



GREAT WESTERN

FOUR-COUPLED TANK LOCOMOTIVE CLASSES

ABSORBED BY THE GREAT WESTERN RAILWAY



DAVID MAIDMENT



Four-coupled Tank Locomotive Classes Absorbed by the Great Western Railway

Front cover photo:

South Devon Railway 4-4-0ST 2122 Gorgon built in 1866 and which lasted to the end of the broad gauge in 1892, seen here c1890. (GW Trust)

Back cover photos:

Upper left: 4-4-4T, No.17 in lined M&SWJR livery at Swindon Town, April 1921. (A.W.Croughton/MLS Collection)

Upper right: Barry Railway 'G' class 0-4-4T, 68, renumbered 4 by the GWR, at Swindon, c1923. (Real Photographs/MLS Collection)

Lower: Ex-Monmouthshire Canal Co. 1870 built No. 14, rebuilt by the GWR in 1893, renumbered 1304 by the GWR at Gloucester, June 1903. (W.Beckerlegge/MLS Collection)



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DAVID MAIDMENT



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**Other books by David Maidment:
Novels (Religious historical fiction)**

The Child Madonna, Melrose Books, 2009
The Missing Madonna, PublishNation, 2012
The Madonna and her Sons, PublishNation, 2015
The Reluctant Traitor, PublishNation, 2021

Novels (Railway fiction)

Lives on the Line, Max Books, 2013
Steamy Stories, PublishNation, 2021 (Short stories)

Non-fiction (Railways)

The Toss of a Coin, PublishNation, 2014
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Non-fiction (Street Children)

The Other Railway Children, PublishNation, 2012
Nobody ever listened to me, PublishNation, 2012

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charity supports street children living on the railway and bus stations of India and East Africa and works with the British Transport Police to protect and counsel runaway children picked up on the railway stations of our own country. I also acknowledge the help given to me by a colleague for many years in the railway industry, John Hodge, who has made a large number of photographs available to me from the F.K. Davies collection which he owns. As is often the case with collections, it is not always possible to identify the original photographer and if I have missed giving credit to the copyright holder, please contact the publisher. I also acknowledge the interest and research of Denis Lewis and Tess Walker of the Railway Studies Collection at Newton Abbot who were inspired to research the gaps

in my knowledge about the South Wales engineers that I admitted in my earlier book on the GW 0-6-2 tanks. By chasing up census data and old newspaper cuttings, they have unearthed new details I have used in this book for which I'm grateful.

I also thank the Pen & Sword company staff for their usual helpful and very competent way in which they have brought this book to publication – my editor, Carol Trow, Commissioning Editor and friend, John Scott-Morgan, Transport Production Manager, Janet Brookes and the design and marketing staff at the company headquarters at Barnsley during the difficult periods of lockdown due to the Covid pandemic, working from home.

David Maidment
March 2023

INTRODUCTION

I didn't realise when I agreed to tackle the story of the Great Western Railway's four-coupled tank engines just how many there were. My immediate thought and inspiration was to tell the history of the GW's classic branch line engines, the 14XX 0-4-2 tank engines and their predecessors, the Wolverhampton built '517' class 0-4-2Ts and the Swindon built 2-4-0Ts – the 'Met Tanks'. Then as I began to research in the library and photo archives of the Manchester Locomotive Society in their clubrooms on Stockport station, the scale of the work that I had committed myself to in signing the contract with Pen & Sword Books began to dawn on me.

Delving back into the nineteenth century, the number of small railway companies that existed in the West of England, the West Midlands and South Wales that struggled and were taken over by the Great Western surprised me and their stories were complex. All had four-coupled locomotives within their fleets almost from the beginning and many had comparatively short routes, so tank engines were appropriate for nearly all of them. Most of these companies were taken over by the Great Western towards the end of the nineteenth century, a few

retained their nominal existence but their operations were carried out by the GWR, and others, most notably the majority in South Wales and the Midland & South Western Junction Railway, were not absorbed by the GWR until 1922-3.

On lines in South Wales and South Devon and Cornwall and in the London suburban area, four-coupled tank engines became for decades the main passenger engines and only as traffic levels grew towards the turn of the century did the need for larger locomotives relegate the four-coupled varieties to secondary and branch line work. As well as the passenger activity, local freight trip work and shunting operations also became the domain of four-coupled tank engines, many remaining to near the end of steam in industrial sidings, collieries and docks. And on the country branches many engines, some dating from the 1850s and 1860s, though often much modified or rebuilt, lived on to a great age – at least until the 1920s and 30s, when Charles Collett in his drive for cost reduction replaced many by the simple, but very similar 48XX (later 14XX) 0-4-2 tank engines which remained the staple power of Great Western branch lines along with the 0-6-0 pannier tanks until the lines

were closed or steam power was replaced by diesel multiple units. The Great Western and its absorbed companies were also among the railways that pioneered the use of railmotor vehicles incorporating a steam engine and carriage on the same chassis and as the locomotive part of the railmotor was of the 0-4-0T wheel arrangement, I have included the designs of the constituent companies.

