

North East Derbyshire Industrial Archaeology Society

NEDIAS Newsletter No. 42 – May 2011

Price: £1.00 (Free to Members)



2011 - NEDIAS TENTH ANNIVERSARY YEAR!

Wingerworth Stone Saw Mill

It's all hands to the pump! NEDIAS has received permission from the land owner to investigate the old stone dressing mill near the junction of Hill Houses Lane and Pearce Lane, Wingerworth. This was a water powered stone saw mill dating probably from the third quarter of the nineteenth century which cut the stone from Bole Hill quarry into lintels, steps, kerb stones etc. The site probably has little national

importance

b u t

certainly

is of local

interest and

badly needs recording properly before it is irrevocably lost to the trees.

The site today is largely overgrown, but with tantalizing lumps and bumps to investigate – and a small NEDIAS group has started on gentle clearance and excavation to see just what can be found, and to supply some of the answers to some intriguing questions.

If you are interested to come along and help, indeed, if you'd like to know more about survey and recording techniques, please contact David Palmer on (01246) 279855 for more information. We'd *certainly* welcome your input either on site, or with background research.



Photos: Les Mather

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Chairman's Comments:

This year promises to be a very busy one for NEDIAS. It marks our tenth anniversary, and we're particularly pleased to welcome back Dudley Fowkes to talk on the subject of Westhouses – Dudley was our very first speaker way back 10 years ago in 2001.

This year we shall also be organising a joint meeting with the Chesterfield and District Civic Society, when David Siddon will talk to us on the history of the "Brampton" potteries – and for this meeting only, please note that our day and venue will change – the pottery meeting will be held on **TUESDAY 11 October, at the Chesterfield Library Lecture Theatre**. This should be a popular event, and I anticipate a larger than usual number of visitors – the Brampton and Pearson potteries feature in the history of many local families. The pottery theme continues into NEDIAS Journal No 4, which will be published in the autumn, and will contain a major article by Lesley Phillips on the subject of the rise of Pearson pottery, moving forward from the early beginnings at Whittington, and taking us through to the split. So expect very much a pottery theme as we enter the second half of the year.

Before that at our meeting in May we have our annual David Wilmot Memorial Lecture, and for the railway topic this time we welcome Richard Booth, Chairman of the Ashover Light Railway Society. It should be a great meeting.

WHAT'S ON?

NEDIAS Lecture Programme

When: Meetings are held on the second Monday of each month, starting at 7:30 pm.

Where: Friends' Meeting House, Ashgate Road (at junction with Brockwell Lane), Chesterfield.

Monday, 12 th September 2011	NEDIAS 10th ANNIVERSARY LECTURE Dr Dudley Fowkes: <i>Westhouses – Midland Railway Village.</i>
TUESDAY, 11 th October 2011 <u>YES – TUESDAY!!</u>	JOINT MEETING WITH CHESTERFIELD CIVIC SOCIETY David Siddon: <i>Brampton Pottery.</i> <u>VENUE- Chesterfield Library Theatre: NOTE DIFFERENT VENUE</u>
Monday, 14 th November 2011	Darrell Clark: <i>The Fall and Rise of Arkwright's Cromford Mill</i>
Monday, 12 th December 2011	CHRISTMAS MEETING Robin Fielder: <i>The History of Steelmaking in Sheffield.</i>
Monday, 9 th January 2012	Stephen Flinders: <i>Stanton at War</i>

Other Diary Dates

Friday & Saturday 13 th & 14 th May 2011	Barrow Hill RailAle Festival. <i>Barrow Hill Roundhouse.</i>
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Saturday & Sunday, 14th & 15th May 2011	Hady Miniature Steam Rally – <i>Chesterfield and District Model Engineering Society present their twice annual display of miniature steam trains and traction engines. Train rides for all ages, for which there is a small charge. The event takes place at St Peter and St Paul School, Hady Hill, Chesterfield (S41 0EE). Free onsite parking</i>
Monday, 16th May 2011	Geraint Coles: <i>The Chesterfield Canal – past, present and future.</i> <i>7:30pm Kelham Island Museum. SYIHS. 0114 230 7693 .</i>
Thursday, 19th May 2011	Mike Greenwood and Trevor Follows: <i>Mixed Bag with two Leicester Rail Enthusiasts – Mike and Trevor delve into their collections with views from the 1970s and 1980s.</i> Barrow Hill Roundhouse Railway Centre off Campbell Drive, Barrow Hill, Chesterfield, Derbyshire, S43 2PR
Saturday, 21st May 2011	EMAC 81, organized by PDHMS in The Pavilion, Matlock Bath. Further details in this Newsletter under AI News & Notes.
Thursday, 23rd June 2011	Philip Cousins: <i>George Stephenson’s Tapton – Taking a look at Tapton House and its surroundings; this guided walk will also examine George Stephenson’s life and death at this Georgian Country Seat.</i> Brimington & Tapton Local History Group; meet @ 7:00pm at Tapton House Gates.
Wednesday, 29th June 2011	Hammersmith and Butterley Walk: <i>The hamlet of Hammersmith is arguably the best example of surviving housing of the Butterley Company’s workers.</i> Walk led by Dr Dudley Fowkes. 7:30pm from Butterley Station Car Park. DAS – book via 01773 830520.

