

INDUSTRIAL ARCHAEOLOGY NEWS

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INDUSTRIAL ARCHAEOLOGY NEWS 188 Spring 2019

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Barn Cottage, Bridge Street, Bridgnorth,
Shropshire WV15 6AF. 01746 765159

Liaison Officer

David de Haan, AIA Liaison Office, The Ironbridge Institute,
Ironbridge Gorge Museum, Coalbrookdale, Telford TF8 7DX.
Tel: 01952 416026.

E-mail: secretary@industrial-archaeology.org

Website: www.industrial-archaeology.org

COVER PICTURE

An overhead view of the Wheel Wreck cargo mound on the seabed off the Scilly Islands – see page 3. The large wheel-rim just showing at the bottom is 3.08m across.

Two successes for Swindon



Swindon – the new Heritage Action Zone

Swindon Railway Village has been selected as one of Historic England's special Heritage Action Zones. The Heritage Action Zone will help to regenerate neglected buildings and enhance visitor attractions and other public amenities in order to draw in residents and visitors. The detailed plan for the HAZ will be worked up by spring 2019 and will confirm the resources, including any grant-funding, to be provided by Historic England.

The scheme is being led by Swindon Borough Council and will help Swindon's historic railway area to be a thriving and connected central hub for the town.

There are already 18 Heritage Action Zones in villages, towns and cities across England. In these places, Historic England is working with local people and partners to unlock their potential and to make them more attractive to residents, businesses, tourists and investors.

Ross Simmonds, Planning Director for Historic

England in the South West, said: "Swindon has so much to be proud of, particularly its world-class railway heritage. Some of its historic buildings are still to find a new use, while some are showing signs of neglect. But with a little investment and imagination, they can become assets for the people to enjoy and for the local economy."

Civic Voice had already declared Swindon Railway Village Conservation Area as the nation's Favourite Conservation Area at an awards event on 20 October.

Laura Sandys, Vice-president of Civic Voice said: "Swindon Railway village was built shortly after the Great Western Railway works established in 1841 to house the workers and their families. Those people didn't just build a railway, but a community."

Other areas with important industrial history that made the short list include Port Sunlight, – Elsecar – Kasbah, Grimsby – Chester Canal docks and Wolverton, Milton Keynes

Crossness Pumping Station Has Been Saved

The Crossness Engines Trust issued the following statement:

'In 2017 asbestos was found in the Beam Engine House. We had to completely close the building to all volunteers and visitors until the problem could be resolved. We are more than happy to say that we have raised £478,000 to cover the total cost of the work with amazing success thanks to the generosity of our wonderful supporters.

The generosity of all who have donated is astounding. We will never be able to thank you enough. We also want to thank Thames Water and Cory Riverside Energy for their generous support plus the invaluable advice and guidance given by Historic England and the London Borough of Bexley.

Our aim is to be open by March 2019 to celebrate the 200th anniversary of the birthday of Sir Joseph Bazalgette, with Prince Consort in steam.'

A very warm Welcome to our New Members

Dr DG Bell, Trevarrick, St Austell

Nigel Williams, Newbury.

Caroline Derry of London

Richard Lewis of Abergavenny.

Kevin Coffee, Massachusetts, USA

R V Pomeroy, South Croydon, Surrey.

And an apology

The Editor apologises for failing to acknowledge the authors of the reports on the site visits undertaken during the Nottingham conference.

Many thanks to Terry Evans, Cherry McAskill, Peter Stanier, Mike Constable and Martin Buckland for their reporting of this excellent programme of visits and, of course, thanks to all our guides for their erudition and the welcome we received everywhere.

The Wheel Wreck

The waters around the Isles of Scilly contain a formidable number of historic shipwrecks, including five protected wreck sites. One of the most intriguing and enigmatic of these is the *Wheel Wreck*, a collection of corroded iron machinery lying in an orderly pile on the seabed in 16m of water, to the south of the uninhabited island of Little Ganinick in Crow Sound.

Kevin Camidge

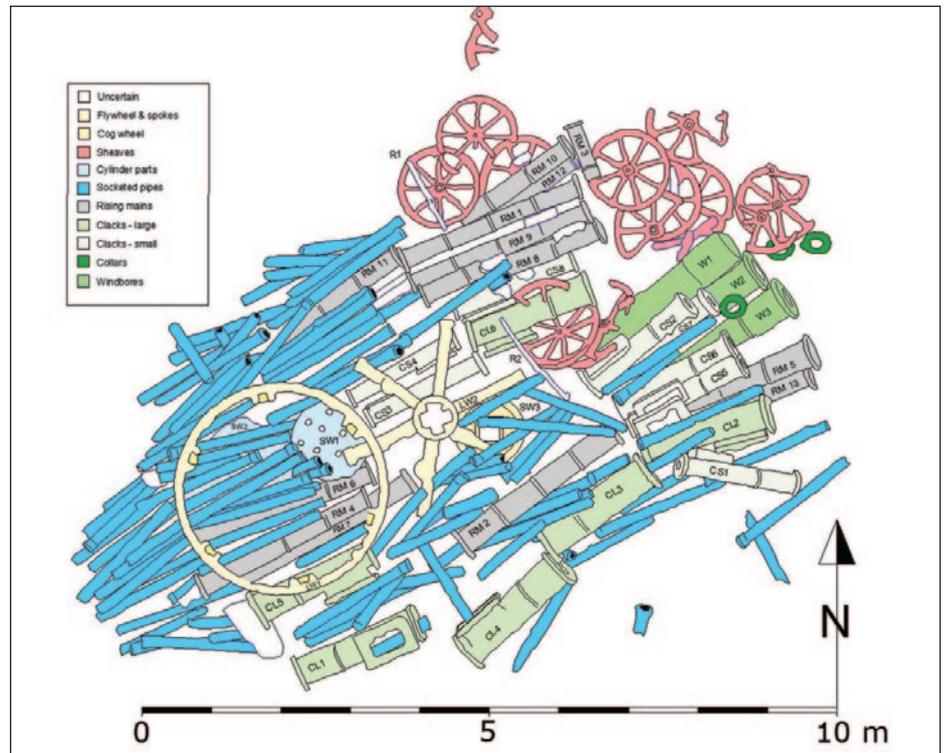
The site was found by local divers in 2005 and investigated by archaeologists the following year. It comprises three distinct areas of wreckage: the main cargo mound which consists of an orderly stack of pipes and wheels (after which the site was named), a scatter of iron cylinder fragments situated about 11m to the north-west of the cargo mound, and part of a nineteenth century iron anchor lying about 60m to the south-west of the cargo mound. Originally it was thought that the cargo comprised mine pumping machinery probably manufactured by a Cornish foundry in the middle of the nineteenth century. This date was based mainly on the identification of a quantity of socketed pipes as replacement 'boiler tubes'. No obvious remains of the ship were located and the identity of the wreck remains a mystery. The site was designated as a protected wreck in 2006 – and there the matter rested until a photographic survey of the site was undertaken by the Cornwall and Isles of Scilly Maritime Archaeology Society (CISMAS) in 2017.

It was noticed that the socketed pipes (boiler tubes) appeared to be made of cast iron. These socketed pipes have now been analysed and found to be made of white cast iron, and are therefore unlikely to be boiler tubes. They appear, in fact, to be interlocking cast iron water pipes – probably used for transport of water at low pressure. Therefore the post-1850 date previously assigned to the site is no longer valid. A small amount of pottery and glass recovered from the site indicates a date of manufacture somewhere between 1770 and 1820. Furthermore, several of the glass bottles were probably manufactured in the late eighteenth century.

The re-dating of the site raises questions of the cargo's origin. It now seems less likely that the *Wheel Wreck* cargo was the product of a Cornish foundry. In the nineteenth century, Cornish foundries were pre-eminent in the production of mine steam engines. In the eighteenth century,



One of the 14 clack pieces lying in the cargo mound. It is 1.87m (6ft) long.



A plan of the *Wheel Wreck* cargo mound, differentially coloured to illustrate the different types of machinery.

however, production of the more complex parts, notably the casting and boring of the steam cylinders, took place outside Cornwall.

The cargo mound consists of an orderly stack of tightly packed corroded cast iron pipes and wheels. It is sub-rectangular in shape and some 12m long by 7m wide. The pile of material is for the most part somewhat less than 1m deep. In total, 155 separate items have been recorded including: at least 100 socketed iron pipes, 14 clack pieces, 13 flanged rising mains, 12 iron sheave wheels, 3 windbores, two toothed gear wheels and a possible piston and cylinder head. There are further iron objects partly hidden beneath the visible elements of the cargo mound.

