WARWICKSHIRE
Industrial Archaeology Society

WIAS

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NEWSLETTER

FROM THE CHAIRMAN

Perhaps the greatest strength of Warwickshire Industrial Archaeology Society has been the loyalty of its membership, with a high turn-out at every meeting. There are some who have been members since the formation of the Society in 1989, and it is sad to start this Newsletter with some words about one such member who has passed away recently.

Peter Chater's interest in industrial history pre-dated the formation of WIAS, but he fully embraced the Society and remained an enthusiastic supporter over the past 28 years. After a working career on the railways, he developed an unrivalled knowledge of local industrial and transport history, always seeming able to add additional information to any topic under discussion. Woe betide any visiting speaker who did not have a firm grasp of his material – Peter would have no hesitation in putting him right! He was still passing on interesting photographs and comments to me via e-mail right up to his final days.

Over the years, he delivered many talks on a variety of topics, and led several walks for WIAS members, all part of the process of passing on his knowledge to others. He shared his passions with a close group of friends with whom he embarked on many an exploratory trip to sites near and far, building a wonderful collection of slides and other material.

Peter was also a member of other local history groups, and his knowledge and enthusiasm will be sorely missed by all. Our condolences go to his family.

Data protection

Victor Lobb, our treasurer, has taken on the onerous task of investigating the issue of data protection, and – with the aid of a subgroup – to formulate WIAS's response to the issues involved in view of changes in legislation. The Society is indeed fortunate to have someone willing to take on this task, and for the extremely effective way in which he has articulated our response. He writes:

Our committee felt it would be helpful to let all Society members have a summary of a presentation made to our meeting on 10th May 2018. This reported on the conclusions of the committee subgroup that has been considering the application of the new Data Protection Act 2018 to WIAS. Thanks are due to our other subgroup members, Peter Coulls, Sue Hammon and Peter Riley for their contribution to our analysis and conclusions.

The new Act replaces the Data Protection Act 1998 and 'enacts' the General Data Protection Regulation EU 2016/679 into UK law. It increases the rights of individuals over their personal data, which is deemed to be 'any information that identifies a living individual', such as name, home address, telephone number, or email address.

Many of us have been 'bombarded' with letters and perhaps emails from organisations informing us of their approach to the requirements of the Act, and, in some cases (necessarily or unnecessarily) requesting our consent to receive further communications from them. There are, however, six lawful bases for processing personal data, three of which are relevant to the Society.

In common with similar membership organisations such as the National Trust, the Society and its members have mutually beneficial interests. These are reflected in the 'aims' of the Society that were approved by HMRC when they recognised us as a 'charity for tax purposes'.

As members of the Society we reasonably expect to receive information on the Society's activities: the lawful basis for this is legitimate interest.

The society has a legal obligation to retain the details of Gift Aid donations for six years.

In addition, a member may wish to contact another member and asks the Society for their contact details. This is not part of the direct relationship that each member has with the Society and so requires the individual consent of the member whose details are sought. We shall invite members to express this consent as part of the subscription renewal process in September.

The safeguarding of personal data is essential. The Society does not:

- Use members' personal data for any commercial purpose;
- Hold any sensitive personal data, such as health records or ethnicity.
- Hold any data on children;
- Publish members' personal data, for example, in a membership list.
- Store or process personal data outside the EU;
- Pass personal data to any other person or organisation (unless the member consents or the Society is required by law to do so);
- Carry out any 'automated decision making' using personal data; or
- Retain the personal data of former members of the Society.

Every organisation that holds personal data must publish a privacy statement. This will be provided to members at our June meeting and sent to those not present. We have kept this as simple as possible, while meeting the requirements of the Act and following the guidelines from the Information Commissioner's Office.

Our committee considers that this approach demonstrates our compliance with the Act.

AIA Conference

The Association for Industrial Archaeology holds an annual conference and this year- as well as supporting the conference in Caithness run by the Scottish Industrial Heritage Society (Friday 22nd June – Wednesday 27th June 2018) - the AIA conference will be held in Nottingham from Friday 31st August to Wednesday 5th August 2018. This is a change to original intentions, and being relatively close geographically makes an ideal opportunity to taste AIA Conferences for the first time. There are lectures and a series of visits to local sites, often with greater access than normally permitted to the general public. Sites include Papplewick and Abbey Pumping Stations, Bestwood Colliery and Clipstone Colliery Winders, the river port of Newark-on-Trent, the Bennerley viaduct, Taylor's Bell Foundry, and Ruddington Framework Knitters Museum. Full details can be found on the AIA website.