I therefore tackle a comprehensive review of all the Great Western's four-coupled tank engines from the main company itself (in the first volume entitled *Four-coupled tank locomotives built by the Great Western Railway*) and all its constituent companies that merged or were taken over by it. I start with a chapter about the Broad Gauge engines, with following chapters on engines taken over from its constituent companies before the 1923 Grouping. Because most of these locomotives were withdrawn before I was born, I regret that I cannot include my normal practice of recounting my own experience with these engines – apart from one journey in the late 1950s to Swansea Docks when I surprised the foremen at Swansea East Dock and Danygraig by turning up with a shed permit before 6am and seeing some of the former Swansea

Harbour Trust and Powlesland & Mason shunting 0-4-0STs set off for their morning shift on the docks. I conclude with a description of preserved locomotives.

There is inevitably some duplication with earlier books that

I have written for Pen & Sword. The description of the Cambrian engines was included in the book I co-wrote with Paul Carpenter, *The Cambrian Railways Gallery*, and a few of the engines described in this book were rebuilt with

pannier tanks and were included in my Pen & Sword's *Great Western Pannier Tank Classes*. I repeat the text describing the design, construction and operation of these classes, and have included a few photos for completeness.

Chapter 1

THE ENGINEERS

Nearly all the locomotives constructed for the railway companies that were absorbed by the Great Western Railway between the 1870s and 1923 were purchased from contractors to their design. The locomotive construction companies identified as builders of these engines were, in alphabetical order:

Andrew Barclay
 Avonside Engineering Co.
 Beyer, Peacock
 Brush Electrical Co.
 Dodds & Co.
 Dübs
 E.B.Wilson
 Fairlie Engine & Rolling Stock Co.
 Falcon Engineering & Car Co.
 Fox, Walker & Co.
 Haigh Foundry
 Hawthorn, Leslie
 Henry Hughes & Co.
 (Loughborough)
 Hopkins, Gilkes & Co.
 (Middlesbrough)
 Hudswell Clarke
 Hunslet
 Ince Forge Co.
 James Cross (St Helen's)
 Jones & Son (Liverpool)
 Kerr, Stewart & Co.
 Kitson & Co.
 Longridge & Co.
 Manning, Wardle

Nasmyth, Wilson & Co.
 North British Loco Co.
 Peckett
 R.Stephenson & Co.
 Rothwell & Co.
 Sharp Bros.
 Sharp, Stewart
 Slaughter, Gruning & Co.
 Stothert & Slaughter
 Vulcan Foundry
 W.Sissons & Co. (Gloucester)
 William Fairbairn & Sons
 Yorkshire Engine Co.

The number of companies offering locomotive building capability in the second half of the nineteenth century is astonishing as is the wide variety utilised by the companies in the West of England and South Wales. Some companies acquired Daniel Gooch designed engines from the Great Western or had engines built for their use to his design.

Only in South Wales, with its profitable coal and steel industries, were companies large and financially secure enough to appoint their own locomotive superintendents designing and constructing engines at their own workshops. However, it has been extremely difficult to research the lives and personalities of the engineers who were the designers and drivers of locomotive policy in South Wales in the nineteenth and early part of the

twentieth century. Despite searches of society libraries and enquiries of the National Railway Museum, the Institute of Mechanical Engineers and the Welsh Railway Research Circle, and past volumes of *The Engineer* and *Railway Magazine*, it has been hard to find other than the bare appointment dates with the honourable exception of Tom Hurry Riches of the Taff Vale and Cornelius Lundie of the Rhymney Railway, both of whom were large personalities who dominated their companies for very long periods of time. Some additional information about the Barry Railway's officers in the November 2020 *Welsh Railways Archive* added a little about H.F. Golding and his successor John Auld. Other than that, nearly all references have been to their work – the locomotives and rolling stock they designed, had constructed and maintained – especially from the comprehensive books of the Railway Correspondence and Travel Society (RCTS). However, on reading my efforts in the book I wrote about 0-6-2T locomotives in South Wales, Denis Lewis and Tess Walker of the Railway Studies Collection at Newton Abbot contacted me and were able to provide me with some additional material, much from newspaper cuttings and census data of the day.

Sir Daniel Gooch

Daniel Gooch was born in 1816 in Bebington, Northumberland, the son of an ironfounder. His family moved to Tredegar in 1831. He trained under Thomas Ellis who worked with Samuel Homfray and Richard Trevithick to pioneer steam locomotion. At the age of twenty he was recruited by Brunel as Superintendent of Locomotive Engines, starting in 1837. In 1840 he found the site for Swindon Works and in 1846 designed the prototype of the 'Iron Duke' broad gauge 4-2-2, *Great Western*, the first engine constructed at the new Works. Although he was mainly involved in the design and construction of broad gauge engines at Swindon, between 1854 and 1864 he designed a number of standard gauge engines for the GWR's Northern Division at Wolverhampton. He resigned in 1864 when he entered politics as a Conservative MP but continued as a member of the GWR Board, a post he retained until 1889. He died on 15 October 1889.

Tom Hurry Riches, Taff Vale Railway, 1873-1911

Tom Hurry Riches was born in Cardiff on 24 November 1846, the son of Charles, educated at Trices' Academy in the city and was apprenticed in the locomotive works of the Taff Vale Railway at the age of seventeen. After serving five years, he gained a scholarship to the Royal School of Mines. Before taking that up, he spent several months at sea as second engineer on the SS *Camilla*. After completing his scholarship course, he became manager of Bute Iron Works, designing and building iron roofs, bridges and engines of all types that belonged to the Marquis of Bute Trust.