NEDIAS VISITS

Co-ordinator: Brian Dick, 01246 205720

Saturday 25th June: Visit to the National Coal Mining Museum, Caphouse Colliery near Wakefield.

The **National Coal Mining Museum for England** opened in 1988 as the **Yorkshire Mining Museum** and was granted national status in 1995. This mine was worked from at least 1789 until the coal was exhausted in 1985. Following the UK Miners’ Strike (1984-1985) work was started to convert it into a museum. The miners were transferred to Denby Grange Colliery at nearby Netherton.

We have pre-booked a special tour for the NEDIAS group.

Please register interest to get your name on the list either by entering your name on the “visit” sheet at the next meeting, or by phoning Brian Dick. The visit will be by community bus from Chesterfield, which Brian has kindly agreed to drive.

Saturday 10 September: Glasshouse Common

Barry Bingham will be leading a walk across Glasshouse Common, an area of immense historical importance. It was in this area that Richard Dixon commenced making glass in 1710 an industry which was to continue for 140 years, and there are many features that Barry will point out relating to past industries and characters of the area.

We meet at 10:00am on Saturday 10th September at The Cock and Pynot for a walk estimated to finish at about mid-day, time for lunch at this historic place?

Please register interest by entering your name on the list at the next meeting.

Further information from: Brian Dick, 01246 205720

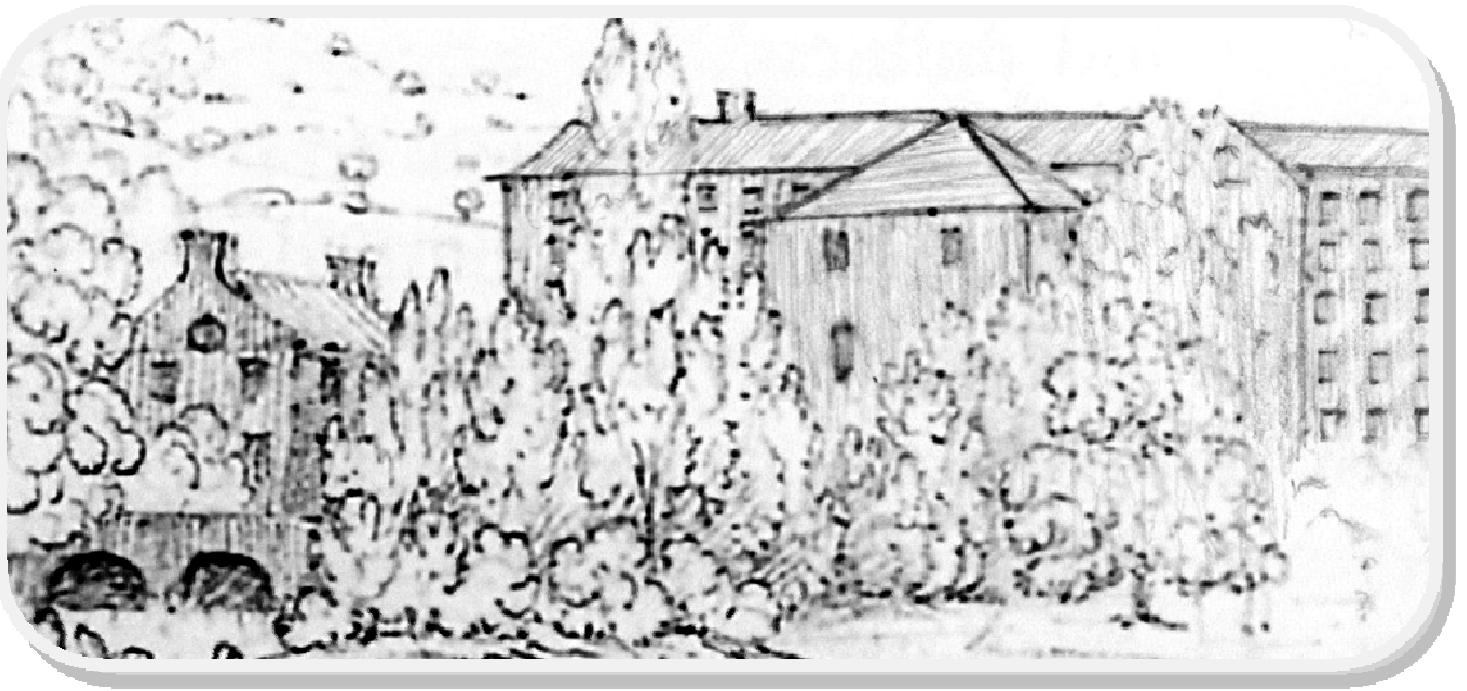
The Hewes Water Wheel from Arkwright's Mill at Bakewell

Jan Stetka

*Jan Stetka's talk to NEDIAS on the subject of Bakewell Mill was well received on his visit to us in February, we were **amazed** at the size of the enormous Hewes wheel the installation of which he outlined and which is partially reconstructed using surviving relics at the Old House Museum.*

