E Employee Car	1	372
B 10700L (FWB)	3	170, 179, 185	BW Casualty (FWB)	1	228
T ^A 10700L (FWB)	2	177, 197	YB Pay Car (FWB)	1	19
T ^C	1	57	Laboratory Store	1	200
T ^C	32	241, 245, 247, 249 - 251, 253, 261, 264, 268, 272, 274, 278, 279 - 280, 284, 288, 343, 344, 346, 347, 349, 358, 359 361 - 364, 370, 376 - 377, 385	VP Provision Van	1	352
T ^D 35600L	22	269, 281, 486 - 505	VS Covered (FWB)	7	131, 733 - 738
TS ^A (FWB)	12	161 - 163, 165, 191, 193 - 196, 198, 199, 205	VS Butcher (FWB)	5	123, 126, 258, 308, 426
TSA (FWB)	3	395, 413, 483	XR Accident	1	93
TS ^B 17800L (FWB)	30	671 - 700	X Accident (FWB)	1	732
TSB 17800L (FWB)	30	701 - 730	XS Breakdown (FWB)	1	731
Total Tank Wagons	135		B Jib & Tool (FWB)	1	176
			BPWS Ballast Plough (FW)	3	214, 225, 233
			BPS Ballast Plough (FWB)	6	192, 204, 207 - 210
			BP Ballast Plough	3	255, 257, 382
			Total Service	34	

Hergott Springs (Marree). This mixed train once a fortnight extended to Oodnadatta. On the North Australia Railway a weekly service was provided.

ACKNOWLEDGEMENTS

The authors acknowledge the work of Peter Clark and Chris Drymalik for their assistance in the preparation of this article. Acknowledgment is also made to various newspapers accessed in Trove, Commonwealth Railways Annual Reports, the *ARHS Bulletin*, *Australian Railway History*, *Locomotives of the Commonwealth Railways*, *Peninsula Pioneer* by Peter Knife and publications by David Burke, along with the National Railway Museum and the ARHSnsw Railway Resource Centre.



Tarcoola was the first daylight stop for passengers travelling west on the Trans-Australian Railway. Here passengers and Aboriginal bystanders mix on the platform circa 1920.

WILLIAM REGE MANN PHOTO, ARHSNSW RAILWAY RESOURCE CENTRE, 446562

In this month's **Railway Digest**

Rails around the Spencer Gulf

During mid-August, Chris Walters spent a few days touring the eastern and western shores of South Australia's Spencer Gulf, and brought back some fascinating snapshots of the region's 'rail hot spots', including Port Pirie, Port Augusta, Whyalla and the Eyre Peninsula.

The Silver Star

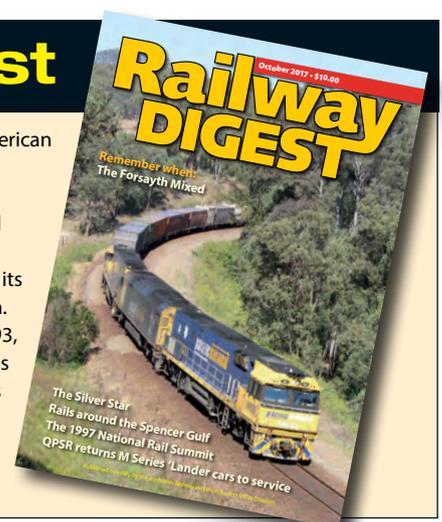
In Port Hedland, next to the Tourist Information office, is a stainless steel observation car, partly obscured by trees, which serves as a popular cafe. Peter Clark tells the intriguing story of how an

observation car built in 1939 for an iconic American diesel train found its way to the Pilbara.

Cairns to Forsyth and return on the Mixed

There were many rumours in the early 1990s that 'The Mixed' would shortly cease to make its weekly run from Cairns to Forsyth and return. So, on the evening of Wednesday 16 June 1993, Graham Crichton and his wife arrived at Cairns Station with enough food, water, sleeping bags and blankets for the next three days.

