MODELLING THE RAILWAYS OF QUEENSLAND
39

CONVENTION 2008

SOME UNIQUE FEATURES OF QUEENSLAND LOCOMOTIVES

John Armstrong

Firstly, the thrust of this discussion is towards QGR locomotives and not as much towards locomotives of private and light railways, though a number are included. Why? There are so many odd things that were done on our industrial lines that inevitably I would miss half of them! Secondly, what does "unique" mean? Synonyms for it include 'only one of its kind', 'exclusive', 'exceptional', 'inimitable' and 'rare'. So that should give plenty of scope!

But do we limit the discussion of uniqueness to 3 feet 6 inch gauge railways? Or do we include other gauges? Do we limit it to the Australasian region, or hope that it's right to claim it is unique worldwide? I will take a wobbly path and do a bit of both!

There are things that you may think were unique to Queensland that in fact were not. For example, you may think that the capuchins on QGR loco chimneys were unique. But you would be wrong. They were used on Belgian, French and other railways.

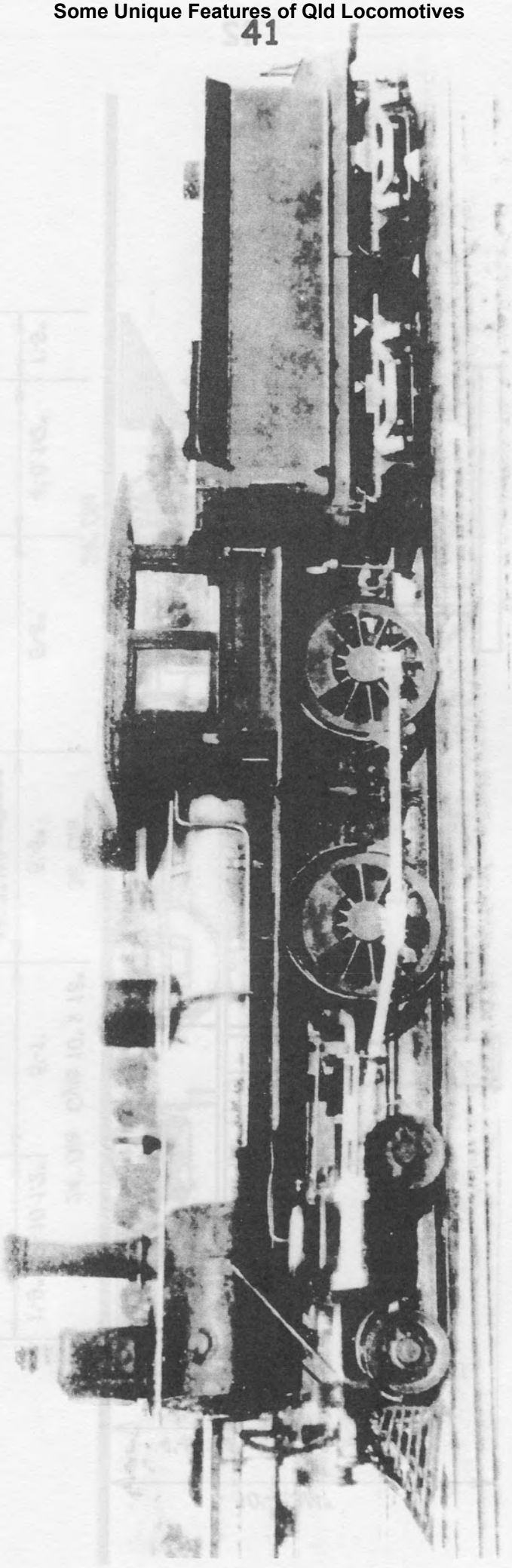
What I am presenting is what I think is or was unique in this State. It will include things that were unique at the time they were introduced but not necessarily now. It may include some items that were in fact unique but not exclusive.

1. GOVERNMENT STEAM LOCOMOTIVES

1. The first Queensland locomotives were named and not numbered, which was fairly unusual as railways generally started their fleet from 1. Naming of locomotives was abandoned after these first four entered service. The next batch, from a different builder was to be numbered 1 to 4 and that company cast number plates for them accordingly. However, they were asked to supply an additional four pair of number plates 5 to 8. All these plates used the European abbreviation "No." for Numero or number. As it turned out, Nos 1 to 4 were fitted to the already named engines and the spare plates 8 were attached to the second batch. After this episode there was little naming of government locomotives! But numbering again became a problem.
2. Several separate railways were built by the government in Queensland. The stock of each line was numbered from 1 with the result that, when some of the lines were about to be connected, the stock on all except the first one had to be renumbered. So there were several spare sets of low locomotive numbers around at that time. Renumbering took place on other railways but what became unique to the QGR was that from about the First World War to 1927 the practice developed of reusing old numberplates off earlier engines when they were withdrawn from service. The old numberplates were put onto new engines, causing some very strange results. For example, numbers of the 1924 PB15 type ranged from 5 to 751. Yet there were only 30 of them! C17's carried numbers from 2 to 1000. The first B18¼ was numbered 84, yet others built four years later carried numbers ranging from 16 to 52!
3. During the early days, the locos were classed by letter. Those in use got as far as F and G was about to be used. However, by then there were something like 20 different kinds of engines classed under these six letters – and that does not include others not grouped under letters at all. Some of them were simply described by wheel arrangement (eg

'Consolidation') or builder (eg Baldwin, Dubs, Kitson). Then someone tried to introduce a system where they would be classed by wheel arrangement and cylinder diameter in inches – such as a 2-6-0-12 or a 4-6-0-13. Finally just after 1890 a compromise was adopted using a letter to indicate the number of driving wheels followed by a figure to indicate the cylinder diameter (eg B12, B13). All tank engines were classed D. But as there were 4, 6 and 8 coupled ones in service at the time, they had to have a number added in front to indicate this. Not an auspicious start! It got worse as there were different kinds of engines with the same number of driving wheels and cylinder diameters. So it became necessary to distinguish some by adding the builder's name again. In later years this practice was abandoned and doubling up of letters was resorted to – and that's how we get such a strange animal as a BB18¼! Now that's unique.

