

# WARWICKSHIRE

## Industrial Archaeology Society

# WIAS

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### FROM THE CHAIRMAN

I'm afraid I have to begin this Newsletter with the news of the death on Boxing Day of John Selby, one of the stalwarts of WIAS since its inception in 1989. John was an engineer by profession, but he had a long interest in industrial archaeology and achieved academic qualifications in the subject under the guidance of Professor Marilyn Palmer at the University of Leicester. Over the years, he carried out research into a number of Warwickshire projects notably the Hillmorton yard and the Fenny Compton tunnel as well as working on the ironfounders of Warwick and Leamington Spa. He and his wife Valerie were loyal supporters of the Association for Industrial Archaeology, and regular attendees at the AIA Annual Conferences held at various locations around the country. John had served on the WIAS Committee for many years, where his wisdom and experience were greatly valued. We send our sincere condolences to Valerie and the Selby family.

On a personal note, I worked on many issues with John, and I was pleased that he was able to give a 'members' presentation' on the Kilsby Tunnel at the 2016 AIA Conference, and that his early research on local ironfounders proved such a valuable help to the presentation given at the November meeting (reported elsewhere in this Newsletter). His research on Hillmorton and Fenny Compton had also been handed over to the Society, perhaps for others to work on in the future.

It is also served to emphasise the importance of recording information - in a manageable form - that might be utilised by others. Twelve months ago I (rather

boldly) stated that I would seek to get my own material in order, and some progress has been made, but, inevitably perhaps, other events and commitments have interrupted the process.

One particular goal is to try and improve the website's coverage of Warwickshire's industries, so that visitors to the site can find material on the history of those industries or where the material might be found if covered by other authors or organisations. The entry for a particular industry might simply be a short bibliography, or an introductory article, but it would be an indicator of what is available.

This is not the same as the database project. That sought to identify specific sites that remain today, and we feel that this has largely been completed, although there are certainly more sites to identify in Coventry. We are always willing to accept new entries!

The industries project seeks to give an insight into Warwickshire's industrial past, including, of course, many industries and activities that have disappeared. This is clearly an ambitious task which could be an on-going project over several years, but has the great advantage of being flexible, with contributions small or large willingly accepted. We are still working on exactly how the material would be organised, and updates will be provided over the year. The fundamental point is that any material contributed will be a step forward.

There are probably three groups of industries that we would seek to cover:

Extractive industries  
Transport industries  
Manufacturing industries  
and many sub-divisions within

these groups.

Each industry might, in the end, be covered by the following categories:

Short introductory history.

Sources: bibliography; websites etc.

Contributions from WIAS members (for example Arthur Astrop's work on machine tools; John Willock's work on the aircraft industry).

Contributions from elsewhere, willingly deposited on WIAS website

Photographs of past industrial activity (perhaps in those collection of slides that many of us have).

Museum and Record Office collections.

Of course, the process would also bring WIAS into contact with the range of societies and groups that concern themselves with industrial history, both local and national organisations. This can only be of advantage to all concerned.

My own experience recently in working with the Leamington History Group on the Leamington ironfounders revealed much mutual benefit, and insight into the different approaches of the two organisations. Long may these contacts continue!

### PROGRAMME

**11 January 2018: Robert Eyre**  
*The Healey Archive.*

**8 February 2018: Peter Stanworth**  
*Military Head Protection and other members' contributions.*

**8 March 2018 Tony Boughton**  
*The Stench of Victorian Indecision; engineering (and other) problems in the development of England's sewers.*

**12 April 2018: John & Linda Burton**  
*The Exhall Colliery Disaster.*

**10 May 2018: Roger Cragg**  
*Marc Isambard - The Other Brunel.*

**14 June 2018: Stephen Wass**  
*A Way with Water: water resources and the life of an 18th century Warwickshire park (Farnborough).*

NEWSLETTER

## Meeting Reports

**October 2017: Nick Holmes:**

*Canals of Lapworth and Rowington.*

Nick Holmes presentation dovetailed nicely with that of Paul Baker in February this year. As we have seen elsewhere, the railways often followed the canals which had pioneered the bulk transport requirements of the industrial revolution. Both men are involved with the Rowington Parish Records Group whose on-line photo archive now holds some 5,000 images.

