



GREAT WESTERN
MOGULS
& PRAIRIES



DAVID MAIDMENT



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PROFILE OF GWR'S LARGE & SMALL
2-6-2 TANKS, 2-6-0 43XX MOGULS
AND OTHER PRAIRIE TANKS AND MOGULS THAT OPERATED
ON THE GWR BETWEEN 1922 AND 1965



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Cover photo:

Small Prairie 4566, built in October 1924 and now preserved in BR plain
black livery, operating on the Severn Valley Railway in 2014, shown here
ex-works in BR lined green livery at Truro, 22 July 1960. R.C. Riley

Back cover photo:

Churchward Mogul 4358, built in April 1914 and withdrawn in August
1959, at Swindon in BR lined green livery, 16 June 1957. 4358 was one of
the last four survivors of the original 43XX series built before or during
the First World War. R.C. Riley

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I wish to offer grateful thanks too for access to the photographic collection of R.C. Riley, made available to me by his widow, Christine, and friend, Rodney Lissenden; to Paul Shackcloth and the Manchester Locomotive Society, their photographic archive and the collections of members, and to Laurence Waters of the Great Western Trust at Didcot, who helped find many of the historic photos included in the book from the trust's extensive archive. And not least, the support given to me by John Scott-Morgan of Pen & Sword, in helping me find the contacts I needed and for the general advice on the layout and plan for the book. Every effort has been made to contact the copyright owners of the photos used. If we have overlooked anyone, please contact the publisher who will enable me to rectify the situation. Finally, I wish to thank my daughter, Helen, for the great help she has given me in scanning and preparing many

of the photographs for publication in the book.

I repeat, all royalties from the publication and sale of this book, including any advances after photographic fees have been paid, will be donated to the Railway Children charity, which I founded in 1995 with the support of many in the railway industry, to protect, support and rehabilitate street and runaway children found on railway and bus stations and the streets of India, East Africa and the United Kingdom.

David Maidment

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Chapter 1

INTRODUCTION

When the accomplishments of Churchward and the golden era of the Great Western Railway are spoken of, it is the dramatic and startling introduction onto the British landscape of the Saints and Stars and the exploits of the *Cheltenham Flyer* and the *Cornish Riviera Limited* that immediately come to mind. Many books have been written on subjects such as these. When I perused the well-stocked bookshelves of my local railway society, which is devoted to Great Western motive power, I found it was full of books by such luminaries as O.S. Nock and Cecil J. Allen on Kings and Castles, Saints and Stars and even the Dean Singles and 4-4-0s, or the locomotives of the Broad Gauge. However on the lesser lights, out of the gaze of the Great Western's publicity machine, there was little. Even the books on the great engineers concentrated on their front-line passenger engines, and it was only the Railway Correspondence & Travel Society's admirable books on the history of Great Western engines that was comprehensive in its scope, giving a treasury of factual data on which others can draw with confidence.

With such gaps in mind, I

researched and wrote about that other Churchward masterpiece, the 2800 class heavy freight 2-8-0 and its derivatives, the eight-coupled tank engines serving the GWR's lifeblood, the coal from the South Wales mines that formed the basis of the Company's profitability. Now in the second of the locomotive profile series that Pen & Sword have commissioned me to write, I am turning my mind and hand to the story of a group of other locomotives that were such a common sight throughout the Great Western territory and its successor, British Railways Western Region, that they were just taken for granted, part of the background, so to speak; the Churchward Moguls and the myriad types of Churchward and Collett Prairie tanks, both large and small.

When I was a trainspotter, like so many other youngsters in the late 1940s and 1950s, these engines were but mere underlinings in my Ian Allan ABCs. It was the 'namers' that took our attention, not those '61ers' dashing into Paddington half hidden by the Arrival Signalbox. Or on holiday in South Devon in the early 1950s, I'd crave runs to Goodrington or Teignmouth or Dawlish behind Castles, or even Halls or Granges, and common engines, like 4176, 4582 or 5557,

at the head of my stopping train were met with disappointment. I look through the photos that I took then with my simple folding Kodak camera and it's all Kings and Castles, the odd Grange or Hall or Manor at Newton Abbot or along the sea wall at Teignmouth. I look in vain for other classes – two photos of a 38XX, one blurred; one of 5557 departing in the early morning from Paignton, the photo ruined by the out of focus parapet of the bridge that got in the way; one photo of 5158 and a group of engines waiting to pilot Castles over the South Devon banks; a 51XX somewhere in the background of a photo of a 45XX on a goods by accident; and one solitary photo of 4547, camera squinting into the sun, at Moretonhampstead, when, after a hot and fruitless family ramble searching for Fingle Bridge, any train was welcome.

It is interesting and significant that Churchward's first list of half a dozen standard designs that he proposed to build included a 2-6-2 tank engine as well as the large passenger engines and the 2-8-0. He was thinking comprehensively about the needs of the Company, and already seeing the benefits of standardisation as far as possible across the range of requirements. He had worked patiently in support

of William Dean in the late 1890s, when the 'grand old man' was losing his grip on things through deteriorating mental health, and some of his ideas could be seen in the first experiments he persuaded Dean to undertake, as well as allowing the best of Dean's designs to be completed whilst his ideas grew to fruition and were thoroughly tested. This book will cover some of those engines that classify under the book's title or were important precursors, such as the ungainly 4-6-0, nicknamed 'Kruger' during the Boer War. A Mogul version of this locomotive was the lead into the Aberdare 2-6-0s, which were really the antecedents of the heavy freight 2800s rather than the mixed traffic 4300s which followed in 1911. Frankly, the Great Western rarely referred to their engines as Moguls, a term that seems to have originated in the late 1870s after one of a group of 2-6-0s built for the Great Eastern Railway was named Mogul after the 'Great Mogul of Delhi', a well-known character of the British Empire at the time. However, since it became a common British term in railway circles, I shall use the term in this book, rather than keep referring to Churchward 2-6-0s or even the 4300s when the class included 5300s, 6300s, 7300s, 9300s and even for a few years, 8300s as well.