Detailed study of the cargo items has raised more questions than it has answered. The previous perception of the cargo as consisting of mine pumping equipment as used in Cornish mines in the eighteenth and nineteenth centuries is largely valid. However, the cargo does not seem to represent a coherent set of mine pumping equipment, but rather a collection of equipment relevant to water movement. In particular, the survey of the cargo items undertaken this year has demonstrated that the cargo cannot be a complete set of pumping equipment. Mine pumping gear was arranged in stages or lifts of 20 to 30 fathoms per lift. This means that each lift would consist of one windbore, two clack pieces (in bucket pump systems one of the clacks would be a pump inspection cover) and 13 to 20 sections of rising main. The cargo mound contains three windbores (sufficient for three lifts), 13 rising mains (only enough for one 20 fathom lift) and 14 clack pieces (enough for seven lifts).

An unusual feature of the pitwork contained in the cargo mound is the lack of fillets between the flanges and the bodies of the rising mains and clack pieces. The junction of the flange and pipe body was

a weak point and apparently subject to cracking – and the fillets were a means of combating this.

It has not been possible to identify the vessel which carried this cargo. However, we have estimated the hold size, beam and tonnage of the vessel from the disposition and quantity of the cargo. From this we were able to conclude that the vessel was at least 18 feet (5.5m) in beam and likely to have been between 70 and 100 tons in capacity. Very little has remained of the vessel itself. The assumption is that the hull was wood and has decayed. That said, the scarcity of metal remains is somewhat puzzling; in particular, the anchors and iron fastenings should have been evident. The survival of lead scuppers does, however, suggest that parts of the hull decayed in situ rather than floating away. The most likely explanation is that parts of the vessel were salvaged shortly after the loss. Salvage activity on site could also account for the displacement of the iron cylinder fragments to the north of the cargo mound.

Our understanding of the items comprising the cargo mound has been improved by the current project. We now have some idea of 'what' and 'how many'. Sadly, we now think this was not the product of a Cornish foundry and its origin could be any one of the small number of British foundries capable of casting and boring the cylinder at this time. What is required now is the identification of the vessel concerned, which will allow us to establish origin and destination of this unique cargo. This will only be possible with a great deal more documentary research. We now need to know more exactly 'when'. Gathering of further dating material may allow us to refine the date further, which would narrow down the range of documents which have to be searched.

More detailed information as well as interactive 3D models of the site can be viewed at: vdt.cismas.org.uk/trails/the-wheel-wreck/

Pumping Stations in Danger



Longwater Pumping Station, Northumberland Park

photo R Carr

Besides the nationally known pumping stations such as Crossness and Papplewick, there are numerous lesser known buildings throughout Britain which housed the equipment to supply the precious drinking water or helped dispose of the sewage that rightly concerned our Victorian forebears. Although they are often fine structures built to express civic pride, many of them are now in a very perilous condition and unlikely to survive much longer. Two examples which cause concern are at Whitley which supplied water to Coventry and the Longwater pumping station at Northumberland Park in London.

Robert Carr

Built in 1893, the pumping station at Whitley, about two miles southeast of Coventry at SP 356 767, was designed by the eminent waterworks engineer and architect Thomas Hawksley (1807-1893). The pumping station here is very similar to his Dalton Pumping Station, Sunderland, 1873 – 79. There were only a few differences concerning the boiler house, the external render and the design of the interior. Hawksley was influenced by John Ruskin and the architecture at both Whitley and Dalton is in the gothic revival style. The Whitley engine house is locally listed grade II.

Originally this building accommodated two massive simple-expansion beam engines which pumped water from the nearby river Sowe to a reservoir which supplied the City of Coventry. Coventry Corporation commissioned Whitley pumping station in 1893 and the City's coat of arms are displayed above the main entrance to the building. Whitley pumping station was reconstructed and electrified in the 1930s so the steam engines here could have been scrapped long ago – say by 1940? Between 1912 and 1923 two subsidiary buildings were added to the north and south of the beam engine house. These might have served to accommodate road vehicles.

Hawksley's pumping station at Dalton, NZ 410 469, is nationally listed, so it is likely that the

steam engines here still exist. From photographs on the Internet these are or were truly monumental. Paraphrasing Historic England, they were 72 inch single-acting non-rotative beam engines by Davy Bros, 1879, with a heavy Corinthian entablature on moulded square-section tapering cast-iron columns. There was a mezzanine at cylinder-head level. At Dalton there was also a period gantry crane, and steps leading down to the borehole. To the rear, half-glazed



Whitley Pumping Station Coventry

photo R Carr

doors at each floor led from a stair flight round the chimney. The boiler house had a wrought-iron truss roof with elaborate iron spacing brackets. The boilers at Dalton have been removed.

To return to Whitley – at the entrance to the site from the London Road there is a lodge house

which, like the main pumping station building, is in the gothic revival style in red brick and stone. This lodge was locally listed grade II, in 1993.

There was a scheme to redevelop Whitley pumping station as the centrepiece of an apartment complex; plans were submitted in 2007 but the rebuilding never took place and the development appears to have lapsed. Currently, the site lies abandoned in a ruinous state and some of the original buildings have been demolished. The boiler house, which was on the east side of the engine house, has been demolished and only part of the wall attached to the engine house survives – see photograph. A period photograph shows that there was an elaborate tall chimney of square cross-section on the north side of the engine house. The entrance lodge by the London Road has been extensively damaged by fire.

There has been a pumping station on this site at Whitley since 1846 but no trace of the original buildings exist.

The Longwater pumping station at Northumberland Park in London, TQ 350 908, is in a perilous situation. The whole of the pumping station grounds have been converted into a hardstanding for Go Ahead buses and they are now packed closely around the building. From ground level it is quite difficult even to see the building as the attached photograph taken in August 2017 demonstrates.

See the article by Mark Sissons in *IA News* 182, page 23.

Longwater was commissioned by the Tottenham Local Board of Health about 1886 to supply clean drinking water and it was in use by 1892. The pumping station obtained water from two boreholes, 198 and 250 feet deep. Tottenham became an urban district in 1894.

When built, the pumping station had a tranquil location not far from the River Lea and this situation persisted for many years. There was a railway station close by to the northwest called The Park. This was officially renamed Northumberland Park in 1923. The pumping station used to be known as The Park and another name was Longwater pumping station. It is also sometimes called Marsh Lane pumping station.

It has a lofty and roomy engine house aligned roughly north-east to south-west. The relatively modest boiler house is at right angles to this, attached at the southern end and protruding to the southeast. The chimney now demolished was linked to the boiler house by a flue. It was built at the south-east corner of the pumping station complex. There was a workshop and stores and a cottage for the use of the engine driver.

The pumping engines consisted of two 75 hp compound horizontal surface condensing engines

by Ward Bros of Sowerby Bridge. Cylinders were 16" x 26" with a stroke of 3 feet. Working at 13 strokes per minute, the total pumping capacity was 648,000 gallons over 24 hours. Steam was supplied from two Lancashire boilers by J & B Umpleby of Cleckheaton.

Why was the engine house quite so big? It dwarfs the diminutive boiler house and is taller than is necessary to house two horizontal steam engines. It is likely that the wells or boreholes supplying the drinking water came to the surface within this building, the height being necessary for the removal and maintenance of the pump rods indoors. Carrying out this work inside a building was considered important to reduce the risk of contaminating the drinking water. There were other pumping stations which had a tower built over the well or borehole so that the pump rods could be handled this way – in hygienic conditions. The pumping station at Wanstead, circa 1903 at TQ 415 882, had this arrangement – and the architecture here is astonishingly good. It is hoped to see a general arrangement plan of Longwater pumping station with an elevation which should make things clear.

However the above remark, about the unnecessarily grandiose engine house at Northumberland Park is made from an early

twenty-first century perspective and it is quite clear that late Victorians did not think in the way that we do now. Their magnificent pumping stations were not built with utility in mind. Abundant examples of this are provided by many of the pumping stations designed by Sir John Hawkshaw.

Addington Well pumping station TQ 371 628 built in 1888 was three stories high but to be fair – this had beam engines. A very striking late example was, however, Waddon pumping station, Croydon TQ 313 639, built in 1910. This was also three stories high even though it only accommodated horizontal steam engines; so unlikely was the architecture that some visitors remarked that it resembled a prosperous girls' school. It closed in 1983 and was subsequently demolished.

Pumping stations to provide pure drinking water were a matter of civic pride and almost no expense was spared to make them magnificent. Longwater pumping station built in an attractive rural location was intended to be attractive & impressive and until recently it probably was.

Many thanks are due to Bryce Caller and the London Museum of Water and Steam for information used in preparing this article.

A heavy anti-aircraft artillery battery

Recent email discussion amongst AIA members about the origins of some recently discovered concrete blocks, mistakenly suggested as being foundation blocks of an anti-aircraft artillery position reminded me of a survey I had undertaken in 2002 of such a site.

Bruce Hedge

The village of Wanborough is some five miles from the centre of Swindon, and during World War II Swindon was protected by five heavy AA artillery batteries and a number of smaller light batteries. These were to protect the aircraft manufacturing plants at South Marston and Sevenhampton, also Watchfield and Wroughton airfields, and the Great Western Railway works.

Wanborough, the former Roman town of Durocornovium, sits astride the Ermin Way that once connected the Roman towns of Cirencester and Silchester, south of Reading, and is still today a thoroughfare. The battery in question sat on pasture land to the east of the road, SU 2062 8425.