4. A design of cowcatcher using horizontal steel angles as opposed to the common practice in USA and elsewhere of using tubes with flattened ends was adopted, resulting in the inimitable type that characterized QR engines built before 1950.
5. Another rare feature in the nineteenth century was fitting cowcatchers on the front and rear of tank engines. Cowcatchers were fabricated for the 1901 6D16 class tankers, too, but they were not fitted.
6. An item even the official historian of Baldwin Locomotive Works found unique was the use of visor roofs on locomotives, these being fitted to engines supplied to Queensland in the 1880s by that company. A front visor or sunshade had been used on earlier engines with fairly basic cabs, but it was strange to fit them to the enclosed and glazed American cabs.
7. Because of the high ash content of many Queensland coals, there must have been problems with the fireboxes of the early British designed engines and by the late 1880s, Queensland adopted rocker bars, one of the early and outstanding features that enabled ashes to be dumped at watering and pit stops and complete removal of the fire bed after a run. Rocker bars could also be used to break up a solidified fire by giving it a bit of a shake en route if necessary. This was a far better arrangement than the old English style of drop grate, where the fire or ashes had to be raked to the opening part of the grate.
8. Another development to aid fuel combustion was the introduction of extended smoke boxes, first fitted to engines on the Central Railway in days long before many other railways adopted them.
9. Possibly stemming from this was the rather unique design of smokebox door used on all conventional QR steam locos since that time.
10. Similarly, an early and rather unique development was de-ashing smoke boxes by use of a chute and steam jet. This beat the old style still used on many railways up until the twilight of steam of having to open the firebox door and shovel it out!
11. Another interesting feature of QGR operations in the nineteenth century was the extended use of the 4-4-0 or 'American' wheel arrangement. Until the PB15s came along at the turn of the century, all mail trains were handled by these relatively small engines, which formed the largest fleet of their kind in Australia.
12. Still in the nineteenth century, the Baldwin Loco Works designed a boiler top sandbox with a wide base, narrower cylindrical body and hemispherical top with a teapot style lid. It replaced the pepper pot style used earlier engines but was soon superseded by the builders by more streamlined looking domes. In Queensland, however, the teapot lid sandbox continued to be used right up to 1953. Today you can see them on preserved PB15, C17 and other engines.
13. Queensland had helped to pioneer development of 3ft 6 in gauge steam locomotives but by the 1890s, larger and heavier ones were being designed for the Cape Government Railways in South Africa. The local civil and mechanical engineers agreed to increase the permissible weight of QGR locomotives but it was a comparatively conservative

