

Wargrave Local History Society

Latest News - April 2012

Crofton Beam Engines

The April meeting of the Wargrave Local History Society took the form of an illustrated presentation by John Coulson about the Crofton Beam Engines.

Water supply is a problem for all canals, and John began by explaining that the engines were needed to ensure a water supply to the highest point on the Kennet and Avon Canal, and are the oldest engines in the world still doing the task for which they were built - a point proved in 2009 when the British Waterways electric pumps failed, and the beam engines had to be steamed for several days to maintain supplies. One of them, built by Boulton and Watt, is celebrating its 200th anniversary this year.

The Kennet and Avon Canal opened in 1810, and was the centre section of a waterway from Bristol to the River Thames - the west end being the Avon Navigation, from Bristol to Bath, whilst the eastern section from Newbury to Reading was the Kennet Navigation. There were two locations where water was pumped up to the canal - at Claverton, near Bath (where there is a water wheel operated pump to lift water 48 feet from the River Avon up to the canal) and at Crofton. The latter is on the highest part of the canal, reached from the west by the notable Caen Hill flight of locks at Devizes. The engineer, John Rennie's original 1793 plan was to have a 2 mile long tunnel at a lower level than the present summit, but another engineer, William Jessop, advised that the canal be altered to avoid the tunnel, and have a pump to lift water to the highest point. This was the reason for the Crofton Pumping Station to be built. Its steam engines lift the water by 40 feet from the reservoir at Wilton Water into a feeder, about a mile long, to the summit of the canal. There was a short tunnel built - principally to satisfy Lord Bruce, the local landowner.

The canal, and hence pumping engines, were taken over by the Great Western Railway in 1852. They built the line from Reading to Taunton alongside the canal, but were under a legal obligation to keep the canal open - as Savernake Station was above the Bruce Tunnel, they had for the water supply, and hence the pumps, for their own purposes. However, instead of the coal supplies for the engine boilers being brought by barge, the railway installed a siding nearby for coal wagons to stand, from where a horse and cart delivered the fuel to the pump house.

The first practical steam engines used for pumping were designed by Thomas Newcomen in 1712, but were rather inefficient, and only used for pumping at collieries (where there was, of course, a ready supply of fuel!). Even so, more than 100 were built by the time Newcomen died in 1729, and there were over 1000 in use by 1800. James Watt developed several improvements to the design, including a separate condenser and a steam jacket for the cylinder (so the latter was being heated and cooled on every pumping cycle). Watt teamed up with Matthew Boulton in 1773 - the extension of Watt's patents being a condition of the partnership. The royalty payment was based on the 1/3 of the cost of the coal saved compared to a Newcomen engine. The first engine at Crofton was a Boulton and Watt wooden beam engine, installed in 1807-9. It used a waggon boiler (effectively a large kettle). The large wooden beam fouled the roof trusses as it rocked to and fro, so the pump house was altered to suit !

The canal Company soon realised that a second engine was needed, to ensure a water supply should the first engine fail for any reason. A second Boulton and Watt engine, this time with a cast iron beam, was ordered, and came into use in 1812. It was modified in 1844 by Harveys of Hayle to operate on the Cornish cycle - this needed a steam pressure of about 20psi (compared to 5psi previously) new boilers were also installed. By 1846, the original engine was in a poor state, and so that was replaced by a

combined cylinder engine built by Harveys, which the Great Western railway rebuilt as a standard Cornish engine in 1905. These two engines then continued in regular use until 1958. Meanwhile, the Cornish style boilers installed in the 1840s were replaced in 1893 by Lancashire pattern boilers. These would work effectively with much poorer quality coal than required by the Cornish boilers. They lasted until 1986, when replaced by similar Lancashire boiler obtained from the Wills tobacco factory in Bristol.

The Crofton Pumping Station, and engines, were then acquired in 1968 by the Kennet and Avon Canal Trust. The Trust set about restoring the engines, and the Boulton and Watt engine was steamed again in 1970, and the Harvey engine brought back into use the following year. The Pump House and the engines are Grade 1 listed, and the Trust has a plan of work for the next 25 years to keep the engines operational, whilst respecting their heritage. The 200th anniversary of the Boulton and Watt engine will be celebrated with three special steamings in June, and it is hoped to publish a book on its history later this year. Details can be found on the Kennet and Avon Trust website at <http://www.croftonbeamengines.org>

The next meeting takes place on Tuesday, May 8th, when Ann Armstrong will recount her experiences of Life in the Land Army, during World War 2. Also in May, on Wednesday 16th, Ann Griffin will take members on an historic walk around Cookham - as a precursor to the meeting on Tuesday, June 12th, when she will tell us about the Cookham Paddock Excavation - an archaeological excavation in 2005 alongside Trinity Church at Cookham.

The meetings start at 8pm in the Pavilion, on the Recreation Ground. For more information, visit www.wargravehistory.org.uk