



SIHG October Visit

Greenline bus similar to the one that ran between Guildford and Hertford on route 715 in the early 1950s



One of the original steam engines that powered Tower Bridge

Photos:
Roger Griffiths

SIHG Visit: London Transport Museum & Tower Bridge

report by Celia Gregory

The date of our arrival at the Transport Museum coincided with half-term, so a quick decision was made to work against the flow of visiting families by going first to the top floor, where there was a comprehensive display of the transport of 19th century London.

A panoramic frieze of the Thames, with boats and buildings from the City down to Greenwich, had movable magnifying lenses so one could study the illustrations in greater detail. Life-size models of horse-drawn trams, complete with animals, buckets of feed and so on, were there for the children. Touch screens provided background information for adults. Lift-up flaps gave comic snippets, such as how many tons of horse manure were collected, with appropriate drawings!

(Continued on page 4)

SIHG is a group of the Surrey Archaeological Society, Registered Charity No 272098
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 Group Patron: David Shepherd OBE, Group President: Prof AG Crocker FSA

Published by the Surrey Industrial History Group and printed
 by YesPrint 3 Leafy Oak Workshops Cobbetts Lane Yateley GU17 9LW
 © SIHG 2011 ISSN1355-8188

Contents

- 1 SIHG Visit: London Transport Museum & Tower Bridge report by Celia Gregory
- 2 Notices
- 3 Venues, Times, Contacts and Surrey Industrial History Group Officers
- 4 Diary: 20 January 2011 - 31 March 2011
- 5 Nobel's Dynamite Factory in the South of France
& the Similarities with the Chilworth, Surrey Gunpowder Mills by Bob Bryson
- 6 Castle Gardens Pumping Station, Dorking by Alan Crocker
- 7 Industrial Archaeology Review Vol. XXXII: No. 2: November 2010 report by Gordon Knowles
- 8 A Fulling Mill in Norway by Glenys Crocker
- 9 Stourport – Terminus of the Staffordshire & Worcestershire Canal by Gordon Knowles
- 9 Surrey Archaeological Research Framework (2006):
Ideas for Investigations in Industrial History (part 2) extracted by Jan Spencer
- 10 The Surrey Tithe Project by Anne Lea

Reports & Notices

Details of meetings are reported in good faith, but information may become out of date. Please check details before attending.

SIHG Visits, Details & Updates at www.sihg.org.uk

SIHG Visit Weds 23 March 2011

British Museum Watch Collection

David Thompson will show the actual watches mentioned in his talk.

The demonstration, in the afternoon, will last about 2½ hours. We shall meet at the museum.

Please sign up now as numbers are strictly limited, with Margaret Levett or Jan Spencer.

SERIAC 2011 - 16 April at Sussex University

South East Regional Industrial Archaeology Conference

Leaflet enclosed or see www.sihg.org.uk/seriac.htm

Surrey Industrial History Group Officers

Chairman & SIHG Lectures Organiser: **Robert Bryson**, meetings@sihg.org.uk

Secretary: **Alan Thomas**, info@sihg.org.uk

Treasurer: **Anne Lea**, treasurer@sihg.org.uk

Membership Secretary: **David Evans**, membership@sihg.org.uk

Newsletter Editor: **Jan Spencer**, news@sihg.org.uk

The deadline for **submitting copy** for the next Newsletter is **10 March 2011**.

Submissions are accepted in typescript, on a disc, or by email to news@sihg.org.uk.

Anything related to IA will be considered.

Priority will be given to Surrey-based or topical articles. Contributions will be published as soon as space is available.

Readers are advised that the views of contributors are not necessarily the views of SIHG.