In 1872, he became Chief Locomotive Foreman of the Taff Vale Railway and less than a year later was appointed as Locomotive Superintendent – at twenty-seven years of age, the youngest in the United Kingdom, following five previous superintendents appointed and let go in quick succession. He then held this post for thirty-eight years, dying in the post of heart failure on 4 September 1911. During his period of office, he doubled the locomotive stock of the company and extended his responsibility to cover carriages and wagons, dock and harbour machinery and coaling appliances. His reputation amongst his fellow engineers was high, despite only belonging to a relatively small railway. He was at various times President of the UK Association of Locomotive, Carriage & Wagon Superintendents, and Member of the Institute of Civil Engineers and the Iron & Steel Institute. He was a Council Member of the South Wales Institute of Engineers from 1885 and its President in 1907/8.

In 1877 he was presented at the Mansion House in London with a piece of silver plate in recognition of his bravery in rescuing 240 miners entombed during a flood at the Tynwydd Colliery, and wrote several highly regarded papers to the various professional bodies on a number of engineering topics throughout his career. He was reporter to the International Railway Congress in both 1900 and 1910 on 'Express Passenger Engines' and 'Railway Motor-Carriages'.

He took great interest in the education and training of young people and was for nine years a member of the elected Cardiff City Council, being Chairman of the

Technical Committee of the County Borough of Cardiff. He was also a Justice of the Peace, a Governor of the National Museum of Wales and a Council Member of the University College of South Wales & Monmouthshire.

His health deteriorated in the last few months and he had to ease back on some of his many commitments, but he died on 4 September 1911 whilst still in office and active to the end.

John Cameron, Taff Vale Railway, 1911-22

John Cameron was born in Wigtonshire, Scotland and was educated at Inverness. He was apprenticed to Stroudley at Brighton and afterwards became Foreman of the Carriage & Wagon activity there. In 1885 he was appointed as Rolling Stock Inspector of the London & South Western Railway and, later that year, as Works Manager at Cardiff for the Taff Vale Railway. He was appointed as assistant to the Locomotive Superintendent in 1894 and became the Locomotive Superintendent himself after Tom Hurry Riches' death in 1911. He continued the TVR locomotive policy of building 0-6-2Ts for the Cardiff Valleys coal and passenger traffic and designed the class 'A' tanks which, rebuilt by Swindon with taper boilers, lasted well into the British Railways era. He retired when the Great Western Railway absorbed the Taff Vale Railway in 1922. He died on 17 March 1938.

Cornelius Lundie, Rhymney Railway 1872-1905

A Scot, born in Kelso in May 1918, he was educated privately and then attended science classes

at both Glasgow and Edinburgh universities. His father died in 1832 and he began work at Broomielaw Bridge on the Clyde. In 1836, he moved to Durham in charge of the Clarence Railway (subsequently part of the North Eastern Railway). In 1839 he emigrated to Australia, undertaking various roles in engineering, returning to Britain in 1847. He then worked for the famous engineering contractor, Mr Brassey, and from 1855-61 was manager of the Blyth & Tyne Railway (also later absorbed by the North Eastern).

In 1861, he was appointed manager of the Rhymney Railway, then still in the early stages of its existence, and retained that role for over forty years. He helped it through the early years of financial difficulty and developed its expansion throughout the Rhymney Valley and Cardiff Docks area and the building of Caerphilly Works. Mr Ahrons, in his book on locomotive and train working in the nineteenth century, describes him by 1872 as the 'Pooh-Bah' of the Rhymney Railway, encompassing – using the same metaphor – Lord High Executioner, Mikado, Lord High Everything Else, Chorus and Band! He was the RR's General Manager, Traffic Manager, Superintendent of the Line, Chief Engineer and Chief Locomotive Superintendent, all rolled into one. (Mr Ahrons ironically stated that when visiting Cardiff station, he was disappointed to find that Lundie – in his presumed role of Chief Ticket Inspector – was off duty!)

Although there were so-called locomotive engineers under him, it was his influence and control that drove the company's locomotive policies, wedded to double-framed 0-6-0 and 0-6-2 saddle tanks

throughout his career (many later converted to pannier tanks in the Churchward and Collett GW eras). He was eventually persuaded to retire in 1905 when he was 89 years old, but he was then appointed as a consulting director of the company and did not take a back seat, being seen in the Head Office only two days before he died, aged 93, on 12 February 1908. Richard Jenkins was nominally Locomotive Superintendent from 1884, but only took full control after Lundie's retirement in February 1905 and retired himself in December of the same year.

Lundie had one son and several grandchildren and was a man of strong religious principles applied strictly in his professional life, and more informally in his private life, where he was known as genial and good-hearted. He was a cultured man and was proud of personally knowing Sir Walter Scott and other writers of the time.

C.T. Hurry Riches, Rhymney Railway, 1906-22

He was the son of the Taff Vale's Tom Hurry Riches and was appointed to the role of Locomotive Superintendent of the Rhymney Railway on 1 January 1906 after the lengthy reign of Cornelius Lundie in that role in 1905, though for the first few years, Lundie's views still held considerable sway. Previously he had been Assistant Works Manager at Gorton (Manchester).

