WARWICKSHIRE Industrial Archaeology Society

WIAS

NEWSLETTER

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THIS ISSUE

FROM THE CHAIRMAN

Anniversaries Abound

The opportunity to celebrate an anniversary inevitably becomes more popular as the years go by, but the industrial archaeology world probably has greater justification than many for identifying and celebrating such events or personalities. Certainly, festivities concerning some of the greatest engineers and industrialists have come thick and fast over recent years with Brunel and Telford leading the way – though not necessarily in that order!

2009 is no exception, with, our own twenty-year anniversary. 2009 also marks the Bicentenary of Matthew Boulton's death, with a range of celebrations, many of which will take place in Birmingham. A major exhibition, *Matthew Boulton – selling what all the world desires*, focussing on Boulton's life and times will be held at Birmingham Museums & Art Gallery, 30 May – 27 September 2009; *The Art of Making Money*, dedicated to Boulton's Mint, will be held at the Barber Institute of Fine Arts, Birmingham University, May - December 2009; The University of Birmingham and the University of Central England will co-host a major academic Boulton conference from 3-5 July 2009. Readers are referred to the Bicentenary website for details of these and other events – www.matthewboulton2009.org.

The society has tried to keep pace with these anniversaries and is extremely grateful to Roger Cragg for his input on the life and works of several of the engineers. 2009 also marks 150 years since the death of Robert Stephenson and Roger is preparing a talk on Stephenson for a WIAS meeting at the end of the year.

Other anniversaries are, of course, of a much more modest and local level. For example, the Centenary Celebrations of Johnsons, the coach company based in Henley in Arden. The Society has never really explored the history of bus services of the county, and attention of readers is drawn to two transport books *Stratford Blue* by Robert L. Telfer and *Midland Red* by Malcolm Keeley.

Martin Green

Warwickshire's Civil Engineering Heritage

This is the first of an occasional series by Roger Cragg highlighting some of the Civil Engineering heritage of Warwickshire. All the structures featured are registered as Historic Engineering Works by the Panel for Historical Engineering Works of the Institution of Civil Engineers.

Bearley (Edstone) Aqueduct

This aqueduct, which carries the Stratford upon Avon Canal is the second longest cast iron aqueduct in Britain.

There are fourteen spans of about 34 feet with brick piers and a cast iron trough containing the canal giving a total length of about 498 feet. The aqueduct crosses over the road from Bearley Cross to Little Alne, the North Warwickshire railway line between Wootton Wawen and Stratford (opened in 1907) and a stream, a tributary of the River Alne.

The waterway trough is constructed from cast iron plates with flanged edges, connected with bolts, which form the sides and base of the trough. The one inch side plates are some 14 feet long and the base panels are half this length. The transverse joints in the sides and base are staggered. The base panel is extended on the east side to form the towpath which is therefore level with the base of the trough. There is an upstand 1 ft. 10 in. high at the side of the towpath to retain the filling which forms the towpath surface.

The brick piers taper from the base and have a stone capping at the top. Each span has two cast iron beams to support the trough. There are brick abutment walls which are curved in plan and there are steps down to the road from the towpath at the south end of the aqueduct.

The Stratford Canal was built in three distinct phases, starting at the north end at Kings Norton. Bearley Aqueduct was constructed as part of the third phase of building from Kingswood to Stratford, being completed in 1816. The designer was William Whitmore (c. 1748 – 1816) who was appointed as Engineer to the Stratford Canal in 1811. His son continued to work for the canal company after his father's death two months after the opening of the canal.

Whitmore's design, described as 'idiosyncratic' was somewhat old fashioned. The placing of the towpath level with the base of the trough is similar to Thomas Telford's design for Longdon upon Tern Aqueduct on the Shrewsbury Canal, the progenitor of cast iron aqueducts, completed in 1795. However, Telford, in his design for the later Pontcysyllte Aqueduct of 1805, placed the towpath level with the top of the trough, the waterway extending underneath it and thus providing a wider trough which reduced the drag on boats crossing the aqueduct. Either this improvement was unknown to Whitmore or he chose to ignore it.