Although Churchward's six prototype classes included the Large Prairie, No. 99, from which flowed eventually the whole range of 3100, 3150, 4100, 5101, 6100 and 8100 classes, by 1905 he was augmenting these designs with a fuller range to meet all

requirements, as well as the smaller wheeled and lighter 4400s and 4500s to cover the many GW branch line duties through the building of another prototype, No. 115. By the end of the decade the GW had been equipped with over eighty Aberdare Moguls and ninety large and forty-one small 2-6-2 tank engines. The last gap was filled in 1911, by the construction of the first truly 'mixed traffic' Mogul, with a route availability that allowed it to travel all over the railway with few restrictions and which, of all GW engines, became the class of engine that penetrated most often onto the rails of other companies on through workings, as well as being one of the choices for overseas use in the first World War by the Railway Operating Division of the British Army (ROD).

Churchward had a supreme engineering curiosity that led him to study the best American and continental locomotive practice, and his method was to study and develop individual components rather than innovate any sweeping change to orthodox locomotive design. For his new standard range, he produced a limited number of entirely new designs of boiler, cylinders, valves, valve gear and motion that could be used for a variety of locomotive classes, the main variant being the size and number of coupled wheels. He was prudent in trying out prototypes of virtually each new class and as a result, his production run engines seldom needed significant subsequent alteration. By 1905, he had sufficient experience to proceed to full production of his designs with confidence. After 1916, as

Chief Mechanical Engineer, he was responsible for design, manufacture, testing and running, being therefore in charge of the whole locomotive 'life cycle'. Between 1902 and 1912 he transformed the Company's locomotive fleet and by the time of his retirement in 1922, he had designed and constructed no fewer than 888 new locomotives that met all the GWR's passenger and freight needs.

Churchward's chief assistant, Charles Collett, has often been criticised for appearing to allow the GWR motive power department to stagnate, but when he took over the reins from Churchward in 1922, he was faced with increased financial demands by the GW Board as profitability fell during the post-war years, and especially after the strikes of the 1920s and the onset of the Depression years. His priority was the reduction in costs, and therefore he kept new build costs to a minimum by perpetuating existing designs with just small improvements, as these locomotives more than met all existing company requirements. He concentrated his efforts on reducing costs and reliability through workshop efficiency and productivity improvements, the areas of his greatest expertise and experience. His contribution to GW's continued profitability and best shareholder dividends of the 'Big Four' during the 1930s is not often acknowledged. His engines, developed on the Churchward principles, sufficed right up to nationalisation, and indeed, it can be argued, up to the end of steam of BR's Western Region in 1965. In fact, he and his successor

in 1941, Frederick Hawksworth, built a further 1,250 locomotives to the principles that Churchward established.

The following chapters cover the history of the design, construction and operation in service of the Churchward Large and Small Prairie Tanks, the Aberdare and 4300 Moguls, and the Collett development of these classes, with the 41XX series of Large Prairies still being built under the

Hawksworth regime for British Railways. Much of the research material available comes from articles in rail enthusiast magazines, especially *Steam Days* and the *Great Western Railway Journal*, as well as the RCTS histories and the GW Board and other papers held in The National Archives at Kew. Colour photos have been provided where possible, to help model makers in particular, but regrettably few photographers

expended the expensive colour film on the so-called 'lesser breeds', so again it is the Kings, Castles, Stars and Saints that feature most in their pre-war splendour; I can find few colour shots of Prairie tanks or Moguls until the early 1950s, many of those being from the lens of Richard Riley, who clearly loved the Churchward and Collett 45XX tanks as much as the Devon and Cornish landscapes through which they operated.

Chapter 2

THE LARGE PRAIRIE TANKS

The prototype No. 99, 3100/5100 & 3150 series, design & construction

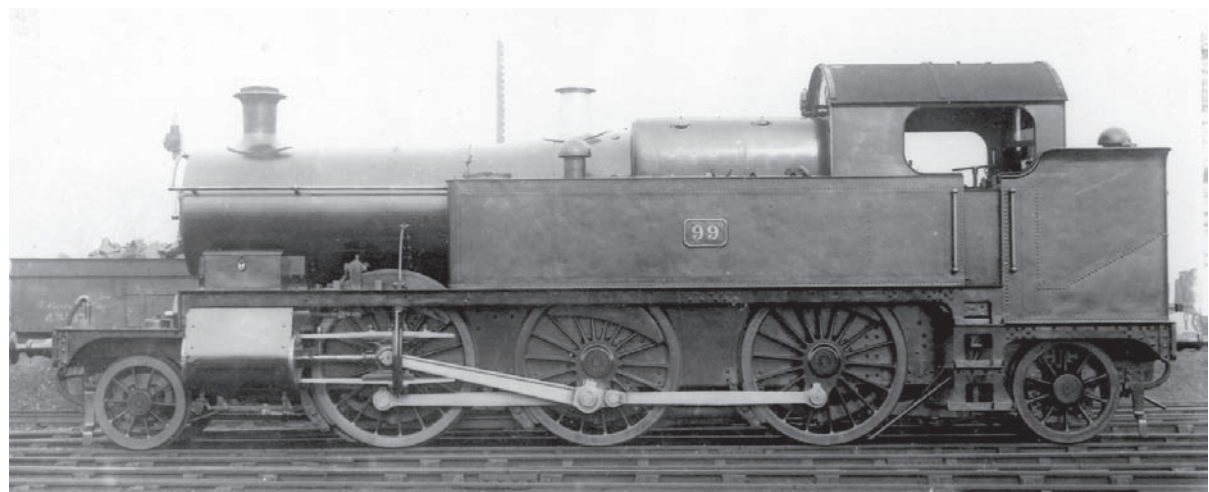
Probably the three most important prototypes of Churchward's new standard designs entered traffic for comprehensive testing in 1903. They were a 4-6-0, No. 98, that became the 2900 Saint class and the precursor of a range of GW two-cylinder 4-6-0s, that led to the development of the classic mixed traffic 4-6-0 by Collett, Stanier, Thompson and Riddles; a 2-8-0, No. 97, that became the GW 2800 class, developed by Collett, and the forerunner of the Stanier 8F and Riddles WD 2-8-0; and No. 99, a 2-6-2 tank, that spawned into the Churchward 3100 and 3150 classes and then spread under Collett as the standard GWR tank engine 'maid of all work', the 5101, 6100 and 8100 classes.

