

GWR Class 6803 "Bucklebury Grange" – our very own steam engine

The Great Western Railway (GWR) designed and built steam locomotives that were both elegant and superbly constructed. The main production works were in Swindon where it made some of the most powerful locomotives over a period spanning over 100 years, commencing from the middle of the 19th century. In many respects the GWR had been the pioneer of the then modern railway with such great engineering names as Isambard Kingdom Brunel, Daniel Gooch, Major William Dean, G.J. Churchward, C.B. Collet and F.S. Hawksworth. Each of these engineers carried the spirit and ethos of what became known as 'God's Wonderful Railway'.

In the very early days of the railways (and still today on some very small and typically preserved railways), locomotives were known by their name alone. As the numbers of locomotives increased, it became necessary to refer to them by number (although many were named as well).

The GWR used fine cast brass number plates to identify its locomotives, the plates being carried on the cab side and its number series never exceeded 4 digits throughout the entirety of its existence. It was the use of these cast brass plates (and the cost of changing them) which meant that the GWR rarely renumbered its locomotives and also meant that GWR locomotives uniquely kept their original GWR numbers after nationalisation when all of the other constituent companies had a 5 digit number added to the original pre-nationalisation number (e.g. former Southern Railway locomotives had 30 000 and former LNER locomotives all had 60 000 added to their original numbers to avoid any duplication of numbers when the locomotives of the pre-nationalisation companies were combined under British Railways.

Each class of GWR locomotive was usually referred to generically by the number of the first of the class (the standard GWR 'matchbox' pannier tanks were usually referred to as 57xx's after the first of the class). The GWR was generally very organised and consistent when naming locomotives with whole classes of locomotives being named according to a theme. Thus the most powerful express locomotives were all named after British kings (and were known, logically enough as Kings), next down in prowess were the Castle class, almost all of which were named after Castles (although there were a number of exceptions). After the Castles, in order of precedence came the Hall class (named after Halls generally within the area served by the GWR and then the Granges (which were numbered in the 6800 series and named after Granges in the area served by the GWR). Locomotive 6803 was named "Bucklebury Grange". More information on the Granges can be found at (https://en.m.wikipedia.org/wiki/GWR_6800_Class).

The Granges were rebuilt from a class of mixed traffic 2-6-0s which had been designed by G J Churchward (Chief Mechanical Engineer of the Great Western Railway from 1902 to 1922). Churchward was a great advocate of standardisation of all the key components at a time when locomotive designs tended to be very bespoke, with locomotives sometimes being designed for very particular services.

As far back as 1901 Churchward had proposed a class of mixed traffic 4-6-0s with 5'8" diameter driving wheels but this didn't come to fruition under his stewardship. The driving wheel diameter had a big impact on the haulage characteristics of a steam locomotive. Express locomotives had large diameter wheels (typically 6' to around 6'8") which were suitable for high speed running (fewer revolutions of the wheel / cylinder strokes for a given speed but the large diameter wheels reduced the hauling capacity). Freight locomotives had much smaller diameter wheels (typically around 4' diameter) to maximise haulage capacity but these were only capable of low speed running which was fine when the majority of freight trains had either no or only a very limited number of wagons with brakes that were controllable by the driver and so could only run at 15 to 20 mph to ensure that they could stop when required.

Mixed traffic locomotives had a driving wheel diameter typically between about 5' and 6' and, as the name suggested, meant that they could handle freight (apart from the heaviest mineral workings), parcels and cross-country / stopping / excursion passenger trains and in reality this type of locomotive was the backbone of the steam railway. The Great Western had a larger mixed traffic 4-6-0 the Hall Class with 6' diameter driving wheels which gave them a greater turn of speed but impacted their haulage capacity. There were 284 Halls with a further 71 to a modified design and a number have been preserved. The much larger London Midland and Scottish Railway (LMS) built 842 of their equivalent type of mixed traffic locomotive (the Black 5) whilst the London and North Eastern Railway (LNER) built 401 of their equivalent design (the B1). The LMS Black 5 was designed by Sir William Stanier and owed a great deal to Swindon design principles which Sir William had picked up during his early career on the GWR which culminated in his being appointed Works Manager at Swindon before being head-hunted by the LMS.