The site comprised four gun emplacements, three substantially complete and one partly demolished. At the time of the survey dumping of soil around the site was taking place in order to make a slurry pit. The site was likely to be lost in the coming months.

Each emplacement was built of concrete blocks to an octagonal plan with ammunition lockers, open to the interior around seven sides. Two rectangular shelters extended beyond these lockers, each with embrasures in two of the three external



Wanborough AA Battery

walls. The eighth side of the octagon is open, facing the centre of the complex and the command post. There was a holdfast, a mounting for the gun, on a concrete base within each emplacement. The command post was flooded to a depth of one metre and only external measurements were taken. See survey drawing and photographs.

Accommodation huts for the gun and support crews are shown on 1943 and 1946 aerial photographs. Those show 16 huts adjacent to Ermine Way on the west side, and 11 bordering the east side of the road in 1943 with a further seven added before 1946. The officers' mess and kitchens were on the west side of the road, along with the generator plant supplying the camp with electricity. Accommodation for other ranks was on the east side of the road.

Later in the war the camp was taken over by the RASC Transport Unit, and after they left the camp was used to house Italian prisoners of war,

later still it was used as temporary housing for the civilian population.

Locals record that the troops would help with haymaking on local farms, while dances were held in the officers' mess with local girls invited.

Compared to other British towns and cities Swindon fared rather well during World War Two, it was subjected to only ten bombing raids between the start of the war and the summer of 1942, all but one on civilian targets; the loss of life was 50.

The single attack on the railway works resulted in one gasholder being hit, the fire being quickly extinguished and the holes plugged with clay. Why such a large and important works was not subjected to more sustained attacks is a mystery.

Site survey conducted by Brian Clarke, David Hughes and Bruce Hedge, drawing by David Hughes with local research by Brian Clarke and later additions by Bruce Hedge.

Operation Outward

The boundaries of industrial archaeology are difficult to define. The following article was devolved from information in The Historic Gas Times relating to the production of hydrogen in World War II. It may seem to be pushing the subject somewhat too far but as a little known story the editor felt it worth publishing. Unfortunately, as a 'secret operation' very few photographs survive.

Chris Barney

On a stormy night in September 1940 a number of British barrage balloons broke free from their moorings. Unleashed, the balloons drifted across the North Sea and landed in Denmark and Sweden, damaging power lines, upsetting railway traffic and even wrecking the Swedish International radio station. Several got as far as Finland. News of this reached Churchill who is said to have responded, "If we can do this sort of thing by accident – think what we can do on purpose."

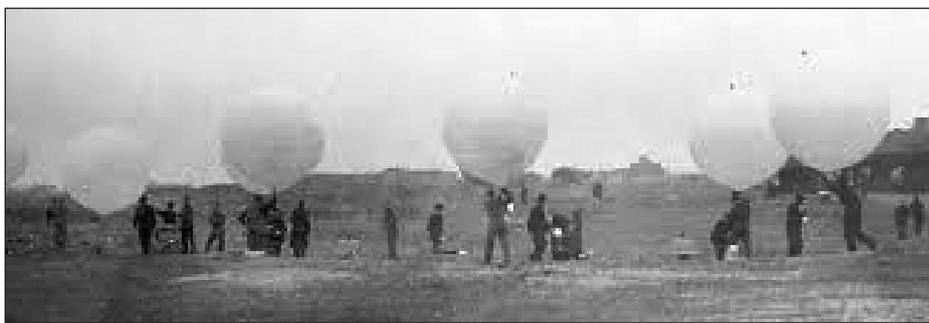
Actually, in 1936, the Air Ministry had already considered the effect of a balloon breaking free and the damage it might do but only as it might effect our own air operations. However, the Navy took up the idea and with the support of Air Marshall Gossage who, as head of Balloon Command, was able to ensure that sufficient hydrogen vital for the operation was available and the bureaucratic obstacles were overcome.

The first balloons were released from Felixstowe Ferry Golf Course in March 1942 and by August a thousand were being set off each day when the wind was suitable, with further sites at Waxham, Norfolk and Oldstairs Bay near Dover. In all, during Operation Outward, nearly a hundred thousand balloons were released, about half carried incendiary devices and half had dangling cables. Almost immediately there were reports of forest fires near Berlin and intelligence that German aircraft were trying to shoot down the balloons. In 1943 an internal German report acknowledged that power lines were being damaged throughout the country and a French resistance report stated that the balloons were highly effective against electric railways. A post war assessment revealed that there had been over 500 problems with German high voltage lines and many more on the lower voltage system.

The most spectacular success was caused by a balloon dispatched on 11 July 1942 which shorted two phases on a 110kV line near Leipzig. The circuit breakers malfunctioned and a 16.5MW generator went out of synchronisation. Its rotor shaft bent and touched the stator causing an explosion and a fire that totally destroyed the 250MW power station.

There were reports that the Luftwaffe were employed to shoot the balloons down and even that as many as 250 aircraft were involved – although these reports are unconfirmed.

Surplus weather balloons were employed, about eight foot in diameter, of which the navy possessed a great quantity. The inflated balloons were conveyed by hand to a dispersal point, where their payload was attached. A simple timing and regulating mechanism was fitted and



Releasing balloons for Operation Outward

at launch, a slow-burning fuse was lit; its length calibrated to the estimated time to arrive over German-controlled territory.

The dangling cables consisted of about 700 feet of 1.6 mm hemp cord with a breaking strength of 40 pounds; to this was attached 300 feet of 1.8 mm steel wire. The intention was that the wire tail would be dragged across the countryside and eventually encounter a high-voltage transmission line.

The incendiary devices were of three different kinds. 'Beer' consisted of a cylindrical metal container containing seven or eight half-pint bottles. Each bottle contained a special incendiary grenade called SIP, composed of white phosphorus, benzene, and water. On the expiration of the fuse, the metal container was tipped open and its contents allowed to fall out. On shattering the SIP grenades would spontaneously ignite. 'Jelly' were cans containing a gallon of incendiary jelly which would ignite and create a fireball about 40 feet across. 'Socks' were long thin canvas bags of incendiary material weighing about 6 pounds, packed with wood wool, bound with wire and soaked in paraffin wax. Each Outward balloon could carry three socks and when dropped, socks formed a V-shaped sausage designed to catch in the crown of a tree. Fuses were inserted which would burn for about 15 minutes.

Once launched, the balloon rose rapidly and expanded in size until an internal cord tightened, preventing further increase in altitude beyond 25,000 feet. By releasing some gas, the balloon would begin a slow descent as the hydrogen gradually leaked away. After a while, the fuse would release a bung in a can of mineral oil; as the oil slowly dripped out, the balloon's payload would lighten, arresting its descent. The same slow-burning fuse was also used to release the balloon's weapon.

In 2004 the BBC interviewed Antoinette Porter who had been one of the 150 Wrens employed to fill the balloons. She described how she had been recruited to a 'very dangerous and secret job'; she envisaged being parachuted into France to help the resistance but it was not to be quite like that. In her own words, "Our briefing began and silently, and if not open-mouthed, we listened. Apparently we, teenagers to a girl, were to launch attacks on Germany from a disused golf course two to three miles from a Suffolk Convalescent Home... and be taught to handle and fire lewis guns and rifles in defence of the site. But our main job would be to inflate white latex rubber balloons, attach various rather nasty devices to them and, when the wind was right, dispatch them to Germany. We were

aghast!.... The balloons were packed in french chalk which got into the back of your throat rather badly. We used to put the residue on the floor and, during our cocoa break, slide up and down and fall over.... These monstrous balloons were housed in three sided tents which, as inflation progressed, created friction...balloon to canvas...causing a great risk of instant combustion. So out came our buckets and stirrup pumps and we sprayed balloon and tent. We also wrote (very tame but we thought very daring and rude) messages on the balloons to Hitler, Goering, Goebbels and any other poor German who saw them. And of course, the black messages, when inflated, became very large. I remember such things as, "Death to all Germans", "Balls to Hitler, Goering and Goebbels", and, "Take this you Bastards"..... In spite of our simple precautions the balloons did, quite frequently, explode causing the nearer Wrens to be flash burned and the further ones to get an instant sun tan with singed eyebrows and hairline. Fortunately I was never near enough to get badly hurt but many of my pals were not so lucky and were carted off to be plastered with gentian violet or acriflavine...not a pretty sight! As teenagers we took all this in our stride which I now find unbelievable. We operated in all weathers as long as the wind was blowing towards Germany (forgetting Belgium and the Netherlands). The balloons thrashed about like live things, firmly and desperately gripped by us and banging on the ground at the side of us. To let go meant being on a charge and losing a day's pay. During rainstorms they became heavy and sluggish and threatened to suffocate us as they bumped towards the sea before stumbling into the air. The loveliest sight was a summer day and a successful launch of two to three hundred balloons streaming into the blue sky like big fat pearls, getting smaller and smaller and eventually drifting out of sight."

