WARWICKSHIRE Industrial Archaeology Society

WIAS

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NEWSLETTER

FROM THE CHAIRMAN

The end of the current season of meetings finds the Warwickshire Industrial Archaeology Society in good health, with high attendances at meetings, involvement with local industrial heritage projects, and increasing contact with other industrial history groups and local history societies. In terms of involvement in projects, the society has pledged £250 in support of the Warwickshire County Record Office's application for funds from the Grants Scheme to catalogue a large collection (80 linear metres) of the Willans and Robinson collection. The project is known as 'Willans Works Archive: Boaters and Bright Sparks' and is a partnership project between Alstom (the depositor), Warwickshire County Record Office, Warwickshire Industrial Archaeology Society and The Friends of Warwickshire County Record Office. As part of that application, I wrote in support of the project and that letter included the following:

The place of the Willans firm in the development of the technology of electricity generation is highly significant and yet surprisingly undervalued, and the possibility of cataloguing this archive presents a unique opportunity to rectify this imbalance and to give the Willans Works an appropriate place in the history of the industry.

Future students and researchers will undoubtedly find this archive an invaluable resource in understanding the pace and pattern of technological change, and the importance of the firm locally, nationally and internationally. The fact that over 60% of electricity generation in this country was supplied by Willans equipment in the latter part of the 19th. century gives some indication of the importance of this technology and the need to place it in context.

There is a wider significance as well with the role played by Willans in the history of Rugby, and the continuing presence of the firm's successors in the town. Rugby developed a strong railway and manufacturing sector during the nineteenth century and the causes and consequences of this growth remain a fascinating topic for study. There is much to be gained from improving our knowledge of the firm, its workers and the impact on the wider community.

In our view, there is a strong case for access to the archive, but this is not possible at the moment. Some of the photographic collection has been recorded, but there is so much more that could become available. Several members of the Warwickshire Industrial Archaeology Society have expressed interest, with two actively involved in the process, and I feel sure more volunteers would be forthcoming if the cataloguing project went ahead.

One of the earliest recording projects with which the Society became involved was the Fenny Compton brick kiln, and I am pleased to report that the renovation project mentioned in a previous newsletter continues to make headway. To that effect, I received an e-mail from James Clifton, Enterprise Manager, British Waterways, which included the following: *I am planning for the kiln to be at the heart of a wider project, potentially including archaeological surveys, circular walks, interpretation, work with the Butterfly Trust, volunteering and possibly heritage skill training for apprentice bricklayers – plus an element of education and, I hope tourism.*

We are linked with the Guild of Bricklayers, as you know, and hope to engage with a good range of local organisations, including WIAS. The kiln last fired bricks in 1917. It is our aspiration to restore it, ready to fire one load of bricks to celebrate the centenary.

John Selby (the author of an AIA Review article on the kiln and Fenny Compton tunnel) and I have been invited to attend a meeting in Fenny Compton in late June and we will keep members informed of progress. This wider involvement of industrial heritage as part of local community projects seems to be an important ingredient of the task of preserving our industrial past.

The presence of WIAS at local history and archaeology events is an excellent way of both spreading the word and of building contacts and the society has invested in a set of display boards to help in this process. The boards had their first outing at the recent Leamington Local History Day, where the focus was the need to encourage recording of memories of local firms Ford, AP and Potterton. We hope to have these display boards available at our monthly meetings and members will be able to display notices and any projects with which they have been involved.

Notice of the AGM

This is formal notice of the AGM to be held in the Pyne Room, Warwick School on Thursday September 13th. 2012. I repeat the usual appeal that if you feel you would like to take on a responsibility within the society (e.g. oral history; summer visits programme) do not be afraid to come forward for a preliminary discussion, with the possibility of joining the committee.

PROGRAMME

September 13th 2012
AGM followed by 'The Industrial Archaeology of Essex'.
Co-ordinated by Martin Green. This year's AIA Conference will be held in Essex, and the chairman will present a report on the Conference and some detail of the sites visited.

October 11th. 2012
Dennis Crips:
A Living Dinosaur: From crystal sets to quantum computing in one lifetime.

November 8 2012
Ian Mackintosh (of the Stroudwater TextileTtrust):
400 years of Stroudwater Textiles.

December 13th 2012
John Berkeley OBE:
From Pens to Particle Physics: the story of a Birmingham family business.

Meeting Reports

March 2011: Graham Fisher MBE
Jewels on the Cut: The Stourbridge Glass Industry & the Stourbridge Canal.

