

# North East Derbyshire Industrial Archaeology Society

**NEDIAS Newsletter No. 15 – August 2004**

**Price: 50p (Free to Members)**



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## **Chairman's Comments:**

What can follow the joys of a wet August in England, the thrill of test match successes and the euphoria of the Olympics? A full season of NEDIAS lecture evenings to brighten those Monday nights of winter!

Not that the summer season was uneventful for NEDIAS members. Four successful visits were made to a range of local sites between late June and early August. Thanks to the organisers of the visits and to those who came along on the day. We now have the challenge of organising an equally good, if not better, programme for next year.

The Unstone visit in particular highlighted the potential for further research to find explanations for remains left on the ground, a founding principle of NEDIAS. The coke ovens have been well surveyed and examined by other bodies at various times but, despite the best efforts of groups such as the Old Dronfield Society, other remains in the area still defy a full understanding of their original purpose. I hope that NEDIAS members will, through time, get to grips with such challenges. We are, after all, hoping to launch a journal in the not too distant future but this depends upon suitable material being offered for publication.

On a similar vein, there is still the power generation project to be tackled. Members may recall that Michael Williams of Nottingham gave us some information a few months back about the electricity generating plants of the major industrial companies in this area, Staveley in particular, in the hope that

we would be able to add to his known information. Although we have since received some very useful notes, the project has not got much further forward.

Given that the power distribution systems of the large industrials often covered their own outlying sites and a variety of domestic premises; that the systems operated in fairly recent times for which both personal memories and corporate documents can still be found, it should be a fruitful topic to pursue. Can I therefore reiterate Cliff Lea's request in Newsletter no. 14 for a member, or group of members, to take up the mantle? The letters from Ronald Presswood and David Edwards in this issue demonstrate the extent of interest on this subject.

*David Wilmot*

## **WHAT'S ON?**

### **NEDIAS Lecture Programme, 2004/2005**

**When:** Meetings are usually held the second Monday of each month, starting at 7.30 pm.  
**Where:** The Friends Meeting House, Ashgate Road, Chesterfield (junction of Brockwell Lane).  
**Cost:** Free to NEDIAS members but a donation of £2 for each meeting is welcome from visitors.  
**Further details:** See special NEDIAS Lecture Programme information brochure.

13 September 2004	Trevor Lodge: <i>Coal Coking &amp; By-Products</i>
11 October 2004	Nigel Carabine: <i>The Peak Rail Story</i>
8 November 2004	Dr Martin Whalley/ Ian Edgar: <i>The Restoration of Bugsworth Basin</i>
24 November 2004	Barrie Marsden: <i>Chesterfield Tramways – Special Lecture at Chesterfield Library Theatre – see note on page 7</i>
13 December 2004	Cliff Williams: <i>Clay Cross Works Paternalism</i>
10 January 2005	Peter Machen: <i>The Sheffield Flood</i>
14 February 2005	Catherine Wilson: <i>Lincolnshire Windmills – their history &amp; development</i>
14 March 2005	AGM & Members' Evening
11 April 2005	Martin Sanderson: <i>A History of the Bryan Donkin Group</i>
9 May 2005	Ann Hodson: <i>The Derwent Dams &amp; Birchinlee Village</i>

### **NEDIAS Visits Programme**

**Date to be advised – Power Generation at Chatsworth.** Derek Grindell has kindly offered to lead a visit to Chatsworth, to review remains of the early power generation with turbines fed by water from the top reservoirs to the Emperor fountain, and later installations. **Watch this space!**

## Summer Visits, 2004

On the evening of the longest day, 21<sup>st</sup> June, over twenty members and friends toured the *Midland Railway - Butterley*. We had a special train of six coaches, hauled by a class 08 diesel to each end of the line, a guided tour of the museum and workshops, followed by a pie and pea supper while watching the sunset from the Johnson buffet.

On a damp Saturday in July, Darrell Clark took about 20 members along the Via Gellia at Cromford to



look at Slinter Mill and sites of various other water mills up the valley. Then, after a look at Cromford Village, it was lunch in the dry of the Gothick Warehouse and a tour of the main mill site. It was very sad to see the remains of the cast-iron aqueduct languishing in the yard awaiting repair and re-erection in Mill Road/Lane but good to see the high quality of the restoration work on the mill buildings themselves. Hopefully, Darrell will be able to lead us on "Cromford, Part II" next summer, with a guided tour of Willesley Castle, Cromford Church and other Arkwright related items.