There are two smaller cast iron aqueducts on this section of the canal at Wootton Wawen and Yarningale.

Roger Cragg

PROGRAMME

March 12th
Mr Brian Ellis: *Blinman: a nineteenth century South Australian copper mine and its environment.*
April 9th
Ms Joanne Gloger: *'There is more to a needle than meets the eye': Needle-making in Redditch and beyond.*
May 14th
Dr Jim Andrew: *The Smethwick Engine.*
June 11th
AGM followed by *The Chairman's Lecture.*

Meeting Reports *by Mike Hurn*

November 2008: Ms Gillian Bardesley & Rev Colin Corke
Car-making at Longbridge

Industrial Archaeologists have a very broad range of interests but there was probably more common ground covered in this presentation than in many we have enjoyed. Apart from the wide variety of end products shown, our speakers illustrated and talked about manufacturing processes, buildings and architecture, social history, war-time priorities and adapting to new conditions and then post-war recovery culminating with some inglorious financial engineering that lead to the demise of a once proud business.

Gillian Bardsley is the archivist at The British Motor Industry Heritage Trust, now located at Gaydon, and Colin Corke is the Vicar of Longbridge and was also one of the Chaplains to the factory. Between them they brought us an unusual and stimulating examination of the Longbridge story.

Gillian opened with a review of the BMIHT from its small beginnings in 1975 at Studley Castle to its present position covering historical collections from over 100 companies from 1896 with an archive and reference library that is almost as broad and to which access by appointment is open to all. This led to the early history of Herbert Austin, his experiences in Australia with the Wolseley Sheep Shearing Machine Company, who he tried to interest in car manufacture but left in 1905 to start his own business in a disused tin printing works at Longbridge. We had an insight into his 'business plan' through a handwritten page outlining his start-up cost estimates, and his source of financing, one Frank Kayser. A first anniversary luncheon menu carries their two signatures and an indigestion provoking list of dishes.

Austin prospered as WWI approached and an evocative series of slides showed the transformation of a car factory into a weapons producer and, most notably, the employment of large numbers of women in skilled roles. The range of munitions produced was extensive including: shells, guns, aeroplanes and engines, lorries and armoured cars. To alleviate the housing problem the 'Austin Village' of 200 flat-pack timber houses from Michigan was built near to the factory. Austin was knighted for his contributions to the war effort but his only son was killed in action.

The post-war slump hit Austin and the firm was put into administration in 1921 but the instant success of the Austin 7 saved the company which then prospered through the inter-war years. A constant feature of the comany's publicity was the theme 'as dependable as an Austin' which typified their cars and other products which included a successful tractor cum stationary engine. In 1937 the Aero Factory, later known as the East Works was built as part of the shadow factory programme following Herbert (now Lord) Austin's appointment as chairman of the 'shadow aero engine committee'.

The factory was distinctive for its interior space which minimised the use of pillars. The first aircraft built were the Fairey Battles which proved disappointing in service. Smaller planes could be flown from the factory's old flying ground but larger aircraft such as the Stirling bombers were made as kits and transported by road to the nearby Elmdon airport for assembly and flight test. As well as aircraft a wide variety of wartime products came out of Longbridge between 1939 and 1945, from military vehicles to jerrycans. Lord Austin died in 1941 and thereafter the Company was effectively run by Leonard Lord who had been recruited in 1938 following a disagreement with Lord Nuffield.

The early post-war years were characterised by the drive for exports using the slogan 'Austins for Dollars', the major landmark launches of the 'Mini' and the Austin-Healey and the 1952 merger with Morris. However, the problems of badge engineering spread scarce resources too thinly and a badly weakened company was merged in 1968 with lorry builder Leyland under the auspices of the Wilson Government to form British Leyland.