Graham Fisher spoke for and from the heart of the Black Country with his evocation of the now lost Stourbridge Glass Industry and its place alongside both the River Stour and the Stourbridge Canal. 'Jewels on the Cut' is an inspired title, combining a sense of the exotic and romantic with the down to earth location of many an 'Enoch and Eli 'escapade. Graham himself is uniquely equipped to tell the story. A devoted son of the Black country (his own words), a lifelong devotee of our inland waterways since he 'legged' through the Dudley Tunnel in the 1960s (and receiving the MBE in 2001 for services to inland waterways), a scientist, a journalist and a rock musician, a qualified skipper of the largest hotel-boat operating on the UK's inland waterways and now an ambassador for the Broadfield House Glass Museum and the fast vanishing industrial heritage it is seeking to preserve. He is also a most entertaining speaker with a ready anecdote or telling aside.

Our journey began with a lesson in geology which showed how all the essential elements of sand, limestone and coal were readily available in the Stourbridge area. Indeed, glass manufacturing there is recorded in the early 17th century, the baptismal record of one John Tyzack in 1612 shows his father as a glassmaker, and must have been in place long before. Then, at the outset of the industrial revolution local entrepreneurial aristocrats such as the Earl of Bridgwater and especially John, 2nd Viscount Dudley & Ward together with the ubiquitous James Brindley and his colleagues, created the canal superhighway which included the Stourbridge canal.

The Stourbridge glass industry encompassed two main processes, hot and cold. The hot is common to all glass manufacture where the molten glass is blown, pressed or moulded to the desired shape. The cold is where the glass blank is crafted into the exquisite bowls, glasses, jugs and decanters generically known as 'cut glass or crystal' and for which Stourbridge is justly renowned.

For the hot end, the Stourbridge district also possessed good reserves of easily accessed fireclay for the pots used to melt the raw materials, and an illustration of pot setting at the Red House Cone in 1984 showed a cavalier attitude to 'Elf 'n Safety'. A cone-shaped chimney has been synonymous with glass manufacture since the late 17th century. Beneath the cone is a circular multi-pot furnace each pot of which was used by a single team or 'chair', often a family group. When shaping a blob of molten glass on the end of a blowpipe one of the craftsman's favourite tools is a wad of wet newspaper but there seems to be no preference between red-top and broadsheet for the best results. Pressed glass may be derided as 'cheap as chips' but underlying the process is considerable technology and precision die sinking.

Turning to the cold processes, there were principally two, grinding and acid etching. Grinding could use over or undershot wheels of stone or copper and was largely a masculine craft whilst women usually undertook the unhealthy task of etching using hydrofluoric acid, although female engravers were not uncommon. The illustrations of engravers, both early and current, showed vividly how little technology has changed over time. There are just very few practising engravers today.

The glass houses that arose in the Stourbridge area to exploit the local natural resources were initially located alongside the river Stour with the earliest recorded (Colemans) in 1612. Subsequent development closely followed the line of the Stourbridge canal when it opened in 1779. The arrival of the canal, with its significantly higher carrying capacity, shorter travelling times and minimal breakage compared to the earlier pack-horse transport must have been of incalculable benefit to the fledgling industry. Furthermore, the canal slashed the price of raw materials, especially coal, which were needed in ever increasing quantities.

No review of the Stourbridge glass industry can ignore the story of the Portland Vase. This exquisite example of Roman cameo glasswork has a fascinating history. Probably, but not certainly, unearthed near Rome it was first seen in 1601 on its acquisition by the Barberini family on the death of Cardinal Del Monte. Sir William Hamilton reputedly paid £1,000 in 1778 when it was sold to pay gambling debts. In 1784 it was bought by the Duchess of Portland, hence its modern name. Its beauty and craftsmanship were much admired and copied, after much experimenting, by Josiah Wedgwood in his Jasperware. Deposited in the British Museum in 1810 it was smashed to pieces in 1845 but subsequently repaired and in 1945 was purchased by the Museum where it can still be admired.

Not only did the vase inspire Wedgwood, it also triggered a resurgence of interest in cameo glass that continues to this day. Benjamin Richardson, whose family owned the Wordsley Flint Glassworks, produced a transfer print version and is said to have offered £1,000 to anyone who could replicate the original, or possibly only said that that would be the value of the replica to its creator. In any event, some thirty years later suitable blanks were produced at the Red House Glassworks and John Northwood successfully carved a replica. He went on to create further masterpieces of cameo glass.