*NEDIAS visit to Cromford, led by Darrell Clark*

Back to a Monday evening, Pam Staunton treated around fifteen members to a tour of unseen Unstone. Starting with the incredibly long range of coke ovens, largely hidden amongst a group of silver birch trees and rather lightly conserved in recent months by English Heritage, the party wended its way along the disused track-bed of the Midland Railway's colliery and industrial loop-line to wonder at a number of other remains of earlier industries and coal mines. The setting sun brought the proceedings to an untimely conclusion, leaving members present with a strong desire to know more about this intriguing area.

The final excursion was a day in South Yorkshire organised by David Rance. Ten members met at Wortley Top Forge for a guided tour of the SYIHS owned forge, its waterwheels and tilt hammers, as well as its impressive collection of small steam and internal combustion engines from a wide variety of sources and makers. After a lunch break, the group went to Rockley Furnace where the remains of a Newcomen engine house and an early blast furnace can be seen in a woodland setting, albeit within yards of the M1 Motorway. The day closed with a visit to Elsecar Workshops and the Newcomen engine of 1795. The engine, sadly out of action and awaiting repair since 1953, is said to be the world's oldest atmospheric engine still on its original site. NEDIAS members were intrigued to learn that the engine builder was one **John Bargh of Chesterfield!**



*Ed: Earlier this year, Peter Hawkins gave a fascinating presentation on the history of Markham from 1889-2000, a follow up to his lecture in the previous year. He has kindly passed to me the following summary of his NEDIAS talk.*

Last year we heard the story of the Oliver family (Markham Part 1) who had had their business in Chesterfield from 1836 and eventually owned the large concern at Broad Oaks. After having financial difficulties in the mid-1880s the company was sold to Charles Paxton Markham in 1889.

This second talk began with a brief reminder of the Oliver years. I also considered the difference between the two families. The Olivers were self-made men who had risen from owning a small blacksmiths shop to become major iron founders. In contrast the Markhams were wealthy and well connected.

Charles Markham, the father of Charles Paxton, died in 1888 when he was the managing director of Staveley Works. Both he and his son had plenty of drive and were gifted with good business sense. Charles Snr. Had developed the works into a very successful concern with its own collieries and ironstone quarries. It had its own workshops capable of tackling almost any job including making steam pumping and winding engines and even locomotives.

Charles Paxton inherited a large sum of money from his father's estate. He saw the great possibilities at Broad Oaks works. It was one of the most up-to-date of its kind, specialising in plant for the iron and coal industries. It was only the slump of the 1880s and the heavy mortgages on the works and plant, which caused its failure. C.P.Markham saw a great opportunity in purchasing the works for himself, which he did in 1889 just as there was an upturn in the UK trade.

Some of the early orders were for old customers but some were for new ones and it was evident that these came from C.P.Markham's connections. A very early order in 1890 was for a coffee-pot locomotive, which ended its days in a Tasmanian forest. In the last ten years it has been rescued and is now in a museum there.

Soon further developments of the works followed. New shops were built and the straightening of the river allowed further extensions. Electric power was introduced to drive the machinery and cranes. It was at this time that the first tunnelling shields were made.

The First World war saw little change, as there was a great demand for coal and iron so these plants had to be kept going. There were orders for six rolling mill engines in 1916-7 and four blast furnaces in 1918 all for the war effort. One result of the war was the development of the Pony, Mule and Stallion engines. These were semi-mass produced haulage engines for the mines. The Chesterfield Museum has a Markham Pony engine, which is in store.

The inter war years saw the manufacture of water turbines for Bovings, a company with which Markhams had a long association. The turbine work became a main base load for the works up to the 1960s. Throughout this period many tunnelling machines were made. Major contracts were for the London Underground and the Mersey and Dartford tunnels. Tunnelling machines continued to be built until the closure of the works.

During the Second World War works under the Admiralty control at Markhams were the production of landing craft, midget submarines, torpedo tubes and gun mountings. Large presses were produced for making extruded aluminium for the aircraft industry.