Website: **www.sihg.org.uk**

Other IA Organisations

- Amberley Museum & Heritage Centre:** next to Amberley railway station, West Sussex, www.amberleymuseum.co.uk.
- Anne of Cleves House (Wealden Ironwork Gallery):** 52 Southover High Street, Lewes, East Sussex, BN7 1JA; 01273 474610; anne@sussexpast.co.uk
- Association for Industrial Archaeology:** www.industrial-archaeology.org.
- Basingstoke Canal Authority:** 01252 370073.
- Brighton Circle (London, Brighton & South Coast Railway):** www.lbscr.demon.co.uk.
- Chatham Historic Dockyard:** Kent ME4 4TZ; www.chdt.org.uk.
- Cobham Bus Museum:** London Bus Preservation Trust, Redhill Road, Cobham, Surrey KT11 1EF; www.lbpt.org.
- Croydon Airport Visitor Centre:** Airport House, Purley Way Croydon CR0 0XZ; www.croydon-airport.org.uk.
- Croydon Natural History & Scientific Society:** meetings: Small Hall, United Reformed Church Hall, Addiscombe Grove, E Croydon.
- Cuffley Industrial Heritage Society:** Northaw Village Hall, 5 Northaw Road West, Northaw EN6 4NW; www.cihs.org.uk.
- Didcot Railway Centre:** Access via Didcot Parkway Station; www.didcotrailwaycentre.org.uk.
- Docklands History Group:** Museum in Docklands, No 1 Warehouse, West India Quay, Hertsmere Road, London, E14 4AL; www.docklandshistorygroup.org.uk.
- East London History Society :** Latimer Church Hall, Ernest Street, E1; www.eastlondonhistory.org.uk.
- Enfield Society:** Jubilee Hall, 2 Parsonage Lane, Enfield, EN2 0AJ; www.enfieldsociety.org.uk.
- Fetcham U3A:** <http://fetchamu3a.org.uk/home.htm>.
- Greenwich Industrial History Society:** Old Bakehouse, Age Exchange Centre, 11 Blackheath Village, SE3 (opposite Blackheath Station).
- Great Dorset Steam Fair:** South Down, Tarrant Hinton, nr Blandford, Dorset DT11 8HX; www.gdfs.co.uk.
- Greater London Industrial Archaeology Society:** Willoughby Theatre Charterhouse Square.
Access via small gate north of Charterhouse Square. The lecture theatre is then diagonally across the lawn; 020 8692 8512, 1830.
- Guildford Museum:** Castle Arch, Guildford, Surrey GU1 3SX; museum@guildford.gov.uk.
- Guildhall Art Gallery,** Guildhall Yard (off Gresham Street), London EC2V 5AE.
- Hampshire Archaeology Society (HIAS):** Underhill Centre, St. John's Road, Hedge End, SO30 4AF.
- Hampshire Mills Group:** www.hampshiremills.org.
- Heritage Open Days:** 1 Waterehouse Square, 138-142 Holborn, London EC1N 2ST; www.heritageopendays.org.uk.
- Honeywood Museum:** by Carshalton Ponds, Honeywood Walk, Carshalton, Surrey SM5 3NX; www.friendsofhoneywood.co.uk.
- Kempton Great Engines:** Feltham Hill Road, Hanworth, Middx TW13 6XH (off elevated section of A316); www.kemptonsteam.org.
- Kew Bridge Steam Museum:** Green Dragon Lane, Brentford, Middlesex TW8 0EN; www.kbsm.org.
- Lewisham Local History Society:** Lewisham Methodist Church SE13 6BT.
- London Canal Museum:** 12/13 New Wharf Road, N1 9RT; www.canalmuseum.org.uk.
- London Transport Museum, Acton Depot:** 2 Museum Way, 118 - 120 Gunnersbury Lane, London, W3 9BQ; 020 7565 7298.
- London Underground Railway Society;** Upper Room, All Souls Clubhouse, 141 Cleveland Street, London W1T 6QG; www.lurs.org.uk
- Lowfield Heath Windmill:** near Charlwood.
- Mid-Hants Railway (Watercress Line):** Alresford Station, Alresford, Hants SO24 9JG or Alton Station, Alton, Hants GU34 2PZ; www.watercressline.co.uk.
- Newcomen Society London:** Fellows' Room, Science Museum, Exhibition Road, London SW7 2DD.
- Newcomen Society Portsmouth:** Room 0.27, Portland Building, University of Portsmouth, St James Street off Queen Street, Portsea.
- Open City London (Open House London):** www.open-city.org.uk.
- Portsmouth Historic Dockyard:** www.historicdockyard.co.uk.
- Railway & Canal Historical Society:** The Rugby Tavern, Rugby Street, London WC1; www.rchs.org.uk
- Rotherhithe & Bermondsey Local History Group:** Time & Talents Centre, Old Mortuary, St Mary Church Street, Rotherhithe Village, SE16; www.kingstairs.com/rotherhithe.
- Royal Gunpowder Mills:** Waltham Abbey; www.royalgunpowdermills.com.
- Rural Life Centre,** Old Kiln Museum, Reeds Road, Tilford, Farnham, Surrey GU10 2DL.
- Shalford Mill (National Trust),** Shalford Guildford Surrey GU4 8BX.
- Shere, Gomshall & Peaslake Local History Society:** Shere Village Hall, Gomshall Lane, Shere GU5 9HE; www.sherehistorysociety.co.uk.
- Southwark and Lambeth Archaeological Society:** Housing Co-op Hall, 106 The Cut SE1 8LN (almost opposite the Old Vic).
- Shirley Windmill:** Postmill Close, Shirley, Croydon CR0 5DY; visitor@croydowntowncentre.com.
- STEAM - Museum of the Great Western Railway:** Kemble Drive, Swindon, SN2 2TA; www.steam-museum.org.uk
- Surrey & Hampshire Canal Society (The Basingstoke Canal):** Parish Pavilion, Station Road, Chobham; ww.basingstoke-canal.org.uk.
- Surrey History Centre:** 130 Goldsworth Road, Woking, Surrey, GU21 6ND, 01483 518737, shs@surreycc.gov.uk.
- Sussex Industrial Archaeology Society (SIAS):** www.sussexias.co.uk.
- Sussex Mills Group:** www.sussexmillsgroup.org.uk.
- Twyford Waterworks:** Hazeley Road, Twyford, Hampshire SO21 1QA; www.twyfordwaterworks.co.uk/.
- Watercress Line:** Station Road Alresford SO24 9JG or Station Road Alton GU34 2PZ
- Wealden Iron Research Group:** Nutley Memorial Hall, Sussex, (North end of village, West side of A22).
- Westcott Local History Group:** Westcott Reading Room, Westcott near Dorking, Surrey RH4 3NP; info@westcotthistory.org.uk.
- Wey & Arun Canal Trust:** The Granary, Fritchfold Farm, Loxwood Billingshurst, West Sussex RH14 0RH; www.weyandarun.co.uk.
- Wings & Wheels at Dunsfold Park:** near Cranleigh, Surrey GU6 8TB; www.wingsandwheels.net.