Charles Long, Brecon & Merthyr Railway, 1872-88

Charles Abraham Long was born on 28 May 1829 at Bitton in Gloucestershire in a community that included fitters and other men engaged in engineering. By 1851,

he was employed as a fitter by the Great Western Railway in Bristol. He married Ann Knight there in 1855 and between 1856 and 1874 had four sons and three daughters, two of the sons dying in childhood. By 1871 he was Foreman, Engine Fitter of the Brecon & Merthyr Railway living at Newport and in 1872 was appointed as Locomotive Superintendent of the Brecon & Merthyr Railway. He retired in 1888 and died on 9 February 1890 aged 60.

George C. Owen, Brecon & Merthyr Railway, 1888-1909

George Charles Mickleburgh Owen was born in 1857, the son of George Owen, a Civil Engineer employed by the Cambrian Railways at Oswestry. In the 1881 census he was described as a mechanical engineer at Oswestry and in 1882 he married Marion Davies in South Kensington. He was appointed as Locomotive Superintendent of the Brecon & Merthyr Railway in 1888 and had two sons and a daughter. The family lived near the B&M Works at Machen and he was killed in 1909 while crossing the line to visit a signal box. He had been decapitated by a train running towards Newport and the verdict of accidental death was passed by the coroner. He was 52. He is buried at Llangattock Juxta, Caerleon. He left £10,000 to his widow.

James Dunbar, Brecon & Merthyr Railway, 1909-22

James Dunbar was born in 1862 in Grantham, the son of Andrew, a Chelsea Pensioner innkeeping in the town, and his wife, Mary. He was the second of eleven children and by 1891 he was a Foreman, Engine fitter of the Midland & Great Northern Railway based at Melton Constable.

He married Isabella in Portsmouth in 1891 and they had three sons and four daughters. He was appointed Locomotive Superintendent of the Brecon & Merthyr Railway in 1909 and moved to Machen near the B&M Works. He died on 26 February 1922 before he could take up his new post of Works Manager at Oswestry in February 1922 when the GWR absorbed the Brecon & Merthyr and other Welsh railways. He left £1,666 to his widow.

J.H. Hosgood, Barry Railway, 1884-1905

John Howell Hosgood was born in October 1860 in Cardiff, son of William, an engine fitter of the Taff Vale Railway, and Ellen. He became Chief Draughtsman of the Taff Vale Railway and in 1881 was made a member of the Institute of Mechanical Engineers. In 1884 he became a member of the Bute Lodge of the Freemasons and the same year was appointed as Locomotive Superintendent and Hydraulics Engineer of the Barry Railway. He married Florence Sainsbury of Thornbury in Gloucestershire in 1891 and they had two sons, the family living in Barry. He left the Barry Railway when it was incorporated in July 1905 and is recorded as leaving Liverpool for New York in December 1906. He returned to Wales on an unspecified date and died in Roath, Cardiff on 28 January 1910, aged 50, leaving £19,753 to his widow. He designed and was responsible for the construction of all bar ten of the Company's 150 locomotives.

Henry Frederick Golding, Barry Railway, 1905-09

Henry (Harry) Frederick Golding was born in 1868 at Weybridge,

Surrey, the son of Edwin, a bricklayer/builder, and Anne Walpole of Loughborough. He started as a printer's apprentice but by the age of 15 became a draughtsman on the London & South Western Railway, spending four years in the drawing office before moving to the engineering shops at Nine Elms. In 1892 he married Helen Walker of New Pitsligo in Aberdeenshire in Portsea Island, Hants and they had five children. In 1893, aged 26, he became chief draughtsman of the Taff Vale Railway and then was assistant locomotive superintendent at Penarth Dock steam sheds under John Cameron. He was involved in the design of engines on that railway before moving to the Barry Railway as Locomotive Superintendent in 1905. Although well thought of on the Taff Vale Railway, his career on the Barry Railway seems to have been controversial and somewhat chequered involving disputes with the Trade Unions and allegations about the state of the engines involving a visit from inspectors from the Board of Trade. His management style was abrasive, and he was accused in particular of his tyrannical treatment of his drivers and firemen and his excessively strict disciplinarian style, notable even in that period. He resigned in 1909 with relationships with the company somewhat strained and left the country in 1913 for a senior position on the Northern Railway of Nigeria. He returned to Wales in 1915, but whether for a visit or permanently is unknown.

John Auld, Barry Railway, 1909-1922

John Auld was born in Kilmarnock on 8 March 1871, the son of David

Auld, an engineer, and Sarah Manson. They were living in Bootle in Lancashire in 1881 but by 1891 the twenty-year-old John, after a five year apprenticeship, was an engine fitter for the Glasgow & South Western Railway in Glasgow. His marital situation seems confusing as he was recorded as marrying a Katherine Griffiths on an unknown date but by 1901 he was married to Agnes who came from Feald in Scotland. In 1895 he was a draughtsman on the Great North of Scotland Railway at Aberdeen and then moved south in 1898 to become Assistant to the Locomotive Superintendent of the London, Tilbury & Southend Railway at Plaistow, living at West Ham. In 1902 he returned to Scotland as Chief Locomotive Foreman of the G&SWR. John Auld came to the Barry Railway to replace Henry Golding in 1909. He became a member of the Institute of Mechanical Engineers in 1910. He was Locomotive Superintendent of the Barry Railway until its absorption by the GWR and clearly mended relationships after the forceful and abrasive Golding. In June 1922, he was appointed by the GWR as Mechanical Engineer to Barry Docks and Divisional Locomotive Superintendent of the Cardiff Valleys Division. Two months later, in August 1922, he moved to become Docks Assistant to the GWR Chief Mechanical Engineer (Charles Collett). In 1924 to 1932 he was designated as a Principal Assistant to the GWR C.M.E. By 1939 he was widowed and living with his sister and two housekeepers in Swindon, where he died on 17 May 1947, aged 76, leaving £30,994.