The construction of No. 99 commenced in September 1903 and it appeared from Swindon works in that November, was described in the *Great Western Magazine* of December 1904 as 'a six-coupled double-ender tank engine ... designed for working heavy goods or passenger trains not required to travel at high speeds.' As built, it had standard cylinder

dimensions, each of 18" diameter by 30" stroke, and coupled wheels of 5' 8". The boiler, which became known as the Swindon Standard No. 2, a lighter version of the No. 4, was pressed to 195lb psi and the tube heating surface was 1,396sq ft, firebox 121sq ft, total heating surface nearly 1,518sq ft. The grate area was 20.35sq ft. It was a short-coned taper boiler, the front section being parallel with a short drumhead smokebox. A slender cast-iron chimney was fitted, a Swindon works plate was on the front of the smokebox saddle and the numberplate was fixed to the centre of the side tanks. Tractive effort at 85% was 23,690lb and with a tank capacity of 1,380 gallons and bunker coal capacity of 3 tons, the

total engine weight was just over 58 tons empty and 72 tons 3 cwt in full working order. The side tanks were short and flat-topped and the bunker had a flat rear sheet. The cylinders were contained in a pair of iron castings bolted back-to-back on the centre line of the engine, incorporating the saddle, which carried smokebox and steam and exhaust passages. Piston valves of

Churchward's prototype Large Prairie 2-6-2 Tank, No. 99, built at Swindon in 1903 for heavy short distance goods and passenger traffic, seen at Swindon shortly after construction. It has short straight-topped side tanks, short cone boiler, slender cast-iron chimney and large mushroom shaped tank ventilators. The bunker has a flared top. This engine was fitted with a long-cone boiler in 1912 and renumbered 3100, but retained the small side tanks until April 1929 when it was again renumbered 5100. In 1938 it was rebuilt with 5' 6" coupled wheels and 225lb psi boiler and renumbered 8100, being eventually withdrawn in April 1962.
GW Trust Collection





Great Western official works photograph of 3120, the last of the first production run of Large Prairie Tanks, numbered 3111-3120, built at Swindon in 1905. The modifications to the prototype can be clearly seen – large side tanks, different boiler and cab side sheets flush with tanks and bunker. It was renumbered 5120 in 1928 and rebuilt by Collett as 5' 6" wheeled 2-6-2T 8106 in 1938. GW Trust Collection

10" diameter were located above the cylinders, driven by Stephenson link motion.

For a few days, the new locomotive was tested around Swindon works, then on 18 December 1903 it began trials at Brimscombe on banking duties to Sapperton summit, a duty still near to Swindon where it could remain under close observation. In mid-January it moved to Southall and later to Westbourne Park to evaluate its performance on both passenger and freight duties. Like the other prototype standard designs, the engine was subject to nearly a year of testing before Churchward was prepared to sanction the construction of a production run. No. 99 proved to

be well capable of all the duties allocated to it, the only major snag experienced during the trials being the inadequate water tank capacity, and this was significantly increased to 2,000 gallons when the first of the production run, 3111, appeared in January 1905.

Ten engines, 3111-3120, of 'Lot 150' (Works Nos. 2066-75) were authorised and construction began in September 1904. The most obvious alteration was the sloping-front tank to take the extra water. The cab sides were also flush with the tanks, and a long-cone boiler was fitted, but there was still a short smokebox and a slender cast-iron chimney. The increased water capacity increased the loaded weight of the engine to 75 tons

10cwt. A further ten locomotives, 3121-3130, were also built in 1905 and the remainder of the class, 3131-3149, the following year. Nos. 99 and 3111-29 had steam brakes, and 3130 onwards were fitted with vacuum brakes.

A further twenty engines of 'Lot 159', to be numbered 3150-69, emerged from Swindon with the enlarged No. 4 boiler pressed at 200lb psi, and slightly increased weight of 78 tons 16cwt. These locomotives became known as the 3150 class and from 3151 onwards, were fitted with 18½" diameter cylinders increasing the tractive effort at 85% to 25,670lb. The heating surface was increased to 1,820.35sq ft. 3150 was built in 1906 and the remaining locomotives,



3121, first of the second production batch (3121-3130) of Churchward's Large Prairie Tanks, built in 1905, at Swindon shortly after construction. It was renumbered 5121 in 1929 and was withdrawn in October 1948. GW Trust Collection

eventually reaching forty-one numbered to 3190, were built in 1907-8. 3150-70 were built with cast-iron chimneys, 3171-90 with large copper-capped chimneys.

A number of modifications were made over the years, the most important of which was the provision of superheater tubes and topfeed apparatus for both 3100 and 3150 classes, most between 1910 and 1912. From 1909, both classes received struts between the smokebox saddle and buffer beam to relieve the strain on the frames, particularly when banking. Engines from 3160 onwards were built with the struts.

Other modifications in chronological order were:

1908-10 – Most engines received copper capped chimneys and removal of toolbox from running plate.

1910 – No. 99 received a long-cone boiler.

1912 – No. 99 renumbered 3100.

1919 – 3100 class boiler pressure

raised to 200lb psi, tractive effort 24,300lb.

1919-22 – Bunkers extended to hold 3 tons 18cwt and plain fenders added.

1920 onwards – Tapered cast-iron chimneys reappear on 3150 class.

1927 – Short safety valve bonnets begin to appear.

1928-30 – 3100 and 3111-49 renumbered 5100 and 5111-49.

1928-30 – Improved weight distribution allows 5100s to run on 'Blue' routes.

1929 – 5100 fitted with sloping-pattern side tanks.

1930-31 – ATC apparatus fitted to both classes.

1931 – Most of 5100 class received new lower cab roofs.