Recording Factory Closures

A good opportunity to record the history
& to rescue traditional papers & machinery!

If you hear of a factory which is about to close, please report it to us; contacts.

SIHG Newsletter No 179 January 2011

DIARY

The 35th series of SIHG Industrial Archaeology Lectures

alternate Tuesdays, 1930 - 2130, University of Surrey (Lecture Theatre F).

Enquiries to programme co-ordinator, Bob Bryson, meetings@sihg.org.uk.

Maps at www.sihg.org.uk. Free parking is available in the evening on the main campus car park.

Single lectures at £5, payable on the night, are open to all.

The Spring 2011 Thursday Morning Lecture Series at Leatherhead

starts on 13 January 2011.

Enquiries to Leatherhead programme co-ordinator Ken Tythacott, Ken.tythacott@btinternet.com.

As seating is strictly limited, enrolment is for the whole course only; casual attendance is not possible.

Diary January

- 25 Tue **Surrey Industrial History Group Lecture: Preservation of Gunpowder & Papermill Sites & the Council for British Archaeology / Association for Industrial Archaeology Day School organized by SIHG in July 2010 by Alan Crocker, Glenys Crocker & Andrew Norris.**

Diary February

- 8 Tue **Surrey Industrial History Group Lecture: King's Cross Goods Yard - its History and Archaeology by Tim Smith & Malcolm Tucker, GLIAS.**
- 17 Thu **Surrey Industrial History Group Visit: Royal Air Force Museum Hendon, details on page 2**
- 22 Tue **Surrey Industrial History Group Lecture: Sir George Cayley, the Wright Brothers & the Achievement of Controlled, Powered & Sustained Flight by Alan Thomas, SIHG.**

Diary March

- 8 Tue **Surrey Industrial History Group Lecture: Carriers & Stage Coaches Before & After Turnpiking 1680-1840 by Dorian Gerhold, Hon. Research Fellow.**

SIHG Visit: London Transport Museum & Tower Bridge

(Continued from page 1)

The first floor showed exhibits of steam underground, 1863 – 1905, with realistic mock-ups of an engine and carriages. The growth of the London suburbs was shown by posters depicting new housing developments and extolling the virtues of them being built near to a train station.

The ground floor was the most popular as it housed many restored buses, trams and trolley buses, pre-war, at-war and post-war, which brought back nostalgic memories of by-gone days (see photo, page 1). A separate Underground exhibit included a full-size replica of the construction of a tunnel with a volunteer worker to answer questions. I was most impressed by the range of activities that the museum provided to suit all ages.

From the museum we travelled to Tower Bridge. First we saw an introductory video, then we went along the two walkways to enjoy upstream and downstream views of the Thames, and finally visiting the old engine room which houses one of the original steam engines, though this is no longer in use.

We learnt that a competition to design a new bridge to cross the Thames near the Tower of London was instigated in 1876, and this attracted over fifty entries. It was not until October 1884 that the competition was finally won by

Horace Jones, the City architect, in collaboration with John Wolfe Barry. The winning bascule bridge took eight years to be constructed by five major contractors who employed 432 workers.

Two massive piers had to be sunk. Over 11,000 tons of steel were used for the framework of the bridge and the walkways. To make the design more aesthetically pleasing in the sensitive proximity to the Tower, and for protection, the underlying steelwork was clad in Cornish granite and Portland stone.

The original raising mechanism was powered by pressurized water stored in six hydraulic accumulators, designed and installed by Armstrong Mitchell & Co of Newcastle-upon-Tyne. Steam was used to power the pumping engines, which were 360 hp horizontal twin tandem compound engines, fitted with Meyer expansion slide valves (see photo, page 1) The bascules could be raised in less than two minutes to their maximum angle of 83 degrees. Nowadays steam has been replaced by electricity as a power source.