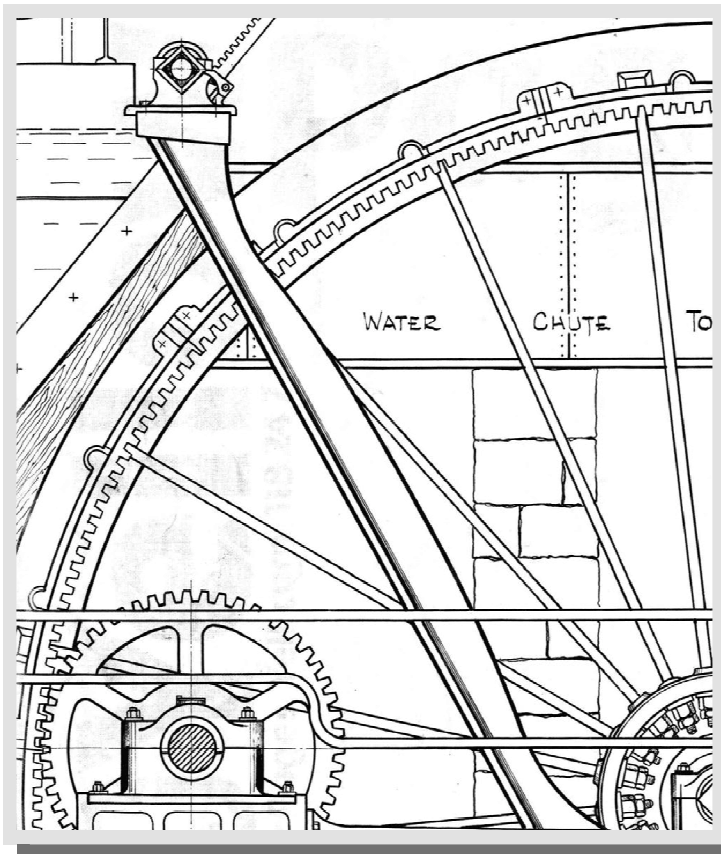
If you mention Sir Richard Arkwright, most people think of his development site at Cromford. Here he set up his first mill in 1771, but it took him 5 years to develop machinery for the many stages of cotton spinning. So his second mill was built at Cromford in 1776. These were comparatively small mills, about 100ft long, as the site is constrained by rock faces and only has the Bonsall brook and a drainage sough to power it. In 1777 he sought a site for his third mill and chose Bakewell, where he built a mill nearly as big as the two Cromford mills put together, powered by the river Wye.

He stationed his son, Richard, at Bakewell to learn the trade and to plan many other mills from Bakewell to Manchester. Richard married and raised eight children in a purpose built house which still stands, near the packhorse bridge to the north of Bakewell. In 1792, Sir Richard died and son Richard moved to Willersley Castle at Cromford. Richard's son Robert later took over the Bakewell property. At that time the mill was powered by an undershot wooden wheel mounted axially within the Lumford mill.



*Arkwright's Cotton Mill at Lumford, Bakewell – A pencil drawing in 1827,
reproduced with the kind permission of Peter Robinson*

In 1827, Robert had the wooden wheel replaced with the latest technology: a 25ft wide, 18ft long iron wheel made by the inventor of such wheels Thomas Hewes. Hewes had worked with the Strutts of Belper who introduced iron construction into mills to make them fire-proof. Hewes had pioneered the construction of iron water wheels which could be made more powerful by supporting long buckets holding, in Bakewell's case, half a ton of water in each bucket. It was 1850 before any steam engine could rival the power of a Hewes wheel. To minimize the weight, he supported the buckets on slim spokes like a modern bicycle wheel and reduced shaft sizes by taking the power from a pinion wheel turned by teeth on the inside of the wheel periphery. By placing the pinion wheel directly below the high breast feed of water, the centre axle of the wheel could be a mere light tube. Each of these inventions: the shaping of buckets for maximum water retention, the suspension on tensioned spokes and power take-off via a pinion wheel, are individually



Hewes Water Wheel, 1827: illustration at Bakewell Museum.

brilliant. Taken together, they revolutionized water power.

Although the mill burnt down in 1868, the Hewes wheel survived and Arkwright's five story mill was replaced with a single story industrial estate. In the late 1800's, a director of an electrical battery company was holidaying in the Peak District and saw that the site was for sale. He realised the potential of the wheel to generate electricity and moved his company, the D. P. Battery Co., to Bakewell. The company employed 300-400 people, just as Arkwright's mill had before. It made large batteries for electrical powered vehicles, including battery arrays weighing 150 tons which went in the Allies' submarine fleets during the war time. The company was taken over by the Chloride Group and unfortunately one of their engineers over tightened the tension on the wheel spokes, causing the wreckage of the wheel in 1955.