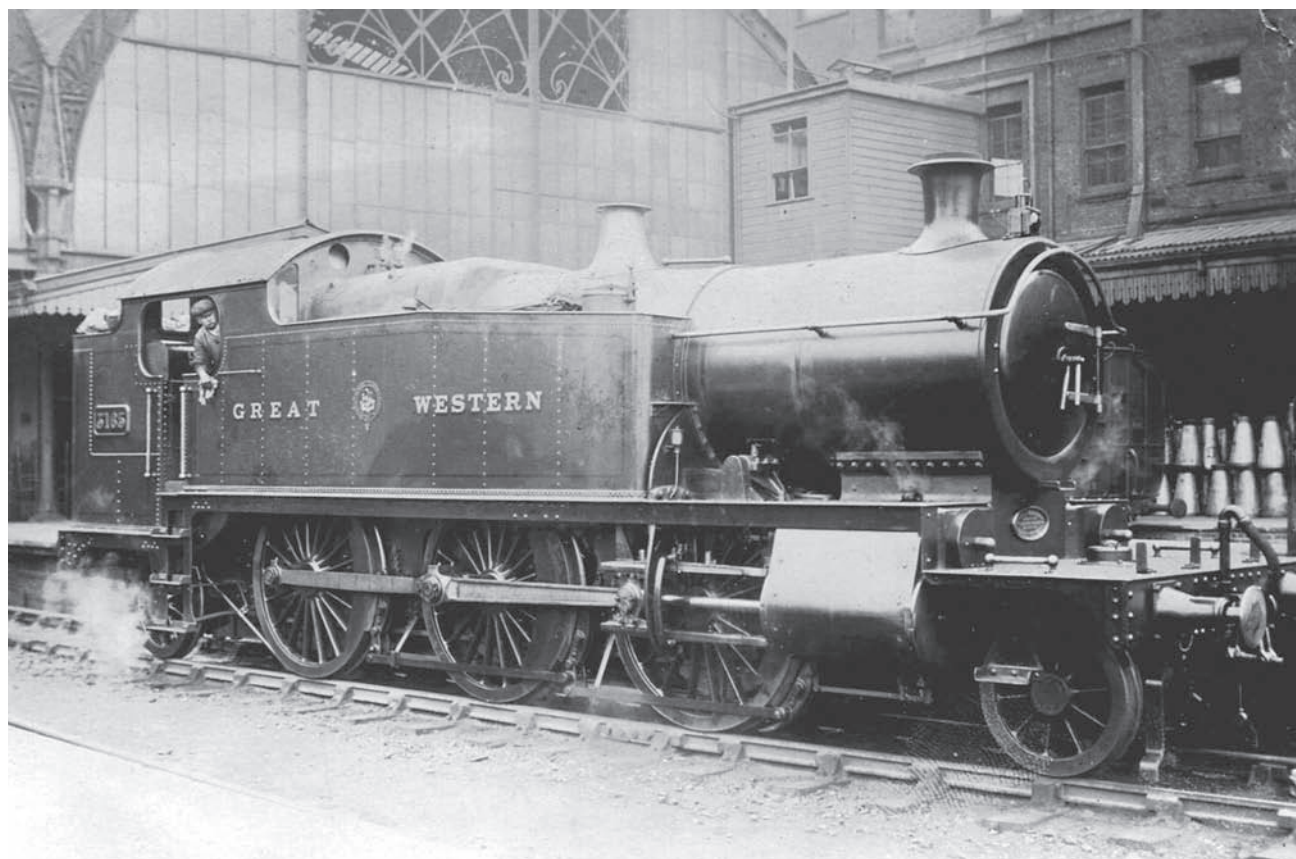
1933-39 – Provision of sliding cab shutters and recessed fenders to bunker tops.

1934 – 3164 fitted with outside steam pipes and curved drop-ends.

3113, of the first 1905 production batch, ex-works at Bath station in lined green livery and in traffic shortly after construction. It was renumbered 5113 in 1928, fitted with outside steam pipes in 1943 and withdrawn from Newton Abbot in 1955.

GW Trust Collection





3165, of the 3150 class, built in 1907, with the original narrow taller chimney and small straight-backed bunker, at Paddington station No.1 platform backing onto a suburban train, c1907-8.
GW Trust Collection

3152 on an up local passenger train at Cardiff General, c1925.
LCGB Collection

1935-47 – Twenty-four 3150s receive curved drop-ends and outside steam pipes.

1937 – 5126 received curved drop-ends retaining inside steam pipes.