A highlight of the evening was a compilation of archive film material, including some colour war-time footage, that illustrated the gamut of production at Longbridge from cars and aeroplanes in 1915 through to the robotised body assembly line for the Metro in 1980. The film also gave some fascinating glimpses of many of the personalities involved in the history of Longbridge.

Colin Corke then gave a very personal and enthusiastic review of the architecture of the Longbridge site. From the original White & Pike tin printing works we followed the expansion during the first war and subsequent consolidation through the second war shadow factories to the innovative CAB 1 (Car Assembly Building) of 1950; all glass and hope. A new exhibition hall in 1956, the largest multi-story car park in Europe in 1961, the new commercial vehicle showroom 'the Elephant House' in 1965 and thence to the beginning of the end with the demolition of the old water tower in 1998.

Colin also introduced us to a wide cross section of Longbridge people, illustrating the great sense of community that existed in much of British industry between the 1920s and the 1980s but which has since lapsed. This led into the concluding shots of the events following the final collapse of Rover in 2005. Stalled production lines then empty shells of buildings which the Heritage Motor Centre was allowed to record before final demolition.

It remains to be seen what will arise next on the Longbridge site, St Modwen, the property developer which now owns it, face a challenge in these very testing times. Will a Longbridge Technology Park and Heritage Trail lead to the revival of the area? Certainly more will be needed than the assembly of a few obsolescent MG sports cars.

Transport Open Day - Saturday 25 April 2009
Warwickshire County Record Office has many records to do with Warwickshire's transport history, including maps, plans and photographs. On 25 April from 2pm to 4pm some of the original records on transport, canals and railways will be available for inspection at the Record Office in Priory Park, Warwick.
Tickets £5.00. Spaces are limited so booking is essential.
Telephone: 01926 738959

December 2008: Mr Malcolm Hancock
A Short History of Rugby Radio Station

Malcolm Hancock is a rarity - he worked for forty years, from leaving school in 1964 until retirement in 2004 as its manager, at the Rugby Radio Station. Who better then to tell its history. A story that served to remind us of the technical debt that is owed to the General Post Office in it's several guises. In particular to the development of wireless technology. It is all too easy only to equate radio with the BBC and Malcolm gave us a most eloquent reminder that it was the GPO which pioneered many radio services that today we take for granted. Telephones, teleprinters and time signals, ship-to-shore and even spacecraft communications all began under the GPO.

When President Lincoln was assassinated in 1865, it took Reuters twelve days to convey the news to Europe. The next year saw the laying of the first transatlantic cable over which telegraphic signals in morse code could be transmitted and in 1891 a London to Paris telephone cable was opened. In 1901 Marconi made his first, historic transatlantic radio transmission. After the first war the need for an imperial wireless network strengthened and in 1924 the GPO acquired 900 acres, including the old Hillmorton Airfield outside Rugby as the site for its first Radio Station.

Historic slides and some old Pathé newsreel footage gave us a good idea of the problems in raising the twelve 820 foot high masts which supported the original aerial array. Other buildings housed the transmitter, at that time the world's most powerful using thermionic valves, giving Worldwide coverage, offices and the BTH generating plant. On 1 January 1926 the Long Wave service opened.

The transmitter, with a power of 350kW, was designed and built by the GPO and was gradually improved over the years. It suffered fire damage in 1943 but a partial rebuild and further improvements saw it continue through to 1965 when it completely replaced by a new three valve, 'latent heat of steam' cooled transmitter. Over this period the traffic moved from commercial telegrams to ships and diplomatic news broadcasts, to Air Ministry weather forecasts and finally played an important part in the Cold War for the Royal Navy.

In 1927 the first radio telephone service from the UK to the USA began. Later this service could carry a maximum of two telephone calls. The cost of a call, during the first year of service was £15 for three minutes, about £600 at today's prices.

Although circuits on Short Wave were not quite as reliable as Long Wave, the transmitters needed much less power and smaller aerials. This reduced costs and increased demand for short wave circuits. Therefore, a second building (Rugby 'A') was opened in 1929 and by 1935 Rugby was capable of transmitting many, mainly telephone, circuits to any country anywhere in the world.