Fortunately three parts of the wheel, illustrating Hewes brilliant inventions, were brought to the site of Bakewell's museum in 1955. They have now been incorporated in a new industrial annex. Other strokes of good fortune followed. Original architect's plans of the wheel were offered for auction on e-bay

and the wheel maintainer, prior to 1955, turned up during a reunion of D. P. Battery staff organized by the museum. Hewes' wheel was rated at 100 horse power and generated 70kW of electricity 24 hours per day to charge D.P.'s batteries. There are 8 other sites near Bakewell which once had water wheels. If these were rebuilt with modern water turbines it would go a long way towards making Bakewell carbon free. So a quadrant of the wheel has been rebuilt incorporating the parts saved 55 years ago by the Bakewell & District Historical Society. It is a community project and the museum has received the 'Derbyshire Museum of the Year' award for its involvement with industry and schools. It is hoped that the rebuilding of the wheel will stimulate the whole of the community in a project to emulate Hewes in making Bakewell once again powered by the River Wye.



The Hewes wheel with 18ft long buckets is at the rear. The maintenance engineer is in the pit. Photograph at Bakewell Museum.

Regional IA News from Yorkshire & Humberside (*Originally published in Industrial Archaeology News, Spring 2011*)

Derek Bayliss and David Cant

We are already seeing the adverse effects, first of the recession, and then of spending cuts, on historic industrial sites and buildings. Planned developments are being postponed or quietly dropped. This may give some buildings a further lease of life, but others which were to be refurbished as part of a project – like the Grade II* late 19thC workshops of Leah's Yard in the planned Sevenstones retail development in central Sheffield – will continue to decay. More buildings will become empty, and it will be harder to find a new use for them. And our public sector partners in industrial archaeology and conservation (planning staff, conservation officers, archaeologists, museum staff, and academics) will be fewer and busier. Challenging times, but success stories among the gloom are all the more welcome.

Congratulations to the Industrial History Section of the Yorkshire Archaeology Society, based in Leeds, which celebrated its 40th anniversary in May. It developed from an earlier group set up in 1964, and offers a programme of talks and walks, a newsletter and occasional publications. The first edition of the 'Pevsner' for the West Riding appeared in 1959, with a second edition in 1967, and has been invaluable. Like others in the series it is being revised and expanded, with much more coverage of industrial and commercial buildings. The first of two volumes appeared in 2009, and covers Leeds, Bradford and the North.

In Leeds the listed Hunslet Mills, disused since 1966, still stand empty. They are a fireproof flax spinning works of 1838-40, probably designed by William Fairbairn. The office building of Union Industries, Whitehouse Street, incorporates a former chapel and Sunday school and the Lion brush works. Union Industries make ropes, flags and banners, and incorporate Ralph Ellerker Ltd., founded in 1795 as tarpaulin makers and rope and twine merchants. The first White Cloth Hall in Kirkgate was built in 1711 but replaced by a second Hall in 1755 and a third (now restored) in 1775 as trade increased. What was left of the 1711 Hall was later hidden by other buildings but was 'rediscovered' in the 1980s and is listed Grade II*. Its frontage has been taken down for eventual restoration, and adjoining buildings have been demolished. There are plans to redevelop the former Buslingthorpe Tannery (mid to late 19thC) in Education Road, Sheepscar, for housing, with an additional floor, a new extension, and blocks on the site of adjoining buildings, to give 349 homes. Leeds was second only to London as a centre of the tanning industry, and this is one of the few tanneries there to survive in anything like their original state.

At Ilkley the Victorian brewery building is now owned by Tesco, but a new Ilkley Brewery wishes to move in. English Heritage has made a £50,000 grant to protect the important lead mining remains on Grassington Moor after surveys showed growing damage from weather and water erosion. The Yorkshire Dales National Park Authority is carrying out a study about dovecotes in the National Park and is appealing for information; there is an article about them on the park website at www.yorkshiredales.org.uk/dovecotes The community hydro-electric scheme on the Ribble at Settle, using an Archimedean screw, began generating in January 2010. Northern Millwrights have restored the breast shot waterwheel, dating from 1874, and the mill machinery at Darley Mill Centre near Harrogate. Low Mill at Bilsdale on the North York Moors, a medieval site, has been out of action since the main shaft broke in the 1980s, and is being restored to working order with a new shaft made by a sawmill in Ampleforth. There are plans for a small watermill at Collingham near Wetherby, latterly a garden centre, to be saved and reused for housing.

The Yorkshire Film Archive based at York St John University aims to find, preserve and provide access to moving images of 100 years of life in Yorkshire. It has many films of industry and work, such as CEAG Lamps in Barnsley, Wormald and Walkers blanket mills in Dewsbury, and cutlery making in Sheffield. The archive can be found at www.yfaonline.com Holgate windmill, York, has been given funding to reopen by the National Lottery People's Millions. A Roman 'industrial estate' has been discovered by archaeologists at

a site linked to a known fort at Healam Bridge near Dishforth. It included a water powered flour mill and storage buildings, and is thought to have been occupied until the 4thC AD.