After the war a backlog of work had to be caught up with for the coal and steel industries. There were full order books and soon further extensions had to be built for the larger work which was now being carried out. Large turbines were made for export and there was the enormous project of turbines for Dinorwig power station in Wales. Other large constructions included tunnelling machines for Mexico, the second Dartford Tunnel and the Channel Tunnel. New products were stowing machines for the National Coal Board, die casting and plastic extrusion machines, and also wind turbines.

However the run-down of the coal, steel and manufacturing industries in later years caused a fall in orders. Work could be carried out in third world countries for very much lower rates of pay.

Inevitably the end had to come and Broad Oaks works closed in 1998.

*Peter Hawkins*

### **Friends of Pleasley Pit - Open Weekend 2004**

**by David Wilmot**

The weekend of Saturday and Sunday, 4<sup>th</sup> and 5<sup>th</sup> September gives the opportunity to view the progress made on restoration of the Lilleshall and Markham winding engines within the engine house complex. The eagerly anticipated construction of the visitor centre by EMDA is still in prospect but the Friends of Pleasley Pit have made very significant progress on the renovation of the internal machinery of the North and South winding houses.

The day is not far off when the Lilleshall engine and its winding drum at the north end of the site will be turned over by an electric motor as a preliminary step towards eventual self-power by steam. The engine is now almost complete, to the point at which work on stripping down the Markham engine at the south end has produced an impressive array of components around the engine house. According to the Friends' Chairman, Bob Metcalfe, the parts removed have been found to be in a better condition than expected.

The Friends' Open Weekend is a chance to see the progress made; the almost pristine Lilleshall engine, the Markham engine "in the raw" and displays of archive material by the local history group. There will also be a flypast by a Dakota aircraft of the Battle of Britain Memorial Flight during the afternoon of Sunday. Bob Metcalfe says they will be reminding the pilot of the height of the pit chimney before the flypast!

### **Letters to the Editor**

*Ed: In Newsletter No.13, Stuart Kay in his letter referred to the gas engines at Staveley; this has prompted the following correspondence and detailed information from members David Edwards and Ronald Presswood. The information from David Edwards will also whet our members' appetites in readiness for the first lecture meeting of the season, on Monday 13 September:*

**From Ronald V. Presswood (Staveley employee 1956 – 93)**

**‘JOAN, ENID & VERA’ – The once giant gas engines of Staveley Works.**

Manufactured by Cockerills at Ougree, not far from Liege, Belgium and installed between 1925 and 1927, they drove the 5,000-kilowatt alternators at Devonshire Works. Each was named after a daughter of three Company officials of that time namely; ‘Joan’ daughter of Mr D N Turner, ‘Enid’ daughter of Mr P W Fawcett and ‘Vera’ daughter of Mr R F F Fabry.

The building in which they were housed, known as the Gas Engine House, was 238 ft long, 101 ft wide and 70 ft high from the ground to the apex of the roof. Its dimensions clearly give some indication, to the mechanically minded, of these machines impressive and massive size. They were of the tandem type, each having four double-acting four-cycle cylinders with a 4 ft 3.25 in bore and a 4 ft 11 in stroke. These engines were among the largest in the country and although there were some other turbines of much later construction on the Works, they still provided most of the Company’s power.

In normal operational conditions two of the three engines ran together and needed some 200,000 gallons of cooling water an hour. Each engine was 7,120 horsepower and the exhaust gases, which discharged into multitubular boilers, were sufficient to raise 14,000 lb of 150-psi steam an hour at 200 degrees F of superheat. Each engine weighed 1,000 tons and lay on a concrete foundation of 5,039 tons. Each crankshaft and rotor weighed 185 tons and the piston rods were 1 ft 2.5 in diameter.

A novel, though very practical, feature of the switchboard platform area used to be the cage and canary, which was used for gas detection.

A Mr Eddie Dobbs, who joined the Staveley Coal & Iron Company Limited in 1925, saw the machines installed and was in charge of them from the beginning until their demise, as a consequence of the Blast Furnace Plant closure on 4 May 1966, which ended a long tradition of iron making at the Works. Its origins can be traced back to at least 1639 when the Freschevilles had already established an iron making activity there. Interestingly, he was a former professional bantamweight-boxing champion of Kent, who trained with the great Len Harvey. During his 50 years’ service with the Staveley organisation that began in the Devonshire Works Stores, before he moved to the By-Products and Gas Engine House. Finally, for a brief period he held the position of charge-hand in the Devonshire Works Services until his retirement on 27 May 1966.