The demand for long distance, point-to-point, radio links continued to increase. Rugby Radio peaked in 1955 when the third building opened. The size of the site was increased from 900 acres to 1600 by the purchase of land on the other side of the A5. A new building, Rugby 'B', was opened in July 1955. Rugby now had 57 transmitters and was the biggest radio transmitting station in the world. In the mid 1960s Circuits at Rugby were set up for use by NASA on the Mercury and Gemini space flights.

When the first transatlantic telephone cable opened in 1956 some of the traffic started to move away from Rugby. Over the next ten years Rugby changed from carrying the high density telephone traffic of North America and Australasia into providing better telephone and teleprinter services to countries in areas that had no direct cable access. These countries, in Africa, South America, Asia, Iceland etc., only required a small number of circuits. Press services for Reuters and London Press Service continued with teleprinter news and picture transmissions.

With the advent of satellite communications, Short Wave International land based, point-to-point, radio services continued a slow declined between 1975 and 1987. Other Radio Stations closed, as the remaining services were concentrated at Rugby. Between 1987 and 1992 the station was converted to carry an improved long range maritime service.

Finally even the ship services started to transfer to satellite. The number of transmitters required reduced and the 'A' Building closed as a radio station in the early 1990s. The ship distress system moved over to satellite and maritime services finally closed at the end of April 2000. This left only two, telegraphy and the Time Signal services.

The contract for the remaining two telegraphy services, one of which was GBR, ceased on 31 March 2003 and eight of the twelve 820ft masts were demolished on the evening of 19 June 2004.

Time Signal Services were always an important function at Rugby, from 1927 to 1986, time signals were transmitted enabling ships anywhere in the world to synchronise their chronometers for navigation purposes. This service was run on behalf of the National Physical Laboratory. The time source improved over the years from Royal Greenwich Observatory land line, to local "Essen Ring" crystal, to Rubidium and finally to a Caesium Atomic frequency standard in 1976. The service moved to Anthorn Radio Station near Carlisle on 1 April 2007 bringing, after 80 years, an end the transmission of Time Signals from Rugby.

A temporary "Loran C" navigation service started in mid 2005. This used an American transmitter and a new "T" aerial, straddling the building, between two of the old 820ft masts. This temporary service ceased on 4 July 2007 and was the last radio transmission from Rugby Radio Station.

The remaining four 820ft masts were demolished on Thursday 2 August 2007 and the site awaits redevelopment - 6,200 new homes are a possibility.

January 2009

Members' Research Evening

This Members' Research Evening covered much ground - two local reviews, one of Victorian train accidents, the other of the little known airfields used by the Automobile Association's Flying Section; an unusual parade of steam-powered road vehicles and an historic canal tunnel; an American home movie record of a trip to England in 1934; the fields to factory to houses saga of a Wolston small-holding; and the untimely end of an experimental aircraft in another field near Broadwell.

Richard King teased at the beginning with a slide of a local man-hole cover which appeared to include several lines in an Eastern language but then drew on local newspaper sources to examine a number of accidents on the Victorian railway lines around Leamington between 1856 and 1895. His hand-drawn maps brought the various locations clearly to mind and the descriptions reminded us of both the mechanical frailty of the equipment and the hardship suffered by the dependants of the railway employees who died. A few pounds raised by a public subscription was the best that could be expected. Inadequate track maintenance also has a long history in the railway industry. Of the nine major accidents over the 40 year period under examination, three were due to mechanical failures, three were down to track defects and three to human failures.

