

The Story of the GWR

A brief historical overview

The Birth of the GWR

Robert Stephenson, Isambard Kingdom Brunel and their impact on travel in Britain and to the wider world

Opened in 1825, the Stockton and Darlington Railway was the world's first scheduled goods and passenger railway and the first to use locomotives rather than horses or fixed steam engines to pull carriages. In 1829, Stephenson's Rocket demonstrated the feasibility of reliable, safe, fast and economical engines and the Liverpool to Manchester Railway opened in the following year.

As Liverpool's main rival for the Atlantic trade, Bristol businessmen soon realised the importance of securing a railway link between the port city and London.

Brunel was appointed engineer to the Great Western Railway in 1833. Only 23 years old, he had already gained considerable experience working alongside his father on the world's first underwater tunnel across the Thames at Rotherhithe.



Brunel with GWR officials

Brunel carried out the main surveys for the new line in 1834 on horseback. He wrote: 'The line has been preferred on account of the superiority of its levels and the ultimate economy of working steam power on it, as well as of its offering the greatest facilities for

a junction with Oxford, Cheltenham and Gloucester and through Gloucester to South Wales.'

Brunel's route included a viaduct over the River Brent near Ealing, a bridge over the Thames at Maidenhead with an unusually flat arch and a tunnel nearly two miles long - the longest ever built at that time - through solid limestone at Box, near Bath. The line between Paddington and Swindon was known as 'Brunel's billiard table' because of its flat gradients.

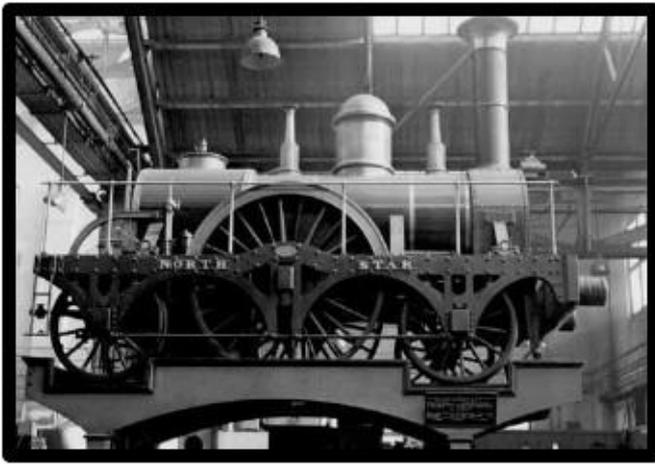
Working with little machinery and in considerable danger, a team of over 1,100 navvies worked around the clock and the first section of the line between Paddington and Twyford near Maidenhead opened on the 4th June 1838. The inaugural run was made by North Star, designed by Robert Stephenson and originally destined for the New Orleans Railway in America. A replica of North Star, with some original components, is now displayed at STEAM.



Navvies at work

The line was extended to Reading early in 1840 and reached Hay Lane outside Swindon (near the present Jardinière Garden Centre) in December. In August 1840 the line opened from Bath to Bristol. Box Tunnel was completed in June 1841 when trains could run directly from London to Bristol for the first time.

Initially, the new track was to have adopted the 'narrow' gauge of 4ft 8 and a half inches, the gauge adopted by George Stephenson from coal mines in the north-east. At Brunel's recommendation, the GWR Board decided instead to adopt the broader gauge of 7, believing that it would provide a faster, smoother and more comfortable ride.



North Star

Brunel's position was challenged on several occasions while construction was underway, with disagreement about the suitability of broad gauge, construction problems and cost overruns. The final bill was £6.25 million, well over the original estimate.



Box Tunnel

In spite of the acknowledged speed of GWR trains, only 13% of the national railway network had adopted broad gauge by 1845. Broad gauge lines included the Bristol - Exeter Railway and the Cheltenham, Gloucester and Great Western Union Railway, which connected with the GWR at Swindon.

