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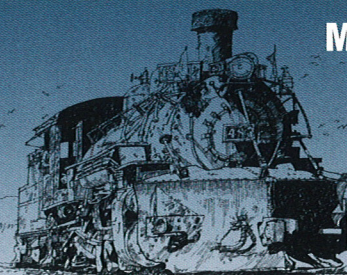
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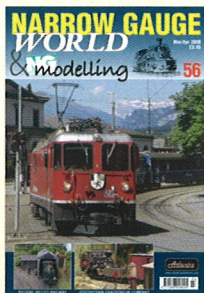
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DAVID JOY

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NARROW GAUGE WORLD & NGmodelling

The magazine giving worldwide coverage – yesterday and today

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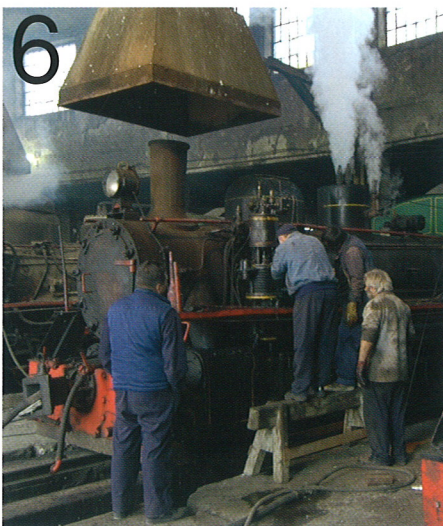
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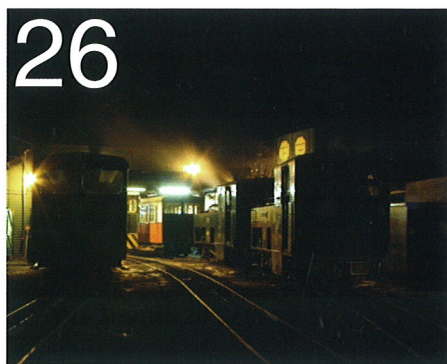
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A Very Secret Railway

John Wilson relates the fascinating story of a line that long remained unknown to the outside world because of its potentially explosive nature!

Gunpowder is first recorded as being made to the north of Waltham Abbey in Essex during the mid-seventeenth century, although it probably goes back much further on this site. All gunpowder manufacture was in private hands at the time. It was not until 1787 that the crown purchased a number of mills around London to ensure a quality product, available in sufficient quantity to continue the expansion of the Commonwealth and to wage various wars against our European neighbours. This is when Waltham Abbey became the Royal Gunpowder Mills.

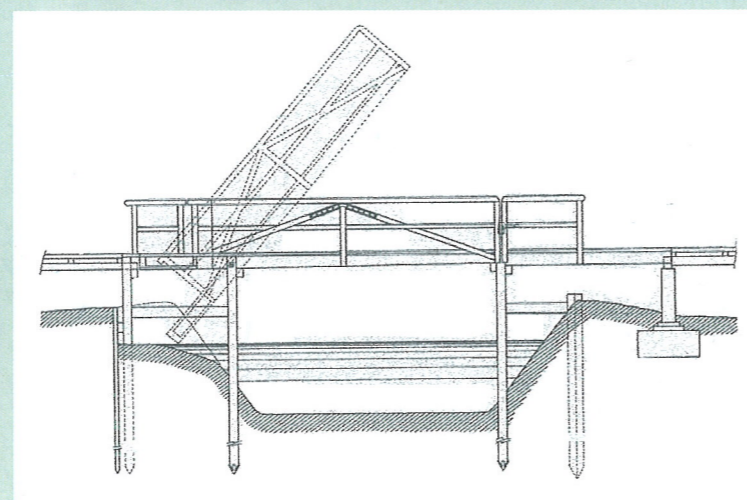
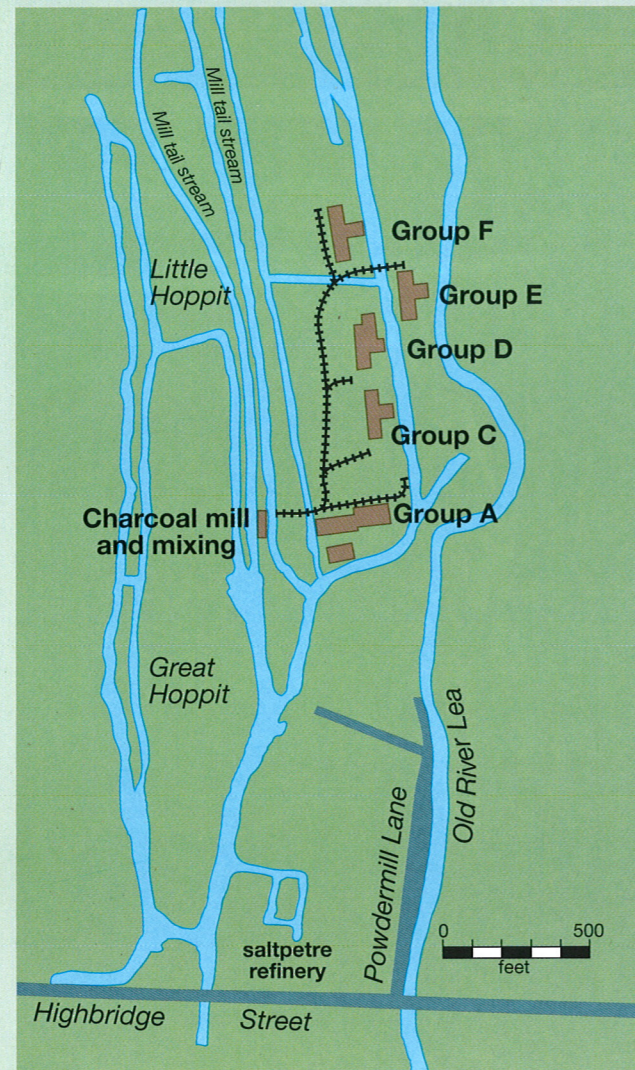
The means of transport at the mills during first two hundred years was exclusively by canal barge, but in 1856, with the