Plus all our regular features



REMEMBERING THE NSW RAILWAY ADMINISTRATION AT 509 PITT STREET

Greg Morris

The photograph on page 16 of the July 2016 issue of *Australian Railway History* depicts another unsung railway enterprise, the 509 Pitt Street Building, now the Wake Up Hotel. The building was erected for Marcus Clarke & Company in 1908 and was used by the NSW Railways Department from 1948.

Like many others, I began my railway service in this building in 1971 and worked there until 1976. I have many fine memories of the activities carried out there and *ARH* readers may be interested in my recollections of this period.

Railway Administration Units

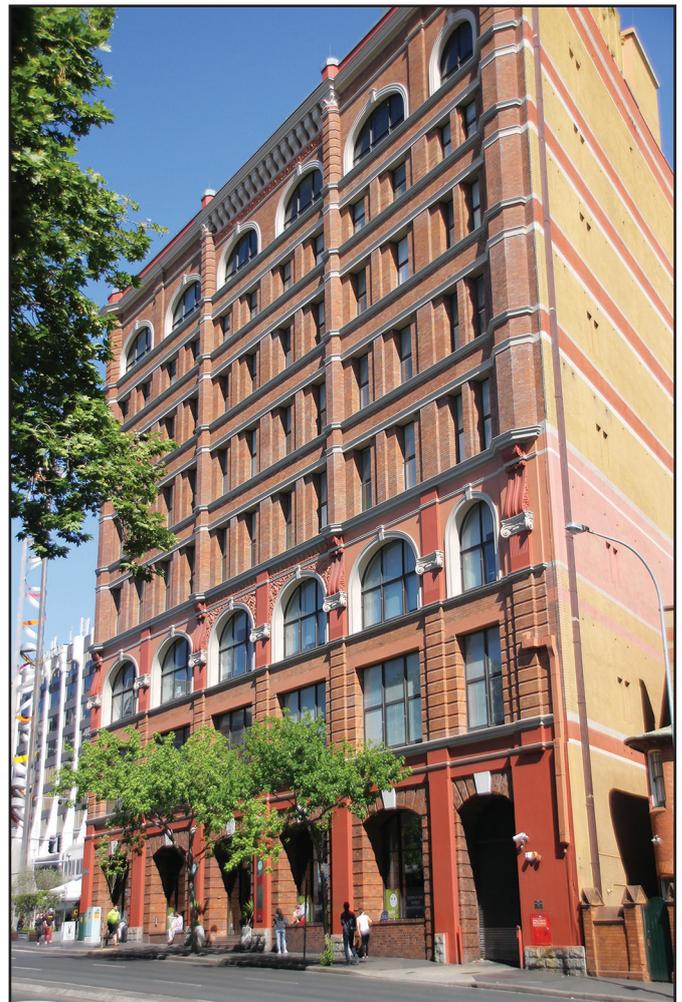
The Seventh Floor housed the NSWGR Medical Section. Dr Frank Perrotet (pronounced Perro-tay), was the Chief Medical Officer (and later Director of Medical Services), supported by four other doctors with various specialities, such as a chiropractic. Dr Perrotet also supervised a doctor at each of the railway workshops such as Eveleigh, Chullora and Cardiff. His Chief Clerk was Bill Hokin, a fine gentleman, while his secretary, Bonnie Lyons, kept an excellent 'ship' running. The typing pool on the westside of the building was supervised by Albert Gibbs and Bill Knight.

In the north-west corner, the Records Section was under Ray Entwistle, who was followed by Paul McElhinney. Periodic medical exams for existing employees were held there.

The sixth floor was supervised by second-in-charge Bill Gilbert, who later succeeded Bill Hokin as Chief Clerk. Two doctors based here carried out the pre-employment medical examinations for new staff on this floor. There was an eyesight testing unit on this floor headed by Jim Groves, while Ian Nicholson was the travelling eyesight examiner. Other sections here were X-ray, headed by Bill Quill, a radiographer and a urine-analysis scientist, whose name I cannot recall. Alex Lysenko was the darkroom attendant. Various clerks and juniors carried out filing and recording tasks.