Problems in transferring goods and passengers between broad and narrow gauge railways led to a Parliamentary Enquiry. Locomotive trials showed that although broad gauge trains were faster, smoother and less likely to accidentally derail, there was no great advantage over narrow gauge in safety, accommodation and convenience. Broad gauge lines were also more expensive to build. As a result, no new broad gauge railways were authorised beyond 1845, except lines already planned or those within the broad gauge area.

New Swindon

The factory system and working life for men, women and children.
The impact of the railways on the local area

The new GWR Works were built at Swindon for several reasons; the site was midway between London and Bristol, at a point in the line where engines could be changed to deal with the steeper gradients west of Swindon. The site also stood at the intersection of the main line both with the Wilts and Berks canal, which could carry in heavy raw materials, and the Cheltenham to Swindon railway.

Work began in 1841. Both the foyer and the eastern wall of STEAM date from the first period of construction, making them among the world's earliest railway buildings still standing.

At first, there were problems in recruiting qualified workers. Six Foremen managed 417 other staff working the following hours:

6 - 8.15	Work
8.15 - 9	Breakfast
9-1	Work
1-2	Lunch
2-6	Work

On Saturdays, the working day was 6 am to 1pm.



The Foundry

GWR Workers' Cottages



Workers were housed in a new estate of stone cottages partly designed by Brunel. The new estate was intended to be visible from the railway line as an advertisement for the GWR. Houses were built in stone and later equipped with gas and running water from a reservoir fed by the canal north of the station. However, the poor quality of running water coupled with the lack of proper sewerage disposal facilities led to outbreaks of typhus and smallpox throughout the 1850s and 60s.



St Mark's Church

Mechanics Institute



St Mark's church was built to serve the new estate with funds donated in 1842, a primary school (now used for industrial purposes) was completed in 1845 and a company park laid out. The Workers Medical Fund was set up in 1847, later established as the GWR Medical Fund. The Mechanics Institute, completed in 1855, was financed by the GWR plus workers' subscriptions and offered recreational and educational facilities of a high standard.

The former GWR Museum was originally built as a boarding house for single workers. Unpopular with the men, it was converted into flats to house the families of Welsh workers brought in to operate new Rolling Mills. In 1867 it was sold to the Methodist Church, who converted it into a chapel.

Growing Pains

Events and changes in work and transport

In spite of a financial crisis in 1848, the GWR continued to expand, mainly by taking over existing lines, often at considerable expense; these included the Wilts, Somerset and Weymouth Railway, the Berks and Hants Railway, the Bristol - Exeter Railway, the Shrewsbury - Birmingham Railway and eventually the Cornwall Railway. But the expense of continuous expansion fuelled a serious financial crisis. In 1865, the Company Chairman, Daniel Gooch, requested additional funds from the Prime Minister Disraeli and services were cut back to the bone, earning the GWR a reputation for poor standards of passenger comfort and service for many years in those areas where it held a complete monopoly.

After years of engineering difficulties, the Severn Tunnel was completed in 1886 and in May 1892 the remaining broad gauge track from Paddington to Penzance was dismantled.

50 broad gauge locomotives and 500 carriages were converted to narrow gauge or sold for scrap. Standards of service began to improve in the 1890s, with faster trains on express routes and technical improvements such as the introduction of vacuum brakes. The first corridor trains were introduced in 1890, and in the same year stream heating was introduced; previously the only form of heating in carriages had been provided by coal-fired foot-warmers.

New Swindon Develops

The factory system and working life for men, women and children

The impact of the railways on the local area
The growth of industrial towns

A proposal to build new Carriage Works at Oxford in 1865 was turned down, partly because of objections from the University. Instead, new Carriage Works were set up at Swindon from 1868 on land between the line and the railway village. Carriages were built in stages from the saw mill in the east to the upholstery workshop nearest the station. The listed curtain wall facade was completed in 1876.

Additional Carriage and Wagon Works were built close to the present-day site of the Oasis swimming pool from 1896 onwards.