change from water mill to steam-powered mill, a wooden tramway was built to transport materials such as coal, sulphur, charcoal and saltpetre from stores to the mills. Canal traffic was still the main source and safest means of transport to move the gunpowder to magazines at Woolwich, Chatham and other sites around London and the rest of the country.

The Royal Gunpowder Mills is built on a flood plain, so the first tramway was constructed on a raised platform of three to four feet (0.91m to 1.22m) above ground level. The actual rails were lengths of square timber of unknown size, capped with angled metal that was probably wrought iron. The gauge was measured from the centres of the two rails as 2ft 6in (76cm) and is believed to have been 2ft 3in

(69cm) actual gauge. The initial length of track was 600ft (182m) but this was expanded, finally reaching around 1,800ft (548m) by 1888. The tramway had two lifting bridges and a number of turntables, points and run rounds. The wagons were small four-wheelers and all were pushed (never pulled) by hand.

In 1885 a major expansion saw a gun-cotton factory built to the south of Waltham Abbey. In 1890s a nitroglycerine factory for the manufacture of cordite was also built, but as there was no link to the northern site except by canal, and the site was on a hill, there was no need to copy the northern tramway. Steel rails were therefore bolted to preformed metal sleepers to a gauge of eighteen inches (49cm). This brought the Gunpowder Mills in line with the sister



depot of Woolwich Arsenal which had an extensive steam-powered eighteen-inch gauge railway. However it would be another twenty years before locomotives would haul wagons at the mills.

Some time in the late nineteenth century a tunnel was driven under the Waltham Abbey to Waltham Cross road along the side of the canal to allow a rail link between the north and south sites. Eighteen-inch gauge track slowly replaced the wooden rails of the north site and in 1916, with the pressure to meet the demands of explosives and propellants to fight World War 1, petrol/paraffin and battery locomotives were introduced at the Royal Gunpowder Mills. The total mileage at this time for locomotive-hauled traffic was 3.5 miles (5.6km), but particularly on the northern site, there were large sections of track where motive power was not allowed due to the risk of causing an explosion, so total track length including the tramway would have been around five to six miles.

The petrol/paraffin locomotives were Ruston Procter ZLH 0-4-0s, works 51697, 51707, 51901 and 51927. Weighing 4.5 tons, they were 11ft 6in (3.5m) long, 3ft 6in (1.06m) wide and 6ft (1.82m) high with a drawbar pull of 800 pounds (363kg). During the war they had a crew of two women and sometimes a teenage boy, who would be too young to be called up. The Rustons ran until the mid-1930s and were then sold for scrap. But for anyone interested in seeing an example of these little machines, the Museum of Lincolnshire Life in Lincoln has one of 2ft 6in gauge saved from the Holton Heath Naval Cordite Factory in Dorset.

The battery locomotives were of three makes, one British Electric Vehicle No 59 of 1916, five Wingrove & Rogers Nos 1043 to 1047 purchased in 1937 and ten Greenwood & Batley - Nos 1668 to 1673 obtained in 1940, and 1851, 1852, 1861 and 1862 that followed in 1942. The last of the battery locomotives were scrapped in 1954.