Meeting Reports

January 2018 Members' Evening:

A last-minute cancellation, sadly due to a bereavement, by the scheduled speaker whilst giving the Chairman a busy few hours, produced a programme that demonstrated the range of interests of our membership.

Roger Cragg opened with a follow up to last month's talk on canal reservoirs with two examples of dam catastrophes in Europe. Construction of the dam at Malpasset near Fréjus in the South of France was begun in 1952 and completed in 1954. In the autumn of 1959 particularly heavy rain had filled the reservoir close to the top of the dam. The dam supervisor was concerned and wanted to open the relieving sluices but was overruled because construction work on the nearby A8 autoroute might be affected by the consequent flooding.

In the late evening of 2 December 1959 the dam collapsed and 423 people died in the resulting flood. The entire dam wall collapsed with only a few blocks remaining on the right bank. Pieces of the dam are still scattered throughout the area.

The breach created a massive wall of water, 40 metres high and moving at 70 kilometres per hour, which destroyed two small villages, the highway construction site, and reaching Fréjus. Various small roads and railroad tracks were also destroyed, water flooding the western half of Fréjus and finally reaching the sea causing $68 million of damage apart from the loss of life.

The cause of the failure remains unclear, but a tectonic fault is possibly the most likely. Roger had visited the sight in 1973 and his photographs coupled with others and google earth views gave a clear impression of the extant damage. Roger had also visited the site of his second example, the Vajont dam North of Venice.

One of the tallest dams in the world at 262 metres but only 191 metres wide at the top it spectacularly blocks a narrow cleft in the river gorge. It had been proposed in the 1920s but was not built until 1960.

On 9 October 1963, a massive landslide from Monte Toc caused a tsunami in the lake in which 50 million cubic metres of water overtopped the dam in a wave 250 metres high, leading to the complete destruction of several villages and towns, and 1,910 deaths. Evidence had been dismissed and reports concealed regarding the geological instability of Monte Toc and other early warning signs had been reported and ignored prior to the disaster. The dam, which is now open to visitors, remains almost intact and there is still evidence of the impact crater 60 metres deep below the dam. However, there are no plans to bring it back into service.

Martin Green took the opportunity to discuss possible ways forward for the Society. The database of Warwickshire Industrial Archaeological sites is largely complete, although new entries will always be welcome. However, Coventry is under-represented and possibly the opportunities presented by its being the City of Culture in 2021 could be exploited. Was there a role for WIAS?

Elsewhere, a detour off the M40 led him to the derelict site of Fenny Compton Buildings. Between 1958 and 2011 this company produced concrete garages and had sold 500,000 by 2008 but little is known about its manufacturing processes, markets or products giving scope for further research. The site is notionally closed, but not to an intrepid industrial archaeologist with a camera.

A presentation to a U3A audience on the industrial architecture of Warwick resulted in a discussion on the significance of architecture in industrial archaeology. Were aesthetics or functionality important? And where might they rank amongst other criteria? An interesting question. And as always with Martin's presentations, superbly illustrated with examples from around the country.

Peter Bolton recounted some holiday ramblings in Ulster last summer in the 'bandit' country of Fermanagh and South Tyrone. Whilst needing to be circumspect in sensitive areas there was mostly a warm welcome for the traveller with easy parking and open hospitality.

However, there was a purpose to the rambling; to seek out evidence for a lost textile industry. Linen had long been Ulster's main product. The 1891 census showed Belfast as larger than Dublin but by 2009 the linen industry was no more although today there is a slight revival of specialised luxury material.

Caledon is a small village County Tyrone. Today it has a population of some 300 compared with 1,000 in former times when it was home to a thriving mill; but of wool not linen following its conversion from a flour mill.

The mill closed in the 1930s but the mill buildings remained and were utilised by the army during WW2 but then deteriorated until demolished in the 1980s. However, a few mill workers' houses and a small weighbridge hut of some architectural merit remain.