From the ancient to the modern, a 25 tonne steam turbine made by Parsons in 1967 for Drax power station has been donated to the Discovery Museum in Newcastle, and is being stored at Beamish. When made it was the most powerful high-speed turbine in the country. It has been taken out of service as part of a £100m steam turbine modernisation project. The Pocklington Canal in East Yorkshire is gradually being repaired and is navigable for half its 9½ mile length. It is a remainder waterway and British Waterways has no statutory obligation to maintain it. It includes nine locks (eight listed), four scheduled road bridges and a Site of Special Scientific Interest. The restoration is supported by the Pocklington Canal Society.

Yorkshire forced rhubarb, produced indoors in the 'rhubarb triangle' between Wakefield, Leeds and Bradford, has been given EU protected status. The rhubarb is initially grown in the open but is taken into heated, darkened brick sheds to produce its pink colour and sweet flavour. It has been grown here since the 1870s, favoured by a cold and moist topsoil, local coal, and (at least in the past) a supply of wool waste from the mills as fertiliser. There were once 200 growers, but now only twelve, who welcome the decision as it will secure the future of the trade. Is it time to record a traditional rhubarb forcing shed?

The National Coal Mining Museum at Caphouse Colliery near Wakefield is relieved to have received a budget cut of 15%, less than the 25% faced by many museums, in recognition of the high costs of keeping the mine open for underground visits. The former ticket office at Sowerby Bridge station, built in 1876 by the Lancashire and Yorkshire Railway, has been restored and opened as the Jubilee Refreshment Rooms, while an ornate First Class refreshment room at Sheffield station, built by the Midland Railway in 1905, has reopened as a real ale bar; an encouraging trend. North light weaving sheds are difficult to adapt to new uses, but the shed at Oat Royd Mill, Luddenden, in the Calder Valley, has been successfully converted to dwellings.

At Longfield Dye Works, Linthwaite, Huddersfield, where there are still sunken dye vats in the floor, an earlier three storey building with continuous windows on the top floor, probably built in the 18thC as a weaver's cottage, has been converted to a works canteen but is now in poor condition. Similar windows are a feature of the Colne Valley Museum at Golcar near Huddersfield, in three handloom weavers' cottages of the 1840s. It is run entirely by volunteers and commemorates spinning, weaving, clogmaking and other local trades, by displays and working demonstrations. A fourth cottage and a butcher's and chip shop of 1904 were bought in 2008 and are to be restored as part of the Museum in a project which will cost up to £900,000. The Heritage Lottery Fund has given a Your Heritage grant of £50,000 for the first stage, mainly weatherproofing.

The 16thC Old Corn Mill at Bullhouse near Penistone, the highest mill on the Don, is being renovated and extended as a green business centre. The wheel has long gone and is not being replaced, but there are plans for two water turbines and heating from a geothermal water source. Down the Don, Wortley Top and Low Forges were built in the mid 17thC but there is documentary evidence of earlier ironmaking in the area, and it has long been suspected that this was at one or both of the Forge sites. A small excavation at Low Forge has revealed bloomery cinder, the first archaeological evidence of the sites' earlier history. A new visitor centre and shop has opened at Elsecar Heritage Centre, and Building 21, the former Iron Works rolling mill, is being refurbished as a concert and events venue. A Friends organisation has been set up. A £400,000 grant has been secured for work on the 1795 Newcomen engine, the only one to survive in its original engine house. The intention is that it should be put into running order but not steamed. This is partly for conservation reasons – the boiler and boiler house have gone – but mainly because it would not be possible to have public access in the engine house while it worked. The grant also provides for interpretation and publicity.

Keith Ayling, who was chairman of the Chesterfield Canal Trust for 18 years to 2009, died in March. He was active in setting up the Chesterfield Canal Partnership, which brings together the bodies and groups concerned in its restoration. During his time in office eleven miles of canal and 35 locks were restored. A detailed consultation document on the restoration of the Canal between Kiveton Park (Rotherham MB) and Killamarsh (Derbyshire), including the largely surface route proposed as a replacement for Norwood Tunnel, was approved and issued in the spring. The Norwood flight of thirteen locks will be restored to its original condition. In central Rotherham, a small but attractive grain warehouse by the South Yorkshire Navigation has been demolished as part of works to improve the area round the railway station.

The Sheffield 'Star' has led a successful campaign to highlight the essential work done by the women who

replaced men in the steel and engineering industries during World War 2, and to record the memories of those who are still with us. They were given a reception in the Town Hall, a book was produced, and a statue is proposed. At the time they were given little recognition, and most lost their jobs when the men returned.

There has been much controversy over the cancellation of the £80m loan offered by the previous government to Sheffield Forgemasters to build a 15,000 tonne hydraulic forging press, which they need to compete with Japan and South Korea for work in the nuclear industry. They continue to produce huge forgings and castings with their present plant, and one project this year, modest by their standards, was a 16 tonne replica of the anchor of the 'Titanic', for display at the Black Country Museum and then at Netherton, Dudley, where the original was made. Their River Don Works was built for Vickers from 1864, and one aspect of its history has been recorded by Douglas Oldham in 'A History of Rolled Heavy Armour Plate Manufacture at the Sheffield works of Charles Cammell and Vickers' (South Yorkshire Industrial History Society 2010).