Chapter 2

THE BROAD GAUGE
LOCOMOTIVES

The Great Western main lines constructed from 1835 onwards on Brunel's 7ft broad gauge were copied by a number of smaller companies in the same geographical area. The first GW broad gauge four-coupled tank locomotives were 2-4-0 tank locomotives converted from 2-4-0 tender engines and appeared as early as 1841 and similar designs to the GW engines were purchased or built by engineering companies for the South Devon, Bristol & Exeter and Torbay & Brixham railways in the West of England and the Vale of Neath, Llynvi & Ogmore and South Wales Mineral railways in Wales. Information about some of the earliest locomotives is sketchy and I have been very reliant on information unearthed by the Railway Correspondence & Travel Society and documented in their comprehensive reviews of Great Western locomotives published in the early 1950s.

Bristol & Exeter Railway

The Bristol & Exeter Railway was built to the broad gauge in 1844 and was leased to the Great Western Railway until 1849 when

the B&E took over responsibility for motive power which were initially 4-2-2 express locomotives and a steam rail car. The latter though had only a single driving wheel under the locomotive and therefore does not qualify to be included in this book. The motive power was the responsibility of C.H. Gregory as Engineer until 1850 when James Pearson from the South Devon Railway took charge, although the early engines acquired were to Daniel Gooch's design. The company's own works and erecting shops were opened in 1854 at Bristol and the first engines built there appeared in 1859. The B&E built both broad and standard gauge engines. Early expresses were hauled by Gooch 4-2-2 tender engines and a remarkable group of 4-2-4 tank engines with a 9ft flangeless driving wheel and were capable of high speed (credited with at least one '80mph'), although they were converted to tender engines after a derailment of one in 1876.

47-52, 61-74, 85-90 (GW 2028 -2053) class 4-4-0ST, 1855

A batch of six 4-4-0 saddle tanks were built by Rothwell & Co. in

1855 and were numbered 47-52. Their key dimensions were:

Coupled wheels:	5ft 6in
Bogie wheels:	3ft 6in
Cylinders:	17in x 24in
Tank capacity:	1,100 gallons

A further four constructed by Beyer, Peacock & Co., (61-64) and ten by Vulcan Foundry (65-74) were larger, the Beyer, Peacock engines being built in 1862 and the Vulcan machines in 1867. Their dimensions were additionally:

Heating surface:	1,208sqft
Grate area:	20.7sqft
Weight:	44 tons 16 cwt
Tank capacity:	1,280 gallons

A final batch of six 4-4-0STs were built by the Avonside Engine Co. in 1872/3 and numbered 85-90. They differed only by having a smaller heating surface – 1,064sqft and a larger tank capacity – 1,440 gallons. When taken into GWR stock in 1876 they were renumbered 2028-2033 (the Rothwell engines), 2034-2037 (Beyer, Peacock), 2038-2047 (Vulcan) and 2048-2053 (Avonside).

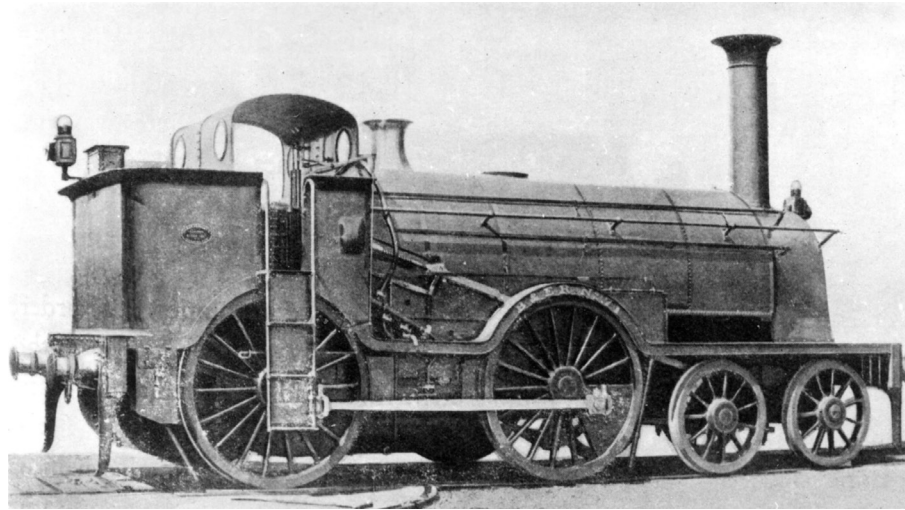
Most broad gauge engines seemed ugly though impressive because of their size to those used only to standard gauge engines and these 4-4-0 saddle tanks looked badly proportioned and unprepossessing, but in fact they were successful, initially hauling passenger and freight services between Bristol and Exeter and then, after being absorbed into GWR stock, spending their last years in Devon and Cornwall.

2051 (Avonside B&E 88) was involved in a fatal collision at Norton Fitzwarren in 1890 and was withdrawn immediately in November, the other Avonside engines all remaining until the abolition of the broad gauge. The Rothwell engines were withdrawn between 1879 and 1884, the Beyer, Peacock engines between 1880 and 1886 and most of the Vulcan engines, like the Avonside ones, staying until May 1892. 2038 (B&E 65) and 2041 (68) were withdrawn early in 1880, 2044 in 1882, and three (2040, 2043 and 2046) in 1888/9.