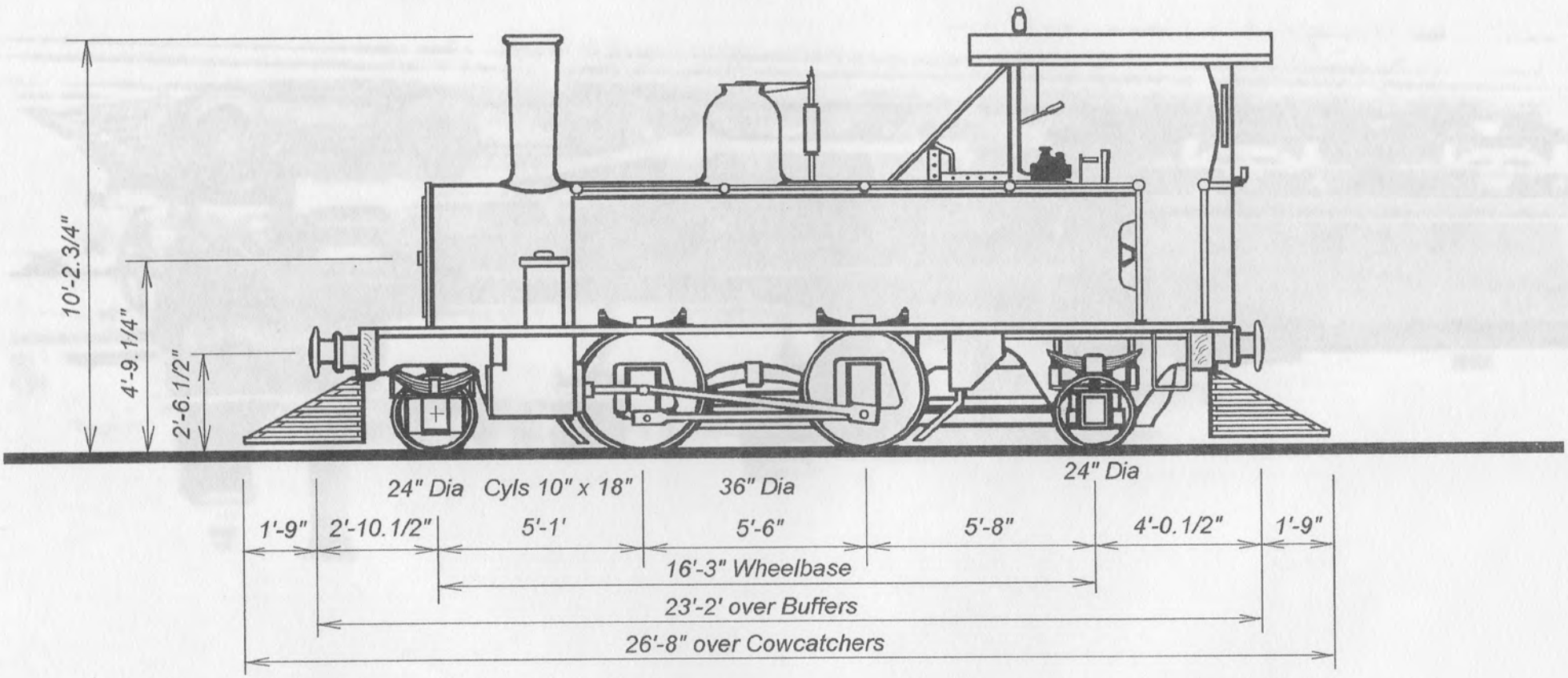


A12 locomotive with visored roof

4D10 CLASS

2-4-2T Ex Neilson "B" (A10) Class

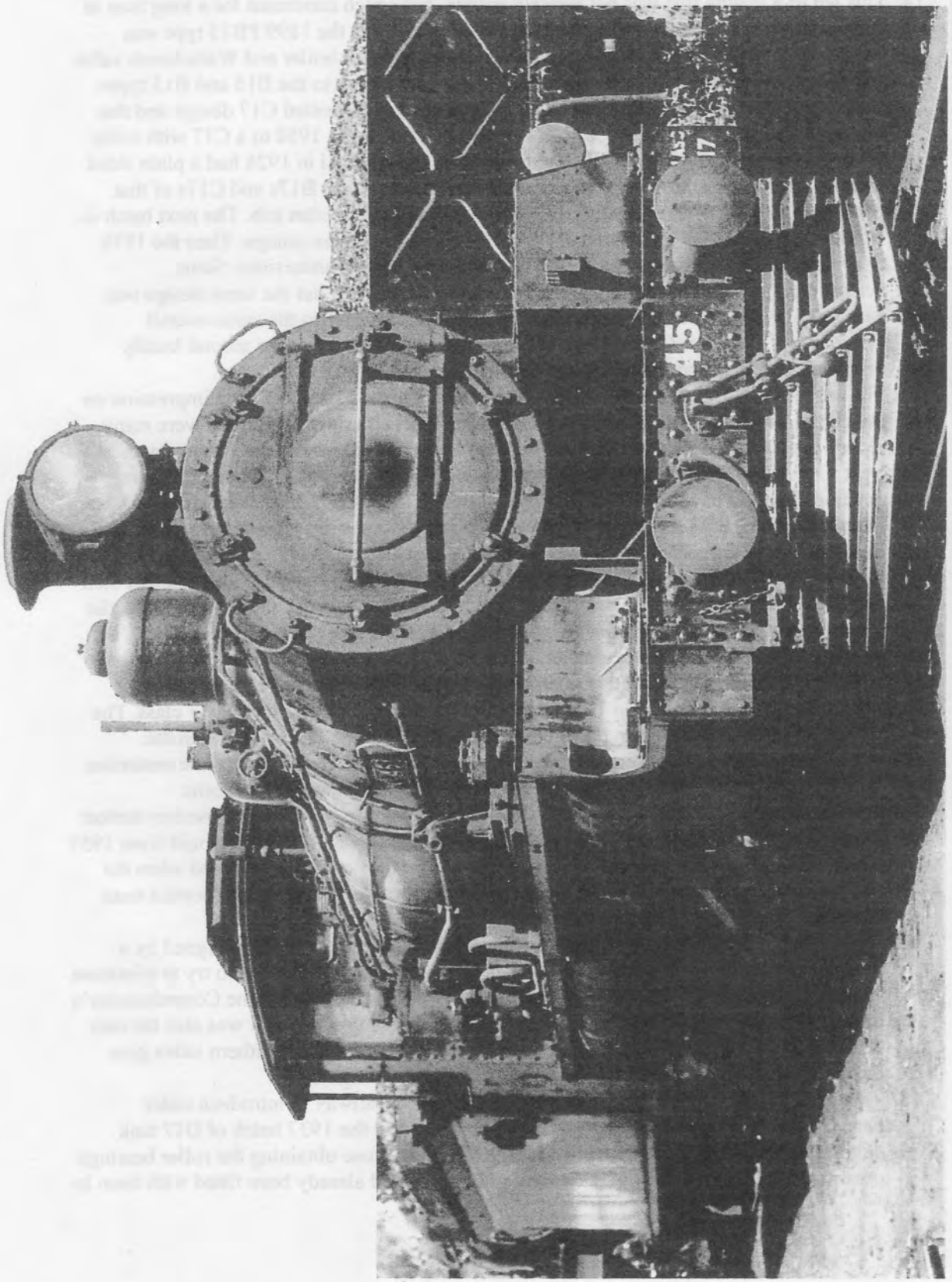
From General Arrangement Drawing 575
"Tank Engine - alteration from 'B' class" 2-4-1887



Cylinders 10" x 18" Boiler Pressure 120 lns sq. inch	8'-6" Boiler Barrel 88 boiler Tubes 1.3/4" diameter	Coal 1 ton Water 600 gallons

JA 11 78 redrawn 2 08

COWCATCHERS FRONT AND REAR



Q.R. STYLE COWCATCHER

C17 No. 45

increase. The externally appointed CMEs' Nisbet and Nutt unsuccessfully advocated a much larger increase. Most main lines and bridges eventually received the modest upgrade but until diesels came along in 1952, the axle load to which main line engines had been built was still in force. This in itself was unique as locomotives built 50 years later were still restricted to the old turn of the century standard!

14. This led to a feature that was not entirely unique, but which continued for a long time in Queensland – the repeated updating of basic designs. Thus the 1899 PB15 type was updated to the1924 type with bigger tenders, higher pitched boiler and Walschaerts valve gear. The development of the PB15 itself can be traced back to the B15 and B13 types. Next, the C16 that was a saturated engine became the superheated C17 design and this was modified in 1938 to a C17 with B18¼ type tender and in 1950 to a C17 with roller bearings. The first and last B18¼ engines varied. The original in 1926 had a plain sided cab and a riveted tender similar in shape and size to the C16s, B17s and C17s of that period. The 1935 B18¼ with slightly modified boiler had a sedan cab. The next batch in 1936 had a tumble top tender and 7-80" cross compound brake pumps. Then the 1939 batch had Laird crossheads and welded tenders with curved undersides. Some performance enhancing changes were made to piston valves, but the same design was persevered with culminating in the BB18¼ type built in 1951 to the same overall dimensions but with roller bearings and a larger tender – and just the second locally designed loco to discard the Baldwin sandbox.