The last balloons were dispatched in on 4 September 1944. In all, the operation was very successful as, in addition to the actual damage caused to the electricity supplies and by fire, the harassment value on German air defences alone justified Operation Outward as it cost the Germans more, in terms of fuel and wear and tear on aircraft, to destroy each balloon than it cost the British to make them. An unintended side effect was the damage caused to neutral nations by balloons ending up in Sweden or Switzerland. On the night of 19-20 February 1944, a balloon shorted a Swedish rail lighting system, resulting in a train collision. Diplomatic protests were issued by the Swedish government, but these mostly proved the potential of the balloon campaign.

Message from Miles Oglethorpe – the new TICCIIH President

I first attended a TICCIIH (The International Committee on the Conservation of the Industrial Heritage) congress back in 1992 and confess to having been totally bewildered by the experience. The conference was hosted by our Spanish colleagues, the first part occurring in Barcelona, and the second in Madrid. Unfortunately, I was only able to join the second part of the event, but did at least meet our friends from the extraordinary network of science and technology museums in Catalunya. This proved to be fortunate as the Madrid segment of the congress was a little chaotic and stressful – but the Catalans came to the rescue and helped wrest success from the jaws of potential calamity.

Despite the stress, there were several aspects of TICCIIH that were instantly alluring. First, there were lots of young people, and second, not all of them were men. Third, the range of different countries present was amazing. Fourth, the range of subjects covered was inspiring, and finally, the quality of work being discussed, the astonishing range of industrial heritage covered and the professionalism of many of the practitioners was hugely motivating. However, I could never have predicted that I would end up becoming TICCIIH president over a quarter of a century later.

In the intervening years, I served time as the GB National Representative (note Northern Ireland's membership has always been on an all-Ireland basis), acting as a valuable bridge between TICCIIH and AIA Council, and then in 2003, was elected to the TICCIIH Board in the city of Nizhny Tagil. The Russian congress, perhaps more than any other, expanded my horizons and made it clear that I needed to re-evaluate the deeply Anglo-centric education I had received in my youth. Indeed, one of the great features of TICCIIH is that it has greatly aided this process. It has been a truly enriching, if sometimes surreal journey.

So it was that in September 2018, Professor Pat Martin, the incumbent TICCIIH president, was obliged to stand down after a maximum of three highly successful terms in office. Elections were duly arranged to take place in Santiago, Chile during the 2018 congress at the general assembly, which was held in the World Heritage copper mining settlement of Sewell high up in the Andes. In the ensuing stampede of candidates to succeed him, I ended up being the only one, so those who were anticipating an acrimonious, hard-fought campaign were grievously disappointed.

Shortly afterwards, I held my first TICCIIH Board meeting. There was a lot of discussion, but my first impression was one of awe – I was faced with an extraordinary array of expertise from all over the world. Amongst the many issues near the top of the agenda is our relationship with the International Council on Monuments and Sites (ICOMOS). Since the London congress in 2000,



Professor Pat Martin, departing president of TICCIIH, receives a miner's hat from the Mining Museum in Bochum, Germany as a token of thanks from the incoming president, Dr Miles Oglethorpe

we have had a formal agreement through which we provide specialist expertise on industrial heritage, helping to ensure it is properly represented within the World Heritage process – ICOMOS being the official advisers to UNESCO. TICCIIH is also committed to carrying out thematic studies to help guide the work of ICOMOS, and has already completed several, including bridges, collieries and canals, to name a few.

ICOMOS is currently in the process of forming an International Scientific Committee devoted to industrial heritage, the aim being to mainstream industrial heritage at the highest level. TICCIIH is therefore engaged with this process, and we are hoping to benefit from interaction with a much larger global membership base, and to look into other areas of expertise, not least succession planning through engagement with the 'Emerging Professionals' programme.

Closer to home, TICCIIH needs to review its relationship with partner national organisations, such as the AIA. Our expanded networks of associate members in countries like the UK, USA, Mexico, Argentina, Brazil, Japan, China, Germany, France, Italy and Sweden are critically important, so we need to work out ways of enhancing and improving existing relationships. Building on the work of former president, Eusebi Casanelles, TICCIIH recently established a European regional branch, emulating Latin America, and there are already moves to do the same in Asia. A key factor that binds us all together is a shared belief in the value of industrial heritage. This was defined in the Nizhny Tagil Charter in 2003, and was further reinforced with ICOMOS through the Dublin Principles in 2011.

Looking back, it's clear that since 1992, industrial heritage has become mainstream in the historic environment in many countries. In the UK, this has been a direct result of the ceaseless work of activists within the AIA, but on the world stage, TICCIIH has been a key player in projecting the potential and proven value of industrial heritage.

As the new president of TICCIIH, I am hoping very much that I can build on this progress, matching the amazing achievements of my predecessors. From a British perspective, I would also like to import some of the infectious enthusiasm, energy and expertise that's now emerging in our member countries across the world. With this in mind, an unsettling truth is emerging. Once the world yearned to learn from us, but now there is no doubt that we have a lot to learn from our friends and colleagues overseas..... TICCIIH will continue to help us do this.

*Dr Miles Oglethorpe
TICCIIH President*

Bennerley Viaduct Project – Back on the Rails

2019 promises to be another eventful year when we hope to make huge strides in bringing about positive changes at the Viaduct. The new project should be starting in March pending the approval of the Railway Footpaths Board and successful bids for funds.

Friends of Bennerley Viaduct Volunteer Workdays are being resumed. Our current priority is to clear much of the scrub vegetation under spans 15 and 16 at the Awworth end of the viaduct. These spans are densely overgrown with brambles and hawthorn and clearing them will make way for the new path which will be routed underneath the viaduct.

The Friends Group are acquiring a following in a number of countries and we are learning about developments which are taking place overseas. John and Gayle from Kelowna in British Columbia, Canada have informed us of the amazing achievements of the Myra Canyon Trestle Preservation Society which has restored a series of wooden trestle viaducts in the Myra Canyon. These have now become major tourist attractions. Sylvain and Flavie from Paris have informed us about the Promenade Plantée or the Coulée Verte, the world's first disused railway viaduct which has been converted into a linear parkway. This Paris development inspired communities in New York to save their disused elevated railway line in West Manhattan from demolition by creating the world famous New York High Line. Vicky from Camden forwarded us plans of the proposed Camden High Line which aims to convert a disused elevated railway into a linear park in a similar fashion to New York. Let us take inspiration from these developments. We have the longest wrought iron viaduct in the British Isles. We, too, can create something really special at Bennerley Viaduct.

Kieran Lee, Friends of Bennerley Viaduct.

A Primary Industrial Archaeology Survey of Wenzhou Alum Mine, Zhejiang Province in China

Since May 2017, we have been investigating four mining sites and seven refining sites in the Wenzhou Alum Mine's area, mostly aiming to analyze its industrial heritage, as well as to promote preservation and reuse. This text is a brief report of our recording and survey activities and its main goal is to present the Wenzhou Alum Mine to an international audience.

Shujing Feng, Wei Qian and Juan Manuel Cano Sanchiz, Institute for Cultural Heritage and History of Science & Technology, University of Science & Technology Beijing.

Wenzhou Alum Mine is located in Fanshan Town, Zhejiang Province, which is near the east coast of China. The alunite in the mine is mainly from the five mining areas of Shuiwei Mountain, Jilong Mountain, Dagang Mountain, Pengpeng Ridge and Mabi Mountain in Cangnan county. Zhejiang Geological Exploration Department has confirmed that the reserves of alunite in Fanshan Town, amount to 240 million tons, accounting for 80% of Chinese reserves and 60% of the world's. The area has been named 'World Alum City'.

Wenzhou alum mine (Fig. 2) has been in operation for more than 600 years, since the Ming Dynasty (14th Century). In recent years, due to the constraints of processing technology, resource conditions and production costs, the enterprise has come to an end and the area is now facing a transformation, from production to industrial heritage protection. However, academic research on the industrial heritage and archaeology of the Wenzhou Alum Mine is still relatively underdeveloped and much research will be needed to reach a proper understanding of the formation stage of the ancient relics, as well as their historic, technical, economic, social and universal values.