110 (GW 2058) class 0-4-2ST, 1874

Two engines were purchased from contractors, Brotherhood of Chippenham, one of which was an 0-4-2 saddle tank engine used on the South Wales Mineral Railway – a Manning Wardle engine of 1864 (see later chapter on engines absorbed by the GW from the South Wales Mineral Railway). It was purchased by the Bristol & Exeter Railway in 1874 and numbered 110 (later GWR 2058). Its known dimensions were:

Coupled wheels: 4ft 0in
Trailing wheels: 3ft 6in
Cylinders: 14in x 20in



Bristol & Exeter broad gauge 4-4-0T, No.71, built by Vulcan, 1867 and withdrawn in 1882.
(F.K. Davies/John Hodge Collections)



Bristol & Exeter broad gauge 4-4-0T, No.74, built by Vulcan, 1867, at work on the docks at Watchet in north Somerset, an early photograph thought to be at the end of the 1860s or early 1870s.
(F.K. Davies/John Hodge Collections)

Its use is not known, and it was withdrawn in 1881.

91 & 92 (GW 2094 -2095) class 0-4-0WT, 1872

91 and 92 were two well tanks built in the Bristol & Exeter Railway workshops at Bristol, the first in 1872 and the second two years later. Their only known dimensions were:

Coupled wheels: 3ft 6in
Outside cylinders: 14in x 18in
Tank capacity: 800 gallons

They were built for shunting, were renumbered by the GWR as 2094 and 2095 and were withdrawn in 1880 and 1881 respectively, after only 7-8 years' service which suggests that they were not adequate for the task and

were replaced by more suitable GW classes after the B & E's amalgamation with the GWR.

Carmarthen & Cardigan Railway

The Carmarthen and Cardigan Railway was an impecunious broad gauge system that started in 1860 building from Carmarthen towards Pencader, the first section opened in 1861. They hired two 4-4-0 tank engines and when the line reached Llandyssil in 1864, purchased two more. The line converted to standard gauge in 1872 to reduce costs and they sold their remaining broad gauge engines to the South Devon Railway. The line was sold to the GWR in 1882 and that company extended the branch to Newcastle Emlyn and never reached Cardigan (which was linked via Whitland).

Heron & Magpie 4-4-0T, 1861

Heron and *Magpie* were two 4-4-0 side tank locomotives hired by the Carmarthen & Cardigan Railway in 1861. They were built by Sharp, Stewart & Co. and their known dimensions were:

Coupled wheels:	5ft 2in (later 5ft 3in)
Bogie wheels:	3ft 3in
Cylinders:	17in x 24in
Heating surface:	1,312sqft
Grate area:	20sqft
Tank capacity:	900 gallons

On conversion of the line to standard gauge in 1872, they were sold to the South Devon Railway who immediately replaced the side tanks with saddle tanks. They were numbered by the GWR 2134 and 2135. They both survived until the

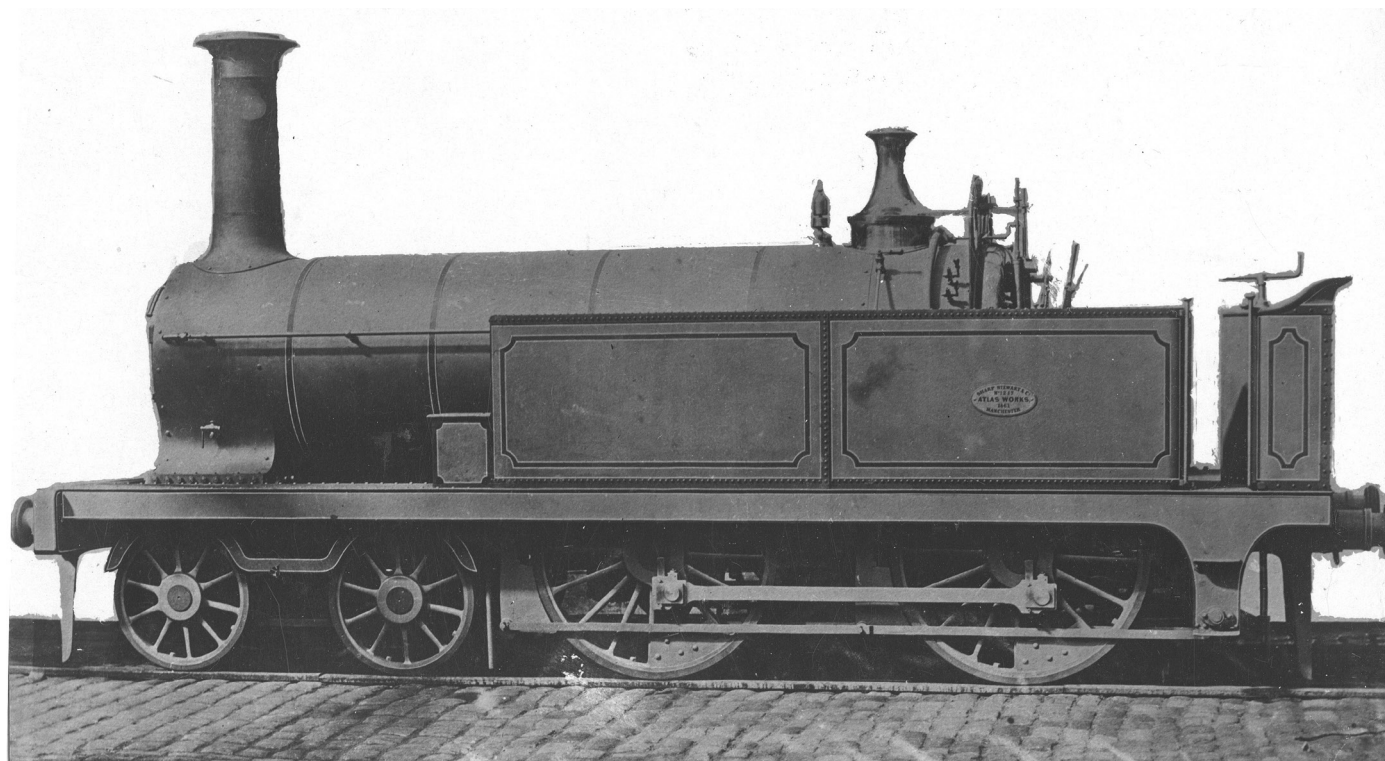
end of the broad gauge and 2134 (*Heron*) pulled the last broad gauge train from Tavistock to Plymouth Millbay on 20 May 1892 before taking itself and the empty stock to Swindon for scrapping.