15. The operation of trains at night with a kerosene headlamp to make a little impression on the gloom when tracks abounded in unprotected level crossings (and there were many places domestic and wild animals could stray onto the line) was hazardous to say the least. One would have thought that the fitting of electric headlamps when they were developed would have had a big priority. Not so! They appeared in Queensland in 1925 intended for the 1924 PB15 class but more than thirty years later, some locos were still running around with kerosene lamps, even suburban D16 and D17 tank engines. In 1951, the D17s eventually got cast offs from AC16 locos that were out of service and not then expected to be repaired. It is also interesting to note when electric lights were fitted, the progression forwards of the turbo generators. From their original position on top of the boiler between the cab and rear steam dome, they were relocated to a position between steam dome and sandbox a bit further away, then to just behind the chimney on the wartime AC16s and finally in 1948 to the front of the chimney on the DD17 class. The D17 class followed suit when they acquired electric lighting. However, when the headlamps of the B18¼s were relocated from the top of the smoke box to the centreline of the boiler their generators remained between the sandbox and steam dome.
16. Strange as it may seem, the use of oil side lamps on tenders, which were used as marker lights, continued right up until the last batch of BB18¼ steam locos were built from 1955 onwards. These lamps were mounted near the cab so they could be reversed when the loco was passing from single to double track or vice versa to indicate the correct train marker code.
17. Some other unique design features were used - Lobb's spark arrestor, designed by a workshops employee at Ipswich that was fitted to a number of engines to try to eliminate sparks. The sole B16½ engine 204 was unique as it was designed, at the Commissioner's insistence, to burn coke to reduce smoke in Brisbane's city tunnels. It was also the only "Prairie" type engine used by the QGR and the only one to have Southern valve gear. Experiments with coke were made with D16 and a C16 engines.
18. The QGR was innovative by being the first Australian railway to introduce roller bearings on loco driving axles. The first to be fitted was the 1937 batch of D17 tank engines commencing with 853. However, a difficulty arose obtaining the roller bearings pre-war and only one was fitted. Several rail motors had already been fitted with them by