The visual history of the Stourbridge Glass Industry is rather sparse today but we were treated to a walk along the 'Cut' with the best of guides. Starting at the restored Bonded Warehouse in Stourbridge we passed the derelict site of Dovey's Glassworks, established in 1790, where one of the first steam engines was installed 'for the manufacture of cutting and grinding of glass'. Holloway End Glassworks is now a retirement home, and so on.

Bridges and the entries to barge tunnels have some interesting ironwork. Notably two bridges carrying the embossed name of James Bradley & Co, Stourbridge, AD 1838 and an earlier example by him cast at Coalbrookdale in 1873. Other abandoned and ruined works line the river and canal and present a depressing picture of how large swathes of our industrial heritage is disappearing under our eyes.

There is more to the district than glass, ironworks and canals. Foster & Rastrick were pioneers of steam locomotives and 'Agenoria', built in 1829 for the Round Oak Steel Works, can still be seen at the National Railway Museum in York.

Continuing along the canal we found reminders of other once great names; Webb, Corbett, Coalbournhill, Platts, together with a refreshing example of detailing by a modern architect who incorporated representations of glass cones into the brickwork of a modern supermarket built on the site of the Old Dial Glassworks.

There are now only four glass cones left intact in the UK, only one of which, the Red House Cone, is in Wordsley in the Stourbridge area. There is a truncated cone at the New Dial Glassworks which is still in regular use by Plowden & Thompson and Tudor Crystal, and is most likely the closest to a working example still extant in the UK.

The evening was a reminder, if any was needed, that our industrial heritage needs more Graham Fishers with his ability to articulate the need for appropriate preservation before all is lost, often on a whim. Another most interesting and thought provoking account of the practical issues facing Industrial Archaeologists.

April 2012: Sam Collenette, Archive Service Manager, Warwickshire County Record Office
From Bolton to Warwick.

Sam Collenette, Manager of Archives and Historic Environment at Warwickshire County Council added to a number of earlier presentations and gave us an illuminating overview of the issues facing those charged with safeguarding our heritage, which is not exclusively industrial.

Through the archives of two once substantial companies, Hick Hargreaves & Co in Bolton and Willans & Robinson in Rugby we were able to explore the rise and fall of several industries. More especially, there was a clear message that much of our remaining industrial heritage needs friends if it is to avoid the fate of many of its peers – records and artefacts unwanted and unloved tipped into a skip and thence to landfill.

We also learnt a lot about the work undertaken at the Records Centre, not least how much is done by Friends and Volunteers as several members can attest.

That archives can have a commercial value today was shown by the recent use made by Prudential of its association with the Titanic in a recent Asian advertising campaign that was very successful. It stemmed from an archivist stumbling upon a copy of an old newspaper carrying an earlier advertisement.

Another factor when dealing with industrial archives is technical expertise. Many professional archivists will have great competence in dealing with matters of commercial history but an understandable lack of technical expertise is clearly a handicap when examining engineering material. We already have members giving their time to help with the Willans & Robinson material and it may be that additional volunteers would be welcomed to help with other material.

Before dealing with her work in Bolton on the Hick Hargreaves material, Sam introduced us to the Bolton Museum, Library and Art Gallery site which also houses an Aquarium, the early work of Mass Observation in the person of Bill Naughton (author of Alfie and Spring and Port Wine) and memories of Fred Dibnah who was involved in the final days of Hick Hargreaves. Sam herself was responsible for removing the company's archive and many artefacts to the Bolton Museum in 2002.

B. Hick and Sons, later known as Hick, Hargreaves & Co, was based at the Soho Ironworks in Bolton. Benjamin Hick had originally been a partner in Rothwell, Hick and Rothwell and set up his company in partnership with his sons in 1832. After the death of the elder in 1842, the firm continued under the management of his son who in 1845 took into partnership William Hargreaves.

The Soho works were extensive and the site large. The first steam locomotive was built in 1833, followed by several more over the remainder of the decade, including an unconventional gear driven steam rail carriage. A number were built for export to America. Between 1837 and 1840 the company supplied engines to many of the new Railway companies as well as the Paris and Versailles Railway.

In 1841 the Birmingham and Gloucester Railway had found some American Norris locomotives very successful, especially on the notorious Lickey Incline, and Hick built three similar ones for the line.. Locomotive building continued until 1855, and in all some ninety to a hundred locomotives were produced; but they were a sideline for the company, which concentrated on marine and stationary engines, of which they made a large number. Incidentally, as a result of the company's strong exports, especially to Egypt, Bolton Museum has the best collection of Egyptian cotton products outside of the British Museum.