The Employment and Compensation Sections were on the fifth floor. Initially in my time, Bernie Hollier was the Employment Personnel Officer, with Norm Rooke his second-in-charge. Bernie was succeeded by George Easton. Norm Rooke also served on the Board of Examiners, to which budding salaried officers had to present practical field demonstrations of their driving, supervising and instruction capabilities. Some ten clerks worked there, together with five typists, processing job applications and interview documents.

Another member of the Board of Examiners was responsible for the intake of apprentices each year for placement with the various branch units. Around 1975, the Bus Division was also installed on this floor.



The former Railway Administration building at 509 Pitt Street as at 14 October 2010. JOHN BECKHAUS PHOTO

Several smaller sections, including Rehabilitation, First Aid, Safety and Ambulance occupied the fourth floor. The Rehabilitation Section comprised Kevin Marsh, Jack MacDonnell, two clerks, a typist and a junior. They dealt with Departmental staff from all over the state. Bert Fuller ran the Ambulance Section, while the Railway Appeals Board was also based on this floor.

My memory of the third floor is now hazy, but I think the First Aid Section and another unit were based here. The Railway Investigation Unit (VEST) occupied the entire second floor. It had been initiated in the 1930s to counter theft from trains and railway property. Arthur Whitaker was

RIGHT: View of Central Square in the 1940s with the Marcus Clarke department store on the left, 509 Pitt Street centre and the clock tower of Sydney Terminal Station on the right. COURTESY COLIN GILBERTSON

the Superintendent throughout my time there. His detectives and patrolmen were fully qualified at the NSW Police Academy and had the same powers of arrest and prosecution as members of the NSW Police Force.

The Claims Superintendent and his staff occupied the first floor, while the State Lottery Office was the tenant of the ground floor. The Railway Department's Lost Property Office and Auctions Section were in the basement. Those wonderful Seth Thomas regulator clocks were sometimes auctioned in the basement, while there was no shortage of 'brollies' on offer! Joe Tell, the lift driver, should not be overlooked.

Tentacles across the state

The sections described above may not seem to have a lot of relevance, but several had their own carriages to extend their function across the state. From time to time, the Medical Officers' Carriage, AG1007 (replaced by AG1856 in 1969), and the Employment Car, DEC26, went on trips to the farthest parts of the state. A doctor and a nurse went with the Medical Car and senior clerks travelled on the Employment Car. I hoped to get a billet on these jobs, but it was never offered!

