WARWICKSHIRE Industrial Archaeology Society

WIAS

NEWSLETTER

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FROM THE CHAIRMAN

By the time you read this Newsletter, we will have launched our Winter Series of Meetings delivered via Zoom only. It is remarkable how the online meeting has now become such an acceptable part of many Societies' programmes, although the in-person meeting remains the favoured option for many. WIAS is unusual in seeking to present the hybrid meeting (in-person with simultaneous delivery online) in our Autumn, Spring and Summer programme, and I would like to emphasise the skills, patience and commitment of David Daniel and Victor Lobb in making these hybrid meetings work. Numbers attending these meetings have remained encouragingly high, and we plan to continue the 7/3 split between hybrid and zoom-only meetings.

Amongst the Christmas post came the latest edition (volume 45 No. 2) of the Association for Industrial Archaeology's Review. This is scholarly publication, with eminent articles covering research of, and investigation into, sites across the UK, and increasingly in recent years, from abroad. The current edition, for example, has an article on 'Archaeological Investigation and Industrial Heritage Study of the Wanshan Mining Site in Guizhou Province, China', together with a shorter notice on 'Industrial Heritage in the Czech Republic'. Alongside, the UK is represented by articles on 'The Offerton Hat Works and Stockport's Felt Hat Industry'; 'Park Glasshouse, Birmingham – A Site of 19th. Century Innovation'; 'White Lead Processing at the Chester Leadworks'; and The History and Archaeology of Hendon Sidings Enterprise Zone, Port of Sunderland'. All these articles are noted for their sophisticated research skills and techniques, for example, the scientific examination of glass waste at the Park Glasshouse site permitting conclusions to be drawn concerning the process of innovation on that site.

Of course, the AIA also publishes the quarterly IA News. This contains current news and information from the world of industrial archaeology in the UK and elsewhere. Regularly featured are reports from members and correspondents, news items, letters, notices of new publications and a diary of forthcoming events. It is this journal that has featured items concerning Warwickshire's industrial heritage and the work of WIAS.

All this reminds one that the industrial archaeology movement is a broad enough church to embrace the finest academic research as well as the work of groups such as WIAS, where intimate local knowledge and experience is such a valuable asset. Indeed key individuals in those societies have taken the lead in the wider movement. The AIA and the Ironbridge Institute have given greater academic rigour and sophistication to the subject, but also always acknowledges the efforts of local societies, and it is within that framework that we look forward to celebrating (with some pride) 35 years of WIAS in the Summer of 2024.

This has caused me to reflect once more on the ways in which Warwickshire's industrial archaeology might be marked out as significantly different from those of other counties, and that a timely reminder of those features might be in order:

• A complex geology offering a range opportunities for exploitation by man for construction materials and power supplies, with several of these industries (e.g. cement, sand and gravel) still functioning, although the last coal mine closed in 2014.

• The area possesses some very early examples of the development of canal and rail transport in England, with some unique features.

• The development of (initially) domestic or workshop industries, particularly ribbon weaving, hat making and watchmaking, with a distinct industrial community in Chapelfields, Coventry associated with the latter.

• A hugely significant role in the development of cycle, motor-cycle, and motor industries (and their ancillary trades), with three major museums devoted to that heritage, together with the Midland Air Museum recognising the area's contribution to the aviation industries.

• The very high concentration of manufacturing industry in Coventry, with a range of industries represented e.g. machine tools, telecommunications, aeronautical engineering, armaments, artificial fibres.

• As well as being a 'railway town', the importance of Rugby in terms of the development of electric power and engineering, with two firms dominating the story – Willans and Robinson and British Thomson Houston (and their subsequent company structures).

• The industrial communities of Nuneaton and Bedworth, based on mining, quarrying and textiles, together with their subsequent post-industrial experience

• The agricultural landscape that covers much of the county and the links that were developed between industry and agriculture, particularly in terms of buildings, vehicles and machinery

• Interesting examples of the provision of power via wind and water, as well as public works such as gasworks and waterworks

Warwickshire has a proud industrial heritage and WIAS has played no small part in gaining a fuller knowledge and understanding of that heritage.

PROGRAMME

11 January 2024 (zoom): Elizabeth Thomson
Brickmaking and the Development of Canals in the Black Country.
8 February (zoom): David Skillen
Starfish, Stripes, Decoys and Dummies. Camouflage and Deception at War.
14 March (live/hybrid): Terry Merrygold
Sir William Lyons: The Great Opportunist.
11 April (live/hybrid): Mark Davies
The Work of the Chance Heritage Trust.
9 May (live/hybrid): David Daniel
Guns and Cars - BSA's Motoring History.
13 June (live/hybrid):
Celebratory Event for 35 Years of WIAS.