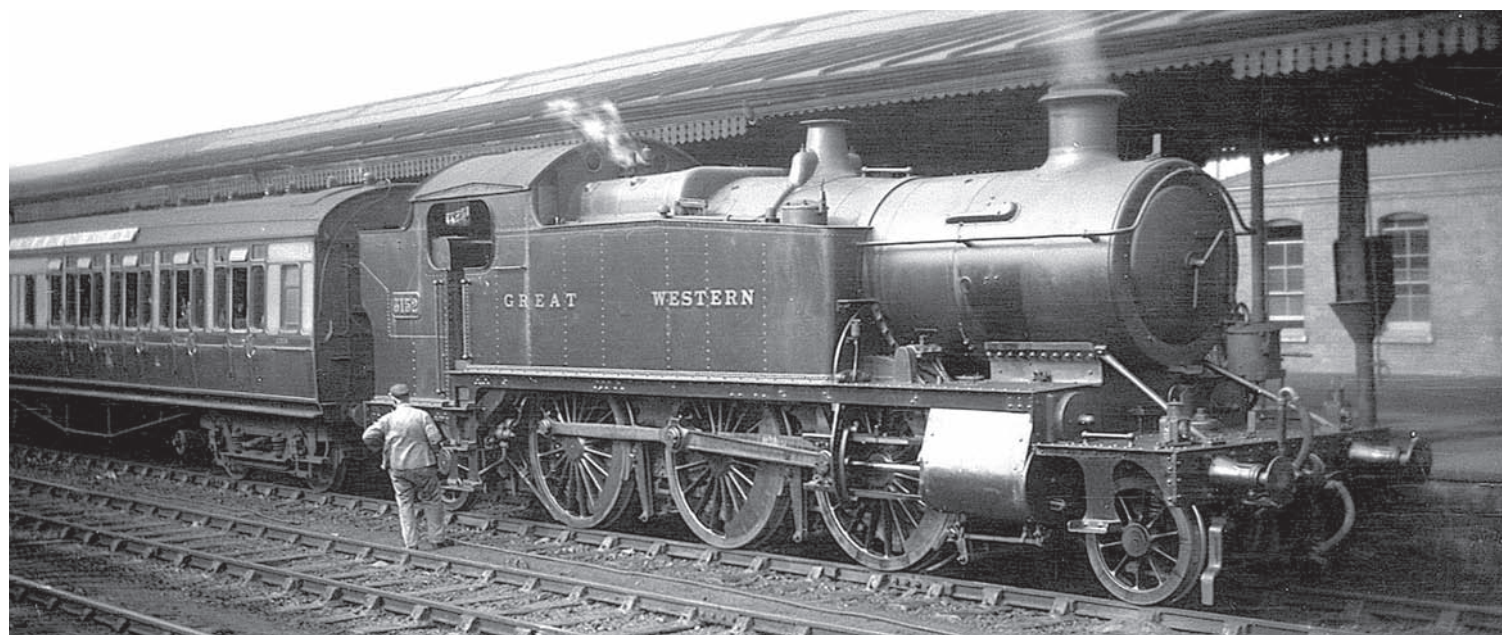
1938-39 – Five 3150s rebuilt as Collett

5' 3" coupled wheel 31XX class.

1938-39 – Ten Churchward 5100s rebuilt as 8100 class.

1943 – Six 5100s received outside steam pipes and curved drop-ends.

Initially the 3100s and 3150s received the lined GW green with crest in the centre of the tank side, and 'Great Western', then plain green with just the lettering 'Great Western', and finally pre-war, plain green, with the 'shirt-button' emblem on the tank side and no lettering. Immediately after the Second World War, the wartime plain black livery was replaced by GW green with the wording 'Great Western', replaced at nationalisation by 'British Railways', before receiving the standard BR unlined black with 'lion & wheel' crest. Only 5148 of this class was repainted in BR lined green in June 1959, only to be withdrawn six months later. All the 3150 class surviving after nationalisation were painted plain black with the BR early logo – none survived beyond March 1958, so none received the later BR logo which was only applied from 1957.

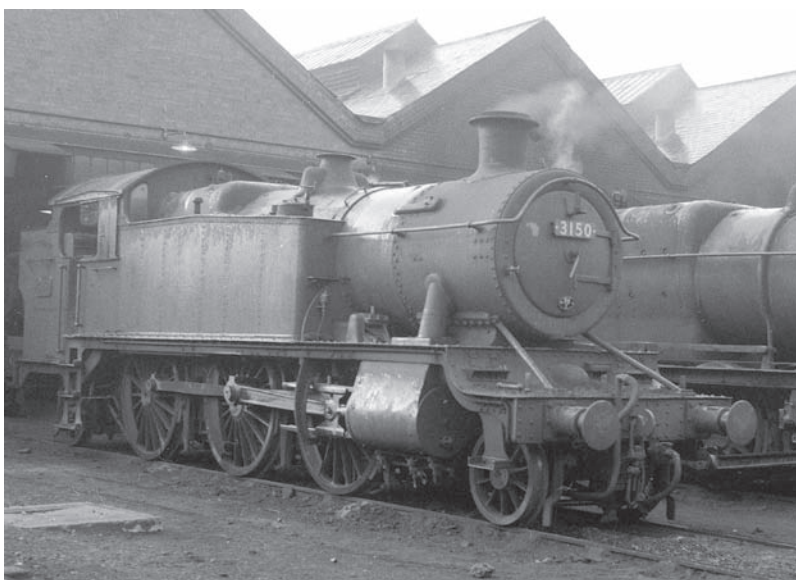




3131, of the 3100 class, built in 1906, seen later with GW larger copper-capped chimney, smaller safety valve cover and enlarged bunker, in Tyseley Factory Yard, c1928, just before renumbering as 5131 in May 1929. It was withdrawn from BR (WR) in October 1948. GW Trust Collection

3156 of the 3150 class built in 1907 with the larger chimney, tall safety valve cover and enlarged bunker, c1920s. GW Trust Collection





3150, the first of the class, built in April 1906, in BR guise, with narrow cast-iron chimney and outside steam pipes, allocated to Severn Tunnel Junction, where its duties would consist mainly of banking or piloting freights through the Severn Tunnel, seen at Severn Tunnel Junction shed, 3 October 1954. John Hodge



3100 class, 5124, with cast-iron chimney, tall safety valve cover, and inside steam pipes, ex-works at Swindon, formerly 3124, c1929. GW Trust Collection



A 3100 class in its final form, 5138, with large chimney, small safety valve cover and outside steam pipes, after withdrawal and removal to the Swindon Stock Shed, awaiting scrapping, 16 November 1952. MLS Collection

3100 class, 5144, built in 1906, renumbered from 3144 in 1929 and withdrawn from Leamington shed in January 1952, seen here in the Swindon 'Dump' awaiting scrapping, 24 February 1952. It is still in faded GWR plain green livery with 'British Railways' in full on the tank sides and remained without outside steam pipes. MLS Collection



2.2: The Churchward engines in operation

Many of the 3100 class, when new, including the prototype No. 99 in 1906, were sent to the Newport Motive Power Division, some to Severn Tunnel Junction for banking and piloting duties through the tunnel and others to work freight and passenger turns in the Eastern and Western Valleys. They were also widely used as bankers and pilots over the heavy gradients in South Devon and over the Cotswolds in Gloucestershire and some local freights when not on banking duties. They were used for suburban passenger and goods train work in the Wolverhampton Division, at sheds such as Leamington, Stourbridge and Chester. However, suburban traffic in the London Division was in the hands of the Churchward County

4-4-2Ts of the 2221 series and the Birmingham and Northern local passenger trains were also worked by the 3600 2-4-2Ts and the 3901 2-6-2Ts rebuilt from twenty Dean Goods 0-6-0s (see chapter 2.3). After 1929, most of the 5100s were allocated to the Wolverhampton Division, as the 3600s, then the 3901s were withdrawn.