Sheffield's steel industry was built on the cementation and crucible steelmaking processes, which produced small amounts of expensive, high quality steel for edge tools, cutlery and engineering, and continued to do so long after Bessemer and Siemens invented ways of making cheaper bulk steel. The crucible process was a Sheffield invention, by Benjamin Huntsman around 1742. The last surviving large crucible steel melting shop was built by Sandersons in 1871 at their Darnall Works. It is a scheduled ancient monument but has long stood empty and neglected. English Heritage gave £300,000 for its restoration last January, and £200,000 has been given by local businessman Andrew Dunigan. It will be used for warehousing or offices. The Sheffield steel firm Edgar Allen was the last in Sheffield to make railway points and crossings from manganese steel alloys, and this part of its business, in Shepcote Lane, was taken over by Balfour Beatty in 2006, but they have now discontinued it. The front block (c1900) of the William Cooke iron and steel works in Tinsley Road, latterly part of the works of Tinsley Wire, has been demolished for redevelopment, as (after recording) has the 1943 Osborn Mushet tool works, known as the 'White Building', a landmark of Penistone Road (A61 North). It had Art Deco details and there was some pressure to keep it, but it was built quickly for war production and was in a poor structural state.

Last year's report mentioned concern about the future of the Grade II* listed Portland Works, Randall Street, Sheffield. It was built c1879 for the cutlery firm of R F Moseley, who were the first to produce stainless steel cutlery commercially. Applications to convert it to small apartments have so far been rejected, and now the tenants and a campaign group are taking steps to acquire the building through a community share issue for a social enterprise. An open day was held in December. The current tenants include knife makers, tool forgers and silver platers, and there are now very few suitable premises for small firms in these traditional Sheffield trades.

The Hawley Tool Collection has moved to a new gallery at Kelham Island Museum, created with a £595,000 grant from the Heritage Lottery Fund, which was opened in 16 March by Sir Neil Cossons. Appropriately the gallery was part of the late 19thC Wheatman & Smith saw works. The Collection contains over 100,000 objects including tools of many trades, catalogues, photographs, films, and oral histories. The Museum also has a new gallery on Sheffield brewing, and work is nearly complete on its flood defences after the 2007 flood. The Sheffield Industrial Museums Trust is preparing a Lottery bid for Abbeydale Industrial Hamlet, to get the waterwheels back to work and build a learning centre. At Shepherd Wheel, the preserved water powered cutlery grinding works on the Porter Brook south-west of the city centre, the dam has been refilled and building work is in hand. Repairs to the machinery, and a new education shelter and toilet block, are due to be finished by June.

Great Unknowns of the Industrial Revolution

– An Introduction

Derek Grindell

Our Editor's footnote to the article by Les Mather on his Orkney trip (NEDIAS Newsletter No.40), set me thinking. You may recall that he invited readers to share photos or information on places of interest encountered whilst on *holiday or days-away*. Despite being a reluctant traveller, a few moments of reflection produced a list of locations I had visited, which were associated with ten figures who were active in the Industrial Revolution but whose names have long since faded from public recognition. Beyond Watt, Wedgwood, the Boultons, the Stephensons, Arkwright and other prominent contemporaries

lies a substratum of talented engineers, entrepreneurs, inventors, industrialists and scientists, who are, sadly, remembered only in the halls of academia and by special interest groups.

The eminent historian G. M. Trevelyan, in his *Illustrated English Social History (Vol.3 The Eighteenth Century)*, wrote 'The patents issued in the quarter of a century following 1760 were more numerous than those issued in the previous century and a half.' Clearly this explosion in inventions and industrial initiatives was not caused solely by a select few but by many players operating in what he called the *atmosphere of bustling speculation in the north*. This latter category encompassed some truly remarkable characters and you may well conclude, when reading of their achievements in an on-going series of articles in the Newsletter, that they have been ill served by industrial historians. I would emphasise that the existence of my list of candidates in no way precludes additional contributions from members. The series begins with the man who designed and supervised the construction of one of the UK's greatest ports.

Jesse Hartley (1780-1860) Derek Grindell

In 2008 I was taken as a birthday treat on a family outing to Liverpool to view the contestants in the Tall Ships Race at their moorings. Impressive as the assembly of vessels were, they could have enjoyed no better backdrop than that afforded by the Albert Dock's restored warehouses. In recent years they have been given a new lease of life and now provide a home for a new outpost of the Tate Gallery as well as restaurants, bars and other retail outlets. The man responsible for the design, planning and construction of this magnificent facility was Jesse Hartley. Born in Pontefract, on 21st December 1780, his earliest works were completed in the West Riding under the watchful eye of his father, who was a stonemason, architect and Bridgemaster. Prior to his appointment in 1824 as Civil Engineer & Superintendent of the Concerns of the Dock Estate in Liverpool, he designed and constructed masonry bridges in Yorkshire, Lancashire London and even in Ireland where his client was the Duke of Devonshire. The latter assignment may well have arisen from his collaboration with John Carr, the renowned architect of York, who had designed The Crescent at Buxton for the 5th Duke. It was funded from the proceeds of the Ecton copper mines on the Staffordshire border, which in one particular year generated an income of £300,000.