Returning to the origins of the Granges, back in the early years of the 20th century, rather than a 4-6-0 design, Churchward opted for a slightly smaller 2-6-0 design with 5'8" diameter wheels and 342 locomotives of what became known as the 4300 Class (after the number given to the first of the class) were built between 1911 and 1932 with the design being so successful that many were used by the military in Europe during the First World War and the last two batches were built by Churchward's successor Charles Collet. The design was based on proven standard components, the cylinders from the Saint Class of 4-6-0s, the wheels of a class of suburban tank engines and the standard No. 4 boiler.

Locomotives are usually classified by their wheel arrangement. A 2-6-0 is a locomotive with 2 carrying wheels at the front and then a total of 6 driving wheels and no carrying wheels behind the main driving wheels (this arrangement is often referred to as a Mogul). A 4-6-0 has a four wheel bogie in front of the 6 driving wheels. In Europe they used a system based on the number of axles rather than the number of wheels thus a 2-6-0 would be a 1-3-0 etc.

By the mid-30s, the earliest of the 4300 2-6-0s were showing their age and with train loads and speeds increasing, a more powerful locomotive was required. Churchward's successor Charles Collet planned to rebuild the 4300 class of 2-6-0s to fulfil Churchward's original 1901 plan for a mixed traffic 4-6-0 with 5'8" diameter driving wheel by re-using the wheels, valve motion and tenders for the new locomotives (recycling is not a new concept!). Although the cylinder diameter of the Granges was the same as that of the Class 4300 locomotives, the cylinders couldn't be re-used because it was necessary to increase the separation between the valve and cylinder centre lines to allow the valve motion to be re-used. This was done to allow the re-use of the old valve motion parts (and probably reflected that the original cylinders were life expired).

When considering the rebuilding of the 4300 2-6-0s into 4-6-0s the extra pair of carrying wheels at the front increased the overall length of the locomotive allowing a bigger boiler rated at 225 psi to be fitted (which increased the rate of steam generation and hence power output) but also allowed the fitting of a larger and more comfortable cab. The 4300 cabs were pretty spartan affairs whereas the Granges were fitted with much more commodious side window cabs reflecting the slowly increasing demands for improved working conditions.

100 of the 43xx 2-6-0s were withdrawn and rebuilt, 80 as Granges and 20 as the smaller, lighter Manor or Class 7800 (the Granges were too heavy for a number of cross-country routes such as the Cambrian and more modern and powerful motive power was desperately needed for these routes hence the evolution of the Manors).

It had been intended to rebuild all of the Class 4300 locomotives in this way but the start of WW2 saw the programme suspended and it was never continued after the end of hostilities.

The Grange Class were built in 2 batches, the first (including "Bucklebury Grange") between August 1936 and December 1937 with the remainder of the class built between February and May 1939.

"Bucklebury Grange" was completed and operational on 5th September 1936 and was allocated initially to the shed at Wolverhampton (Oxley). When based at Wolverhampton, she would have typically worked west and north of Wolverhampton to Shrewsbury, Chester and up to Birkenhead or south towards Banbury as well as around the West Midlands, mainly on 'fast' freights from Birkenhead docks as well as secondary passenger trains. These fast freight trains would typically run at speeds of 40 to 60 mph and with either all or a significant proportion of the wagons fitted with automatic brakes under the control of the driver conveying perishable goods such as fruit and broccoli, and the Granges were also popular for powering excursion trains.

For as long as steam locomotives have been around, crews have referred to their charges as female. "She" and "the old girl" are synonymous with a steam locomotive. The reason for these female references is believed to be a term of endearment, affection for a machine that is as alive as any creation of our world.

In August 1950 she was allocated to Banbury but had migrated back to the West Midlands and Stourbridge Junction shed by March 1959. At Banbury, she would typically have worked fast freights and inter-regional passenger trains towards London via the Chiltern route, down through Oxford towards Reading and north to Wolverhampton. Steam locomotives never generally tended to work much more than 50 to 100 or so miles from their home depot before being swapped for another locomotive. Of course there were exceptions such as the locomotives which hauled the non-stop Anglo Scottish services but they were just that – exceptions. This was why there was always great excitement amongst spotters when a 'foreign' locomotive from a far-away shed appeared, perhaps on an excursion or as a result of being 'borrowed' by a depot that was short of an engine to work a service. It is thus unlikely that "Bucklebury Grange" was a regular performer anywhere near her namesake.