In the early days before the First World War it would appear that although classified as 'mixed traffic', they had few regular passenger turns. Before the substantial increase in the 2800 2-8-0s and during the latter's priority wartime assignments to deliver heavy steam coal traffic for the British Navy, the 2-6-2 tanks were allocated to some surprisingly long freight services for tank engines, such as Banbury's seventy-wagon 12.05 am freight to Southall via Reading, returning after only an

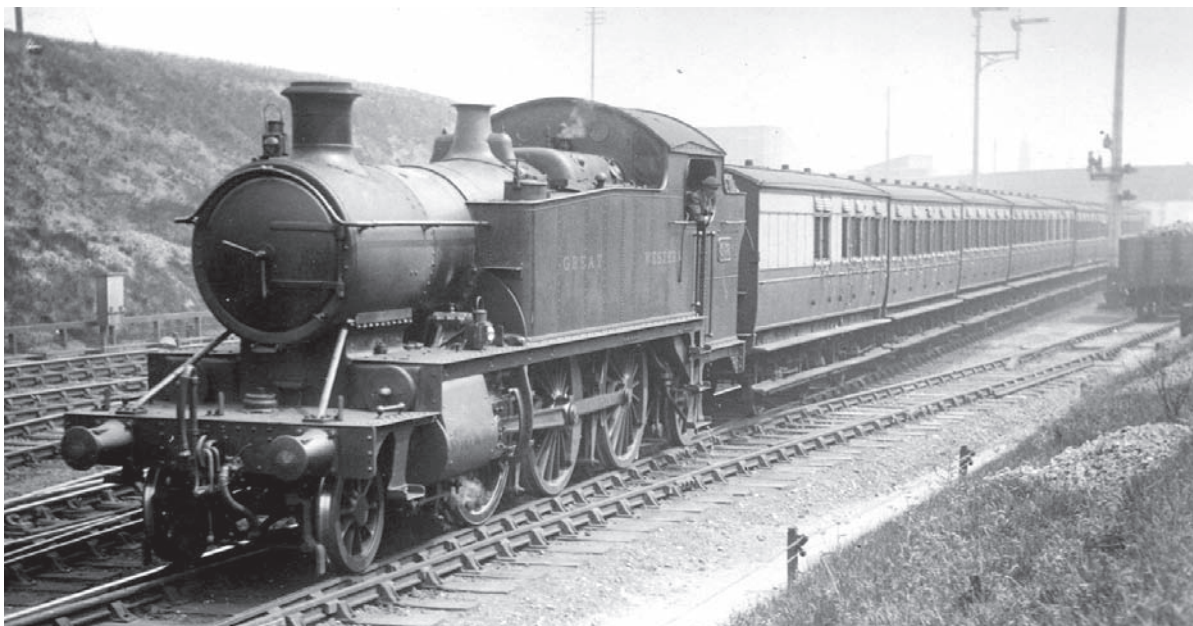
hour's turnround with a seventy wagon train of empties. Bristol had an overnight trip to Rogerstone with a westbound load of sixty empty mineral wagons for collieries in the Western Valleys – others ran substantial freights between Exeter and Plymouth. The 3150 class were initially allocated very similar duties to the 3100s, despite their slightly extra weight and power.

A number of the 3100s were reallocated to the London Division in 1920 and had regular suburban services to Windsor, Reading, High Wycombe and Aylesbury, alongside the 4-4-2Ts. It would seem that the 2-6-2Ts were preferred for the heavier eight-or ten-coach trains, which presumably were taxing the County tanks. By 1923, apart from eight at Severn Tunnel and six at Newport Ebbw Junction, the remainder of the class was surprisingly distributed in 'penny



3112 as built in January 1905, with the swapping of the original narrow cast-iron chimney for the standard GW copper-capped variety and struts from the smokebox saddle to the front footplating. 3112 was the second of the production run following successful trials with No. 99, and is seen on an excursion to the Severn & Wye line, at Yatton, just before the outbreak of the First World War, c1912-3. GW Trust Collection

3100 class 3138, built in February 1906, and now fitted with top feed apparatus, but retaining the tall safety valve cover, and large diameter chimney, is seen working a down Stourbridge Junction local passenger train of close-coupled six-wheel suburban stock train at Handsworth Junction, cearly 1920s. H. Salmon/GW Trust Collection



numbers' all over the system. The next major movement took place when Collett built the 5101 class in 1929 based on the 3100 design and both the Churchward 3100s (renumbered 5100s in 1928-9) and the new Collett 5101s were concentrated in the West Midlands with groups of the older engines at Leamington, Tyseley,

Stourbridge Junction, Stafford Road and Birkenhead. They virtually disappeared from South Wales, replaced mainly by the 3150s. The introduction of the 6100s in 1931 removed the last 5100s from the London Division. By now the 2-6-2Ts had a considerable amount of passenger work around the Birmingham and Chester areas. In an article by John Copsey in the *Great Western Railway Journal* in the Spring of 2013, he states that 'between forty and fifty of the class [5100s and 5101s] could probably be seen at Birmingham Snow Hill during a 24-hour period.'

After 1929 and the modifications to the 5100s and the introduction of the Collett 5101 class, the 3150s were concentrated in the Newport, Newton Abbot and Gloucester Divisions to undertake almost the whole of the banking duties formerly carried out by both classes – especially at Severn Tunnel Junction for banking and piloting heavy freights through the tunnel. In 1935, sixteen of the class were at Severn Tunnel for these duties, eight at Newton Abbot for Dainton, Rattery and Hemerdon, and three at Gloucester for the climb from Brimscombe to Sapperton. By 1947, the Severn Tunnel allocation had increased to twenty-two and some would also appear on local passenger services in the Newport-Cardiff area, on such turns as excursions to Barry Island or Porthcawl, or substituting for GW diesel railcars on the Cardiff-Swansea stopping service. The Severn Tunnel 3150s were notoriously filthy as they spent so much time in the smoke and fumes of the tunnel, but they



3100 class 3148, built in March 1906, works a suburban train of Dean close-coupled six-wheel stock in the Birmingham area, in the immediate post-First World War period. As 5148 (renumbered in 1928) it was the last survivor of its class, outliving its sisters by over four years and not being withdrawn until December 1959. GW Trust Collection

were kept in good boiler and mechanical condition. The use of a 3150 as pilot increased the load a 2800 was allowed through the tunnel from forty to sixty-five loaded coal wagons, and the piloting continued even with the powerful BR Standard 9F 2-10-0s. They also operated the car train service through the tunnel, a service introduced in 1924 and required until the opening of the Severn Bridge.