During his 36 years in the service of the Dock Trustees, Hartley constructed or altered every dock in the city, adding 140 acres of wet docks and some 10 miles of quay space. He was a consultant engineer to the Liverpool & Manchester Railway Co., was involved in the construction of the high level coal railway, the Liverpool end of the Leeds-Liverpool Canal and always ready to seek advice from such other engineers as James Walker, George Aitchison and George Stephenson. In November 1824, within eight months of his appointment, he presented the Trustees with plans for a river wall, works to the north of Princes Basin, the Dry Dock, the Salthouse Dock, the



The Albert Dock 2004 (Photo: Liverpool Museums)

Brunswick Basin, the Brunswick Dock, the South Basin and the Graving Dock. He must have been very persuasive since the Dock Bill, mainly formulated on his recommendations, was given the Royal Assent on the 27th June 1825. The Liverpool docks built under his direction were Clarence, Brunswick, Waterloo, Victoria, Trafalgar, Albert, Canning Half-tide, Salisbury, Collingwood, Stanley, Nelson, Bramley-Moore, Wellington, Wellington Half-tide, Huskisson and Canada Docks.

When designing the Albert Dock warehouses he made



Hartley's Dockmaster's Office for Salisbury Dock, Liverpool, 1848

models of the brick arches and conducted an experiment to ascertain how long a sheet iron ceiling under a wooden floor could resist fire. He constructed a model 18 feet square and 10 feet high in the Dock Yard and the Dock Committee members were invited to witness him set it alight; they were able to note that a period of 40 minutes elapsed before the floor combusted. The outcome was a design for an iron framed incombustible warehouse. The Albert Dock warehouses were equipped with hydraulic cargo-handling and dock machinery. An enclosed dock-warehouse system, already adopted in London earlier in the nineteenth century, was incorporated in Hartley's design. Locks were installed to impound the water at a constant level, which facilitated loading and unloading and the site was enclosed within high boundary walls, which reduced opportunities for pilfering. London's St. Katherine's Dock had pioneered the location of the warehouse blocks at the water's edge to allow cargo to be hoisted directly from the holds but Hartley improved on the concept by incorporating crane arches in his design. Such was his attention to detail that he specified the bricks to be used *....manufactured of the Clay called the North Shore Clay...to be hard burned and well shaped...and without any admixture of Clinkers or of broken or of Soft Bricks or Bricks containing Lime pebbles.* In the event that any contractor or supplier attempted to query the rights of their customer, Hartley added...*And it is hereby agreed that the Surveyor of the said Docks shall have the sole and uncontrolled power...of rejecting all such of the said Bricks as he may in his own judgement deem soft, badly shaped or in the slightest degree defective...or otherwise unsatisfactory to the Surveyor of the said Docks in any manner howsoever.*

An 1836 report on the Dock Surveyor's Department detailed the composition of the direct labour under Hartley's control. Seventeen blacksmiths and twenty assistants were engaged in the forge and shop, producing the forged iron work required for the gates and bridges and there were also millwrights', carpenters' and shipwrights' workshops, a brass foundry and a painter and plumbers' shop. Masons, sawyers and paviours with apprentices and labourers were also a part of the work force, which by 1841 numbered 528. Interestingly, the office staff comprised one supervisor, a principal clerk and a storekeeper. Small wonder that an investigation into the management of the Dock Yard at that time unanimously concluded that *...the various works have been executed on very reasonable terms, and at lower rates than they could have been in any other way....* Hartley was equally assiduous in controlling the cost of materials and he opened a granite quarry in Kirkcudbrightshire and commissioned a coaster for transporting stone and timber. He claimed that this investment saved more than 8d. per foot on ashlar and more than 6d. per ton on setts.



The Albert Dock 2008 (Photo: Derek Grindell)

If he had a weakness in the range of his professional skills it was surely betrayed by his forays into architecture. His association with the Duke of Devonshire had brought him into contact with the architect William Atkinson, who had a penchant for the Gothic and castellated styles, which seems to have made a lasting impression on Hartley. Sir J. A. Picton in his *Memorials of Liverpool* (1872) was scathing in his criticism of Hartley's design for the hydraulic accumulator tower at Canada Dock, now demolished. Describing it as a lofty structure in grey granite, Picton wrote... *Whatever may have been the merits of Mr. Jesse Hartley as an engineer – and they are undoubtedly great – a feeling for the beautiful was certainly not one of them.* Hartley died on 24th August 1860 and was buried at St.

Mary's, Bootle. His gravestone was subsequently moved to accommodate a road-widening scheme but his name will be forever enshrined in Liverpool's waterfront and, in particular, Hartley's personal 'Albert Memorial'.

I. A. News and Notes

Faces in the Crowd Exhibition at Buxton Museum

The exhibition “Faces in the Crowd: Joseph Wright and Friends” at Buxton features eight of the famous paintings by Wright, but also includes paintings by many other artists of Derbyshire people and scenes, including quite a few industrialists and other luminaries of the enlightenment era. So you will see portraits of James Brindley, the clockmaker John Whitehurst, and the Hosley family of Alfreton Ironworks, Astronomer Royal Flamsteed (born in Denby) as well as Strutt and Arkwright (and see some of Arkwright’s bank notes printed for the Arkwright banking empire).