Incidentally, the author was privileged to have first seen these machines operating as a newly engaged junior employee during his three-day induction course in August 1956 and later some identical sister machines operating at Cockerills, Belgium in April 1960.

*Ronald V. Presswood.*

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**From David G. Edwards:**

**Staveley Gas Engine: A Description by Brownlie**

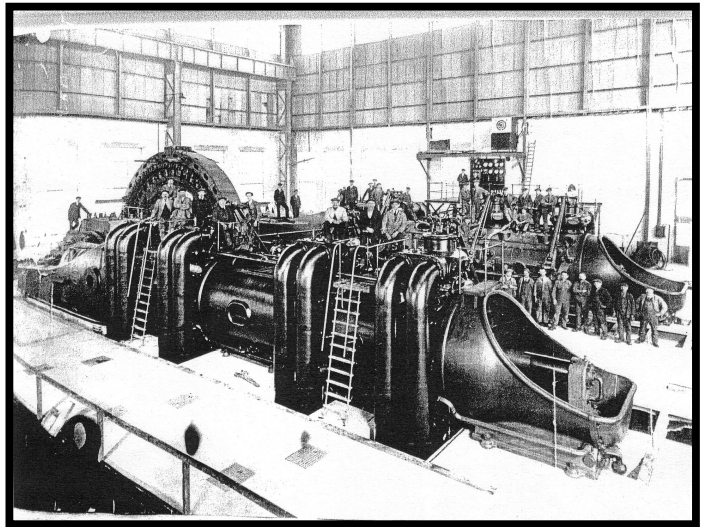
A description of this engine (mentioned by Stuart Kay in NEDIAS Newsletter No.13) appeared in an article by D. Brownlie on low temperature carbonisation of coal, in Transaction of the Institution of Mining Engineers, Vol.LXXI, 1925-6, pp.238-9. A longer article entitled “Large Gas-Engine-Driven Generating Set” was published in Iron & Coal Trades Review, 3 July 1925, pp.22-24. Exhaust from the engine was being used to heat a retort in semi-scale experiments on low temperature carbonisation, none of which, I believe, led to any full-scale application. Here is an extract from Brownlie’s article:

“The gas-engine.... Is of 7,150 brake horsepower, and started up on June 27<sup>th</sup>, 1925. It is one of the largest in the world, of the double-tandem four-cycle double-acting type, with overhung cranks; it was supplied by the Societe Anonyme John Cockerill, of Seraing, Belgium, and operates on blast-furnace gas. The cylinders are 51.25 inches in diameter by 59 inch stroke, while an alternator, acting also as a flywheel and weighing 100 tons, is placed between the two rows of cylinders, the whole equipment, including gas-, air-, and water-pipes weighing approximately 1,000 tons, 5,039 tons of concrete having been used in the foundations. The raw blast-furnace gas ... is delivered to the washing and cleaning plant

at the rate of 500,000-600,000 cubic feet per hour for 7,150 horsepower ... and the washed cooled gas ... contains not over 0.02 gram of dust and 18 gram of water per cubic metre. At the normal duty of 7,150 horsepower, the speed of the engine is 91.5 rpm, corresponding to 7,720 BthU per indicated horsepower ... with a mechanical efficiency of 85%. The exhaust for these conditions is approximately 3,500,000 cubic feet per hour at an average temperature of 1,110°F. ... Normally all these exhaust-gases are passed through two Cockerill waste-heat boilers of the horizontal tubular type, with superheaters and feed-water heaters ... the boilers and pipe connections constituting a very efficient silencing equipment. The running of this huge engine is remarkably free from noise and vibration.!

I enclose a copy of a photograph of the engine, kindly given to me by David Roberts a few years ago.

Some information is also available on the generation of electricity at by-product coke oven plants in the early 20<sup>th</sup> century. For instance, at Grassmoor surplus coal gas was burnt in gas engines coupled to generators, whereas at Hardwick (Holmewood) and Holbrook (Killamarsh) the power was generated by steam raised from the hot combustion gases leaving the non-regenerative coke ovens. At Hardwick in 1913 there was a Westinghouse 100 kW dc generator with a 230V output, driven by a 150 hp Robey horizontal steam engine. At Holbrook the same year there were two Scott & Mountain 150 kW sets and one Bellis & Morcom 260 kW set with Siemens regenerator, again providing direct current. References to these and other examples can be found in my "Historical Gazetteer and Bibliography of By-product Coking Plants in the United Kingdom" (Merton Priory Press, 2001).