Etna & Hecla, 4-4-0ST, 1864

Etna and *Hecla* were built in 1864 by Rothwell & Co. and were 4-4-0 saddle tanks. Their known dimensions were:

Coupled wheels:	5ft 3in (later 5ft 6in)
Bogie wheels:	3ft 6in
Cylinders:	17in x 24in
Heating surface:	1,223sqft (new Avonside boiler for <i>Hecla</i> 1875)
Grate area:	15.5sqft (ditto)

The 4-4-0 side tank built by Sharp, Stewart & Co. in 1861 for the Carmarthen & Cardigan Railway and sold to the South Devon Railway and rebuilt as a saddle tank in 1872. Photo as built in 1861. (LPC/F.K. Davies/John Hodge Collection)



Tank capacity: 700 gallons
(*Etna*),
1,000 gallons
(*Hecla*)

Etna was sold to the South Devon Railway in 1868 and *Hecla* in 1872. *Hecla* received a new boiler and tank from the Avonside Engineering Co. in 1875. They were numbered 2132 and 2133 by the GWR after acquisition of the South Devon Railway in 1872. Both lasted until the end of the broad gauge in 1892.

Llynvi & Ogmore Railway

The Llynvi Valley Railway from Bridgend to Maesteg had three broad gauge engines, two 0-6-0 goods tank engines and a 4-4-0 saddle tank named *Rosa*. When it amalgamated with the Ogmore Valley Railway from Tondur to Ogmore Vale in 1868, it opted for the standard gauge and exchanged its three broad gauge engines for four standard gauge locomotives from the West Cornwall Railway, which had become part of the South Devon Railway in 1866.

Rosa 4-4-0ST, 1863

Rosa was constructed by Slaughter, Gruning & Co. in 1863 as a 4-4-0 saddle tank with the following known dimensions:

Coupled wheels: 5ft 6in
Cylinders: 16½in x 24in

It was acquired as part of the locomotive exchange by the South Devon Railway in 1868 and altered to the 0-6-0ST wheel arrangement in 1874 and given the number 2145 when that railway was amalgamated with the GWR in 1876. It was withdrawn in October 1885.

South Devon Railway

The South Devon Railway adopted in 1844 the 'atmospheric' system of traction and it took three years to get it running after any fashion. The first section between Exeter and Teignmouth was opened in 1846 and GW engines were used instead. The abandoned atmospheric section through to Plymouth with its gradients of around 1 in 40 was too much for the early GW engines and Gooch supplied the two 1849 'Corsair' 4-4-0STs to operate the line. Further tender engines were supplied by the GW in 1851 and in 1851, a contract with Evans & Geach was agreed to supply the motive power for ten years – twelve 4-4-0 saddle tanks and four 0-6-0 saddle tanks, built under the supervision of Gooch. The West Cornwall standard gauge railway was acquired in 1866 and converted to broad gauge and Evans, Walker and Gooch supplied further 4-4-0

and 0-6-0 saddle tanks, before the Great Western took over the South Devon Railway, along with the Bristol & Exeter, in 1876.