After the Second World War, there was a wider distribution of the 5100s, although in the year before nationalisation, the heaviest allocations were to Stourbridge (seven engines) and Tyseley (six engines). Twenty-nine passed into BR stock after 1948. Seventeen were still extant in August 1950,

when the allocation was one at Leamington; one at Wolverhampton Stafford Road; two at Gloucester

for banking trains to Sapperton; two at Chester, mainly used on the Birkenhead–Chester portions of London trains; three at Stourbridge; four at Wellington for the Wellington–Crewe service, and, in the West Country, three at Newton Abbot and one at Laira for the South Devon banks. Two, 5112 and 5113, which lasted until October 1955, were at Stafford Road and Newton Abbot respectively, and the last survivor, 5148, was stationed throughout the 1950s at Laira until its demise in December 1959.

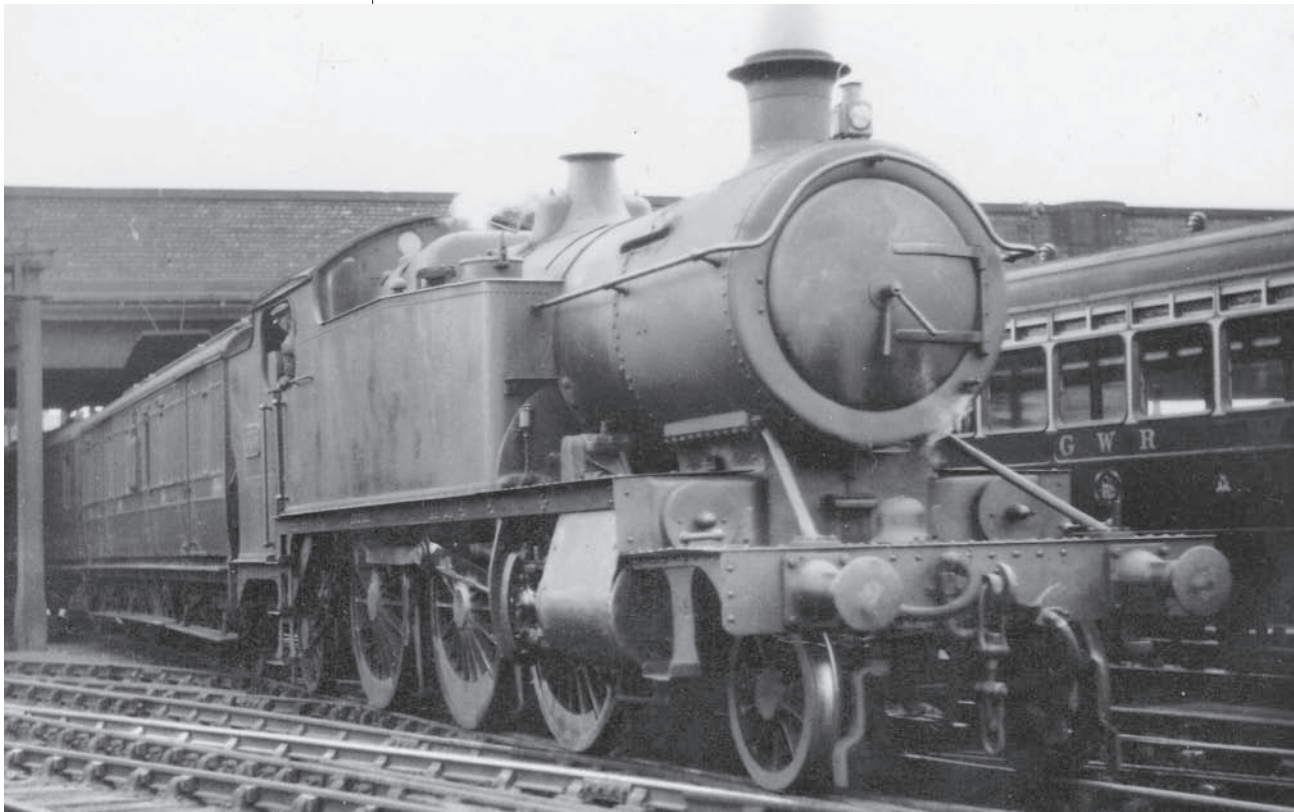
Thirty-three of the 3150 class passed to British Railways on nationalisation, but eight did not survive long enough to carry BR style smokebox numberplates, being withdrawn in 1948 or 1949. Twenty-four were still operational in August 1950, although 3154 and 3168 were withdrawn from Severn Tunnel Junction within a couple of months. Twelve of the other twenty-two were based at Severn Tunnel depot; four were at

Brand new 3150 class No. 3160, as built in May 1907, with narrow cast-iron chimney and tall safety valve bonnet without top feed. The Leamington based engine is seen at Paddington station with an outer suburban service for Oxford, 1907. It was withdrawn from Stafford Road shed in July 1953. Author's Collection



3160 forty-five years later, standing in Wolverhampton Stafford Road depot, 12 October 1952. MLS Collection.

3150 class No. 3155, built in 1907, with a local stopping service at Chester, 1927. It has a cast-iron chimney, tall safety valve cover with top feed and struts from the boiler saddle to the front footplating and enlarged bunker. J.E.N. Ashworth/Author's Collection



Gloucester; three at Laira; two at Tyseley and one at Stafford Road. All but the last three were engaged primarily in banking activities. The thirteen that survived to the latter half of 1957 or beyond were split: seven at Severn Tunnel; three at Gloucester; two at Laira and one lone example, 3170, that had been transferred from Severn Tunnel to Newport Ebbw Junction in 1954 and presumably spent its last four years on passenger and freight turns up the Monmouthshire Western Valleys.