Meeting Reports

September 2023: AGM and 'Twenty's Plenty
Members' Evening

Following the 2023 AGM we had three short talks. The first was by **Martin Woolston** whose title was 'A talk on Talks'.

He started by suggesting that there were three categories of talks:

1. Learned and professional.
2. Amateur meetings for an enthusiastic membership (such as WIAS).
3. General Subjects.

And there were now three forms of delivery: Live, Internet eg Zoom and Hybrid.

Focusing on amateur meetings such as WIAS. Martin listed the duties and responsibilities of the Speaker, the Chair and the Audience. Most of the points made were familiar to the audience, for instance that the speaker should face the audience and not look back at the screen except when using a pointer. It was good, however, to have these points reiterated.

He mentioned some matters specific to recorded or zoom talks such as the need not to move away from the lectern to avoid disappearing off camera, which even experienced speakers need to remember.

Martin concluded by wondering if live talks were in peril and whether zoom talks would oust them – he hoped not.

Our second speaker was **John Willock** who had brought a splendid brass maker's plate. At about 30 inches long it was quite the largest most of us had ever seen. It had been spotted at vast jumble sale at Beaulieu and John described the process of acquiring it and the need to be sure it was genuine.

Investigating the names on the plate John's researches had revealed that the Southwark Foundry and Machine Company was a well estabished business in Philadelphia manufacturing steam engines and particularly blowing engines for working blast furnaces. The company was later aquired by the giant Baldwin Locomotive Works.

Richardsons Westgarth & Co Ltd were one of the largest builders of marine engines in the world, established in Hartlepool in 1846, by 1900 they were employing some 2000 people.

As many will know, the George Watkins Archive with its vast collection of photographs of stationary engines, built up over 40 years, is held by Historic England. By good fortune Watkins had recorded the very engine from which the plate had come; no 236 was constructed in 1903 for the Appleby Frodingham iron works at Scunthorpe. The engine was about 30 feet tall with 42 and 84 inch diameter high and low pressure cylinders and a 60 inch stroke, each coupled to an 84 inch cylinder. It worked at 35 rpm to supply air to the blast furnace. John thought that the 'quarter crank' was probably to do with supplying an even flow of air to the furnace.

The engine operated until the late 1940s but remained in place until 1960 before it was scrapped. The magnificent brass plate is now all that is left.

To round up the evening our Chairman, **Martin Green**, told the stories of three men. Bradley, Roberts and Green may sound like a firm of solicitors, but their common link was town gas.

The image of Warwick Gas Works on the Saltisford Road has been the symbol of WIAS since its inception. Opened in 1822, it is one of the earliest gas works in the world and is maybe the oldest surviving gas works building anywhere. Martin showed us a succession of images and plans of the works, including the 1851 Board of Health Plan, as the site grew through the nineteenth century. Production ceased in 1956 and the buildings decayed. They have recently been converted to apartments.

The two octagonal buildings at either end of the elegant frontage on the main road contained the gas holders until it was realised that in the event of an explosion the flying masonry would cause much more damage than would be caused by the iron gasometers within.

The works were designed and engineered by the first of the trio, Joseph Bradley, who also designed many other gas works including those at Coventry and Northampton. The National Gas Museum at Leicester has a scale model of the Northampton works and we could see features similar to the buildings in Warwick.

Joseph Bradley's connection with Warwick continued; in 1825 he bought a block of land between Rugby and Warwick Place from Bertie Greatheed with the intention of developing it as Bertie Circus with 12 large properties around a central circle. Only two of these were built and the land was sold after Bradley's death in 1830.

The second member of the trio was Thomas Roberts. He was a millwright and foundry owner who built a gas works for Leamington in 1819. He had trouble raising money and the venture did not prosper, losing out to the Saltisford Works at Warwick which supplied gas through a three-mile-long pipe to the New Town which the Warwick Gas Company had built in 1823.

Charles Green, a celebrated balloonist, was the last of the three. Early balloons had been filled with hydrogen but Green realised that coal gas would be much more economical. His first ascent was on the occasion of the coronation of George IV in 1821. This balloon was 50 feet high and 107 feet in circumference and took three hours to fill. He made an ascent from Leamington in 1824 which was said to have attracted 15 to 20 thousand people who saw him disappear into the clouds. A few weeks later he made another ascent when he spontaneously gathered up a 14-year-old girl (actually prearranged) as a passenger. They landed near Lutterworth to the amazement of two labourers who were so shocked that they fainted.

October 2023: Victor Riley
The Riley Story.

For our October meeting we were privileged to have Victor Riley, grandson of William, the founder of the cycle business which was to become Riley cars.

The Riley family have been in Coventry since at least the sixteenth century, first as weavers, then in the silk trade and ribbon manufacture.

After a short-lived boom during the Franco-German war in the 1870s, when imports from Europe were suspended, trade collapsed and William (1851-1944) took good advice and started manufacturing bicycles.