(Opposite page, left) Map showing the raised tramway as it existed around 1888.

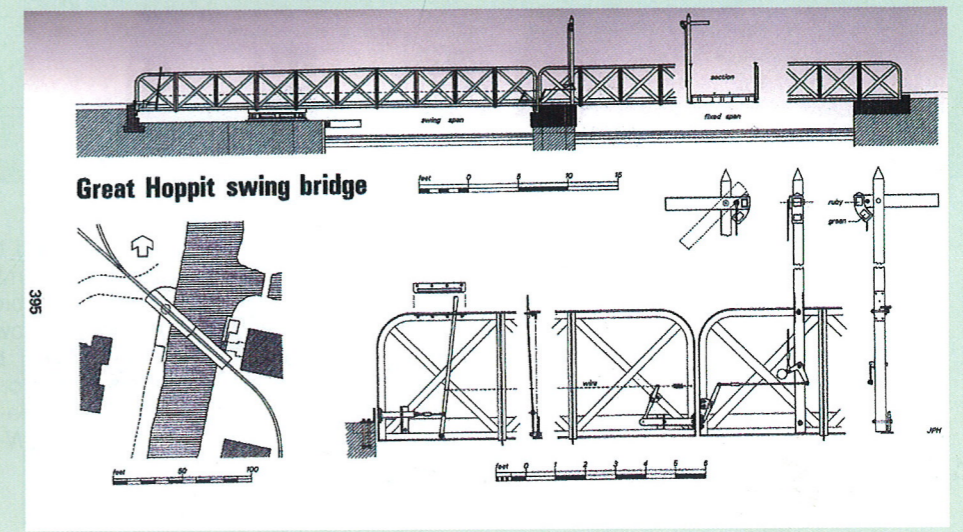
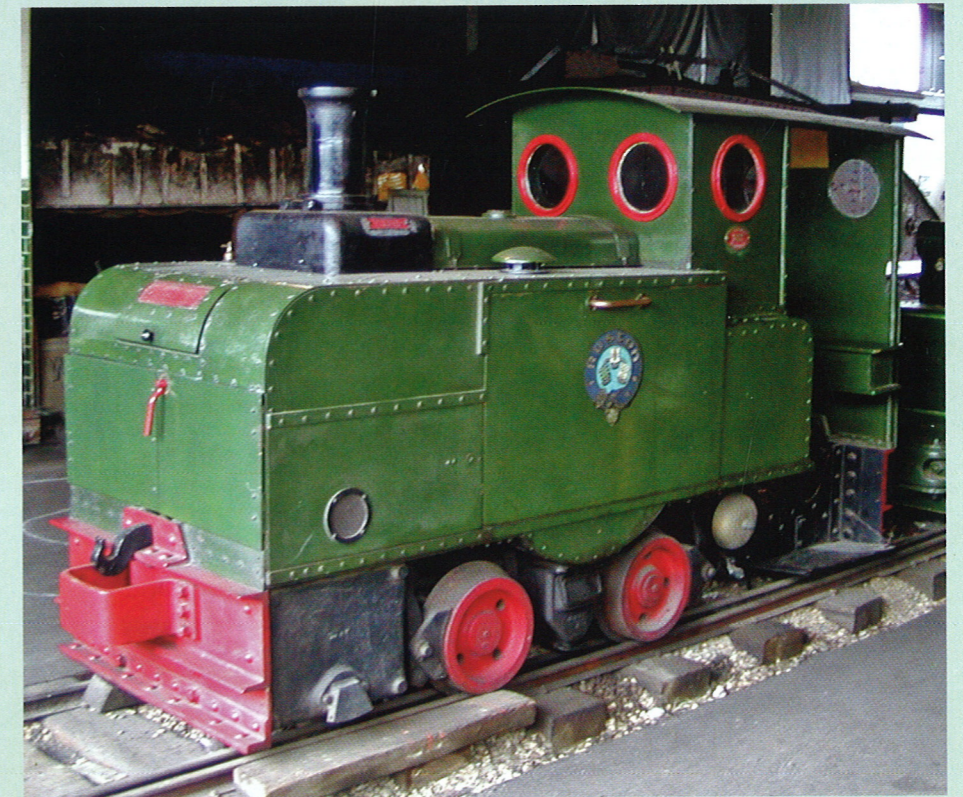
(Right, top) Female staff pose with two of the small four-wheel wagons that were pushed by hand along the railway.