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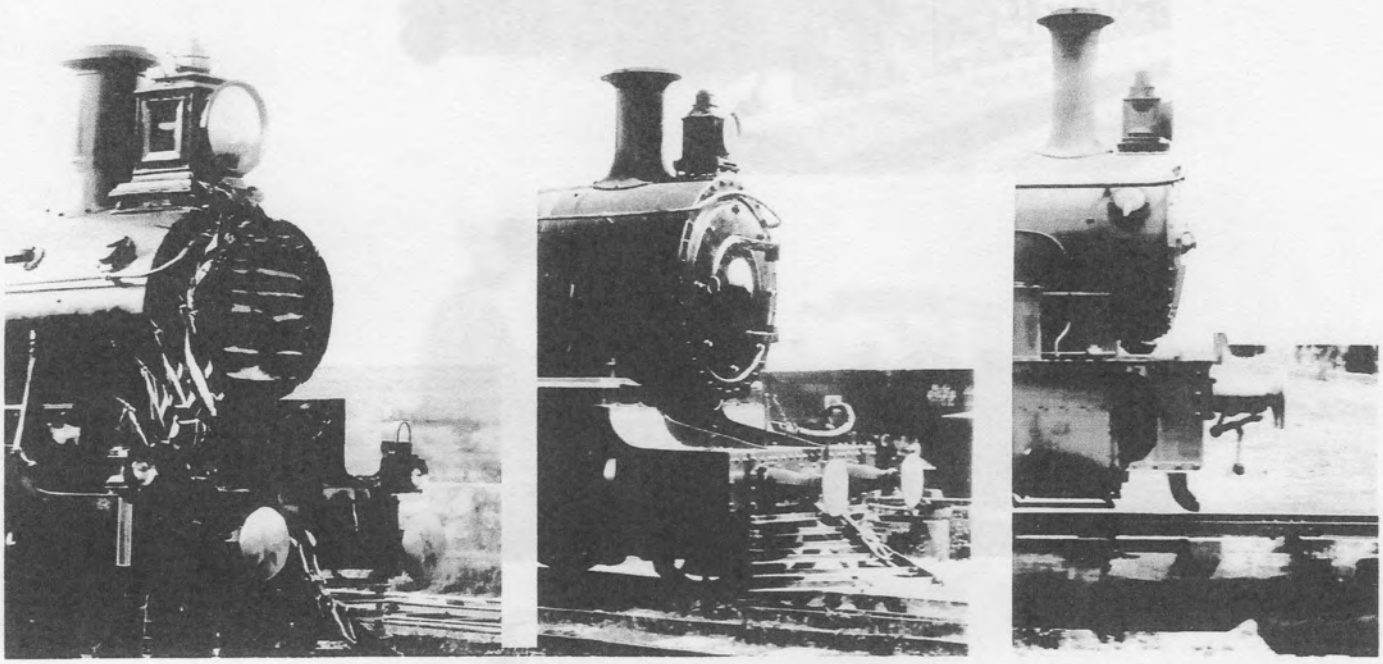
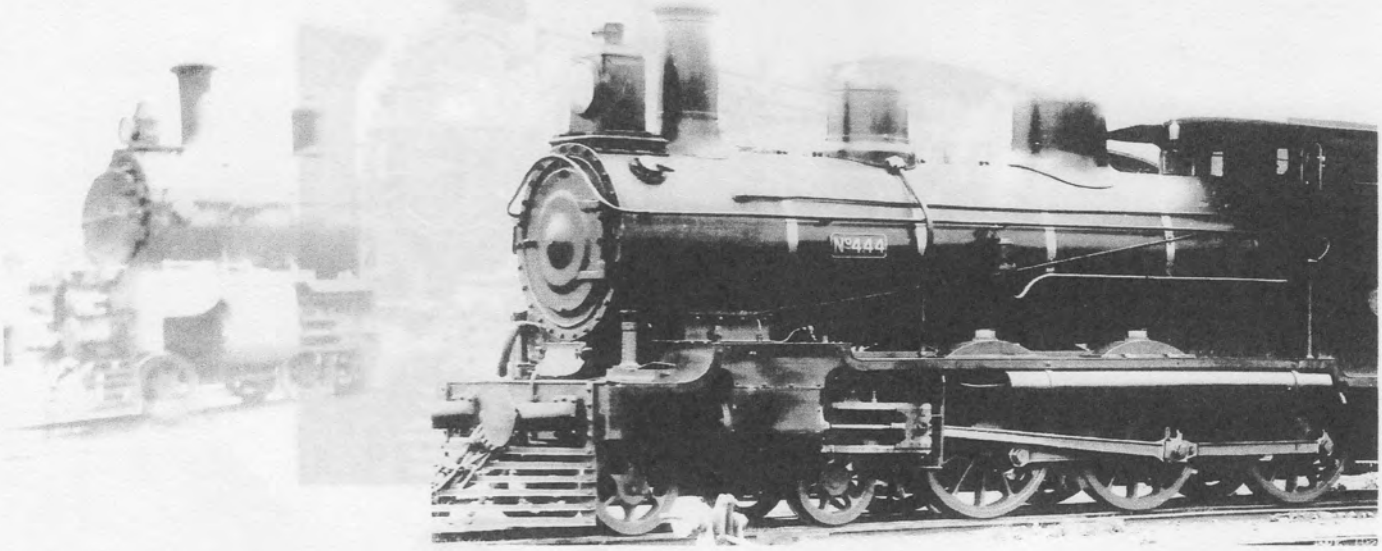
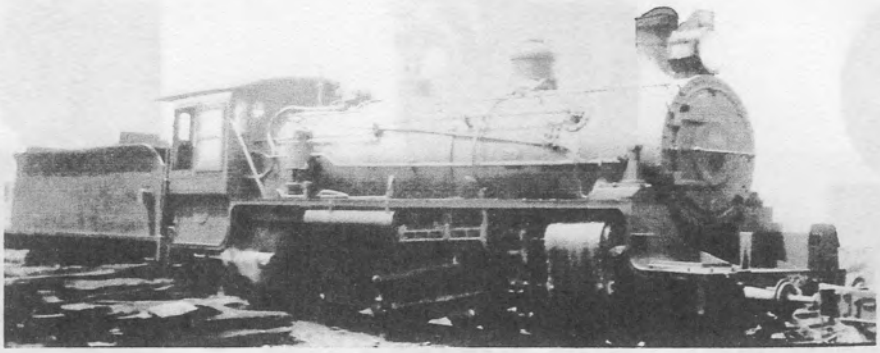
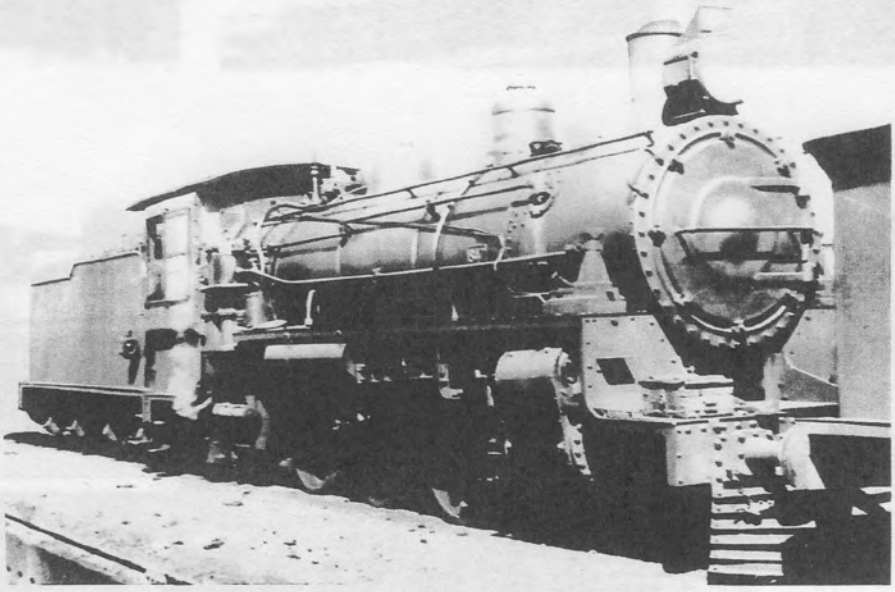
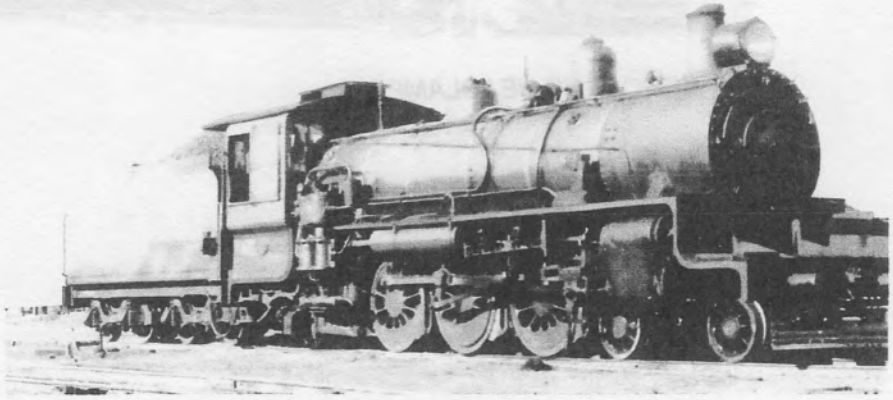