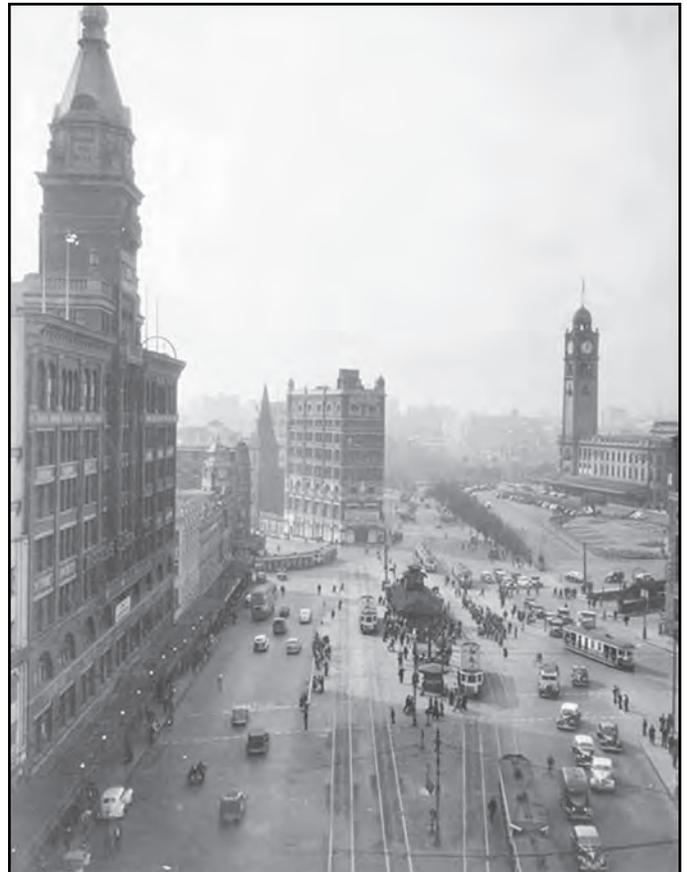
The Eyesight Car spent much of its time out and about at country depots and other locations. Subsequently, Ian Nicholson was allocated a mini-bus enabling him to stay at hotels. The eyesight chart in the carriage (and later the bus) was written backwards and viewed through a mirror to get the correct sighting range. These tests were demanding on the participants. At 509 Pitt Street, they had polished Masonite tables and you had to read a very faint print Ishihara number book 'confetti box' to pass for any job. Light from the window used to bounce off the table top into your eyes! It was all very tough. Professor Ishihara was a doctor with the Japanese Navy who developed these books for fighter pilots. It was no pass, no fly!

Periodic medical examinations were carried out for long-established staff at around two-year intervals, and more frequently if ill-health had been identified. Drivers suffering from Hypertension could only continue to drive ifostered on with a full-time basis with an acting-driver as crew-me. They could only wear glasses if 6/6 vision could be obtained in each and both eyes. Those who could not were taken 'off-the-road' and rostered as shunting drivers.

All oe-scenes people helped to keep the railway service and the public as safe and dependable as possible.

The Railway Investigation Unit

The issues reported in the media during the 1970s were limited were limited in comparison with the scale of corruption investigations that are reported in the media today. The Department of Railways sought to limit theft and corruption by ensuring that everything in the cash box went to the Comptroller of Accounts and Audit, who oversaw the financial security of the whole process. If anything went astray, VEST officers came barging through the door.



VEST officers were assigned to ride the Penrith to Katoomba after-school train in 1968. This was due to the damage that had been done to the train each school term, necessitating the car set going to Carriage Works at Eveleigh for repairs, so another car set was required. Students were pulling the stop-cord in Glenbrook tunnel, which exposed the crew to significant risk inspecting the train in the unlit tunnel. The VEST blitz lasted several weeks.

Conclusion

As outlined above, there is much information to be gained from the buildings depicted in the photograph on page 16 of the July 2016 issue of *Australian Railway History*. Today, the former Parcels Post Office adjacent to Central Station is a also hotel, as is the Camberg's Carpets building on the extreme left of the image.

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BYWAYS OF STEAM 31

This new edition of *Byways of Steam* focuses on the railways and industries of the Lithgow Valley and it is the grandest to date. It comprises two essays, Mark Langdon's 'The Railways and Industries of the Lithgow Valley' and Ray Love's story on the 'Lithgow Locomotive Depot of 1924'. Published by Eveleigh Press, PO Box 345 Matraville NSW 2036 in 2017. Card cover, 248 x 185mm, 233 b&w photos, 18 colour photos, one map and five diagrams. RRP \$50.00 (plus p&p if required) from ARHSnsw Bookshop, 67 Renwick Street, Redfern NSW 2016.

Byways of Steam 31 is an impressive addition to this Eveleigh Press stable of popular books on New South Wales railway topics. Following a short introduction, Mark Langdon provides a fascinating and well-illustrated account of the railways and industries of the Lithgow Valley.