A steam-powered whistle was mounted in 1864 on the roof of the Fitting and Machine shop. With a range of 12 - 15 miles, the hooter was first sounded at 5.15am and again at 5.45am and 6am. The hooter's licence was temporarily revoked in 1874 after Lord Bolingbroke at Lydiard House complained of the disturbance to his sleep.

In 1870 a tunnel was built linking the centre of the town with the Works, the first to be built. Previously workers had walked across the line, leading to many accidents. The Rodbourne Road underpass was completed in 1888 after another fatal accident.

The supply of water to the Railway Village improved in 1864 with the establishment of a reservoir at Wroughton by the Swindon Water Company. From 1874 onwards, fresh water was pumped in from a spring at Kemble north of Swindon.

The Cottage Hospital in the Railway Village opened in 1872 and four years later Park House was built as residence and surgery for the GWR Doctor. The GWR Medical Fund centre opened in 1892, including swimming baths, consulting rooms and pharmacy. The swimming and Turkish baths are still in use today as the Health Hydro.



GWR Medical Find Centre

The annual GWR Children's Fete began in 1868, with free cake and fairground rides for every child, a tea for workhouse children and a dance for the grown-ups in the evening. The Fete continued until 1939.



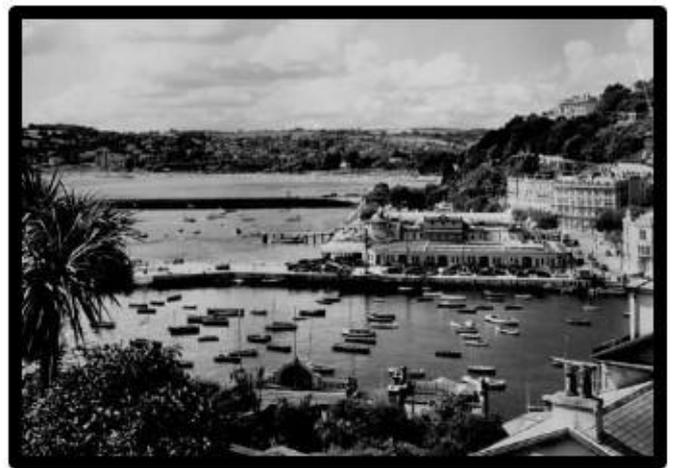
GWR Children's Fete

National legislation led to a reduction in working hours by 3 and a half hours per week in 1872. The working day now ended at 5.30 instead of 6 pm on weekdays and 12 instead of 1 on Saturdays. These hours remained unchanged until 1919.

Swindon Works employed a small but growing number of women, mainly in the Carriage Upholstery Shop. From 1913 women were also admitted as clerks, where they operated a new automated accounting system.

'God's Wonderful Railway'

Appointed in 1902, George Churchward developed super-heated steam engines influenced by French and American design. The new 'Star' locomotives used interchangeable parts and tapered boilers requiring less maintenance. As a result, the Works required a smaller workforce, and resulting lay-offs may have contributed to growing labour unrest. Mass protest meetings were organised in 1908, Swindon Works participated in the first national Rail Strike in 1911 and in 1912 the National Rail Executive was set up. Short-time working introduced in 1913 caused many Swindon railway workers to emigrate to Canada.



Torquay - the English Riviera



The Cornish Riviera

An economic upturn from 1896 led to renewed investment in the GWR system. The direct line from Wootton Bassett to the Severn Tunnel opened in 1903 and in 1906 the completion of a cut-off line at Castle Cary created a new direct route from Paddington to Penzance - advertised from 1903 as the 'Holiday Line.' Fishguard Docks were also rebuilt and the GWR worked with local authorities in Devon and Cornwall to develop and publicise seaside resorts.

In 1900 work began on a massive new Locomotive Erecting Shop east of Rodbourne Lane. Gas generators supplied electric power to the Works from 1901, and in 1902 Rochester Time Recorders were installed to power factory clocks more accurately.