Moving on, a visit to Ballygawley, also in County Tyrone, to find evidence of a linen mill was hampered by lingering memories of recent troubles which restricted photography. Nonetheless, the old mill was recorded but no information as to its present use was available other than that it might be being used as a government flour store.

Tim Clark concluded the evening with an update on his researches into the 18thC worsted mill on Saltisford in Warwick (see Newsletter 59). He is currently investigating the impact of the arrival of this substantial enterprise on the town. If the mill did employ some 500 people, then it would have been the town's dominant employer.

One possible source of information would be the baptismal records of St Mary's, where the father's occupation is given after 1813. Searching the records by possible occupation might give some clues. However, although a preliminary survey has shown several woolcombers, surprisingly no other related trades have been found such as stovers (who bleached the yarn) or firemen/boilermen to run the steam engine.

Another source could be the poor rate assessment books. They show a significant increase in ratepayers between 1805 and 1811 which points to immigration into the parish. Possibly, these incomers were reasonably well paid but some were falling in and out of assessment. However, the mill had been operating, seemingly successfully, since 1796 so the delay of 8 years needs some explanation. Was the mill not as successful as quickly as thought? One complication is that the increase of commercial activity on the canal could also be a cause of migration; there is evidence for coal dealers, sawyers and other tradesmen moving to Saltisford at this time.

Nonetheless, the mill clearly had a substantial impact on Warwick. After 1815 the mill was in steep decline and poverty in the town was appalling with half of the population receiving soup provided by the parish. Clearly a work in progress of great local interest.

February 2018: Peter Stanworth:
Military Head Protection.

Peter Stanworth combined a career as a prominent neurosurgeon with a long-standing involvement with the territorial army. In the latter role he has seen service in many recent conflicts, notably in Afghanistan, Iraq, Kuwait and Kosavo. He pioneered life-saving operations under battlefield conditions, receiving the OBE for the development of neurosurgery in the armed forces..

80% of head injury mortality on the battlefield divides equally between penetrating injuries and haemorrhage. However, in comparison with the diffused brain damage caused by, for example, head impact on a windscreen in a car crash, the more local damage from a penetrating wound has a greater chance of being successfully treated.

The study of wound ballistics shows that energy transfer is the key factor. As a missile passes through tissue it transfers its energy to a variable degree depending on its state. A bullet does not follow a straight flight, it can yaw, it can precess and it can combine both in nutation. As a result wounds can be much more severe than they would be if the bullet flew straight.

High-speed photography of test firings into a gelatine block showed how a tumbling bullet created massive damage, and left the block travelling backwards. Similar findings had been achieved some time previously by test firing into a clay block and taking plaster casts of the resulting cavities.

Such wounds, caused by the cavitation creating a large volume of dead tissue, are usually badly contaminated, become infected and lead to gangrene if not treated promptly. Some real-life photographs were not for the faint-hearted.

Having outlined the problem, Peter moved to a discussion of the solutions for providing adequate head protection for the soldier on the battlefield.

Prior to WW1 no thought had been given to the matter but static trench warfare with air-burst shrapnel shells soon showed up the limitations of the cloth, felt or leather headgear worn by infantrymen at the outbreak of the war. No protection whatsoever was offered against the new weapons then introduced. A photograph of an air-burst shrapnel shell over the trenches graphically illustrated the problem.

An early answer, in 1915, was a French produced simple domed metal skull cap to be worn under a cloth cap. Not very comfortable and providing little protection. It was soon replaced by the Adrian helmet which was patterned on the French fireman's helmet. However, this was much more complicated to manufacture, involving some 70 separate processes.

By the summer of 1915 there was considerable disquiet in the British Parliament. In July Members noted that the value of these French *'Callottes Metalliques'* had been considerable. By November it was the importance to the troops of not being in possession of steel helmets – no French soldier was without one. Happily, by June 1916 the supply of steel helmets had very nearly reached the number asked for within the zone of shellfire in France.

This first helmet, the Brodie Mk 1 with its familiar shallow domed crown and wide all-round brim formed in a single pressing was designed to protect the wearer against shrapnel bursts above the trenches. It was popularly called a 'tin hat' or a 'battle bowler'.