Chris Barney reviewed the saga of Bluemels of Wolston. A factory was built in 1898 by Joseph Cash of Coventry on a small-holding to produce filaments for electric light bulbs from artificial silk but production ceased after only two years and the three Bluemel brothers purchased the works in 1902 and moved their successful business manufacturing umbrellas and walking sticks from Stepney. They expanded their product range to cater for Coventry's fast developing cycle and motor industry with a range of celluloid parts including mudguards, chainguards, handles and tyre pumps. From a small start the workforce had grown to some 200 at the time of the last Bluemel's death in 1938. Wartime production of small engineering components saw numbers rise to a peak of 800 and in 1949 Bluemels introduced steering wheels made from bakelite as a new product range. Sadly, the business underwent a series of takeovers in the 1960s and 70s and after making its highest profits of some £2 million in 1977 it went into receivership in 1985 blaming a lack of markets. The land subsequently became a 40 unit business park which in 2004 became a housing development.

Thelma Gee examined the crash in May 1949 of the experimental 'flying wing' Armstrong Whitworth AW 52. Field-walking for Roman remains had uncovered modern metal parts and thus sparked further investigation. Following a glider prototype, two jet-powered aircraft were built in 1947 expressly to evaluate laminar flow wings which promised much reduced drag but ultimately were beyond manufacturing capabilities. The aircraft had a 90 ft wingspan, a ceiling of 45,000 ft and a speed of 495 mph. The aircraft involved in the crash suffered uncontrollable wing flutter and the pilot, Flt Lt Lancaster an ex-RAF bomber pilot, became the first to use a Martin Baker ejection seat in an emergency. He landed safely near to Long Itchington and the pilotless plane crashed into open fields half a mile from Leamington Hastings towards Broadwell. The second prototype was eventually scrapped.

Roger Cragg provided some highlights from the Bridgnorth Steam Festival in July 2008. Notably, the nearly completed replica of 'Catch Me if You Can' together with a number of other steam powered road going vehicles. These included the 1801 'Puffing Devil' owned by the Trevithick Society, another replica Trevithick chassis with an extraordinarily high mounted coach body that needed a ladder for access, Hancock's 1833 steam coach and a genuine 1801 Grenville steam cart. He then took to the water for the 150th anniversary celebrations of the opening of the Netherton Canal Tunnel on 20 August 2008. Designed by James Walker, the second President of the Institution of Civil Engineers, the 3027 yard long tunnel has a 17 ft waterway flanked by two 5 ft towpaths. Fully brick-lined and originally gas-lit, the tunnel took 2 ½ years to drive and was needed as a relief for the old Dudley tunnel (which took 7 ½ years to build). The celebrations were enlivened by many participants in period costume and the presence of the steam-powered narrow boat 'President'.

Derek Billings introduced a film 'My Trip Abroad' from the Bill Gibbons' collection. This recorded the 1934 visit of an American family to England and especially to Leamington Spa where a house (still extant) named 'Oversley' in Radford Semele featured prominently. Shot in black and white we followed the family's journey, first on the liner *Berengaria* then on the train to Leamington Spa and to Oversley and its extensive gardens. The film-maker recorded many local scenes as well as family events. An evident highlight of the visit was a trip to London which allowed us to see the old Leamington and Paddington stations and a tour that included many historic vehicles and landmarks, a completely scaffolded Palace of Westminster was notable as was Buckingham Palace, St Pauls, Ludgate Hill and Marble Arch. Returning to Leamington we toured the Jephson Gardens, Warwick - the town and the castle- before departing on the train to Southampton to embark on the *Majestic* for the voyage to New York. Southampton docks, including the massive floating dock and the scenes of arrival and docking in New York provided, as did the film throughout, much of industrial archaeological interest.

John Brace brought the evening to a close with information on a subject of which many must have been quite unaware. The Automobile Association with its motorcycle patrols is very familiar but the AA's Flying Section is less well known. Light aircraft must have been popular in the inter-war years because the AA produced a register of flying grounds that could be used by its members. The published data sheets were remarkably comprehensive and included details of topographical and other hazards such as the possibility of sheep or cattle as many seem to have been located on farmland. Photographs of some of the old hangars, some still in use as farm buildings, showed them as the forerunners of the well known RAF structures. Locally there were AA Flying Section airfields at Leamington Spa, Rugby, Stratford upon Avon and Banbury.