KEROSENE HEADLAMPS







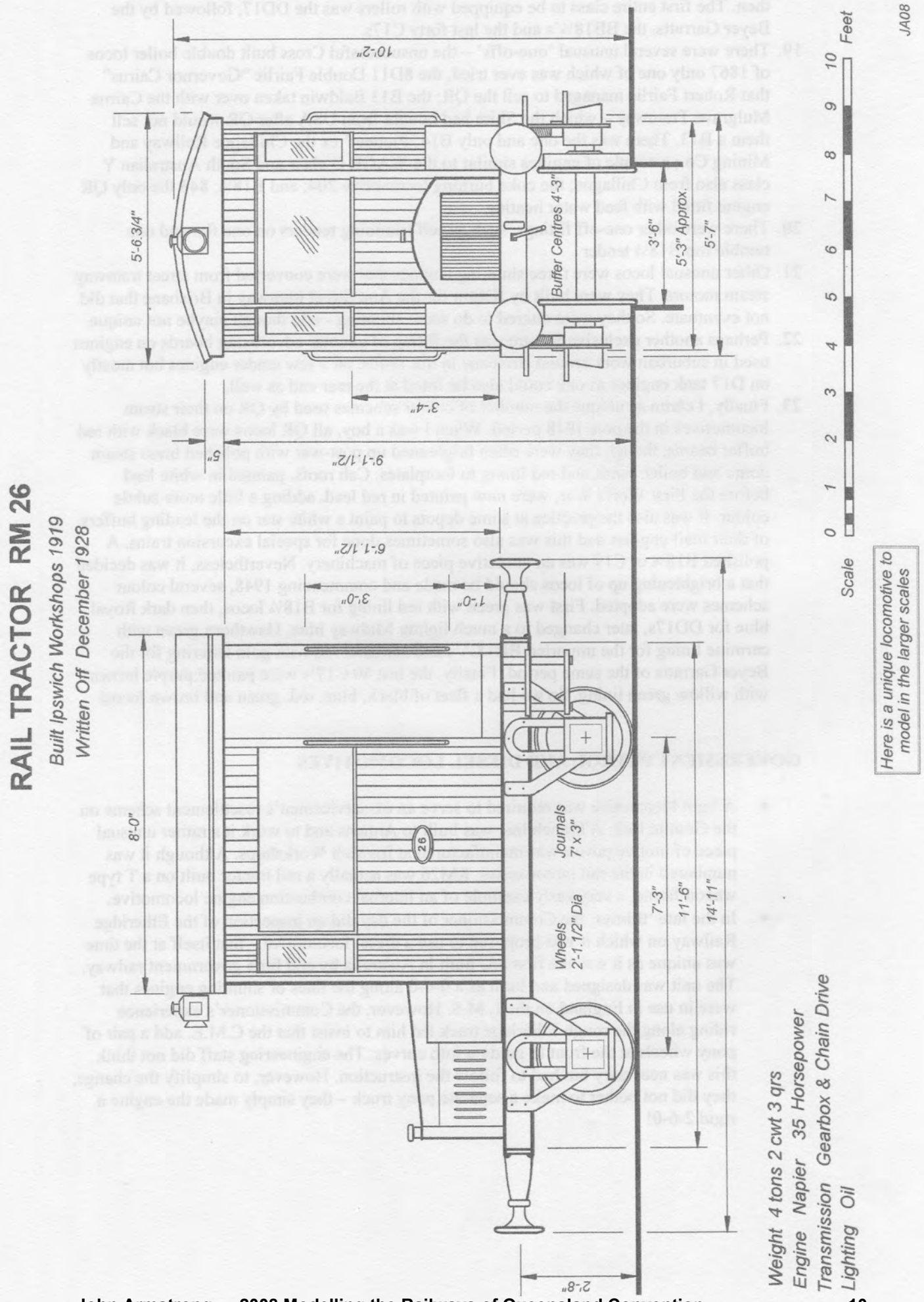
B18 1/4 original, 1935, 1936 & 1938

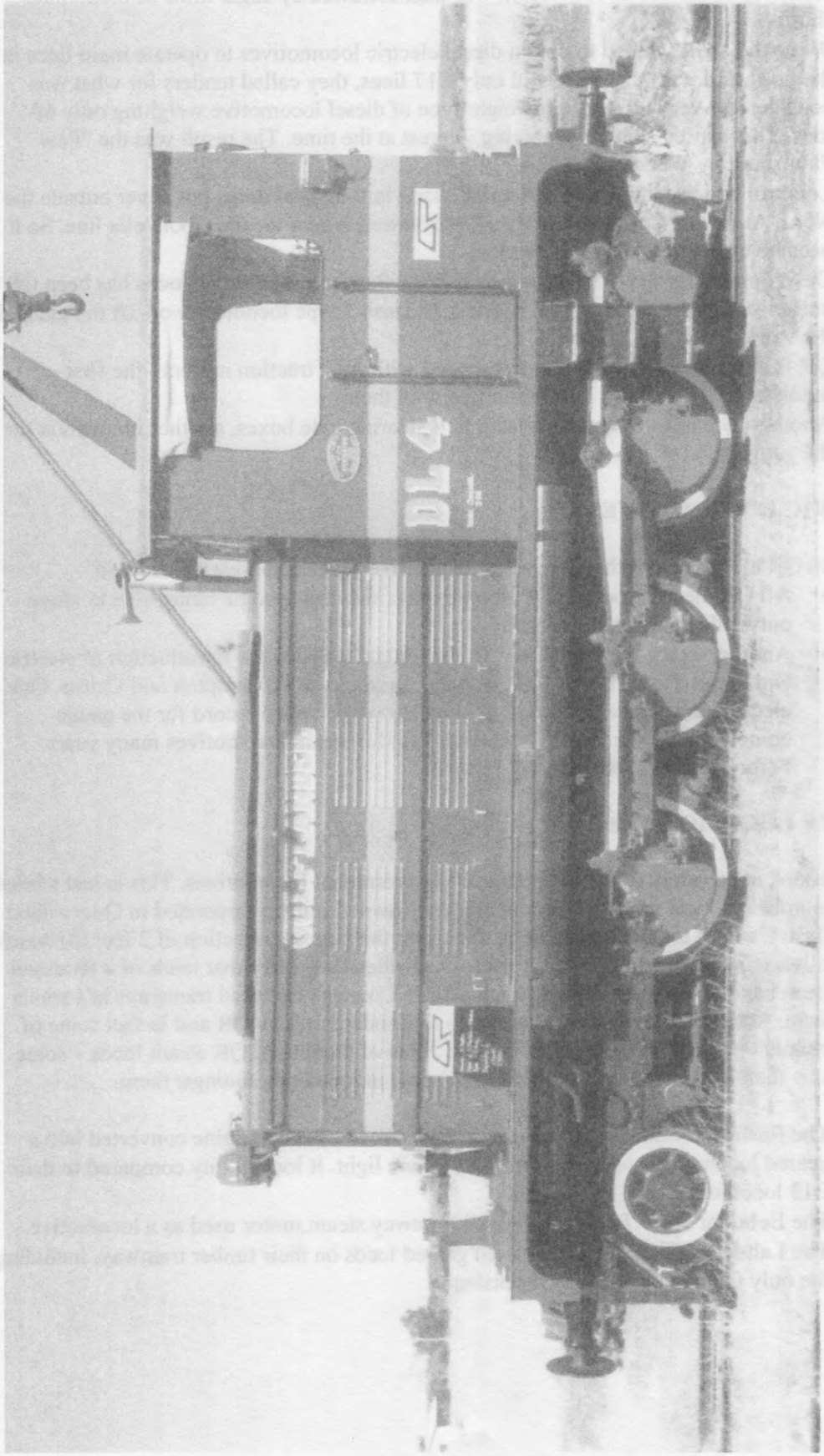
then. The first entire class to be equipped with rollers was the DD17, followed by the Beyer Garratts, the BB18¼'s and the last forty C17s.