The exhibition runs until the end of May – but note that the museum is closed on Mondays.

Ecclesbourne Valley Railway

The Wirksworth branch of the Midland Railway, running through Duffield, Shottle, and Idrigehay was opened in 1867, being a potential but unfulfilled onward route to the north-west with the intention to link up at Rowsley. In the event, passenger services ran from Duffield to Wirksworth until 1947, and whilst freight continued to move, the last stone train from Wirksworth pulled out in 1989.

The Ecclesbourne Valley Railway now report the route as fully operational from Wirksworth through now all the way to Duffield, where passengers can feed into the East Midland trains network. There are four services per day on each Saturday and Sunday

throughout the summer. For the grand opening by the Duke of Gloucester of the through line on 8th April, passengers were reported to have travelled on the mainline from as far away as Southampton for the occasion, and Wirksworth is seeing a remarkable increase in weekend visitors.

At NEDIAS we have all been aware of the remarkable activity that’s taken place in recent years – we send the EVR our warmest congratulations.

With the advent of Peak Rail shortly to be connected to the network at Matlock it will soon be possible to travel from Rowsley to Wirksworth via two preserved railways and East Midland Trains – now that is something to look forward to!



Photo: EVR – At Wirksworth Station during the busy opening day of the line to Duffield

EMIAC 81: The Impact of Lead Mining on the Peak District Landscape

The next EMIAC Heritage Day (EMIAC 81) will be on Saturday 21st May 2011 at Matlock Bath organised by the Peak District Mines Historical Society. Speakers will include Dr John Barnatt, Dr Jim Rieuwerts and David Webb. The conference will take place in the Pavilion, Matlock Bath, and booking can be made directly at the Museum in the Pavilion. More information: 01629 583834, mail@peakmines.co.uk, booking form on line at www.rod.sladen.org.uk/EMIAC.htm

..... and Finally ...

... a Donkin myth?

Many will vividly remember the Donkin works in Chesterfield, but the company has a much longer and more extensive history.

The tin can was patented in 1810 by the British merchant Peter Durand who had adapted it from a French system which used pressurised glass containers. In 1812 he sold the patent on to Bryan Donkin for £1000 and Donkin opened the world's first canning factory in Bermondsey in 1813.

Donkin's cans had two drawbacks. They were robust, usually weighing more than the food they contained, and needed a hammer and chisel to open them (the can opener wasn't invented until 1858). They were also soldered using lead, which resulted in some famous cases of poisoning, one of the most notable was alleged to have been that of Sir John Franklin's three year expedition to chart the North West Passage in 1845.



Sir Bryan Donkin (1768-1855)

Gas Exhausting Plant.

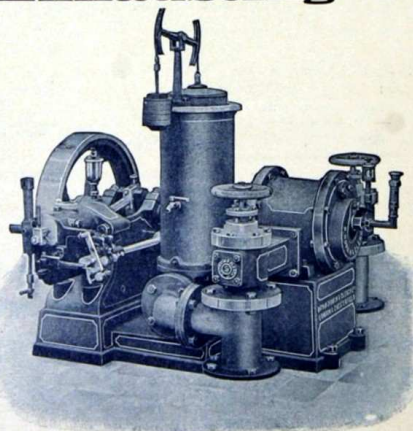


Fig. 535.

The above is a view of a small Exhauster driven by Gas Engine combined on the same baseplate. It is of our latest design, and we have supplied a large number for small Gas Works. By means of the special Exhaust Governor or Gas Compensator, which is combined with a self-acting Bye-Pass Valve, these plants are used for the smallest makes, and perfectly satisfactory governing of the vacuum is obtained, a constant pull being maintained irrespective of the charging and drawing of the works. The connections beneath the Exhauster are much simplified, the Bye-Pass Pipes between inlet and outlet being supplied with the Plant. They are made in sizes small enough to deal with 500 cubic feet per hour; and owing to the increased yield of Gas per ton of Coal resulting from their use, these plants pay for themselves in a very short period.

VALVES OF ALL TYPES AND SIZES. TAR, LIQUOR, AND WATER PUMPS. COMBINED METER-BLOWERS FOR OXIDE REVIVIFICATION.

THE BRYAN DONKIN CO., LD., CHESTERFIELD.

Head Office and Works: CHESTERFIELD. Telegraphic Address: "DONKIN CHESTERFIELD."

London Office: Parliament Mansions, Victoria Street, Westminster, S.W.

Lead poisoning can lead to delusions before it kills you: when Franklin's ship became icebound, one group of Franklin's men set off on foot across the ice with a lifeboat lashed to a sledge, and instead of food and drink to sustain them, one account suggests the sled was found to be loaded with button polish, hankies, curtain rods and a writing desk! The truth is probably more mundane, and that a combination of bad weather, years locked in ice, disease including scurvy, poisoned food, botulism and starvation had killed everyone in the Franklin party.

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