GWR in the First World War

Discontent about wages and conditions were temporarily defused with the outbreak of the First World War, when special wartime bonuses were introduced. As well as locomotives - 175 were made during the war - shells and other components were also manufactured. From 1915, additional female clerks were taken on and the female workforce continued to increase after the introduction of universal male conscription in 1916.

By the end of the war, around 1000 men from Swindon had lost their lives, 825 from the Swindon Works. Attempts by the Government to cut wartime bonuses led to a nine-day national Rail Strike. On this occasion the public felt widespread sympathy for the railwaymen, and the Government reinstated wartime wages.

The First World War left the national rail network in a poor state, made worse by increasing competition from the road haulage industry. In response, the Government drew up plans to reorganise Britain's rail network under four big companies. Of these, only GWR retained its original name, in part reflecting the dominance of the old company in the regions it served, in part through pressure from the GWR Board, which appreciated the publicity benefits of the famous name. Newly enlarged, the GWR network extended to dockyards and coalfield lines in South Wales.

The 47 hour week was introduced at Swindon in 1919. On weekdays, the working day now ran from 8 to 12.30 and from 1.30 to 5.30, and from 7.30 to 12 on Saturdays.

Between the Wars

The Depression New Technologies

The Swindon Works reached their height in 1921, employing over 14,000 men. GWR locomotives continued to grow more powerful and in 1924 the first of the Castle Class - Caerphilly Castle - was exhibited at the British Empire Exhibition at Wembley. Caerphilly Castle, and its more powerful successor King George V, now stand on display at STEAM.



Caerphilly Castle

The 1920s saw continued emphasis on advertising and public relations, and in 1923 the 'Cheltenham Flier' was launched, billed for a brief period as the 'World's Fastest Train'. Advertising material glamorised flagship locomotives such as the Cornish Riviera Express and plans were made to develop special saloons for trans-Atlantic holiday trade via Fishguard.

In 1925, the Swindon Works produced 73 locomotives - a record year. But the General Strike of 1926 hit the GWR's profitability hard. The Strike speeded up the decline of the

South Wales mining industry, making GWR coalfield lines unprofitable and reducing supply of the anthracite steaming coal on which GWR trains were designed to run. Further difficulties were caused by the worldwide Depression and by 1930, 3000 Swindon workers had been made redundant.

The GWR made a partial recovery during the 1930s. New express trains were built in 1935 to mark the centenary of the GWR and in the same year a new film 'Romance of a Railway' was made. The 30s also saw the development of the 'Diesel Railcar', designed in Art Deco style for cross-country and commuter lines.

1937 was a profitable year but trade in 1939 was hit by uncertainty about the international situation.

the GWR in the Second World War

The Blitz and evacuation The Second World War in the local area

The 1938 Defence of the Realm Act made provision for railways to be placed under public control in time of emergency, and the GWR was effectively nationalised for the duration of the Second World War, though existing management remained in place. Company shareholders were given a guaranteed income based on income from 1935- 1937

On the outbreak of war, most trackside and station lamps were blacked out, causing problems for staff in shunting yards. Precautions were also taken to minimise the glow from fireboxes. Signalmen were issued with small metal shelters known as coffins which they could retreat into during air raids whilst remaining available to operate signals.

At first, carriages were fitted with low-wattage blue lights, but after complaints from the public, dim white lights were reinstated except in corridors and toilets. In the event of an Air Raid, passengers were directed to close all windows, pull down blinds and lie on the floor where possible.

All main station signs were removed in June 1940 and subsequently other place names were obliterated. A Railway Service Identification Badge was issued and staff trained in security issues. Procedures were put in place to immobilise the network if necessary and some bridges were drilled with cavities for explosives.