A regular walker of the canals, Nick found himself asking; how, by whom and why were the canals built. The first canal in Great Britain is popularly held to be the Bridgewater built in 1759 but it was preceded by the Tyrone to Dublin and the Sankey from St Helens to the Mersey. By the mid-1850s there were over 5,000 miles of canal and navigable river on the British mainland with another 900 miles in Ireland.

Many towns wanted to be connected to the canal system to facilitate trade and to reduce the cost of bulk materials transport, especially coal. In planning a canal it was important not to upset other companies who could use tolls as a weapon against a competitor.

The initial study in 1792, or possibly earlier, was for a single canal from Digbeth to Stratford with a branch to Warwick.

However, local interests objected because it would take coal out of Birmingham and thereby increase its price. A petition suggested an alternative from Dudley (to take coal from the Dudley and Netherton mines) via Selly Oak and Lapworth, changing the junction from Digbeth to King's Norton on the Worcester canal which was prepared to allow the junction, without compensation, to increase traffic on the new Northern section of the canal.

The Birmingham Canal Company saw this as a threat and persuaded the Warwick company to separate from Stratford and pursue their own line from Digbeth to Warwick. The fallout became worse in 1794 when The Birmingham Canal Company supported the extension of the Warwick canal to Braunston where it would eventually link with the Grand Junction to provide a direct link to London. The Worcester and Stratford Canals opposed the bill. The Birmingham Canal Company then opposed link between the Stratford Canal and the Warwick Canal at Lapworth by presenting a petition against the Bill because it would divert traffic from which Birmingham Canal received tolls. This opposition was unsuccessful, but the Stratford Canal had to pay 11d per ton on all traffic passing through the junction.

Nick then explained the processes needed for building a canal. Unsurprisingly, these were almost identical to those detailed by Paul Baker in relation to the railways. The canals were pathfinders, not only across the countryside but in the forests of the law and Parliament. Suffice it to say that the requirements were a Canal Company whose shareholders were the proprietors of the enterprise, a survey of the proposed route and an Act of Parliament. Each stage had costs, some heavy – an Act of Parliament cost some £3,500 (apply a factor of 100 for today's value). Nonetheless, there was no shortage of potential shareholders anxious for a handsome return on their investment and tempted by initially only having to put up a small percentage of the share value.

The Committee first met in Knowle on 25 June 1793. Land Valuers were appointed as were P H Witton as Clerk Accountant (at £100 plus a house) and W Felkin as Engineer. That this was no casual project is made clear in

the minute book that survives in the National Archives.

The committee resolved to rent a house in Bradford Street belonging to a Mr White for £25 for one year provided he:...

*“ put a skirting board around the room appropriated to the use of the committee, and to put an hearth stone and chimney piece to the same.*

*To build a brewhouse, privy and wall to make the yard and garden private and entire. To sink a well and put down a pump - to glaze the windows in the room to be occupied as an office “... and later...*

*“That Philip Henry Witton does provide a bookcase and shelves for the use of the said Company”.*

Although the Act effectively authorised the compulsory purchase of land, agreement still had to be reached with the landowners on price and this was not always easy. Again, a surviving notebook (in the Birmingham Library) from one of the land valuers details the difficulties in dealing with sometimes stubborn individuals or multiple owners of small plots.

By 1795 the Company seemed to be losing confidence in its engineer Felkin and Witton took on the role whilst remaining clerk/accountant. He also assumed responsibility for drawing and measuring tasks. Witton was an accomplished artist and appears to have been well connected, perhaps falling onto hard times before his appointment as clerk. His artistic ability is attested in a book of paintings of property damaged in the Birmingham Riots of 1791 including the house of Dr Joseph Priestley.

Of more interest to the industrial archaeologist is the collection of his drawings of ‘*Utensils in Canal Work*’ held in the Science Museum Archives. These give fascinating details of the equipment used in building the canals.