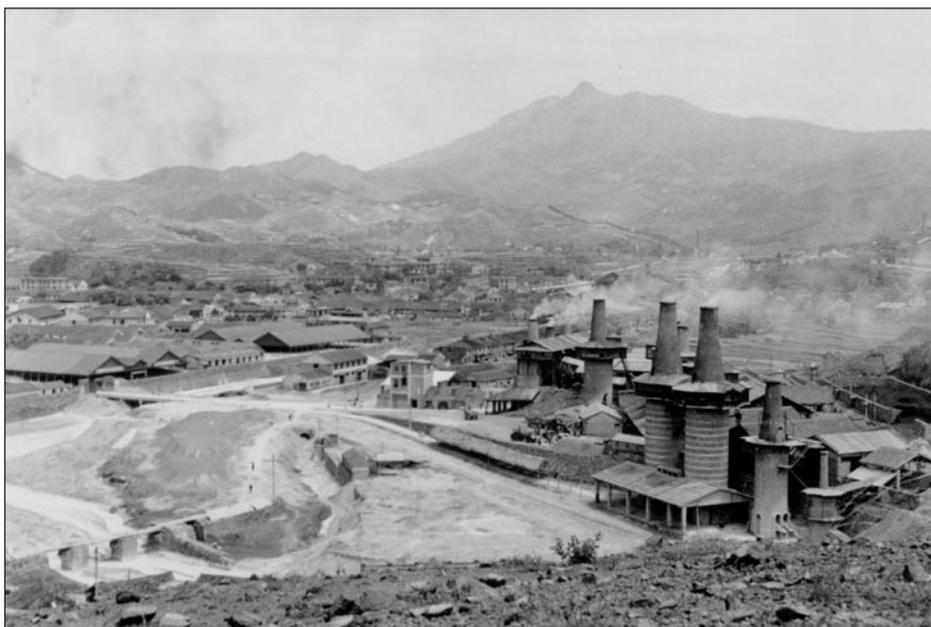
Location of Wenzhou Alum Mine in Fanshan Town and its main mining and refining facilities

Since 2017 we have investigated four mining sites and seven refining sites in the area. Our survey is still continuing and will provide evidence for the evaluation of Wenzhou Alum Mine's values, offer suggestions for protecting these sites and help their transformation into a sustainable industrial heritage site.

Description and analysis of the evidence

There are several mining remains (Table 1) in Wenzhou Alum Mine, among them the Shuiwei Mountain mine cave group, the Dagang Mountain mine caves, and the Jilong Mountain mine-cave-group.

The processing and refining sites no longer producing are mainly distributed in Dagang Mountain, Jilong Mountain, and Shuiwei Mountain. In the survey, we identified seven refining sites (Table 2) presenting different chronologies, characteristics and material remains.



Main plant area of Wenzhou Alum Mine in 1970s

Photo by Xiao-Yunji



Inside Xuehuaku

Fanshan mining sites (fig 1) saw the progress of mining techniques of alum from traditional artisanal systems to blasting with the aid of gunpowder, then to directional blasting of explosives, and finally to mechanized production. They fully reflect the progress of alum mining technology from ancient times to the present day in China.

Xuehuaku mining site preserves the footprints of the traditional 'fire dragon' mining method in the Qing Dynasty. In the Xiguang site there is more than one mine cave and some of the interior

Table 1. The Mining sites in Wenzhou Alum Mine

Name of mining sites	Location	Date	Remains	Current situation
Xuehuku	Jilong Mountain	17 th -19 th century	1 m wide, 1.8 m high, wooden brackets	abandoned
400 Adit	Jilong Mountain	uncertain	Closed, nothing can be seen outside the adit.	abandoned
Xiguang Mining Site	Dagang Mountain	uncertain	Three adits. The No.10 adit was reused for refining alum in 1950s.	abandoned
Nanyang 312 Adit	Jilong Mountain	1950s to present	More than 1,100 m long and 600 m deep. 558,000 m ² of goaf, 2,890,000 m ³ of the goaf's volume. Electricity, lighting, transportation, machines and other facilities preserved.	To be redeveloped as a touristic attraction

Table 2. The refining sites in Wenzhou Alum Mine

Name of refining Sites	Location	Date	Material Remains	Current situation
Fengchuige Site	Jilong Mountain	uncertain	None	abandoned
Banshanyao Site	Jilong Mountain	uncertain	Two crystal pools, one weathering pool, and one destroyed calciner	abandoned
Fudewan Refining Site	Jilong Mountain	uncertain	Five calciners, two stock-yards, one weathering pool, and four narrow-gauge-skip-cars	properly protected
Main factory of Wenzhou Alum Mine	Jilong Mountain	From 1950s until now	One slag-yard, 11 calciners, two weathering pools, one dissolving-room (including two roller sand washing pools), two filter workshops, one crystal pools group, and one overhaul shop	properly protected
Zhiqing Refining Site	Shuiwei Mountain	1950s-1970s	Two calciners	abandoned
Xiguang Refining Site	Dagang Mountain	uncertain	One destroyed calciner, one weathering pool, one dissolving tank, one chimney, and 19 crystal pools	properly protected
Jijiao Ridge Refining Site	Dagang Mountain	Qing Dynasty -?	One stock-yard, one destroyed calciner, one weathering pool, and 18 outdoor crystal pools	abandoned

spaces of the mines were reused in the later period to build dissolving pools, sand washing pools, crystal pools (fig 2) and other facilities for refining alum. Nanyang 312 Adit is over 1,100 m long and 600 m deep with a volume of 2,890,000 m³. The goaf amounts to 558,000 m²; the pillars range from 5 to 10 m. in diameter. The electricity, lighting, transportation, meeting room and other

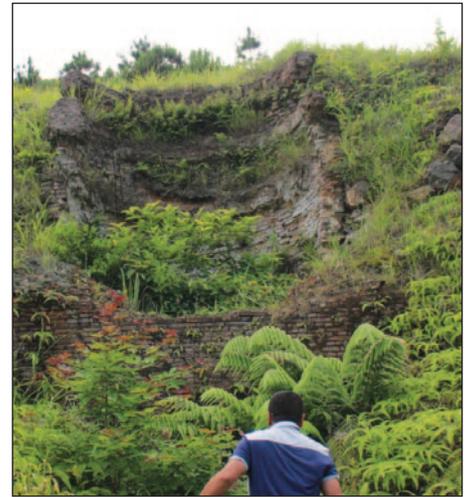


Calciners in Main factory of Wenzhou Alum Mine.

facilities in the adit are preserved, and they reflect the mechanized production and technical level of Wenzhou Alum Mine.

The earliest calcination method known is the 'skull turtle stove' of which no examples survive. From the Qing Dynasty to the early 1950s, the 'taro-shaped downdraft kiln' was used for calcination. The remains of the last surviving one (fig 3) lie on the Jijiao Ridge Site, but a model of it (fig 4) is on exhibit in the Museum of Wenzhou Alum Mine. The large-scale calcining-furnace-group (4.4) is one of the most visible infrastructures in the industrial landscapes of Wenzhou Alum Mine. They are continuous mixing furnaces developed and built between the 1950s and 1960s. These furnaces represent the latest footprint of the development of Chinese alum refining processes.

The refining system in Wenzhou Alum Mine has always followed the Chinese original 'water leaching method'. This method originally had three main stages: calcining – dissolving – crystallizing. Later, the method was gradually improved into calcining – weathering – dissolving – crystallizing (fig 5). During both the early development and the modernization periods, the innovative renewal of



Destroyed Calciner in Jijiao Ridge Site

production facilities was carried out on the basis of Chinese local craft and technologies. Therefore, unlike the production of alum in Europe, Japan and other regions around the world, production processes in Wenzhou Alum Mine stayed unique through time, creating a particular industrial heritage with endogenous traditional technology.

Wenzhou Alum Mine has witnessed the development of alum mining and refining technology in China for more than 600 years. The water leaching method recorded in the mine is unique in the world and it is also one of the core



The Model of Calciner in Museum of Wenzhou Alum Mine.

technological and historical values of this industrial heritage site. While the technological aspect of Wenzhou Alum Mine has already received some attention, its economic, social, ecological and cultural aspects still need to be analyzed. This research aims to develop a comprehensive and interdisciplinary study of the mines that let us not just understand the site more accurately, but also highlight the universal values of alum mining.

We would like to show our gratitude to the Government of Fanshan Town and to the staff of Wenzhou Alum Mine, as well as to the Ironbridge International Institute for Cultural Heritage (University of Birmingham), especially to Professor Mike Robinson and to Dr Roger White.

For further pictures—please see page 10



The Process of Alum Production

(1) Calcination. (2) Weathering. (3) Dissolving. (4) Crystallization.

(Photos by Shujing Feng)

Southall gasholder gone

The Mann gasholder at Southall will probably be completely gone by the time this IA News is distributed. Besides its primary function this particular gasholder served as a landmark for aircraft approaching Heathrow. Near the top of the gasholder were the letters LH and an arrow which were there for a very good reason.



Southall Gas holder with HR painted on the top to guide flights coming in to Heathrow
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There used to be a similar pair of gasholders at Harrow and pilots found this confusing; in 1960, a PanAm 707 began an approach to Heathrow, but seeing what they thought was the main runway slightly off to their right the crew began to descend and landed on Northolt's only runway. There was some consternation in the Heathrow tower when the aircraft didn't appear on the runway and initially they thought it might have crashed. However, very soon, Heathrow got a call from Northolt asking what a PanAm 707 was doing on their runway which was normally closed to civilian traffic. The next day, the 707 after being stripped of all unnecessary weight because the Northolt runway was shorter than a 707 normally required, took off for the short flight to Heathrow.