At the end of the 19th century HH began to manufacture steam engines for electricity generating purposes, and from 1911 diesel engines. In World War I the firm did much war work, and began making high vacuum condensing plant, again used in power generation. This was greatly expanded in later years as centralised power generation was adopted in Great Britain.

In 1933 the records, drawings and patterns of three defunct steam engine manufacturers were acquired and a lucrative business developed in repairs and spare parts. Large stationary steam engines were still used by many textile manufacturers in the Bolton area until the collapse of that industry after World War II.

After World War II the firm expanded its work in electricity generation, and branched out into food processing, oil refining, petrochemicals and offshore oil equipment production.

The photographs from the HH archive gave a flavour of the business over the years and included the final removal of the factory gates in 2003, and Fred Dibnah's statue in front of the restored 1886 HH Corliss engine in Oxford Street, Bolton.

Turning to Warwickshire since her arrival in 2004, Sam expanded on the work of the Record Office and the January 2012 presentation to the Society by her colleague Christina Evans. In particular she expressed her thanks for the work done by friends and volunteers without which much needed research would remain untouched.

The Records Office provides a wide variety of services to the public including free access to various subscription websites. Interestingly, if any member is contemplating taking out a subscription to Ancestry UK with a view to a bit of family research it is financially advantageous to the Record Office if application is made via the link on the Warwickshire.gov website.

Future developments are dependent on the financial situation for which the outlook is gloomy in the short term. However, an application for Heritage Lottery funding for cataloguing projects is pending with a decision due in June.

Returning to the archive material, we revisited Willans & Robinson. Three of our members are currently working on this material and gave us a most detailed presentation in May 2010 (see Newsletter 38) and so a lot of the information was familiar and does not need to be repeated.

However, the concluding part of the evening covering the products of both companies allowed the use of much new material from the archives.

Early drawings of HH locomotives and pioneering railcar engines needed more time for study, as did the Corliss valve mechanism. The variety of industrial applications for W&R engines spoke for their exporting abilities and there were tantalising glimpses of ledgers and commercial documents written in immaculate copperplate.

A fragile blueprint relating to cattle pens on the SS Sorrento, an early Australian Refrigerated ship from the HH archive, indicated a connection with cold storage that might have links to the Nelson family's development of the frozen meat trade from Australia and New Zealand (see Newsletter 41). HH were even involved in the car industry in the 1920s, producing a range of small petrol engines. One was shown fitted to a now long-forgotten Vulcan car.

Sam Collenette made a powerful case for assistance, especially in dealing with technical or engineering subjects. Indeed, as she said 'I have chosen pictures for their aesthetic qualities. I do not understand the engineering'. There seems to be a gap that needs to be filled.

May 2012: Derek Hurst
Droitwich Salt Production: A Pickled Past.

Whilst we all use salt on a daily basis, the techniques behind its production are less well known. Pictures of salt pans on coastlines, especially in warm climates, may be familiar from travel documentaries but Iron Age brine pits in Droitwich get few mentions.

Derek Hurst, Archaeological Projects Manager at Worcestershire County Council, knows more than most about them having been involved in much of the recent work around the Droitwich salt industry. Surprisingly, it has only been during the last thirty years that any serious archaeology has been undertaken in the area. As an archaeologist specialising in exploring the economic drivers behind his projects, one of which was the story of Cotswold sheep, Derek has found much of interest in Droitwich.

Inland salt production anywhere in the world stems from either mining solid deposits, as in Cheshire, or utilising brine from saline springs. Droitwich is rich in saline springs (unusually as a totally saturated solution with one gallon of brine yielding 3 ½ pounds of salt) and the town was long a producer of salt on a commercial scale.

The rights to making salt, given its importance and universal use as a preservative and as a condiment, were vested in persons of authority and power, often the Crown. However, in 1215 King John sold the rights to the citizens of Droitwich for an annual payment of £100 and until 1695 the industry was run as a monopoly of the townspeople. This period is well documented but needs a full investigation. When the borough monopoly was broken as the result of a court ruling, individual producers proliferated. With the simultaneous removal of price and output controls production soared and prices plummeted, ruining the speculators. One astute survivor, John Corbett, bought up the remains and in the 19th century his private monopoly brought great wealth to him and his descendants.