Meanwhile, the construction of the canal was proceeding but when nearing completion the money ran out and another Act had to be obtained in 1796 to raise a further £50,000. Nearby, the Warwick and Napton Canal was also nearing completion and Witton's letters to his contractors showed his impatience at any delays.

A joint opening ceremony for the two canals took place in Warwick on 19 December 1799. Although it had been pressure from the Birmingham Canal Company that forced the separate canals, it seems that from the outset both companies were interested in the idea of a link between the two. Hence the Kingswood Junction. Such a link had been first proposed in 1793.

However, wrangles over toll rates and water – was Warwick going to bring water in or take it out? – caused delays but an Act gained assent in 1795, at a cost of £1,267, which included the requirement for the Stratford canal to deliver a ‘lock full of water’ to the Warwick canal every time a boat passed through the junction. This measure emphasises how important a reliable source of water was to a canal system that had few rivers feeding into it and hence the need for pumping stations – another market for Boulton & Watt engines.

A discussion of the economics of the canals and a review of the arrangements for the wharf at Lapworth, and what remains to see today, concluded a most interesting presentation. The Warwick canal was a commercial success as it joined two others and enjoyed a steady traffic of bulk goods plus fly boats and recreational use.

## November 2017: Joint Presentation by WIAS and Leamington History Group

### *Ironfounders of Leamington.*

A large audience (60 members and 15 guests) enjoyed this joint presentation with the Leamington History Group on a subject of great mutual interest. Martin Green, Peter Coulls, Mick Jeffs and Margaret Rushton had spent much time in researching the records (having newspapers available on-line had been a great benefit), walking around Leamington collecting information, photographing and collating the evidence. Their joint presentation was described as a 'work in progress' but clearly they have built very firm foundations.

Martin Green opened from the starting point that any journey for matters relating to Leamington was the work of WIAS founder Toby Cave. The cast iron balconies of his former Portland Street home epitomised the local iron founding abilities. A photographic tour of the town showed how much of such work remains, something for which we can be grateful, to set alongside the records of English decorative ironwork by Daniel Roth and John Harris. Member John Selby has also made a major contribution to the local record with his past research.

Roth's work, although comprehensive in its pictorial coverage, notably omits any names of the manufacturers. Similarly, whilst many of the extant examples on pavements and gutters carry the makers name others are frustratingly anonymous. As for the balconies, canopies and railings, their provenance generally remains elusive.

In the first half of the 19<sup>th</sup> century most towns had small scale iron foundries producing a wide range of products for local users. The technology had been established and with modest start-up costs, available land and labour, the market grew for cast and wrought iron, helped by the competition from several suppliers. The canals and railways had a major impact by opening further markets to the more entrepreneurial amongst the iron masters.

The range of trades (including: iron founder, ironmonger, whitesmith, tin plate worker, bell-hanger, brazier and brass founder) and goods (including: balconies, verandas, palisading, gates, stove grates and a wide variety of street furniture) produced by local iron founders are well recorded in contemporary directories and advertisements. The latter also enable the local historian to chart the development of businesses and the connections between them.

What remains and where can we find examples? The two best options are to walk the streets and join the National Trust. The former will provide evidence of street furniture and the latter the other Leamington speciality, the 'Kitchener'.

The researcher will soon find that street iron was not just a local product. There are plenty of examples within Leamington of work from Warwick (the next project?) and national iron founders from the Black Country to Glasgow.

An 1838 map of Leamington annotated with the locations of the main local iron founders was a useful introduction to Mick Jeffs who went on to describe the work of three Leamington principals: Flavel, Radclyffe and Grove.

The Flavel dynasty has its roots in the Black Country, William Flavel, who moved to Leamington in 1803, notably invented the 'Kitchener' although whether it was patented or not remains in doubt. He went bankrupt in 1828 but by 1829 was back in business. This pattern seems to have been quite commonplace amongst the thrusting manufacturers of the era and little damage appears to have been caused to their progress.