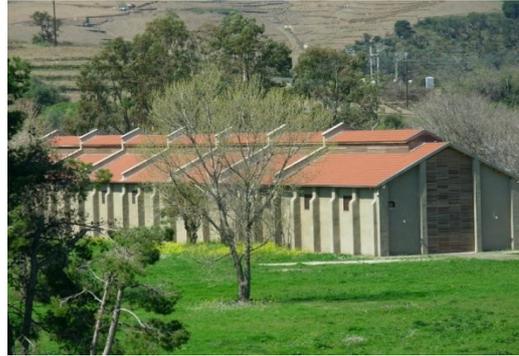
Altogether a most enlightening day. More time at London Bridge would have been welcome, but we had to beat the traffic home. □

Nobel's Dynamite Factory in the South of France & the Similarities with the Chilworth, Surrey, Gunpowder Mills

by Bob Bryson



Sketch of kneading & press houses,
smokeless powder works Chilworth, Surrey (c. 1890).
Compare this with the photo of the French factory.



The great hall at Nobel's Dynamite factory,
France (c. 1870).

Last year I was fortunate to be on holiday with friends in the South Eastern corner of France, in the area of Northern Catalonia. While out one day exploring the coastline about 2 miles (3 km) south of Port-Vendres we stumbled upon a recreational area overlooking the bay at Paulilles. Having parked the car and started to walk down to the bay I observed that one of the nearby buildings looked similar in outline to the kneading and press house at the East end of the Chilworth gunpowder mills site.

What I had not realised is that the Paulilles Recreational Park occupies the site of a former dynamite factory. The factory was apparently built in 1870 by Nobel's French associate, Paul Francois Barbe.

The great hall that I photographed is one of only nine buildings to have been newly renovated, out of some eighty originally on the 42 acre (17 hectare) site. The factory employed 300 to 400 people as recently as 1960 and produced 20 tons of dynamite per day. The factory finally closed in 1984 and the area has since been turned into a recreational area housing a small museum which highlights the industrial heritage of the site. There is also a traditional Catalan boat repair facility; some boat parts being stored in the renovated great hall.

The history of Dynamite

Alfred Nobel was born in Stockholm on 21 October 1833. His father Immanuel Nobel was an engineer and inventor who built bridges and buildings in Stockholm. The family moved to St Petersburg in Russia when Alfred was nine years old and by the time he was seventeen Alfred Nobel was fluent in Swedish, Russian, French, English and German.

After his return to Sweden in 1863, Alfred Nobel worked on developing nitroglycerine as an explosive. Nitroglycerine had been invented by the Italian chemist Ascanio Sobrero in 1846, but in its natural liquid state is very volatile. Alfred's experiments culminated in several explosions, including one in which his brother was killed.

In 1864 he started mass production of nitroglycerine. To make the handling of nitroglycerine safer Alfred Nobel experimented with different additives. He soon found that mixing nitroglycerine with a form of silica would turn the liquid into a paste which could be shaped into rods of a size and form suitable for insertion into drilling holes. In 1867 he patented this material under the name of Dynamite. To be able to detonate the Dynamite rods he also invented a detonator (blasting cap) which could be ignited by lighting a fuse. These developments, together with the introduction of pneumatic drills, drastically reduced the cost of blasting rock, drilling tunnels, building canals and many other forms of construction work.

In 1869, Nobel met Paul Barbe in France, a graduate of École Polytechnique. Barbe had witnessed Nobel demonstrate his product and was willing to finance the introduction of dynamite into France, with its state monopoly on explosives production, on the terms stipulated by Nobel, i.e. half of the profits. A factory was eventually built at Paulilles on the Mediterranean, in Pyrénées-Orientales.

Smokeless Powder & Cordite

For centuries, black powder had been the only explosive available for military as well as civilian purposes. Black powder was used as a propellant in guns of all sizes as well as an explosive but one of the problems with using gunpowder was the large amount of smoke produced. The first smokeless powder, Poudre B, was developed in 1884 by the French chemist Paul Vieille. It was made out of nitrocellulose (collodion dissolved with ethanol and ether) which was rolled into very thin sheets, then dried and cut up into small flakes.

In 1887, Alfred Nobel invented and patented a smokeless propellant he called Ballistite. It was composed of 10% camphor, 45% nitroglycerine and 45% collodion (nitrocellulose). Over time the camphor tended to evaporate, leaving an unstable explosive.

(Continued on page 6)

(Continued from page 5)

In Britain the Explosives Committee, chaired by Sir Frederick Abel, monitored foreign developments in explosives and obtained samples of Poudre B and Ballistite. However, neither of these smokeless powders was recommended for adoption by the Explosives Committee. Abel and Sir James Dewar, who was also on the committee, developed and jointly patented in 1889 a new ballistite-like propellant consisting of 58% nitroglycerine, by weight, 37% guncotton (nitrocellulose) and 5% vaseline. Using acetone as a solvent, it was extruded as spaghetti-like rods ultimately called "Cordite". Nobel sued Abel and Dewar over patent infringement but he lost the case when it eventually reached the House of Lords. [The claim was lost because the words "of the well-known soluble kind" in his patent were taken to mean soluble collodion, and to specifically exclude the water-insoluble guncotton.]