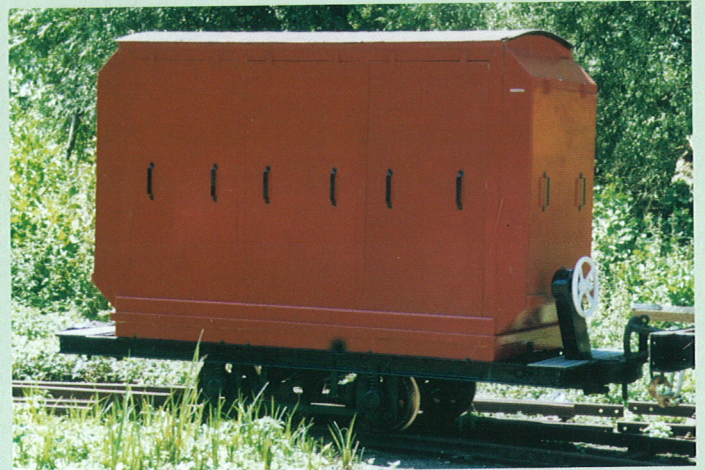
(Right, lower) Typical lifting bridge on the tramway, circa 1880.

(This page, top) Female staff undergo training in 1916 - and manage to obscure much of one of the Ruston Procter petrol/paraffin locomotives that were a distinctive feature of the 'very secret railway'.

(Centre) A similar locomotive from Holton Heath Naval Cordite Factory, which is now preserved at the Museum of Lincolnshire Life.

(Lower) Great Hoppit swing bridge on the 1916 section of the railway.





Scenes on today's railway at the Royal Gunpowder Mills, Waltham Abbey. (Top) Ex Woolwich Arsenal motive power purchased from Bicton Gardens for the projected 18in gauge line – Hunslet 0-4-4-0DM Carnegie (left – Jonathan James) and Avonside oil-fired 0-4-0T Woolwich (right). (Lower) Initial motive power on the current 2ft 6in gauge line was a 1975-built 0-4-0 diesel from Bishopton Cordite Factory (left). The rolling stock includes this cordite-drying wagon (right – Jonathan James).
(Uncredited photographs by the author)

bomb. After the war, propellants for space research, missiles and ejector seats were developed, but none of the research required the existing transport facilities. The railway was slowly ripped out and the canals filled in.

With the closure of the site in the 1990s, a museum was created and the canals re-excavated. At this time Bicton Gardens in Devon was disposing of its locomotives and rolling stock, which the museum purchased, as the oil-fired 0-4-0T Woolwich and diesel Carnegie – plus a number of the carriages – were original Woolwich Arsenal stock. The intention was to build a working eighteen-inch gauge railway around the site, but Woolwich's boiler certificate had expired and Carnegie has a transmission problem. There was neither the finance or labour to do the job, so the eighteen-inch gauge system is on hold.

In early 2002 we were given a 2ft 6in gauge Hunslet 0-4-0 diesel of 1975 vin-

tage plus a number of wagons from the Cordite Factory, Bishopton, which was closing down. At the same time one of the volunteers, Robin Parkinson, was able to persuade his employer, Thames Water, to donate some used 35lb rail from its filter tanks and a fledgling railway started to appear.

At the time of writing there is around a thousand feet of track and sidings. An additional 0-4-0 diesel from Whippsnade Zoo has been purchased and, once some major earthworks have been done, the track can be completed and the line will be almost ready to offer passenger trips. The site is open to the public at weekends between the last week of April and the first week of October as well as on Wednesdays during the school summer holidays. Group bookings can be made at other times.

For more information see the web site: www.royalgunpowdermills.com or email info@royalgunpowdermills.com

In 1942 it was decided to move all production to Scotland and the Royal Gunpowder Mills became a research establishment, developing new explosives and propellants, amongst which was RDX used in the Sir Barnes Wallis bouncing

Faraway Places

Falkland Islands

I don't wish to use *Narrow Gauge World* as a general enquiry service, but I wonder if I might push my luck on one particular problem concerning stamps. The question is why in 1985 did the Falkland Islands produce a set of stamps depicting Rye & Camber Railway rolling stock? Any ideas or pointers, sent c/o the editor, would be much appreciated.

Howard Piltz

New Zealand

May I be permitted to correct a point in Andrew Neale's most interesting article on the Avonside Engine Company in NGW-52 regarding the 1875 order for New Zealand. These four locomotives were the motive power for the ascent of the Rimutaka Incline rather than simply banking trains. The train engine did not attempt the climb (or the descent) but was replaced by the Fell engines for the three-mile long incline.

My article in NGW-41 explains the practice in more detail.

Jim Henderson
(Treasurer, Fell Locomotive Museum)