The pioneer enterprises of Thomas Brown are well covered, but it was the opening of the Great Western Railway from the Clarence Tunnel to Bowenfels on 18 October 1869 that enabled the four pioneer coal mines in the Lithgow Valley to transport their product east to Sydney and beyond. Mark covers the copper smelters established in the valley and the blast furnace of the Eskbank Ironworks, which commenced operation in November 1875, while I found his coverage of the experimental freezing works opened by Thomas Mort in late 1874 of particular interest. This is accompanied by two photographs of Mort's Lithgow Valley freezing works and one of the special vans Mort used to transport his frozen meat to Darling Harbour sourced from the State Library of NSW collection, which as far as I am aware, have not previously been published.

A six-page fold-out features an excellent map of the historical railway sidings in the Lithgow Valley, a 1130mm wide panoramic photo of the Lithgow Valley in 1911 and a 700mm wide panoramic image of the valley in June 1928.

The establishment of Lithgow township and the emergence of Australia's pioneer integrated iron and steel works in 1870 are covered in some detail and there is a brief coverage of the Lithgow Small Arms Factory. These are well illustrated with similar photographs to those used in the LRRSA book *Furnace, Fire & Forge* published in 2006. I was particularly impressed with the presentation of the Baldwin-built 131 Class 2-8-0 locomotive with its crew from the Lithgow Library Learning Centre on pages 28-29.

Ray Love's essay covers the 'modern' steam locomotive

depot No. 23 opened at Corneytown on the eastern outskirts of Lithgow in June 1924. Given the introduction of 57 Class 4-8-2 locomotives, the 75ft turntable initially installed was inadequate, so a 90ft turntable replaced it on 21 October 1929. This in turn was replaced by a shortened 105ft turntable in March 1961.

Surprisingly, the 1924 locomotive depot did not receive coaling facilities, so locomotives had to be coaled at the old Eskbank facility built over three tracks, one of which was the engine coaling road. Although a 300-ton mechanised Holmen coaling plant was proposed for Lithgow in December 1925, it did not eventuate and, while the labour-intensive Eskbank facility received a 100 ton coaling bin in December 1933, locomotives based at Lithgow continued to be coaled at the labour-intensive Eskbank facility until late 1967.

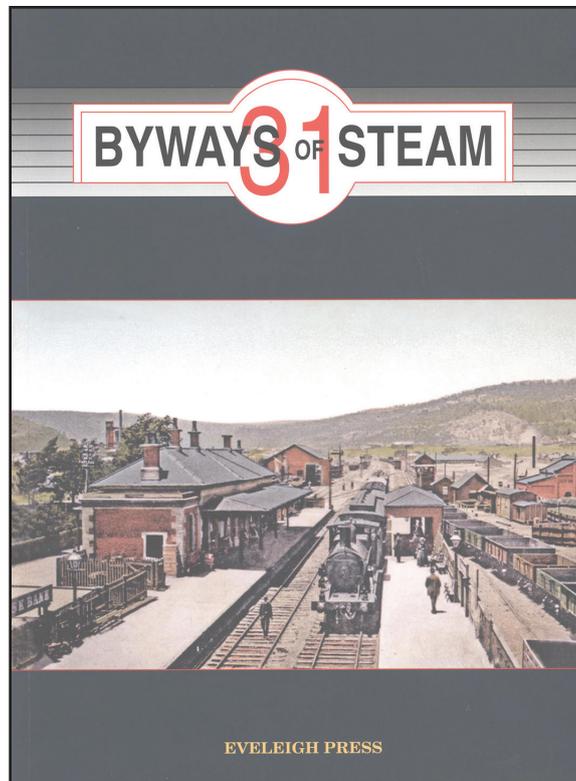
Ray provides detailed information on the locomotives based at the Lithgow depot in his profusely illustrated essay and also covers the lines on which Lithgow engines operated.

Of particular interest are the profiles on two Lithgow enginemen, Hilton Raymond Luck, who was based at Lithgow from August 1924 until May 1952; and his son, Raymond Alexander Luck, who joined the NSW Railways at Lithgow in August 1935. Apart from four months at Broken Hill, he remained at Lithgow until transferred to Broadmeadow as a 'Steam Driver Special Class' in January 1966.