In order to manufacture smokeless powder using this new technology the gunpowder factory at Chilworth was extended to the East around 1890. While not part of the main site the kneading and press houses (illustrated) can be seen from the path to the East of Lockner Road. The

press house contained hydraulic presses used to extrude the nitrocellulose and nitroglycerine mixture through dies to form 'cords' of explosive.

The Admiralty erected more buildings in 1915 (near the smokeless powder works) but these were largely demolished at the end of the First World War when the company merged into Nobel Industries Ltd. The manufacture of explosives and propellants mainly moved to Ardeer near Glasgow, onto the existing a 100 acre (40 hectare) site established when Nobel opened The British Dynamite Company in 1873.

An entirely new industry grew up based on Nobel's patents. Within ten years, 16 explosives producing factories had been founded in 14 countries with Nobel as shareholder or co-owner. Alfred Nobel held three hundred and fifty-five patents in the fields of electrochemistry, optics, biology, and physiology. When he died in 1896, Alfred Nobel left behind a nine million dollar endowment fund and the Nobel Prize is awarded yearly to people whose work helps humanity. □

Members' Evening, 7 December 2010

Castle Gardens Pumping Station, Dorking

by Alan Crocker

Research on surviving waterwheels in Surrey has led to a study of a water-powered pumping station in Castle Gardens, Dorking (NGR TQ 1882 5029) which is mentioned briefly in the SIHG Mole Valley Guide compiled by Peter Tarplee. 'Castle Gardens' is now a road branching off the Reigate Road (A25) 1 mile east of Deepdene Station and lying between the River Mole and Betchworth Park Golf Course. Previously the name was used for the kitchen gardens associated with Betchworth Castle, the ruins of which lie only 270 yd south of these gardens. There are now houses lying between the road and the river, and the pumping station is in the back garden of one of these. It was built in 1800 by Henry Peters, the owner of the Castle and its estate, and pumped water up about 70 ft to the mansion which had replaced the medieval castle buildings. The brick building was tiled and the timber waterwheel was about 17 ft in diameter and 3 ft wide. It was probably designed by Sir John Soane, architect to the Bank of England.

In 1834 the Betchworth Castle estate was purchased by Henry Thomas Hope of Deepdene House, just over 1 mile south-west of the pumping station. He reduced the castle to a 'picturesque' ruin and refurbished the pumping station so that it could raise water 230 ft to his grandiose mansion. He gave the pump house a thatched roof, which was again 'picturesque' and several artists painted it in the Victorian period. Hope died in 1862 but his wife continued to live at the mansion until 1884. A large steam-powered saw mill was built just east of the pumping station at about that time. However, the estate

was being neglected and in 1897 the pumping station was taken over by the Dorking Water Company, which had been incorporated in 1869. They sank a 100 ft borehole which provided 11,000 gallons per hour, installed new pumps and an iron waterwheel and pumped the water up 320 ft through a 7 in diameter main to a reservoir on Tower Hill nearly 2 miles south-west, where new filtering equipment had been installed. The pumping station probably closed in about 1919 as by then the Company were relying entirely on steam pumps at other sites.

When Peter Tarplee visited the site in 1994 the derelict building was roofed in corrugated iron almost covered with ivy. Since then the present owner has converted the upper story to become his company office, roofing it with tiles as was done in 1800. He also noted the remains of machinery in the basement, which must have been the pumping equipment; unfortunately it is now buried beneath an enormous amount of building rubble. The waterwheel that operated the pumps does however survive, albeit in a ruined state. It is made of iron is 17 ft 4 in in diameter and 3 ft wide. It is low breast-shot, having a head of water of about 5 ft and has two sets of eight arms each cast in two halves and bolted together in six places. There were about 44 curved sheet-metal buckets 13 in deep. It is considered that this wheel dates from 1898 when the Dorking Water Company sank the 100 ft borehole. The owner plans to restore the wheel but it will not turn as the water supply has been lost. □

Industrial Archaeology Review Vol. XXXII: No. 2: November 2010 report by Gordon Knowles

This issue is devoted to **Railway Archaeology**; the editor, David Gwyn, sets the scene by describing how railways have been the 'way in' to Industrial Archaeology for many AIA members, (*it was certainly true in my own case. GK*) He refers to some of the crucial work on the archaeology of railways by authors such as Dr Michael Lewis's '**Early Wooden Railways 1970**', and the more recent combining of material and documentary evidence in Dr Michael Bailey and John Glitheroe's '**The Engineering and History of Rocket**'. He does not forget other important studies by among others, Jack Simmons, Gordon Biddle and Ottley's '**Bibliography**'.