Casualty evacuation and Home Ambulance Trains were built and all GWR ferries were requisitioned, including the St David and St Andrew on the Fishguard-Rosslare route and the St Helier on the Channel Islands route. Wagons from the GWR Salvage Corps picked up paper, towels, coal and other items. on a four weekly cycle

At the outbreak of war, the GWR ran 163 special evacuation trains, using procedures established during a smaller scale evacuation at the time of the Munich crisis.

Although less badly affected than the Southern Railway, the GWR suffered much damage in the course of the war. One of the first raids occurred in August 1940 with the loss of 14 lives at Newton Abbot station. Poplar depot was destroyed in September 1940 and Temple Meads clock tower burnt out in January 1941. However only 104 bombs fell on Swindon during the entire course of the war, and the Works were only slightly damaged, although the gas holder received a direct hit.

Passenger traffic increased, and suggestions were made to use first class carriages for third class passengers in the event of overcrowding. Although this proposal was not carried out, first class carriages were withdrawn completely on London suburban trains in 1941.

Overcrowding was made worse by a steady decline in the number of passenger trains between 1941 and 1944. Smoking compartments were increased to 85% of the total stock, and theft of soap and towels from toilets led to their complete withdrawal in 1942.



Bomb Canisters at Swindon Works



Female Workers at Swindon Works



Machine Guns at Swindon Works

The glass roofs of the Swindon Works were painted over, speeding up the conversion from gas to electric lighting.

Secret munitions work included manufacture of Hurricane fighter parts, bombs, machine guns and 50 superstructures for Midget submarines. The Works also assisted with the construction of Bailey Bridges for D Day.

The GWR was at first slow to accept female staff with strong resistance from shed staff to the employment of women. However by August 1941 4000 additional female workers had been employed as porters, cleaners, guards and in the heavy engineering shops in Swindon. By 1943 the total number of female workers had reached 16,000. A woman's welfare assistant was employed and female only toilets established where necessary.

The GWR docks in South Wales took on great strategic importance during the war and were used for the import of petrol until the completion of a national pipeline grid. The National Dock Labour Scheme was introduced to guarantee a minimum wage and the Government paid for many improvements, such as the installation of electric cranes at Swansea and Barry.

The Government paid for other improvements on the railway network designed to speed up the flow of troops, such as loops on junctions at Newbury, Didcot and Southampton.

Post-War

The GWR became the Western Region of British Railways at Nationalisation on 1st January 1948 but the Swindon Works continued to produce locomotives of Castle Class GWR design until 1950.

In 1946 two weeks paid holiday was introduced and the working week reduced to 44 hours in 1947, with Saturday working discontinued.

The last steam engine made at Swindon - Evening Star - was built in 1960, and the Works then switched to the production of Diesel Hydraulic Locomotives, in which the wheels were directly powered by the rotation of the engine. Diesel Hydraulics proved unreliable and costly to maintain, leading to their withdrawal in the late 70s.

The 1960 Works Modernisation Plan called for a reduction in the size of the Swindon work force from 8,000 in 1962 to 5,000 in 1967. Fortunately, the implementation of the 1952 Town Development Act had created new employment opportunities in Swindon such as the Pressed Steel Plant and elsewhere.

Much of the former Works north of the station was sold in 1966 and became the site of the Oasis Leisure Centre, the Hawksworth Industrial Estate and North Star College. In the same year, Swindon Borough Council purchased the Railway Village.

By 1973 Swindon Works employed just 2,200 staff, but this had risen to 3,800 in 1980 with the refurbishment of Southern Region Electric Multiple Units. However new units introduced in the mid 80s required less maintenance, and British Rail announced the closure of the Swindon Works in May 1985. The GWR 150 Celebrations, due to be held three weeks later, were cancelled as a result.

The final closure of the Swindon Works took place on 31st March 1986 and the site was purchased by Tarmac plc. Listed buildings have been retained and an ongoing development programme has included the opening of the Designer Outlet Village and STEAM Museum. The site is now the headquarters of The National Trust, English Heritage and the National Monuments Records Centre.