The early production process, known from at least the second century BC, was simple. Brine from the spring is first contained in large pits lined with wood and clay to form a watertight storage tank. Some evaporation may also take place at this point but settling out is considered the principal objective, with evaporation taking place in large shallow pans heated from below. Wet salt crystals deposited from the solution are removed and placed in another container which allows the salt to drain and form a solid block. Archaeology has found remains of both tanks and evaporating pans close by the saline springs in Droitwich.

The conical porous salt containers were made from ‘briquetage’ and some recent work has recreated examples based on fragments from excavation. Large quantities have been found in dense layers in the salt-making areas of Droitwich as well as in many Iron Age settlements in Hereford and Worcester and beyond. A network of salt trade and exchange across a large area can, therefore, be mapped in detail and shows the importance of Droitwich salt at this early period.

Roman times have left little evidence of salt production but the other nearby Roman remains of Doddenhill Fort and the luxurious Bays Meadow Villa (an example uncommon in the Midlands) dating from the 2nd century AD, together with the use of the name ‘Salinae’ for the town, indicate significant Roman interest in the area.

One piece of Roman archaeology is the major engineering works around the brine springs also dating from the 2nd century. A large plank-lined tank or channel, probably for brine collection was constructed from older timbers dendrochronologically dated to AD 61-5 and situated adjacent to two massive crossbeam braces, possibly part of a later crane or winch mechanism. The villa was burned down in the late 3rd Century and the last dateable evidence of Roman occupation is coins dating to the 370s. There is evidence that the villa’s aisled hall was reoccupied in the 4th century but extensive robbing has taken place and the site was ploughed up in medieval times.

Salt production continued in Anglo-Saxon times. Stone-lined hearths with lead pans have been found dating to the 5th to 7th centuries. There is also evidence of post holes that indicates an out-of-doors location protected by wind-breaks needed to ensure a steady temperature in the evaporating pans. Excavations have also found that during this period there was a great flood which inundated the site in mud and buried the evidence for salt making. The Saxons named the River Salwarpe after its propensity for ‘throwing up brown stuff’.

Further evidence for the importance of Droitwich as a centre for salt production is that of the medieval ‘salt-ways’ that can be traced from Saxon and medieval place names radiating from Droitwich to the South and South East. Interestingly, there seems to be little evidence of such connections between Worcestershire and Warwickshire which begs the question; where did the latter’s salt come from?

Perhaps the most interesting archaeological find from these times has been the ‘Great Well’ found in Upwich in the excavations of 1983/4. This large, ten metre deep brine pit has been dated to 1264/5. It is lined with oak beams and is located alongside the Roman crossbeam braces referred to above. Between the two lie the remains of a later medieval pump base. Other examples of medieval equipment found are the remains of barrels and wooden tools, rakes, paddles and shovels for handling the salt. Very similar equipment is illustrated in a 16th century German industrial treatise which suggests a strong European tradition of salt manufacture and the interchange of technology.

By around 1400, annual salt production had been raised to at least 1,500 tons using about 11.35 million litres (2.5 million gallons) of brine. The pump alongside the brine pit further increased production when it replaced the bucket method of brine extraction. Hollowed-out elm was used for piping. Interestingly, production of salt was limited to six months in a year equating to some 10 tons a day.

A visitor to the town in the 1530s reckoned that 6,000 cart loads of wood were being consumed each year by the brine boiling hearths. Terrible pollution resulted and a local cleric is recorded as petitioning the Bishop of Worcester for a transfer to a cleaner place!

By the end of the 17th century larger pans (some iron but many still lead lined) and brick built coal-fired hearths helped to increase production to nearly 3,000 tons a year. This led to the need for cheaper transportation and attempts were made to improve the navigability of the River Salwarpe between Droitwich and the River Severn.

In the 19th century, large factories were built alongside the Droitwich barge canal enabling boatloads of 60 to 70 tons of salt at the peak of production of 120,000 tons in 1872. After John Corbett amalgamated all the salt production he relocated much of it to Stoke Prior some 3 ½ miles to the North East, and Droitwich was developed as a spa. He also built Chateau Impney as his home.

Salt production finally ended in 1922 when ICI, by then owning all the salt resources in both Droitwich and Cheshire, moved production North. Apart from the archaeological remains, the main evidence remaining of Droitwich’s great salt industry is the subsidence and leaning buildings, especially in the High Street. Had brine extraction continued the town might have disappeared!