The first paper is **Excavation on the Brunton and Shields Railway at Weetslade, North Tyneside**, by Philip N. Wood, Senior Project Officer at Northern Archaeological Associates, in Barnard Castle, Co. Durham. Excavations and recording of the railway have revealed remains of two phases of trackbed, both dating from the first half of the 19th century. The 1826 line, which was horse drawn, lay in a cutting over 1 m deep. The line was re-laid in 1839 for the introduction of a locomotive, although no sleepers or rails were found on the site.

Excavations have shown that, despite continual use of the line for over 150 years, significant remains have survived of the early trackbeds, the depth of the cutting being the principal factor in their preservation. This excavation is one of comparatively few investigations of an early railway to examine a single section of line in detail. The remains date from the era of iron rails and stone sleepers, which distinguish it from other excavations in the north-east which have been published, where earlier wooden waggonways were revealed. Wood states that the work demonstrates the wider potential for early railway remains to be beneath later lines, even those in recent use, and emphasises the need to examine the routes of early lines archaeologically.

The Conservation of Operational Steam Locomotives is a joint paper by Jim Rees, Special Projects Manager at Beamish Regional Resource Centre; Paul Jarman, Transport Curator at Beamish Museum; and David Gwyn, who as well as being editor of the Review is a Director of the Festiniog Railway Co. and of the Bala Lake Railway and also runs Govannon Consultancy. They emphasise that the steam railway locomotive is one of the iconic machines of the Industrial period and is reflected in the many examples that have been preserved in museums as static exhibits, and in the replicas that have been constructed of vanished prototypes, such as Planet and Tornado.

Additionally, many historically significant locomotives are now operated on heritage railways, or on heritage services on main lines, in ways that potentially affect their historic integrity. The paper assesses the ways in which operational steam locomotives can be conserved in ways that mitigate this loss of integrity. It quotes the example of the recent re-streamlining of 6229 *Duchess of Hamilton* by the National Railway Museum where authenticity was ensured by using the original works drawings, and by the fact that two other non-streamlined examples existed, *City of Birmingham* in that city's museum, and *Duchess of*

Sutherland which operates on the main line. Other examples quoted include *Coffee Pot* at Beamish. The authors conclude that to retain the integrity of such locomotives it must be ensured that the maintenance, preservation, restoration, reconstruction, adaptation and interpretation are all effectively combined.

The Archaeology of the Rural Railway Warehouse in North-West England is discussed by Michael Nevell who is Head of Archaeology at the Centre for Applied Archaeology at the University of Salford. The paper studies in detail two rural railway warehouses of the mid-19th century from the North-West. These structures were an integral part of the branch and secondary lines that developed across the network in the mid to late 19th century. The two warehouses recorded each reflect the needs of the particular railway company. The one at Delph was a multi-purpose structure, whilst the Summerseat warehouse appears to have been a small cotton warehouse and was notable as surviving almost completely intact.

Both represent the Victorian approach to industrialised transshipment and redistribution brought about by the railways. They also demonstrate how vulnerable such structures are to early 21st century redevelopment pressure.

Social Change in 19th Century Rural Ireland and the Archaeology of the Narrow-Gauge Railway: the Case of Munster by Edel Barry who is a student at University College, Cork, Ireland. He writes that railways are unusual archaeological entities in that they lasted, in many cases, only for a short length of time, and in their locomotive-hauled form are of quite recent origin. There is considerable documentary evidence available, making it well-nigh impossible, as well as inadvisable, to rely solely on the extant material remains.

Barry states that the fact that later incarnations of some of these lines remain in existence today, and are to a degree part of our lives, means that we possess preconceived notions about rail travel. Railways have featured heavily in literature and art, as well as having influenced the development of communication networks, politics and social issues. All of these combined, aside from drawing our awareness to the magnitude of the importance of railways, make it difficult to look at them from an archaeological perspective, or see what this can bring to the study of railways.

His paper examines what an archaeological study of the narrow gauge railways of Munster in the south-west of Ireland can contribute to an understanding of broader patterns of social change in 19th century rural Ireland. He concludes that the railway in south-west Ireland was seen as a socially necessary part of the modernisation process. It raised the standard of living and marginally allowed the population access to consumer goods similar to those living in towns. Accommodation and services gradually came into line with the rest of the country and it became a tourist area aided by cheap excursion trains provided by the railway.