The Type A helmet was made from mild steel and had a leather liner and single chin strap. It was not particularly comfortable to wear and with only single strap not very stable. Mild steel was used in preference as a hardened steel had a tendency to shatter when impacted causing more serious injury.

The later Type B helmet used 'Hadfield' steel, a manganese alloy developed in Sheffield (during later questions it emerged that this alloy had been used for railway lines to counteract excessive wear on curved tracks). It had work-hardening properties that enabled it to better absorb impacts from bullets or shrapnel. The helmet weighed 0.6 Kg and had an improved and more comfortable liner. It was first delivered with a shiny steel finish which was quickly changed to the familiar dull khaki!

WW2 saw little change. The Hadfield helmet continued in service, it was slightly modified in 1940 with the Mk ll version which enjoyed an improved liner and an elasticated chinstrap. It was in use throughout the war. However, in 1944 the Mk lll 'Turtle Helmet' was introduced. Developed after an Medical Research Council study, it was deeper and provided some 38% more protection, particularly at the side of the head. These helmets were fitted with a permanent net to hold camouflage materials. A photograph of a prone rifleman outside Caen in 1944 showed the head protection it offered without interfering with the handling of the rifle.

By the mid-1950s the limitations of these designs were becoming clear. Their weight to protection ratio was poor, they were uncomfortable and unstable (single chinstrap) and they were incompatible with the other equipment that was increasingly being used – head-phones, respirators and ear defenders.

These new requirements were met with the Mk Vl Helmet. This was designed to fit closely to a human head. It gave the best ballistic protection within the specified weight limit (1.15kg) thanks to the concept of energy transfer and reduction and its construction from 22 layers of ballistic nylon. It improved impact protection (closed head injury) because the force was distributed over the whole area of the head through an improved liner. It accommodated ear protection, earphones and respirators and was more stable and comfortable in use thanks to a 3-point chin-strap/harness. It also featured a permanent camouflage covering. This helmet was initially manufactured by Courtaulds in Coventry and cost £60. It was later made by British Aerospace.

The next major change came in 2009 with a new composite material, Kevlar, replacing nylon. Few details have been released but protection against impact penetration has been improved and weight has been reduced. The new helmet is manufactured by Morgan Advanced Materials in Coventry. Whilst Peter could photograph the premises the only technical information available is on their website, and that gives little away. However, photographic evidence from a training exercise involving a grenade explosion showed the protective properties of the helmet which enabled the soldier to survive the accident relatively uninjured.

Members were able to examine Peter's MkVla combat helmet and to compare it with a captured Iraqi one leaving little doubt as to which one was preferable.

As always, the post-talk discussion produced additional information, one has been referred to above but another tantalising one was the existence of a wartime factory in Leamington making helmets. Location and details are unknown, but any information will be gratefully received and publicised.

March 2018 Tony Boughton:
The Stench of Victorian Indecision.

Tony Boughton is an engineer who took an MA degree subsequent to his retirement and he took a forensic approach to his subject, which formed part of his degree course.

Victorian engineers, both civil and mechanical, faced many issues due to the explosive growth of urban populations arising from the industrial revolution. Not the least was the stench and health problems that resulted from a 'flush and forget' attitude to sewage disposal. 'Not our problem' was the watchword.

Whilst most in the audience were familiar with the process of urbanisation, a series of graphs emphasised its scale and speed; England and Wales quadrupled city populations between 1801 and 1911 with some cities growing at a far greater rate. Contemporary illustrations and cartoons were used in the presentation to good effect.

Living conditions were terrible and marked by disease. Deaths from cholera peaked in 1848/9. Physicians from London and Bristol, Drs John Snow and William Budd, identified the probable sources of the outbreaks, which ran contrary to the popular 'miasma' theory of disease transmission. On Snow's advice the handle from a public pump in Soho was removed and cases of cholera quickly subsided.

A cartoon depicting a drop of London water (Punch in 1850) was particularly memorable as was the quote from chemist's letter to the Times in 1828 *'The Thames water which is conveyed into my premises has never been in a state fit for domestic purposes. Even during the cold season, it abounds with animalculae and in the summer months it is often intolerable; so full of insects, and emitting such a foetid smell, as to render it totally unfit for any human necessity.'*.