*David G. Edwards*

## **IA News and Notes**

### **Barrow Hill**

Congratulations to Mervyn Alcock. Members will remember the presentation last year on the magnificent progress at Barrow Hill. Mervyn has now been awarded the prestigious Transport Trust Preservationist of the Year Award this year in recognition of his drive, enthusiasm and success in not only preserving but also bringing back to practical use the UK's last operating railway roundhouse.

### **The Lumsdale Project**

Moves are underway by the Arkwright Society/ English Heritage to fund an information centre at Gartons Mill to provide displays of the Lumsdale and Tansley industrial heritage, and its connection with Sir Joseph Banks, the leading 18<sup>th</sup> century botanist who was actually a previous owner of the Tansley Wood Mills.

### **East Midland Industrial Archaeology Conference**

The next EMIAC conference will be held on 16 October 2004, with presentations on industry at Ashby-de-la-Zouch, Ticknall, Sharpes and Swadlincote potteries, and on the Ashby Canal. Further information



from Cliff Lea. Perhaps at some time in the future NEDIAS could join with other local groups and offer to mount an EMIAC event in our area?

#### **Chesterfield's Horse & Electric Tramways 1882-1927 – Barrie Marsden**

Historian and author of several books on the tramways of this area, Barrie Marsden, will be giving an illustrated lecture in the Lecture Theatre at Chesterfield Library on Wednesday November 24th at 7.30pm. Tickets will be available from the Library and through NEDIAS from late autumn. **Make sure you reserve the space in your diaries for this important event.**

#### **Derbyshire Victoria County History**

The third Scarsdale Local History Fair, organised by Derbyshire VCH, will take place on Saturday 30th October 2004 at the Arkwright Centre, Arkwright Town, from 10.30am until 4pm. Admission is free. On Saturday 2 October Philip Riden will be giving two lectures on Derbyshire VCH research over the last year, with particular emphasis upon the industry of Chesterfield once styled "The Centre of Industrial England". The lectures will be held in Chesterfield Library Lecture Theatre, starting at 10.30am with a break around 11.30am and finishing at 1pm. The lectures are intended as a prelude to reconvening the local research groups. Admission is free to all.

#### **IS THERE A CONTRIBUTION *FROM YOU* FOR THE NEXT NEDIAS NEWSLETTER?**

A short article or observation, which would be of interest to the membership? Maybe something for the letters column? Then please send to Cliff Lea, 15 Kelburn Avenue, Walton, Chesterfield S40 3DG (Tel; 01246 234212, email; [c2clea@tiscali.co.uk](mailto:c2clea@tiscali.co.uk)).

**Deadline: Contributions for the next newsletter before 25 October please.**

#### **And Finally ...**

On one of my visits to Cornwall this year, my vacuous cogitations during the long, long boring drive reminded me that Matthew Boulton was also given to similar empty thoughts on trips to Cornwall. On one trip in 1780 he wrote home on his birthday with the staggering news that:

*“... as sure as there are 1728 inches in a cubic foot so sure was I born in that year... and as sure as there are 52 weeks in the year... so sure as there are 52 cards in a pack, so sure am I 52 years old on this very day ...”.*

And yes, **this is the MB of Soho, Birmingham**, who perhaps more than any other person was responsible for the rise of industrial Birmingham; or am I treading on thin ice here?

*Cliff Lea*

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**NEDIAS Committee:** - *Chairman* – David Wilmot; *Secretary* – Patricia Pick; *Treasurer* – Pamela Alton. *Membership Secretary/Assistant Treasurer* – Jean Heathcote; *Publicity & Newsletter* – Cliff Lea; *Lecture Meetings* – David Rance; *Archivist* --Pete Wilson; *Committee Members* – David Hart, Stuart Kay, Paul Smith, Jack Smith

**Published by** North East Derbyshire Industrial Archaeology Society. **Editor:** Cliff Lea, 15 Kelburn Avenue, Walton, Chesterfield, S40 3DG, phone 01246 234 212 or email [cliff@nedias.org.uk](mailto:cliff@nedias.org.uk). The authors retain copyright of the contents.