Surprisingly, there was very little in terms of an investigation into what had occurred, and then, in 1964, the same thing almost happened again. This time a Lufthansa 707 found itself on its final approach to Northolt before it was alerted by Heathrow who were watching it on radar. But this was not the last incident. Just a few days later, a Spanish Air Force C-54 which was bound for Northolt, almost landed at Hendon.

This time an inquiry was launched, not least because even pilots familiar with Heathrow were saying that having two gasholders of very similar proportions on the approach to both airports was causing confusion. Among the ideas put forward was to paint them in different colours. In the end it was decided to paint letters at the top of the gasholders. NH was painted on the Harrow gasholder (later changed to NO) and LH was painted on the Southall gasholder.

Dr Noel Meeke

On 24 October a large gathering of family, volunteers, members and close associates, met at the Waterworks Museum in Hereford at the invitation of Dr Noel Meeke, Emeritus Chair, MBE, who will shortly be stepping down from his formal roles at the Museum after two and a half decades as a Trustee and a Director.

Noel Meeke referred to the vision of Stephen Southall who in 1960, as the Chairman of the Herefordshire Water Board, visited Broomy Hill Water Treatment Works and determined that the mothballed steam engines he saw should be preserved and that the water pumping station should one day become a museum. In closing, Noel suggested that perhaps the Museum might think in future terms of enhancing its education provision to include the science of water.

In response, current Chairman, Richard Curtis, thanked Noel on behalf of all his invited guests and went on to say: "I very much welcome that he has referred to the vision of Stephen Southall, for Noel has successfully developed Stephen's vision over the past twenty years and more to establish the Waterworks Museum as one of the UK's finest industrial heritage museums."

At the end of his talk Noel Meeke was presented with a fine painting on behalf of D r Cymru Welsh Water – a major benefactor of the museum since its establishment 45 years ago – to recognise his personal contribution to the development of the museum.

When in Rome – a unique combination of classical archaeology and industrial archaeology



Central Hall of the Musei Centrale Montemartini

Martin Green

Rather than battling one's way through the crowds at Rome's most popular tourist attractions, a much more rewarding experience is to be found by visiting a museum located to the south of the city – Centrale Montemartini. A disused power station provides the back-drop for the display of many of Musei Capitoline's classical statues, sculptures and mosaics, but does so – not in an empty shell as at Tate Modern – but with the machinery still in situ. It is a powerful statement that exhibits both the classical and the industrial archaeology to telling effect, with the white marble providing a stark contrast to the dark grey mass of the machinery.

In the early 1900s there was much debate locally over the need for a publicly-owned power company to break the monopoly of the existing Anglo-Italian company. Ernesto Nathan led the fight and appointed Professor Giovanni Montemartini as technology controller, and the power station that emerged was named after him. The public body formed was Azienda Elettrica Municipale (AEM – later ACEA), opened in 1912.

The site chosen lay between the river Tiber and Via Ostiense, outside the city's tax zone, with good transport links by road and rail, generous

supplies of water from the Tiber and plenty of room for expansion.

The power station was originally designed as back-up, but soon became a steady supplier to the system. Steam turbines were the main source, with diesel engines used for peak demand. As demand increased, modernisation and expansion became the order of the day, but the plant eventually became obsolete and closed in 1963.

There was much talk of making effective alternative use of the building and the crucial step came in 1997 when Musei Capitolini needed a home for their sculptures during a re-fit. It was decided to place these sculptures against a backdrop of the power station's machinery in an exhibition entitled "Machines and the Gods".

The exhibition was such a success that the decision was taken to make the combination of the two cultures a permanent exhibit, with the addition of Italy's last remaining railway carriages – those of Pope Pius IX – as an added bonus.

The museum itself is part of a wider project to redefine the Ostiense Marconi area, converting it into a cultural centre for the oldest industrial area of Rome including, as well as the electricity plant, the slaughter house, the gasometer, structures from the docks, the old Mira Lanza site and the old general markets.

While walking around, it was difficult to tell whether one was amongst visitors with a classical leaning who were surprised to see the magnificence of the industrial monument, or vice versa. I suspect the former. I also felt that the visit could have benefitted from a short document giving clear, simple explanations of the functions of the remaining machinery (in English and Italian!) to make the visit more than a mere visual experience. Perhaps one of our readers might like to provide the English version when next in Rome.

Martin Green

Tuckers Maltings closes after 187 years

The Newton Abbot company, famous for its annual beer festival, was set up in 1831 and was one of only four malt houses in the country still producing malt in the traditional manner and supplying more than 30 breweries in the South West blaming the difficulties in staying competitive while continuing to produce malt in the traditional way.

A letter from Edwin Tucker and Sons Ltd, the firm that runs the Maltings, has told breweries that: "After producing malt in Newton Abbot for 118 years the directors of Tuckers have had to make the sad decision to close the Maltings. We have always been proud to be the smallest maltsters in the country producing malt in the old traditional way.

"Operating on this scale has finally proven to be uncompetitive in the modern world and

increasing capacity, without jeopardising the quality of the product, within the old traditional building would be very difficult. After consultation and professional advice it was decided it would be wise to make this decision while the business was financially sound and closure could be achieved in an organised and efficient way."

Tuckers Maltings opened its purpose-built malthouses, next to the railway in Newton Abbot, in 1898, completing the building in 1903.

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WEBSITE**

www.industrial-archaeology.org

Historic England to give up publishing

News has been received that Historic England, as a result of an internal consultation exercise, is to dispense with its Publishing Section which has produced a long series of exemplary books over the last 40 years, including five winners of the AIA Peter Neaverson awards.

Marilyn Palmer has commented, "I am really very sorry about this. Ian West and I had a very good experience with the publishing team – some excellent copy-editing and marketing etc. They have produced some excellent books on industrial and other subjects. It will be a very great loss."

Chimneys – A Gap in our Knowledge?

This is a reply for those who responded to the chimney article in *IA News 186* – thank you all. The outcome has been quite pleasing; I had expected misconceptions to be pointed out but it seems there weren't many errors.

What has emerged from the chimney correspondence is that there seems to be a gap in our knowledge. For the large chimneys that were built in the late Georgian period, especially from about 1820, was there a mastermind behind their design? I have a number of people to suggest and one in particular, or his son, so this will be the main point of my reply.

Many of the first steam powered mills were built by Boulton & Watt with John Rennie (1761 – 1821). The latter is a very likely candidate; he was one of the greatest civil engineers of all time and he also had a steam engine manufacturing business. However initial enquiries have drawn a blank. He was so very eminent that mention of something relatively unpleasant such as a smoking factory chimney may have been considered inappropriate when describing the prodigious works he accomplished. As consulting engineer he probably oversaw the building of industrial chimneys as a minor part of quite major projects.

The other Great Engineers of the heroic age of the Industrial Revolution, Smeaton, Telford, Jessop and so on had to contend with brickwork on a larger scale than that of their predecessors and they could also have contributed, creating a pool of knowledge and expertise concerning the stability of brickwork relevant to the creation of the tall elegant industrial chimneys of the late Georgian – early Victorian period.

Well-educated civil engineers did appear to have some theoretical knowledge, for example Robert Stevenson designed two chimneys 132 ft high for the 60 hp stationary engine at Camden Town which hauled trains up the incline from Euston station in London. These elegant chimneys were built c. 1838 with the correct logarithmic profile rather than using an approximate rule of thumb more generally in use, such as a reduction in outside diameter of half an inch per foot increase in height.

So far it has not been possible to find any written account of the Smeatonians theoretical knowledge regarding the construction of tall chimneys. It seems likely that members of the Institution of Civil Engineers kept their expertise to themselves; after all they were professional people who charged a fee when they acted as consulting engineer. If anything was on paper it was probably written in notebooks. Some examples of these notes ought to exist somewhere? There were also theoretical textbooks, some quite mathematical, which were generally in French. Compared with Britain, France was far more advanced theoretically. In England, engineers were somewhat dismissive of theory.

John Rennie died in 1821 but his younger son John (1794 – 1874), later Sir John Rennie, carried on his father's practice as a civil engineer. Together with his older brother George, the younger Rennie also had a steam engine manufacturing business. Between about 1820 and 1850 there was something of a fashion for really tall chimneys with underground flues to ventilate all the boilers, hearths and furnaces of an industrial site. Sir John Rennie is a possible candidate for the designer of these tall Georgian – Victorian chimneys. The younger Rennie designed the Royal William Victualling Yard in Plymouth (1823 – 33). Covering 14 acres, this has a chimney 150 feet in height – originally there were two similar chimneys, as at Deptford Dockyard. The surviving chimney in Plymouth is a prominent landmark yet gets very little mention in descriptions of the Royal William Yard.

We should also note that at the instigation of younger engineers who wanted a professional body, The Institution of Civil Engineers was founded in 1818 and chartered in 1828. Younger up-and-coming engineers should also be taken into account; the civil engineer who designed late-Georgian tall chimneys could be one of these. In the Survey of *London volume 48* (page 108) Peter Guillery mentions in Chapter 2 that by c.1840 there were specialist chimney engineers.