May 1965 saw Bucklebury Grange move to her final shed allocation which took her back to Wolverhampton Oxley from where she was withdrawn on 28th September 1965 having served for 29 years and travelled some 843,825 miles. After withdrawal in the early autumn of 1965, "Bucklebury Grange" was sadly broken up and disposed of at Birds of Long Marston. A variety of images can be view on the internet by searching for "Bucklebury Grange 6803" an example of which is <https://plumbloco.smugmug.com/Trains/Former-GWR-Lines/i-t2GBPVs>.

To commemorate the first birthday of His Royal Highness Prince George on 22nd July 2014, Hornby created a detailed model named "Bucklebury Grange" after the West Berkshire village's family home of his mother Catherine, Duchess of Cambridge. 500 of the models were produced of which the first 200 were sold in a special numbered limited edition sleeve for Harrods.

Although all of the Granges were scrapped at the end of steam good progress is being made with the construction of a replica, number 6880, "Betton Grange" (<http://www.6880.co.uk/>) at the Llangollen Railway. The project started back in 1998 and the boiler was first steamed just before Christmas 2019 having undergone very extensive refurbishment at Tysely locomotive works just outside Birmingham.

The construction of the new Grange has been made much easier by the Great Western's policy of standardisation as the project has been able to make use of various components from other GWR locomotives including the boiler which came from a Hall class locomotive (the wheels and frames of which are being used as the basis for construction of a replica County class locomotive by the Great Western Society at Didcot (the County class being another class of which none survived the scrap

man's gas axe)), the wheels are a spare set from a preserved 4300 2-6-0 on long term loan from the Severn Valley Railway, the leading bogie and tender have been borrowed from another Hall class locomotive belonging to the Betton Grange project group and which is a long term restoration project. The group have also obtained a spare tender frame from another Hall project so have the option of building a complete new tender should one be required.

Although there is still much to do to complete the locomotive, the prospect of being able to ride behind a Grange class locomotive is now within sight.

For those of you who like statistics, No. 6807 "Birchwood Grange" with her tender comprised (http://www.greatwestern.org.uk/m_in_grg.htm) the following metals:

	<u>6807</u>	<u>Tender</u>
Steel	57 tons 13½ cwt (58,723 kg)	16 tons 6½ cwt (16,621 kg)
Cast Iron	5 tons 10 cwt (5,600 kg)	1 ton 16 cwt (1,832 kg)
Copper	2 tons 9½ cwt (2,520 kg)	84 pounds (38 kg)
Hardened Lead	1 ton 10¼ cwt (1,540 kg)	0
Gun Metal	1 ton 2¼ cwt (1,132 kg)	0
Bronze	5 cwt (254 kg)	168 pounds (76 kg)
White Metal	196 pounds (89 kg)	28 pounds (12.7 kg)
Brass	84 pounds (38 kg)	0
Total Weights	68 tons 13 cwt (69,898 kg)	18 tons 5 cwt (18,581 kg)

Specifications.

Cylinders	(2) 18½ x 30 inches	Driving wheel diameter	5 feet 8 inches
Bogie wheel diameter	3 feet 0 inches	Tractive Effort	28,875 pounds
Boiler type	Number 1	Boiler maximum dia.	5 feet 6 inches
Boiler minimum dia.	4 feet 10 13/16 inches	Fire tubes, no. and dia.	176 x 2 inches
Flue tubes, no. and dia.	14 x 5 1/8 inches	Superheater tubes, no. and dia.	84 x 1 inch
Boiler pressure	225 lbs/square inch.	Boiler length	15 feet 2 7/16 inches
Area of fire grate	27.07 square feet	Heating surfaces, tubes	1,686.6 square feet
Heating surfaces, firebox	154.78 square feet	Heating surfaces, superheater	253.38 square feet

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