Despite the short distance work of their main duties, they put up a respectable mileage, albeit spread over forty years – and in a few cases fifty – the lowest, withdrawn in 1947, being 3162 at



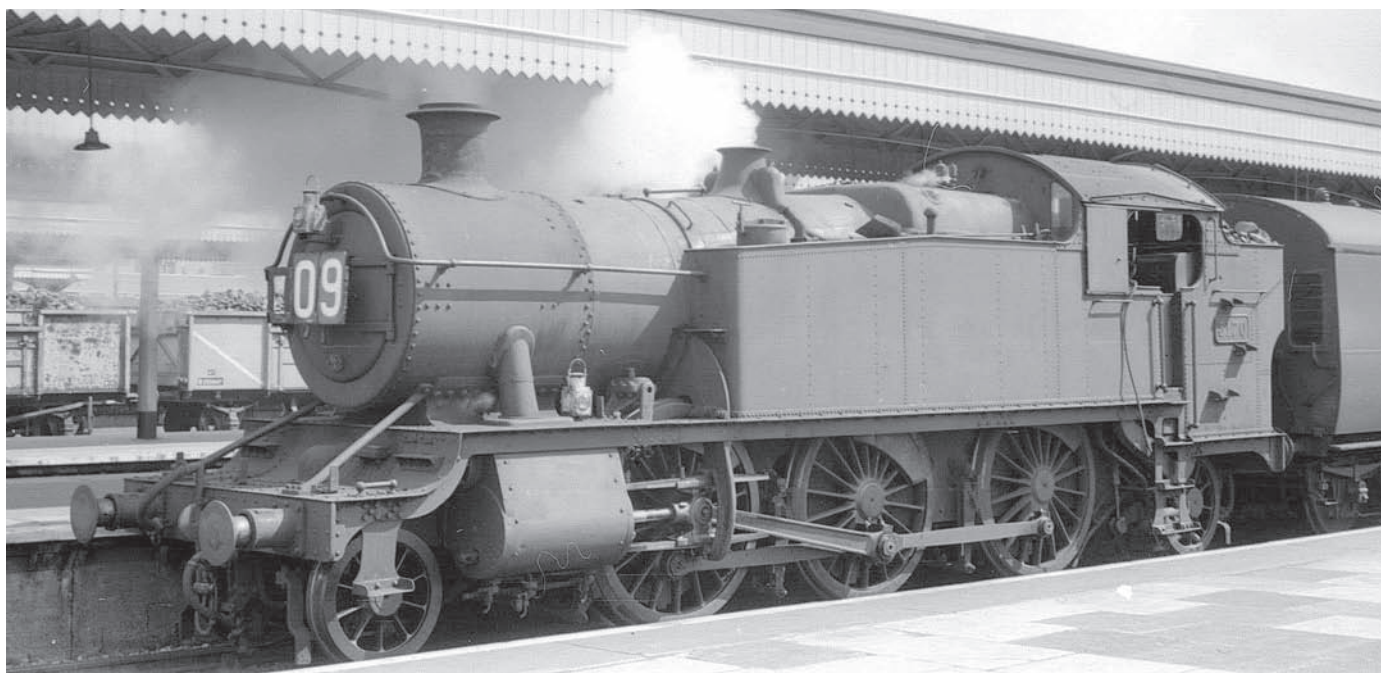
Severn Tunnel based 3159 on a typical working as 'Target 4', piloting Churchward Mogul 4365 on an up part-fitted freight on the climb out of the Severn Tunnel at Pilning, c1920s. GW Trust collection

705,403, whilst 3180, one of the last survivors withdrawn in October 1957, amassed 1,110,828 miles. The most long-lived 3150, the doyen 3150 itself, lasted fifty-one and a half years and 3148/5148 of the earlier series, fifty-three years and nine months. The success of the class is not just demonstrated by the longevity and mileage records of the two classes, but the fact that the GW continued to build the basic design right up to nationalisation, and the Western Region completed the last batch of the 4100 series in 1949. In the end, the GWR and BR Western Region built a total of 306 Large Prairie tanks, which were seen throughout the system between 1905 and the final demise of Western Region steam in 1965.



Severn Tunnel's 3176 pilots Bulldog 3392 *New Zealand* (rebuilt in 1937 as *Earl* 3209, later 9009) out of the Severn Tunnel, at Patchway where the up and down lines are separated, with an up freight consisting partly of empty passenger stock being conveyed to Swindon for repair, c1930s. GW Trust Collection

Laira's 3177 pilots
4086 *Builth Castle* on a
down West of England
express on the climb
from Aller Junction to
Dainton, c1930s. Piloting
heavy expresses over
the South Devon banks
was a regular duty for
class 3150 tanks in the
1930s until the work
was later taken over by
tender locomotives and
3177 was transferred to
Severn Tunnel Junction
for banking and piloting
duties there.
Rail Archive Stephenson



3170 on a Newport
– Porthcawl excursion
(No.9) at Cardiff General,
on 8 August 1958.
John Hodge



3190 at Cardiff General on an excursion for Barry Island, c1955.
John Hodge



An unusual shot of 3100 class 5139, still in GWR livery as late as 1952, being passed by newly built Standard 3MT 2-6-2T 82006, at Leamington Spa. 5139, built as 3139 in March 1906, was withdrawn in November 1952. MLS Collection



15137, formerly 3137 built in 1906, struggles to depart from Crewe with a local for Wellington, in its final year before withdrawal, 14 April 1951. MLS Collection

2.3: The 3901 rebuilt Dean Goods Prairie tanks, design & operation

At the beginning of the twentieth century, commuter traffic around the major cities was beginning to become of greater importance and on the GWR, this meant to and from London, obviously, but

also in the West Midlands around Birmingham. In London, as early as 1869, the GWR had standard gauge tank engines fitted with condensing gear, that worked from

the suburbs over the Metropolitan Railway through to Moorgate Street. By the 1880s and the last decade of the nineteenth century, Dean had perpetuated the building of the little 2-4-0 tank engines designed by Joseph Armstrong, the last batch (nos. 3591-3599) being constructed in 1899. Some of these Metro tanks remained on commuter work around London until the 1920s and ten even survived until nationalisation, though on branch rather than commuter traffic. The last one, 3599, was withdrawn in December 1949.

However, loads were increasing and Dean, influenced no doubt by Churchward, produced a 2-4-2T prototype, No. 11, in 1900, fitted with a shortened Camel parallel domeless boiler, the class later receiving Standard No. 2

3625, a 2-4-2T built at Swindon in November 1903, a predecessor of the Churchward Prairie Tanks and the 3901 class in the Wolverhampton and London Motive Power Divisions, on a suburban train in the West Midlands, after rebuilding with an extended smokebox, early c1920s. 3625 ran 467,627 miles and was withdrawn in July 1931. MLS Collection