(Continued on page 8)

Members' Evening, 7 December 2010

A Fulling Mill in Norway by Glenys Crocker

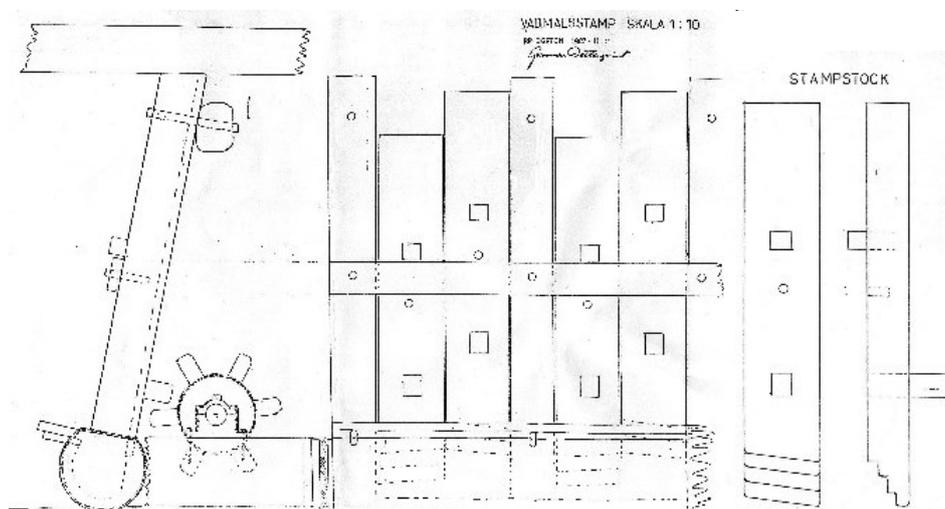
In June 2010 I attended an international textile workshop at Vinje in Telemark, where the project was to weave a length of *vadmel*, the traditional woollen cloth of Scandinavia, full it in a water-powered fulling mill, known in Norway as a *stampa*, and make a garment. This took two weeks, the first for weaving, the weekend for fulling and outings and the second week for sewing. There were breaks throughout the programme for short talks on Norwegian crafts and culture and visits to see museums, local weavers, sheep etc. The sheep were the ancient *Spelsau* breed, with a long hairy outer coat and a soft undercoat. We used commercially spun Spelsau wool for our projects, in natural colours from white through greys to black for the warp and natural or dyed colours for the weft.

The *stampa* had been built by the local guild of the Norwegian Folk Art & Craft Federation at the Mjonøy Cultural Centre and Camping Site, where we had our accommodation in well-appointed cabins. It was a reconstruction of a type we were told had been developed by technology transfer from the stamps introduced by German miners in the sixteenth century. Before that people fulling their *vadmel* by treading it in tubs. In the 1980s a Swedish weaver, Kerstin Gustafsson, who was finding this method laborious and time-consuming, had tried to find a surviving *stampa* in Sweden. She recorded several, none of them fit for use, and with Gunnar Zetterqvist, who prepared drawings, proceeded to build one. The *stampa* at Mjonøy was

based on their plans.

The installation had a breastshot clasp-arm waterwheel 2.2m in diameter and two pairs of stamps operating in troughs carved out of a massive tree-trunk. The hammers were inclined at 10 degrees to the vertical and were raised by tappets on a shaft at the rear. They received about 25 lifts per minute so the waterwheel was turning at about 50 rpm. About 20m of cloth 75cm wide was folded concertina-wise into each trough and very hot water was poured in. The shape of the trough and the action of the stamps made the pile turn over, with 30 blows causing a complete rotation. It took between 60 and 90 minutes to full the cloth to our satisfaction and this produced a shrinkage of about 20 per cent in length and 14 per cent in width. We understood that in the past heavy working clothes were shrunk by as much as 50 per cent.

It was interesting that no detergent was needed, although the wool had been lightly oiled for spinning, and that tenter frames for drying cloth under tension were not apparently used in Norway. Instead cloth had been wound around split wooden rollers with wedges knocked in for tightening. The stamps were a different type from the pivoted, swinging fulling stocks seen, for example, at the Welsh Folk Museum, and recorded in Greece and Spain, and this is a subject inviting further study. □



A Fulling Mill in Norway—Stampa at Mjonøy Cultural Centre, Telemark

(Continued from page 7)

The final article, **Oubliez Waterloo: The St Pancras Effect** is by Sir Neil Cossons who was Chairman of English Heritage between 2000 and 2007 and prior to that was Director of the Science Museum, London. He states that St Pancras station has provoked controversy and shaped opinions throughout its existence. In reactions to its construction and changing views on its architectural style, from its decline in the 1930s to the debates over its

future, and in the spectacular reversal of fortunes that has made it at once the symbol of the railway renaissance and an exemplar of how great historic buildings handled with care and understanding can affect our wider sense of values. St Pancras has been profoundly influential. Throughout, the impact of St Pancras has been more far-reaching than its role as a railway terminus. Sir Neil explores the trends in detail in his paper. □

SIHG Lecture 9 November 2010

Stourport – Terminus of the Staffordshire & Worcestershire Canal by *Gordon Knowles*

The canal age between 1760 and 1830, (after the pack horse and the carrier, and before the railway,) mirrors the formation, development and heyday of Stourport almost precisely. The town, which did not exist before the canal, is at the confluence of the rivers Severn and Stour, four miles downstream from Bewdley on the Severn and the same from Kidderminster on the Stour. Worcester is some eleven miles further down the Severn.