Most images are in greyscale, but there are three double-page colour photo spreads towards the end of Ray's essay. The photographs cover a wide range of railway scenes at Lithgow and the lines operated by Lithgow-based locomotives that capture the character of the area and era.

At \$50 from the ARHSnsw Bookshop, *Byways of Steam 31* is highly recommended.

Bob McKillop



Reader's Request

ARH 959, September 2017

I was intrigued by Don Hagarty's request.

The subject of his enquiry was in fact Major H C Antill, *aide de camp* to Governor Lachlan Macquarie, who was granted land at Stonequarry by Governor Brisbane in 1822. The Antill Park Country Club now occupies part of that grant, with the homestead, constructed by his son, as the clubhouse. He was the patriarch of the Antill family of soldiers and pastoralists (having pioneered the raising of Ayrshire cattle in NSW) and of the Pockley family of ophthalmic surgeons and scientists. He was a colleague of John Macarthur on the magistrate's bench and died at Picton in 1852.

While I have no direct source for W A Bayley's assertion, there may be a clue in the *Sydney Morning Herald* of 30 January 1857 at page 2 [found on Trove], which refers to a Parliamentary paper on the Appin to Mittagong railway, and quotes extensively from correspondence between Sir Thomas Mitchell and William Shone, dating from 1847. I am wondering whether Antill's comments may be in contemporaneous correspondence which is included in the Parliamentary report. As police magistrate in the district at the time of Shone's survey, he would have been well aware of that exercise. I cannot find any reference in the digitised newspapers of the period to

Antill's comments. A search of Trove with the keywords "railway Appin Mittagong" comes up with several other contemporary reports, including one which refers to influences seeking the deviation of the line south of Campbelltown, but no direct reference.

I know from my time as archives officer many years ago that the ARHS collection held many of these Parliamentary enquiries, so there may be some clues therein. The State Library holds the Antill family papers, but the catalogue record does not suggest anything relevant.

Graham Smith, Kurri Kurri 2327

Correction September ARH, page 25

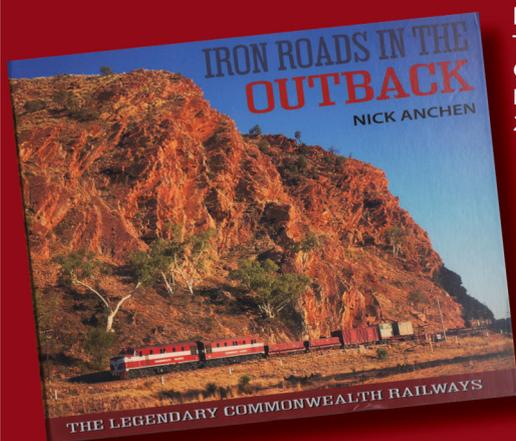
My apologies to readers for the spelling errors in the box at the bottom of page 25 in the September *Australian Railway History* magazine.

This occurred after the magazine had been uploaded to the printer, as I discovered that there was a signifi-

cant void at the bottom of this page. To fill this space, I decided to include an update on some forthcoming articles for *ARH*, but evidently I overlooked correcting several spelling errors.

Editor

What's New at the ARHSnsw Railway Bookshop



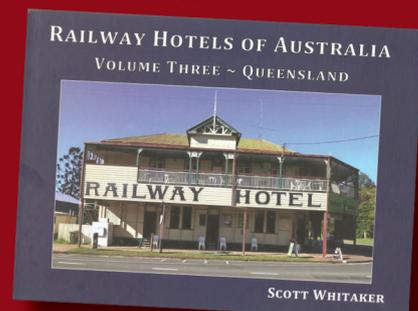
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G Class 4-6-0 locomotive G1 on display in the Commonwealth Railways pavilion at the National Railway Museum at Port Adelaide on 2 January 2010. This pioneer locomotive is the sole survivor from the steam era on the Trans-Australian Railway. BOB MCKILLOP PHOTO

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