By 1830 the construction of tall industrial chimneys seems to have been quite routine, carried out by a small-group of artisans. Sir George Head in *A Home Tour through the Manufacturing Districts of England*, 1836, describes the building of a brick chimney at Runcorn in 1834. This was for a soap and soda manufactory and was to be 276 feet high, see pages 17 – 18. Head's remark, "one of those stately circular chimneys which are becoming everyday more general in the country", is significant.

The tall chimneys of the first half of the nineteenth century seem to be relatively similar which could imply that their builders were copying an approved design, which in their construction artisans could vary and modify as appropriate. It is the originator of this design that we are looking for. Of course there may never have been any such person – conceivably tall chimneys might simply have come about through artisanal evolution?

There is a book in English which deals with design and theory but this is a very late Victorian publication, *Chimney Design and Theory* by William Wallace Christie, 1899. Christie laments the lack of published work on this subject but being such a relatively recent book really tells us nothing new about chimneys built in the first half of the century. For our purposes he does not add anything over and above the excellent work *Tall Chimney Construction* (available in facsimile) by the two Bancrofts, father & son, which was published in 1885.

There is an earlier book which has a section on the Construction of Chimneys, *A Practical Treatise on Coal Gas* by Samuel Clegg, 1841. He favoured the use of concrete for chimney foundations but does not really discuss the tall elegant chimneys that Sir George Head mentions. This is not surprising as most gasworks are unlikely to have had very tall chimneys, although the 1853 edition of Clegg's book tells us that at

Edinburgh the gasworks chimney was 330 feet high. This is an interesting example – see George Buchanan FRSE in the *Civil Engineer & Architects Journal 1850*, pages 398 – 9.

Going up in Smoke by James Douet 1988 is superb and can be strongly recommended – much in this present article derives from James's work. First rate though *Going up in Smoke* is, Douet's thesis is principally concerned with industrial archaeology, while for the late Georgian – early Victorian period we are considering most of the chimneys built then no longer existed by the time of Douet's work. Many of the earlier elegant slender chimneys were either demolished, blown down in the great storms of 1856, or have been demolished since.

In July 2010, in their Information Series the British Brick Society published a *Tall Chimneys Issue*. This is another good source of material. Here Paul Sowen reports on Sir George Head's description of building a tall chimney at Runcorn in 1834, mentioned above. There is also a contribution by Graham Brooks on the building of Dixon's chimney in Carlisle, 305 feet high. *Our Grimy Heritage* by Walter Pickles 1971 is essentially a picture album and while a delightful book adds nothing to the present topic.

We are now moving into industrial history with footnotes and references. An adequate investigation of the topic of late-Georgian tall chimneys needs to be carried out and it is hoped to report back to *IA News* if anything significant is learnt from further work.

Robert Carr

UK withdrawal from UNESCO rejected

The Times has reported that development secretary Penny Mordaunt proposed withdrawing the UK from UNESCO, following decisions made by the USA and Israel to do the same.

Keith Nichol, Head of Cultural Diplomacy for DCMS, has shared the government's official position that: "There has been no change to our funding commitment to Unesco." And that "The UK is working closely with Unesco and other member states to ensure it makes crucial reforms to deliver the best results and value for taxpayers' money".

World Heritage UK has now released a statement in response, assuring that while it understands scrutinising bodies such as UNESCO is a 'legitimate political duty', they also have confidence in the economic, environmental and social benefit delivered by the UK's World Heritage Sites.

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Valerie Selby

We are sorry to report that Valerie Selby died on 28 November at the age of 90. She had been a regular participant at AIA conferences for very many years, lastly in 2017 at Northampton. She and her husband John, who died just a year ago, were stalwart members of the Warwickshire Industrial History Society since its formation in 1991.

Restoring the 'Empress of Britain' at the Museum of East Anglian Life



Stripping out the old boiler

One of the largest objects in the museum's collection is the Empress of Britain, a general-purpose agricultural steam traction engine made in 1912 by Charles Burrell & Sons of Thetford, Norfolk. Since entering the collection in September 1983, it has become the museum's showcase steam engine and has been regularly used to demonstrate traditional farming techniques to visitors.

This engine is important to the story of East Anglian life as it represents the steam era in agriculture and the work of one of the most important East Anglian steam engineering companies, as well as being typical of the type of vehicle used by farmers and contractors – after the horse, but before the invention of the tractor.

Since the early 2000s over 270 visitors and museum trainees have benefitted from the opportunity to learn about this machine by getting hands-on alongside our dedicated volunteer team, so it was quite unexpected when the Empress failed its annual boiler inspection during the winter of 2016.

Thanks to a 2017 AIA restoration grant of £16,500, funding from the Mid-Suffolk Locality fund and the generosity of several individual donors, September 2017 signalled the start of the engine's restoration. Members of the museum's Collections Volunteer Team were given the signal to start stripping down the engine – the footboard, brass bands, cladding, lagging, ashpan, lifter hose and more were all labelled and put into safe storage.

October saw two days of 'knocking out' the 35 tubes that run through the engine's boiler barrel – a grubby and noisy task, especially for the person at the end of the tubes inside the engine! This preparation enabled access to the old boiler barrel once the engine completed its low-loader journey to Mervyn Mayes' boiler shop at Yaxham near Dereham, Norfolk.

barrel alone, ready for the corresponding rivets that would hold the engine together.

As part of owning a working steam traction engine it is essential to carry out inspections under the Pressure Systems Safety Regulations 2000 so the Boiler Inspector was employed once again to carry out a hydraulic test. The test involved filling the engine with water until there was no air space – the safety valves already removed and all points for pipework having been blanked off. A hand pump was used to pressurise the engine to 1½ times the boiler design pressure (for the Empress, this would be 180 + 90 = 270 lbs), with this level held for at least 30 minutes, allowing for close examination and the detection of potential leaks on riveted seams and around the boiler tubes.

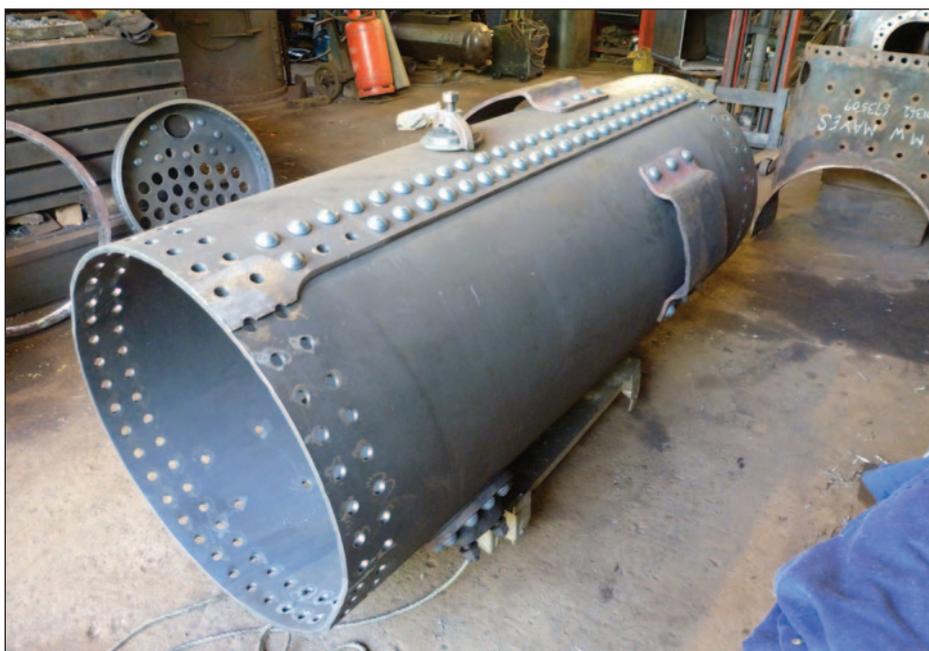
With the test passed successfully the rest of the engine parts were added – from pipework to safety valves, smokebox, front axle, steering, chimney base, chimney, firebars and ashpan all fitted into place.

By now, our 20 October launch deadline was only a week away. The last hurdle was a hot, working examination or steam test – once again, in sight of the boiler inspector. This was reached successfully with no signs of leakage around any of the joins (pew – relief all round!)

We held the launch as part of our Cider and Song event where we were able to welcome and thank our supporters in the bright October sunshine – the Association of Industrial Archaeology, the Mid-Suffolk Locality fund, several individual donors as well as our dedicated collections volunteers and boiler engineer. As the Empress steamed, fizzed and popped gently in the background, it was fabulous to have live steam at the museum once again!

Lisa Harris

Collections and Interpretation Manager



The new boiler barrel

Battersea Power Station



Representation of the proposed lift at Battersea

As part of its renovation of the Giles Gilbert Scott-designed power station, the architecture studio has designed a lift that will rise 109 metres through one of the building's four chimneys. When it reaches the top, it will offer occupants 360-degree panoramic views across London.