William had five sons, the third, Percy, was described by Victor as an inventive genius. On leaving school Percy built a car, keeping it secret from his father who he knew would disapprove. By 1898 it was complete and Percy wondered how to demonstrate it. His older brother, Victor, suggested driving it to Stratford and back to demonstrate how much speedier this would be compared with bicycle. Percy and Victor did this and averaged 20 mph. Percy then installed an engine into a bicycle but neither of these convinced his father of the future of powered vehicles. William was even less impressed after he was persuaded to try a powered tricycle, lost a wheel and crashed into a sweet shop.

Against their father's wishes, three of the brothers pooled their resources, borrowed £39 from their mother and, in 1903, set up the Riley Engine Company. Initially they made engines for motor cycles.

By then William had converted his bicycle business into one making detachable spoked wheels for numerous other motor manufacturers and had been persuaded that there was a future in motor cars.

in 1906 the brothers built the first Riley 9. This was well received and over the next few years they went on to make a variety of models .

The First World War saw four of the brothers remaining in Coventry, directed to make war material, while the youngest, Cecil, joined up. The company made all sorts of munitions including aero engines and in 1916 they moved into larger premises at Foleshill.

Post war the brothers were all busy; Victor, the oldest, was running Riley (Coventry) Ltd at Foleshill; Alan was running the Midland Motor Body Co; Percy, the Riley Engine Co. Stanley was working with Percy designing chassis and bodies while Cecil, released from the RFC had various roles including the Competition Department.

By the mid 1920s Riley had built a reputation for quality and reliability. Twenty Riley cars took part in the 1925 London to Edinburgh Run; 18 finished winning 16 gold medals and two silver and, at a dinner for drivers and passengers to celebrate the success' it was decided to form a Riley Owners Club with William Riley as President.

In 1924 Percy and his brothers had designed and built a new Riley 9 but pressure of other work had caused it to lie in store until in 1926 when Victor took it to a rally in the Cheddar Gorge. There, it caused a sensation with so much interest that Victor wired his father, William, to call an urgent Board meeting. The Riley 9 was recognized as a great advance in light car design and orders came in such quantity that for a while there was a two year waiting list.

Parry Thomas was developing a racing model until his death while endeavouring to break the world speed record. Reid Railton took over and the Brooklands 9 model won race after race through the early 30s both at Brooklands and TT events, as well as in long distance rallies including the Alpine Rally and the Monte Carlo where, in 1931, they won the light car class.

Victor related a hairy story of one race at Brooklands when the driver became aware that the number plate on the front of the car had worked loose. Rather than pull in to the pits to fix it the mechanic crawled forward on the bonnet with the driver managing to hold the mechanic's ankle with one hand and keep the car racing with his other hand on the wheel. Number plate fixed, the mechanic scrambled back into the cockpit and the car kept its place in the race.

The marque's greatest success was in the 1934 Le Mans 24 hour event when six Rileys were entered, finishing 2nd, 3rd, 5th, 9th, 11th and 13th. The car finishing 13th was driven by our speaker's mother who had been ordered by the team manager not to overtake other members of the team. She believed, that if she had not obeyed, she could have done better.

Over the years 1928 to 1937 Riley were building about 100 Riley 9s per week and a typical price was £300.

In 1936 Rileys considered building BMW cars under licence. Victor visited the plant in Eisenach and was shown around but was puzzled when a section of the factory was kept from him. When he asked, he was told that they would need permission from Herr Hitler before they could take him in there. Realising the significance, he reported back that there would be war soon. How right he was.

However, financial difficulties in the late 30s made Riley accept Lord Nuffield's offer to acquire the Company on the condition that the design and production would stay with the family; Nuffield would be providing a 'financial umbrella.'

1939 saw the outbreak of war and Riley turned their attention to making precision parts for such as Rolls Royce Merlin engines.

They also designed a greatly improved propulsion unit for torpedoes which until then had been so slow that they could be easily evaded.

In the middle of the war Rileys were given permission to work on the design for a post war car which resulted in the elegant and highly successful 1½ and 2½ litre saloons which continued to be produced until 1955. By that time Austin and Morris had amalgamated.

The 1960s and the introduction of 'Badge engineering' destroyed Riley and towards the end of 1969 they ceased to be produced.

Victor had kept the audience enthralled throughout his talk and concluded by telling us about The Riley Cars Archive Heritage Trust which has a unit at the Coventry Canal Basin where they have on display one of the two Riley bicycles known to have survived as well as a replica of Percy Riley's 1898 car. It is staffed by a small group of volunteers and welcomes visitors from Tuesday to Saturday.

November 2023: Chris Clack
Harry Ferguson: Man of Vision.

Chris Clack, a long time employee of Massey Ferguson, kept us enthralled with his knowledge of this remarkable man and the revolutionary developments that he had instigated.