The Patent Kitchener in the words of an 1829 advertisement

afforded: '*the most ready means of performing in the best manner; either separately or at once, all the operations of Cookery – as Roasting, Baking, Boiling, Steaming, Stewing etc, with only one Fire (and that an open one) no larger than what is used in ordinary cooking grates for the Boiling of a single Vessel*'.

Considerable ingenuity had gone into the design and manufacturing benefited from advances in the use of cast iron.

William Flavel had been well respected in the community and his successors became, as often occurred, more and more involved in local civic affairs whilst further developing the business. Flavel brought an unsuccessful action against Harrison for using the Flavel Patent Kitchener name and moved the business to the Eagle works, acquired from Thomas Radclyffe, in 1856, not 1833 as popularly recorded.

Much research into archive material produced many interesting examples of contemporary editorial and advertising material together with photographs of Flavel Kitcheners still in situ at historic locations.

Thomas Radclyffe also manufactured a patent kitchener and was in and out of business with several partners before amalgamating with Flavel in 1902. Radclyffe had sought to develop exports and sent 17 kitcheners to an exhibition in Melbourne in 1888.

George William Grove, whose father was an ironmonger in Grove Street, also produced kitchen ranges, notably the massive installation in Charlecote House together with drain gratings and covers. He too sought exports at the Sydney Exhibition in 1879 ahead of opening a new foundry at the Cape in Warwick in 1880.

Grove had an appetite for litigation and there is evidence of a variety of suits brought by him against fellow tradesmen and even employees on seemingly trivial grounds, a view shared by the judiciary!

Peter Coulls took the story on with an account of the Carter family of Oxford, Leamington, Emscote and Birmingham. Again, surviving examples of commercial stationary offer vivid depictions of the manufacturing processes of the early 19<sup>th</sup> C.

The local newspapers also charted the ups and downs of the Carters with accounts of works openings and then property sales to meet financial obligations followed by a rebound to greater prosperity. Operations, especially for 'Leamington Kitcheners' moved to Birmingham in 1855.

Martin Green concluded rhetorically. Why Leamington? Flavel was a strong influence with innovative designs that were widely imitated but overall a favourable business environment and good communications systems were fundamental to success. Architectural fashions for decorative ironwork also helped as the town developed.

Martin also touched on the activities of three other local businesses, Hewens, Jenkins and Harrison who all made important contributions to domestic systems. Hewens with a patent regulator that improved the efficiency of the kitchen range, Jenkins with hot water heating (early central heating) and Harrison with further range improvements including the largest field kitchen ever made during the Crimean War '*able to feed 1,000 with a fire no larger than normal*'. He also enjoyed a chequered career but always recovered and finally went to the USA and was granted US patents. The great survivor!

We look forward to the next instalment of such a fascinating history of local ingenuity and success.

**December 2017: David Brown:***Canal Reservoirs.*

**D**avid Brown is a distinguished civil engineer and currently the Principal Reservoir Engineer with the Canal & River Trust with responsibilities across the country. His interest in Industrial Archaeology began when he studied at Durham University and is ongoing.

Whilst concentrating on the Trust's canals and reservoirs in the Midlands, his wide-ranging talk covered the development of the canal system, reservoir engineering and the threats, failures and legislation needed to protect users and the environment.

The Industrial Revolution needed better transport than the traditional packhorse. A horse might carry a couple of hundredweights, but the same horse could pull a barge carrying 50 tons on a canal or river. Hence the development of a canal system to join up the navigable rivers and allow the growth of basic industries, coal and iron and then manufacturing, textiles, pottery and metal.

However, canals had one major problem, water cannot run uphill, so a lock system is needed to cope with gradients and locks need a supply of water – a typical narrow lock will need 25,000 gallons (180 M<sup>3</sup>) to refill it.

The heyday of the canal began with the Bridgewater Canal in 1761 and lasted until overtaken by the railway system in the 1850s, although some major works were later, e.g. The Manchester Ship Canal in 1894. Nevertheless, canals continued to be used commercially and increasingly as a leisure resource into the present day.

Water supply was a constant challenge. Rivers and streams could be used in lowland areas, but there was an ever-present challenge from existing users such as water mills whose livelihood depended on those same sources. In upland areas reservoirs had to be created to provide a water supply.