19. There were several unusual 'one-offs' – the unsuccessful Cross built double boiler locos of 1867 only one of which was ever tried, the 8D11 Double Fairlie "Governor Cairns" that Robert Fairlie managed to sell the QR; the B13 Baldwin taken over with the Cairns Mulgrave Tramway – which the Shire had bought from USA after QR would not sell them a B13. There was the one and only B14 'Pioneer' ex the Chillagoe Railway and Mining Co.; a couple of engines similar to the WAGR G class and South Australian Y class also from Chillagoe; the coke burning locomotive 204; and B18¼, 843 the only QR engine fitted with feed water heating.
20. There were other one-off fittings, such as self trimming tenders on one flat and one tumble top B18¼ tender
21. Other unusual locos were three shunting engines that were converted from street tramway steam motors. They were built by Kitson for the Ann Street tramway in Brisbane that did not eventuate. So they were altered to do some shunting - odd though maybe not unique.
22. Perhaps another exclusive feature was the fitting of circular advertising boards on engines used in suburban work around Brisbane in the 1940s, on a few tender engines but mostly on D17 tank engines as one could also be fitted at the rear end as well.
23. Finally, I claim as unique the number of colour schemes used by QR on their steam locomotives in the post 1948 period. When I was a boy, all QR locos were black with red buffer beams, though they were often brightened up post-war with polished brass steam dome and boiler bands and red lining to footplates. Cab roofs, painted in white lead before the First World War, were now painted in red lead, adding a little more subtle colour. It was also the practice at some depots to paint a white star on the leading buffers of their mail engines and this was also sometimes done for special excursion trains. A polished B18¼ or C19 was an attractive piece of machinery. Nevertheless, it was decided that a brightening up of locos should be made and commencing 1948, several colour schemes were adopted. First was green with red lining for B18¼ locos, then dark Royal blue for DD17s, later changed to a much lighter Midway blue, Hawthorn green with carmine lining for the imported BB18¼'s and Midland red with gold lettering for the Beyer Garratts of the same period. Finally, the last 40 C17's were painted purple brown with willow green lining. So we had a fleet of black, blue, red, green and brown locos!

GOVERNMENT PETROL AND DIESEL LOCOMOTIVES

- A light locomotive was required to serve an ex-servicemen's resettlement scheme on the Granite Belt. A branch line was built to Amiens and to work it a rather unusual piece of motive power was manufactured at Ipswich Workshops. Although it was numbered in the rail motor series, RM26 was actually a rail tractor built on a T type wagon frame, a very early example of an internal combustion engine locomotive.
- In the late 'thirties, the Commissioner of the day did an inspection of the Etheridge Railway on which it was proposed to use a diesel locomotive – that itself at the time was unique as it was the first one built in Australia by and for a government railway. The unit was designed and built as a 0-6-0 along the lines of shunting engines that were in use in England on the L.M.S. However, the Commissioner's experience riding along the rough Etheridge track led him to insist that the C.M.E. add a pair of pony wheels at the front to guide it into curves. The engineering staff did not think this was necessary but had to follow the instruction. However, to simplify the change, they did not bother to make a separate pony truck – they simply made the engine a rigid 2-6-0!


RAIL TRACTOR RM 26
Built Ipswich Workshops 1919
Written Off December 1928
10'-2"
5'-6.3/4"
Buffer Centres 4'-3"
3'-6"
5'-3" Approx.
5'-7"
3'-4"
5"
9'-1.1/2"
6'-1.1/2"
3'-0"
1'-0"
8'-0"
26
Journals
7" x 3"
Wheels
2'-1.1/2" Dia
7'-3"
11'-6"
14'-11"
2'-8"
0 1 2 3 4 5 6 7 8 9 10 Feet
Scale
JA08
Here is a unique locomotive to model in the larger scales
Weight 4 tons 2 cwt 3 qrs
Engine Napier 35 Horsepower
Transmission Gearbox & Chain Drive
Lighting Oil



DL4 THE FINAL 2-6-0 DIESEL MECHANICAL LOCOMOTIVE

- When the Aramac Shire obtained a diesel hydraulic loco to replace their Com-Eng diesel, they successfully offered it to the QR. However, instead of using it on the 3ft 6 in gauge, Ipswich workshops altered it to run on the 2 feet gauge Innisfail Tramway. This sort of conversion was later followed by sugar mills as mentioned shortly.
- When the QGR wanted to obtain diesel electric locomotives to operate main lines in the north and west that were still only C17 lines, they called tenders for what was considered a very unique lightweight type of diesel locomotive weighing only 60 tons. This caused some engineering interest at the time. The result was the "Paw Paw" built by Walkers Limited.
- Locotrol had been tried in USA and Canada in long coal drags but never outside the North American Continent, until QR introduced it here for the Goonyella line. So it became unique outside the Americas.
- Development far from the lightweight "Paw Paw" diesel electric locos has been QR's unique use of the first General Electric 30 Dash 7 type locomotive on 3ft 6in gauge in the world.
- QR is also operates diesel locos equipped with A.C. traction motors - the first medium gauge locos in Australia fitted with them.
- Another recent development is with Self steering axle boxes, another innovation for the gauge.

ELECTRIC LOCOMOTIVES

Turning to QR electric locos there are a few distinctive features amongst them, too.

- All QR electric locos are Tri-bogie units, the centre bogie being able to move outwards to negotiate curves.
- Another exclusive feature for 3ft 6in gauge has been the introduction of electric and diesel Tilt trains that run between Brisbane, Rockhampton and Cairns. One electric unit is also unique in holding the world speed record for the gauge coincidentally the same as the record set for steam locomotives many years beforehand by "Mallard" – 126 mph!