Against this background Tony examined the response of the civil authorities to the problem. At first, the eight independent London districts appointed their own officers (Commissioners of Sewers), but there was no uniformity of systems and each Commission carried out its work often with disregard for neighbouring districts.

The situation was improved somewhat in 1847 with the creation of the Metropolitan Commissioners of Sewers (MCS). Members were nominated by the Government but had different views with no consensus. At this time all London's house and street refuse was discharged into the Thames, and with similar systems being adopted in provincial towns widespread river pollution was becoming a serious issue. However, the MCS had many changes of membership and there was minimal progress in carrying out works of any magnitude.

In 1856 the Metropolitan Board of Works was formed incorporating the work of the MCS. It was the first example of a scheme of local self-government. London was divided into 39 districts, the ratepayers elected members to form the board which had control over drainage, paving, lighting and other improvements.

There are three key players in the history of London's sewers; Edwin Chadwick, Sir Robert Rawlinson and Sir Joseph Bazalgette. Chadwick produced an important report on sanitary conditions and favoured fast flowing pipe-based sewers. Rawlinson's experiences in the Crimean War, where he had substantially reduced fatalities, wanted pipe and brick sewers, whilst Bazalgette disliked pipes. He was supported in this view by the failure of a pipe-based system in Croyden in 1852 (fractures in unsound ground).

Punch, as always, had some hard-hitting cartoons which usually featured a foul-looking Father Thames. Such comments probably encouraged wider government interference. Palmerston's Liberal government of 1855/8 was criticised for its slowness whilst its Conservative successor eventually gave the Metropolitan Board of Works (MBW) independence and a brief to get on and sort out London's problems. The 'Great Stink' of 1858 was probably the last straw that precipitated action and work commenced on the main drainage system in 1859.

The description of the development of London's intercepting sewerage system was well illustrated by material culled from contemporary sources. The scale of the undertaking was enormous and well shown by the site plan of the pumping station, outfall and sewage reservoir at Crossness together with a photograph of the reservoir interior wherein a group of top-hatted Victorian worthies were dwarfed by their surroundings.

Whilst we have plenty of information on the contractors involved in the building of the contemporary railway network similar information is sadly lacking for London's sewage system. We do know that the contractors reported to Bazalgette and that there was a Royal Commission in1888 to investigate 'favouritism' but other knowledge is absent.

The Prince of Wales turned on the steam engines at Crossness in April 1865 and Punch praised the return of 'Father Thames' to good health. We are fortunate that some of these temples to Victorian engineering have survived and indeed, as at Crossness, been restored to their former glory.

For the next part of his presentation Tony turned to events in Warwickshire and Warwick and Leamington in particular. We have had other presentations on the local water supply (see Newsletters 40 and 54) but this was the first examination of the disposal issues. And pretty complex they were!

We do not know what Queen Victoria thought of the town on her visit in 1838 but she was sufficiently impressed to authorise its designation as a 'Royal Spa'. However, it was not until 20 years later that an improvement and sewerage plan was prepared by the town surveyor. The work included widening, straightening and deepening the Leam, moving the weir and altering the island and adding embankments, promenades and parks. The works for the sewage plan required intercepting sewers and a new sewage works.

All this required considerable investment. Lord Warwick offered loans and land but required certification by an inspector from the General Board of Health in London. The river improvements and the new sewage works were opened in June 1862 and Robert Rawlinson was appointed to carry out the inspection. A lengthy legal process ensued and one which could have been written by Dickens so tangled did it become. Eventually a settlement was reached, strangely not disadvantageous to Lord Warwick.

Tony concluded with a review of the ongoing demands for better works in London and the other industrial conurbations and various technical innovations. Notable amongst these was Isaac Shone's pneumatic sewage ejector used in the Houses of Parliament and elsewhere. The Lancet in 1887 commended the system but pertinently commented *"Our legislators have shown themselves alive to the importance of 'passing it on.' Let us hope they will turn their attention to the recipients of it and take unhappy Barking and poor Father Thames into their kindly consideration."*.

The Victorian engineers met many of the challenges presented to them but the legislative and planning considerations were no less onerous then as now and often delayed progress. That the practice of dumping London's excess waste into the North Sea by 'sludge boats' continued until 1998 shows that old habits can die hard.