Turning to reservoir engineering, modern concrete dams were preceded by earth dams, usually built with a puddled clay central core and sunk down to bedrock to provide the necessary resistance to leaks.

The principal threat from a dam failure is flooding in the valley below. Spillways are a common feature to minimise this risk but many early examples were too small to be fully effective. High waves can be generated in stormy weather and cause erosion in earthworks that threaten stability. Illustrations included the effects of internal erosion in dams that collapsed (USA in 1976 and Tasmania in 2005).

In the UK, there were plenty of failures with early dams but the worst was near Sheffield in 1864 when the Dale Dyke dam fractured. The reservoir had been first filled the year before. An horizontal crack in the crest of the dam was spotted on the afternoon of 10 March and the dam failed catastrophically the next evening at 11.30pm. The flood reached Sheffield 9 miles downstream killing 244 people en route. More recently, dam failures in 1925 killed 5 at Skelmorlie and 16 at Dolgarrog.

More effective legislation soon followed these last disasters. The Reservoirs (Safety Provisions) Act of 1930 introduced, for large raised reservoirs, *inter alia* statutory inspections, panel engineers, works 'in the interests of safety' and monitoring procedures. An interesting quantification for a large reservoir was 10 Olympic Pools or 5 million gallons/25,000 M<sup>3</sup>. The Reservoirs Act 1975 extended the scope with requirements for registration, enforcement authorities and supervising engineers. The

Flood & Water Management Act 2010 and Reservoirs (Scotland) Act 2011 added risk not volume, surveillance and maintenance criteria.

The Trust today has responsibility for 72 reservoirs around the country, all of which were built for canal supply. The largest by volume is Killington (3,240,000 M<sup>3</sup>, the oldest is Pebley (1776), the average age is 193 years, the most recent is Winterburn (1891) which is also the highest dam (25M), the longest dam is at Southfield (2.5 km).

Risk Management by the Trust involves Statutory Inspection, Supervision and Surveillance. These involve making local inspection visits two to three times a week throughout the year. Monitoring for water levels, leakage and settlement. Comprehensive emergency planning procedures are in place for each of the Trusts' reservoirs.

Turning to Warwickshire, David outlined the development of the canal system from the Coventry and Oxford canals in 1790 through to the purchase of the Warwick & Napton and Warwick & Birmingham canals in 1927 by the Regent's canal and the formation of the Grand Union two years later.

The early canals had no dedicated water supply but this was soon needed and a large number of reservoirs were built between 1764 and 1811.

The first was Seeswood Pool in 1764 North of Coventry by Sir Roger Newdigate of Arbury Hall and feeding 13 locks, followed by Oldbury, Olton, Stockton, Napton, Wormleighton, Boddington and Earlswood.

These were then examined in detail and David made good use of two sources available to us all. For detailed maps of many dates The National Library of Scotland has a very accessible website and Google Earth gives contemporary views. Between the two all needs are covered. Site visits also provided photographs of features and details otherwise hidden.

Between these sources we were able to get not only a detailed examination of the individual reservoirs and their histories but a clearer understanding of the work of the Canal and River Trust and the responsibilities of its staff. Not least, we began to get a feeling for the size of an Olympic Swimming Pool.

Details of the relationships between adjacent and competing canals were revealing. For example, in 1797 the Warwick & Napton canal had no water supply and reached an agreement with the Oxford canal to enlarge Boddington reservoir to provide it with water for which it paid a toll of 2/- a ton.

A study of the old maps can show how developments occurred, for example at Olton the Birmingham & Oxford railway first passed over a corner of the reservoir on a viaduct but later this was replaced with an embankment.

The complex layout at Earlswood includes the remains of the pumping station with pictures of the original beam engine which caught the attention of some members.

Questions demonstrated David's exhaustive knowledge of his subject and included issues of reservoir location (choose a valley that won't leak), climate change effects, the pros and cons of dredging (disposal of contaminated sludge is difficult) and the possible use of pumping as a substitute for a reservoir.

Altogether, a most interesting and informative evening with which to close the year.