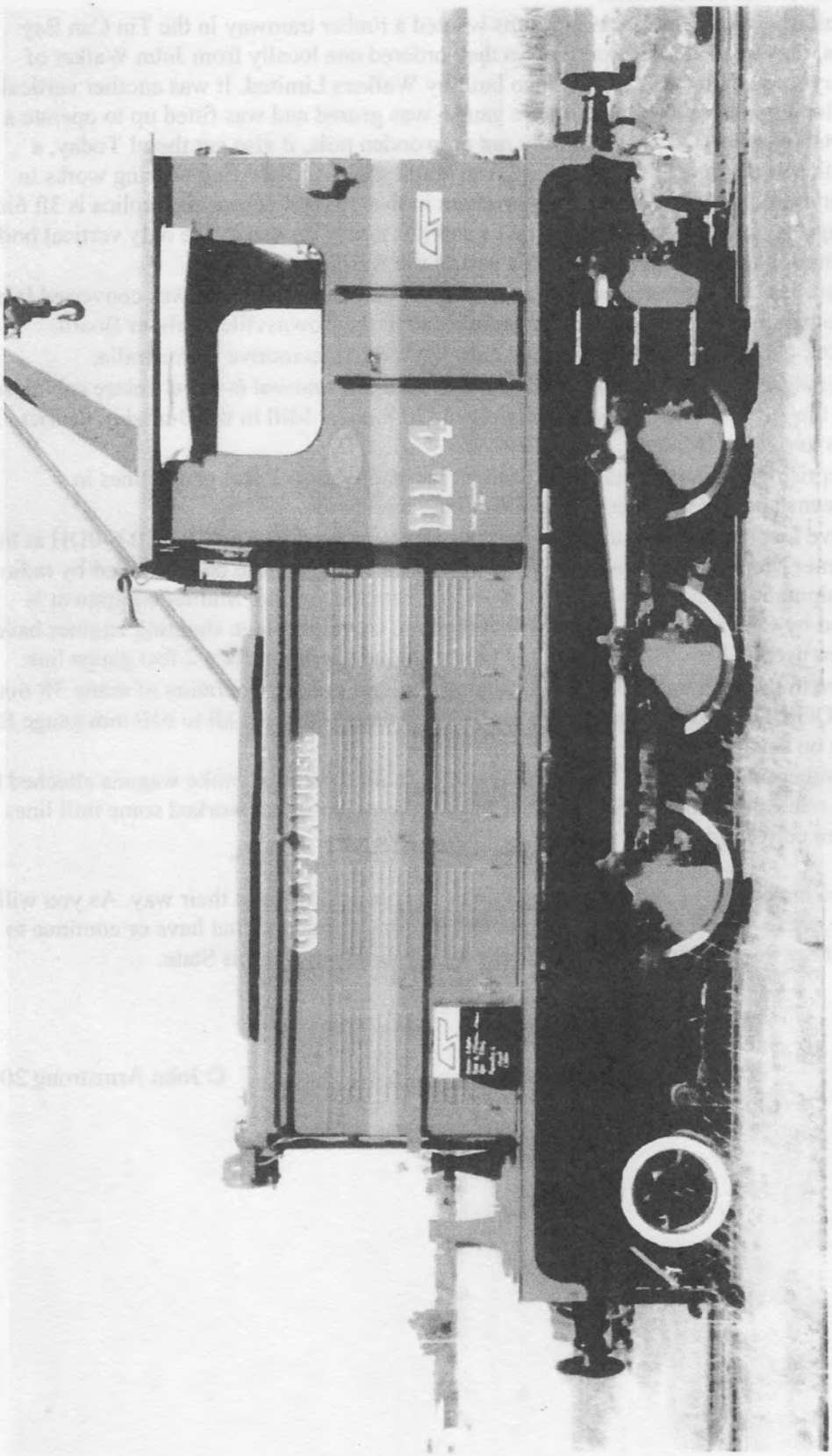
PRIVATE LOCOMOTIVES

Finally, a look at privately owned as opposed to government locomotives. This is just a brief overview. A number of local government and privately owned railways operated in Queensland. The sugar industry's lines today are unique as they form the largest collection of 2 feet (610mm) gauge light railways in the world. People are surprised when they learn that loads of a thousand tonnes have been handled on these narrow tracks. Shire Councils operated tramways in various parts of the State. Actually, they had to measure up to standards set by QR and in fact some of them were actually operated on their behalf by QR. Most of them used QR steam locos – some being bought by them second hand. But there were some unique ones amongst them.

- The Beaudesert Shire Council used a Foden road traction engine converted into a geared locomotive when their traffic became light. It looked tiny compared to their B13 locomotive.
- The Belmont Shire Tramways' street tramway steam motor used as a locomotive.
- The Lahey family at Canungra used geared locos on their timber tramway, including the only Climax that ran in Queensland

- Maroochy Shire Council and later Moreton Central mill operated two geared locos for many years – the only two 2ft gauge Shay locos in Australia.
- Douglas Shire in far North Queensland operated a public 2 feet gauge tramway on which ran a Mallet loco, unique to the country.
- The first loco in the Mackay district was John Spiller's first locomotive, a locally built vertical boiler affair.
- Similarly, when Pettigrew and Sims wanted a timber tramway in the Tin Can Bay area, they needed a locomotive. So they ordered one locally from John Walker of Maryborough. It was the first loco built by Walkers Limited. It was another vertical boiler engine. It was around metre gauge, was geared and was fitted up to operate a portable sawbench. So it not only ran on wooden rails, it also cut them! Today, a replica of this machine, the "Mary Ann" built at Peter Olds' Engineering works in Maryborough regularly does a tourist run in that city. Of course the replica is 3ft 6in gauge so it can run on existing tracks and it is surely unique as the only vertical boiler steam locomotive operating in this part of the world!
- There was another vertical boiler engine, which was strange as it was converted from a conventional government tank engine sold to the Townsville Harbour Board.
- Cattle Creek mill's Borsig was the only 'Atlantic' locomotive in Australia.
- Turning to diesel operation, Walkers also built this unusual 6-wheel centre cab diesel for the Aramac Shire which was later sold to Pioneer Mill in the Burdekin district.. It was known as 'Mango'.
- Surprisingly, Locotrol has been used on locomotives on 2 feet gauge lines in Queensland and this must surely be unique worldwide.
- Slave locomotives of another variety also have been tried. The Clyde 0-6-0DH at the former Moreton Mill was an example, the idea being for it to be controlled by radio equipment carried by an operator working from the ground. Similar equipment is used by CSR at their Victoria Mill at Ingham. Certainly slave shunting engines have been used in New Zealand but it is rather unique operation for a 2 feet gauge line.
- Rare in the world also was the regauging for light railway operators of many 3ft 6in ex QGR DH and standard gauge ex NSW 73 class DH locos all to 610 mm gauge for use on sugar lines.
- Another unique feature has been the use of radio controlled brake wagons attached to the rear of cane trains. Some of the former diesel locos that worked some mill lines were converted for this use.

So there you have some of the interesting things that are so unique in their way. As you will now realize, there were a number of unique features in Queensland that have or continue to form part of the fascination of the varied operations of railways in this State.



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