2096- 2105 4-4-0ST, 1851

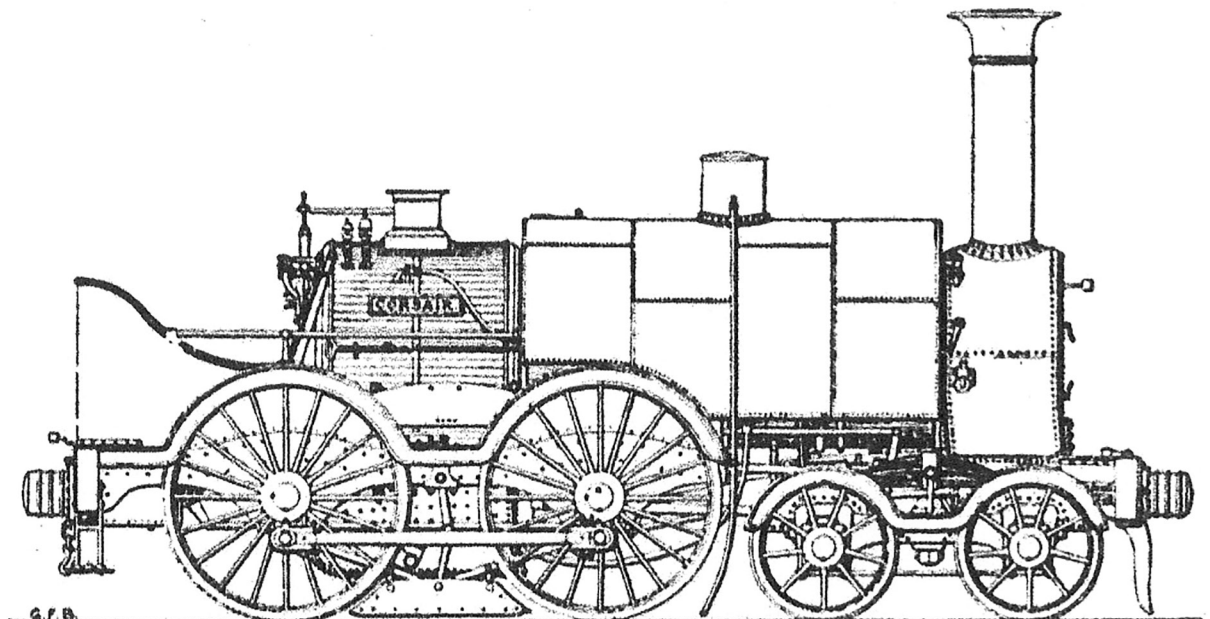
The first five 4-4-0 saddle tanks acquired from the contractors in 1851 were built by Longridge & Co. of Bedlington and were named:

Comet Lance Rocket Meteor Aurora

The second batch of four engines were built by Haigh Foundry of Wigan between 1851 and 1853 and were named:

Priam Damon Falcon Orion

Just one was built by William Fairbairn and Sons of Manchester in 1852, named *Ostrich*, and the final two by Stothert and Slaughter of Bristol in 1853 named *Ixion* and *Osiris*.



A drawing of the GW 'Corsair' class, examples of which were supplied by the GWR to the Bristol & Exeter Railway in 1849. (G.F. Bird/LCGB)

They were all similar to the GW 'Corsair' design, key dimensions being:

Coupled wheels: 5ft 9in
 Bogie wheels: 3ft 6in
 Cylinders: 17in x 24in
 Boiler pressure: 60lb psi
 Heating surface: 1,323sqft
 Grate area: 22sqft
 Tank capacity: 800 gallons

They were all operational in Devon and Cornwall, though many of them hardly survived the transfer to GW stock. The company struggled to keep them running and it was reported in October 1854 that only four of the twelve were operational, one of those in very poor condition, even though they were scarcely two or three years old. To keep the service running the South Devon Railway had to borrow a locomotive from the GWR. *Lance* was destroyed in a collision of goods trains at Menheniot in 1873 and *Osiris* was used as a stationary engine in 1873 for the Portreath Incline. The remaining ten locomotives were numbered 2096-2105 by the GWR in 1876. *Priam* and *Damon* were withdrawn the same year and all except *Comet* and *Meteor* had gone by 1878. These two were withdrawn in 1884 and 1881 respectively.

2106- 2121 4-4-0ST, 1859

A second batch of twelve 4-4-0 saddle tanks were supplied under contract in 1859/60 and a further four between 1863 and 1865, very similar in design although the saddle tanks were lengthened to 1,100 gallon capacity. Their key dimensions were:

Coupled wheels: 5ft 6in (the last four had 5ft 9in, later reduced to 5ft 6in)
 Bogie wheels: 3ft 6in
 Cylinders: 16½in x 24in
 Heating surface: 1,195sqft
 Grate area: 20sqft
 Weight: 38 tons
 18 cwt
 Axleload: 13½ tons

They were named:

<i>Eagle</i>	<i>Elk</i>	<i>Hawk</i>	<i>Lynx</i>	<i>Gazelle</i>
<i>Mazeppa</i>	<i>Giraffe</i>	<i>Lion</i>	<i>Antelope</i>	<i>Wolf</i>
<i>Tiger</i>	<i>Hector</i>	<i>Cato</i>	<i>Dart</i>	<i>Pollux</i>
<i>Castor</i>				

They all operated west of Exeter and when that railway was acquired by the GWR in 1876 they were numbered 2106-2121. Two (2106 and 2109) were condemned immediately

and a further three went in 1877. The last survivors were 2108, 2110, 2111, and 2119 withdrawn in 1885 and 2117 (*Hector*) which was the only one to last until the end of the broad gauge in 1892.

2122-2127 4-4-0ST, 1866

The company ordered six further 4-4-0 saddle tanks in 1866, delivered from the Avonside Engineering Company (formerly Slaughter &

Gruning). These had inside plate frames and were named:

<i>Gorgon</i>	<i>Pluto</i>	<i>Sedley</i>
<i>Sol</i>	<i>Titan</i>	<i>Zebra</i>



4-4-0ST 2122 *Gorgon* built in 1866 and which lasted to the end of the broad gauge in 1892, seen here c1890. (GW Trust)