After several abortive attempts to improve navigation on the rivers an Act was passed in 1766 to construct a canal from Heywood in Staffordshire on the Trent & Mersey Canal to a point on the Severn. Brindley was engaged to survey the route and he elected to follow the sandstone ridge near the Stour and then bring the canal out to the Severn. Bewdley, which had good wharfage and a bridge and was on the pack horse routes was not chosen as it would have been necessary to lock up to 250 feet and back down again. The canal was just over 46 miles long with 12 locks up to the summit and a further 31 down to the Severn. It was completed in 1770 and opened for business in 1771. A view by Sherriff, dated 1776, illustrated the new basin, river locks, warehouses and the Tontine, a large hotel which in the early days provided accommodation for merchants and travellers. For a time there were numerous 'water fetes' on the canal but the rapid increase in commercial traffic soon drove them from the water.

Stourport had a monopoly of trade to and from Birmingham and the Black Country for twenty years and

the docks and warehouse were enlarged several times, eventually covering seventeen acres. The village grew rapidly and immigrant workers and industry soon flowed in. The Baldwin family, that of Stanley the Prime Minister in the 1930s, were early industrialists in the town with foundries and tinned hollowware factories. Carpet weaving and vinegar brewing were among other early industries.

In 1816 the Birmingham & Worcester canal, which was a third shorter in distance, opened and immediately took some 30% of the trade. By 1845 the Severn had been improved with sets of locks giving 7 ft of water up to Stourport. The Birmingham & Gloucester Railway took further business away but in 1850 70,000 tons of coal, now the principal trade, was still being carried on the S&W. The company dominated town affairs until 1897 when the newly created Urban District Council took over many of the activities that had been sponsored by it. The Railway had come to Stourport in 1852 when the Severn Valley line was opened.

Canal traffic continued to decline until the last coal was brought down to the electricity generating power station in 1949. This had been built in the 1920s. A rail link to it and to the new second power station finally ensured the end of the canal as a commercial activity. After some years of stagnation the docks, locks and the canal have been restored and warehouses and the Tontine converted into flats, both for locals and holiday visitors. Today the town has a population of just over 20,000 and has a thriving mixed tourist and industrial economy. □

Surrey Archaeological Research Framework (2006) Ideas for Investigations in Industrial History (part 2)

extracted by Jan Spencer

The Surrey Industrial History Group has been involved in many research or restoration projects in the past, but we have not been very active recently.

This is a summary of the above document from 2006 in the hope of inspiring future work. If you have ideas, however vague or ambitious, please put them forward to excite and inspire us, (which means all of us!) to future action. (SIHG is organizing the SARF conference in 2011.)

Semaphore and telegraph chains; Transport of building materials; Plotting the effect of new transport systems on industry & settlement;

Effect on layout of towns (markets etc + zoning of inhabitants); Effect of designed landscapes on roads (eg Titsey, Albury); Study of medieval / early modern road system (+ bridges, fords);

Availability of maps of turnpikes, canals & railways + dates; Routes known;

Recording of transport-related features - toll-houses, gate positions, railway structures being overtaken by modernisation etc;

In some cases excavation to record construction methods (eg of short-lived or non-completed sections of railway);

Militia-related structures, practice areas (MD surveys);

Publication and analysis of defence survey material;

Further work on Second World War defence systems, eg lesser category nodal points, establish locally-based survey projects;

Army camps; 'Canadians'; Record the lines of the main anti-tank ditches;

Recording of First World War practice features;

Aircraft crash sites; Airfield locations; Surrey after about 1500; Annual SIHG makes conservation award - suggestions welcome for next year;

Linear landscapes such as the Tillingbourne Valley & the Wey Navigation;

Woodland landscapes, mentioning glass & charcoal production; Landscapes of the extractive industries such as Reigate stone quarries, hearthstone mines & chalk pits;

Urban landscapes including tanneries, corn mills, markets & industrial housing;

Landscapes of war, including second world war defences;

'Landscapes of Social Memory' including manufacturing industries such as Dennis Bros of Guildford; Settlements, particularly the influence of landholders;

Buildings of social control, eg workhouses, hospitals & prisons, the Epsom hospitals, religious buildings & cemeteries such as Brookwood & finally leisure

& entertainment including football grounds, cinemas & Brooklands race track;

The woollen industry; Utilities; Extractive industries;

Wealden glass, pottery, roads, waterways & railways;

Gunpowder, papermaking, textiles, motor vehicle manufacturing, aviation & the aircraft industry & other industries.. □

To be continued in the next *Newsletter*>