Harry Ferguson was born in 1884, one of eleven children from a farming family in County Down, Ulster. After leaving school he soon found that he did not enjoy manual work, particularly following horses and steering a plough and at 18 he joined his brother in a car repair business.

The first sign of his extraordinary practical genius was when, with his brother, and inspired by the new technology of powered flight, he designed and built the first aeroplane to be made in Ireland and in 1909 he became the first man in Ireland to achieve powered flight.

In 1911 Ferguson was in business selling cars and tractors and soon realised the advantage of mounting implements directly onto the tractor rather than towing them behind as trailers. He designed and put into production a plough, which he named the Eros, that could be mounted directly onto a Model T Ford car with an early form of three point linkage.

The principal disadvantage and cause of many accidents in towing rather than directly mounting a plough on to a tractor was that if the plough struck a substantial obstacle such as a rock or a root the tractor could rear up or even turn over backwards. Drivers had even been killed by this. A limited counter to this lay in extending the main mudguards back and down sufficient to prevent the tractor completely overturning.

Mounting the plough directly on to the tractor effectively prevented overturning as if the plough struck an obstacle compressive force was transferred to the top link and hence forcing the front wheels down while the back wheels would spin. The driver could then back off, lift the implement clear of the obstacle, move on and lower it to continue.

Another important advantage of directly mounted ploughs was that they could be worked right into the corners of fields, which was impossible with either horse drawn ploughs or trailed implements. This was particularly important in small fields which were the norm in much of Ireland and large parts of England. A further advantage was in improving traction by effectively increasing the weight of the tractor.

During the 20s and 30s Ferguson made further improvements to the system, notably ‘draught control’, a hydraulic arrangement which kept the plough at constant depth on uneven ground. In 1936 his company went into partnership with the David Brown Company to build tractors with these devices.

Harry Ferguson’s mission in life was to make farming more productive and to feed the world more effectively. As he said in 1943, “Agriculture should have been the first industry to be modernized, not the last.”

In 1938 he took a Ferguson Brown tractor to Dearborn and demonstrated his system to Henry Ford, the largest car maker in the world. Ford agreed to incorporate his ideas in his tractors and on the strength of a handshake they went into partnership. This lasted through the Second World War and until Henry Ford’s death. However, his grandson, Henry Ford II, ended the agreement in 1947 but continued to use some of the patented features. Ferguson sued the company and the case lasted for four years before it was settled out of court for nine million dollars.

In 1946 Sir John Black of the Standard Motor Company agreed with Ferguson to manufacture tractors at the shadow factory at Banner Lane on the outskirts of Coventry. Standard Motors had been making Bristol Hercules engines there for heavy bombers but with the end of the war the factory was redundant. The Standard Company began to produce the TE tractors, the iconic ‘little grey Fergies’. Two hundred were made in 1946 and 20,000 in 1947. 90% were for export, desperately needed to help pay for war time debts. In all, over half a million were made during the next ten years.

Harry Ferguson Ltd amalgamated with the Canadian firm, Massey Harris in 1953 to become Massey Harris Ferguson, later just Massey Ferguson and they took over the lease of Banner Lane in 1956. The factory continued to build tractors until 2002.

While most if not all of the WIAS audience probably knew that Harry Ferguson and tractors went together but many of us knew less of Ferguson’s connection with four wheel drive.

In the 1930s Freddie Dixon, a successful racer of mororcycles and cars, concerned by the number of accidents, designed a car with four wheel drive and four wheel steering but the war started before it could be properly developed.

Post war, in partnership with the racing driver Tony Rolt, as Dixon-Rolt Developments, they built a prototype. This car was the first to have seat belts and a collapsible steering column, it was ten years ahead of Saab or Volvo, but manufacturers were not interested.

To develop it further Dixon and Rolt approached Ferguson to see if he would invest in the project. Ferguson used part of his money from Ford to buy the company and renamed it Harry Ferguson Research Ltd. Various prototype road cars were built including two estate cars and a saloon but no manufacturers would take up the system.

The problem with four wheel drive was that besides a differential on the back axle and another between the front wheels a third one was needed between the back wheels and the front wheels.

This third unit needed to be normally unlocked except when wheelspin occurred when it needed to lock. The problem was ultimately solved by the development of a viscous coupling. This system, the Ferguson Formula, is now used on nearly all four wheel drive vehicles including Audi and Land Rover.

In 1959 work started on an experimental Grand Prix car, the P99, which was to have considerable success. Unfortunately, Harry Ferguson died before it was complete. It was suggested that the strain of the four year court case with Fords had damaged his health.

Harry’s son-in-law, Tony Sheldon, became the new Chairman with Tony Rolt continuing as Technical Director. In 1994 Ferguson Research Ltd was finally taken over by Ricardo Plc, based in Leamington.