Named the Chimney Lift, the elevator is one of three new attractions revealed by the Battersea Power Station Development Company.

Alongside the lift, the company has unveiled plans for an event space for 1,500, called the Venue. The developer envisions the space being used for product launches, fashion shows, conferences and dinners.

A second event space within the power

station's former control room, described as 'a magnificent and rare example of a complete 1930s art deco interior', was also unveiled.

'Having already engaged with a number of prospective partners, we are confident the market shares our enthusiasm for the new spaces, and we're looking forward to selecting partners that can deliver real vibrancy, animation and soul to the development.'

Wilkinson Eyre's overhaul of the structure will transform it into a complex of offices, shops, apartments and a 60-room hotel. The largest tenant of the building will be Apple, which will rent 46,000m² of office space across six stories, as its London campus.

TICCIH in Chile

The once-every-three-year congress of TICCIH, **The International Committee for the Conservation of the Industrial Heritage**, took place at Santiago in Chile during September 2018 and by all accounts was a success.

I did not attend, but arranged that Barry Gamble, who did go, could vote as proxy if need be. In the event, elections were not required and the new board matches the number of places available. Patrick Martin stepped down after nine years as president. The new president is Miles Oglethorpe, who you may remember as formerly co-opted on to AIA council.

My invitation to other members of TICCIH to come forward as new national representative fell on deaf ears. I will carry on meantime, in a low-key way. There have been no recent meetings of TICCIH UK/ GB.

The next congress is expected to take place in 2021 in Montreal Canada. There had been one in Ottawa in the 1990s so they are starting to come around again. By then there will have been several intermediate conferences on specific subjects. Earlier this year there was one on Water Supply (reported in IA News by the Litchfield Trust). Also this year there has been one on Company Towns and Workers Housing in Catalonia and in December another on World War One in Paris (see page 18), at which a TICCIH Europe Section will be instituted, matching those for South America and Southeast Asia.

The 2018 TICCIH National Reports provide extensive descriptions of industrial heritage activities that have occurred over the three years since the last Congress. They are available on the TICCIH website and well worth reading to see the very considerable amount of work that is being done around the world.

Mark Watson

Railway Heritage Trust

The Trust gave grants totalling £2.15 million in their year 2017/18 which attracted partnership funding of £2.9 million and they were able to support 65 projects.

The largest grant was for £229,063 towards the cost of relocating a Brunel-style train shed from Maidenhead, where the overhead clearance obstructed electrification, to the Cholsey and Wallingford Railway. The exact date of its original construction is not known but some of the ironwork had received 30 coats of paint.

The smallest grant was for just £275 for repairs to the clock at Haltwhistle. Other substantial grants were made towards restoration of heritage features at London Bridge, restoration of the swing bridge over the Sheepwash Channel at Oxford, Rewley Road and repairs and restoration at Bognor Regis, Levenshulme South, Middlesborough, Worksop, Mytholmroyd and Perth Stations.

A grant of £6150 went towards the total cost of work on the Princes Risborough North Signal Box, the largest surviving GWR box in the country, built in 1904 with 126 levers. The box belongs to the Princes Risborough and Chinnor Railway association (C&PRR) and will be open to the public.

The C&PRR was also in the news when work to reinstate platform 4 at Princes Risborough was completed in August. This refurbished platform now enables trains from C&PRR to connect with Network Rail. An official opening ceremony was held on 15 August.

Network Rail Chairman, Sir Peter Hendy said, "The connection of the CPRR with the National Railway Network is a stunning achievement for a volunteer-operated railway, and will generate environmentally friendly rail-based tourism on the closest preserved railway to London. Network Rail congratulates the railway for this extension, and it will be a privilege to ride on the first public train on it."

"Archeology is honoured in every domain, except for building processes — we know more details about the Egyptian and Babylonian civilisations than about the origins of our industries. University chairs exist for each history segment except for history of technical applications of sciences."

Anatole Mallet, in the introduction of his book "*L'évolution pratique de la machine à vapeur*" published in 1908.

MV Balmoral

Sadly, it has been announced that although there have been many offers of help following the recent appeal, the project to return MV Balmoral to service in 2019 has failed. The vessel moved berth in July to Mardyke Quay, meaning the on-board events during the summer were limited in number due to poor access.

Balmoral moved back to Princes Wharf in October under her own power. This has allowed a resumption of on-board events. The immediate plan is to develop the use of the ship as part of the Bristol scene in a self-sustaining static role, providing an interesting venue which can be hired out, whilst developing the charity to access funding for the work needed to get her back to sea.

The scale of the task is enormous

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website**

Agricola, two Hoovers and Snow White



Illustration from *De Re Metallica* with miners (or are they three of the seven dwarfs?)

On the bookshelves of some AIA members will be dog-eared copies of *De Re Metallica* by Georgius Agricola, the contents of which are as relevant now as they were when published in 1556.

It was a delight to the spelunkers on the 2018 Spring Tour to observe that the base hotel in Chemnitz boasted an 'Agricola Suite'. Born George Pawer and a prodigious scholar, he was in his time, hugely influential in medicine, metallurgy, chemistry and physics but nowadays does not share limelight with Saxony's famous later son Martin Luther.

1912 saw the translation of the original Latin *De Re Metallica* into English by Herbert Hoover, assisted by his wife, a geologist. This was the Herbert Hoover (1874 – 1964) who after decades working as a mining engineer and geologist in Nevada, California, Western Australia, China and Russia and becoming extremely wealthy, was elected President of the United States from 1929

to 1933. His history is fascinating but must be shunned and replaced here by mention of his supposed friendship with Walt Disney. Here starts confusion as in 1940, three years after the film *Snow White and the Seven Dwarfs* was released, Walt Disney changed allegiance, ceasing to be a Democrat and becoming Republican and extremely right wing at that. It is common knowledge that Walt was an FBI informer from 1940 to 1966 and was a leading activist in 1947 during the Red Scare. The head of the FBI was J Edgar Hoover (an engineer and businessman) but no relation to Herbert.

A copy of Agricola's masterpiece must have been lying about to be seen by Disney – just look at some of the wonderful illustrations and in particular the headgear, and remember that the Seven Dwarfs were skilled miners of ore!

Gluck Auf! Dopey

The Changing Role of Consultants in Industry, 1850–2000

Workshop is to be held at the Maison Française d'Oxford, 2-10 Norham Road, Oxford OX2 6SE, on 10-11 May 2019.

The workshop is supported by the Newcomen Society, the British Society for the History of Science, Oxford Brookes University and the Society for the History of Alchemy and Chemistry.

While historians have explored the role of R&D in industrial progress, consultants as a specialist professional group are largely neglected. It is clear that consultants were often a key resource in knowledge management for firms, especially in emerging sectors making the transition from craft-based traditions to use of scientific knowledge. As the modern corporation arose during the late nineteenth century, firms faced a growing problem of managing knowledge. They set up in-house laboratories and began to develop R&D programmes. But, at the same time, consultants played a key role in spreading new technologies across firms, improving operating practices within factories, establishing standards and helping develop key supply industries.

Questions that arise include:

Who are the consultants? Studies of individuals or consultancy firms which illustrate the role of consultants.

What of the emergence of professional service firms and process plant contractors who bundle consultancy with the supply of design, plant or buildings, commissioning, training and start-up? How did someone become a consultant? What gave them the expertise (and standing) to undertake such work? The market for consultants

Who employed consultants? What are the challenges for a business in defining a consultant's project? How readily is the consultant's report utilised by the business? What kind of consultancy work was undertaken? Did it vary over time? Did any conflicts arise? If so, how were they resolved? To what extent were patents involved?

The impact of consultants

How did consultants contribute to innovation and diffusion of technology? What types of knowledge were transferred? What was their relationship to formal in-house R&D – complement or substitute?

Organisation

The workshop will be based on pre-circulated papers, approx. 5,000 words, with deadline of 30 March 2019. A selection of workshop contributions will be published in an edited volume.

The workshop is being organized by Peter Reed (Independent Researcher), Jonathan Aylen (University of Manchester and the Newcomen Society) and Viviane Quirke (Oxford Brookes University).

Conservation specialists

Figures collected by Historic England in early 2018 show that there were 798 full-time equivalent (FTE) historic environment specialists providing advice to local authorities in England.

This comprises: 533 FTEs working on building and area conservation; and 265 FTEs providing archaeological advice.

In the past 12 months the number of conservation specialists has increased by 3% (15

FTE); and the number of archaeological specialists advising local authorities in England has increased by 1% (2 FTE).

Since 2006 the number of conservation specialists has fallen by 35% (283 FTE); and the number of archaeological specialists advising local authorities in England has fallen by 35% (142 FTE).

Report on the Council Meeting held in Salford, 13 October, 2018

On the previous day a Seminar on Creative Re-use (see report in *IA News* 187 p11) had been held at the same venue in Salford, so having several Council members already to hand it was deemed fitting to hold the meeting there instead of Ironbridge as is usual. Not all Council members could be present and those that were not submitted written reports.

Headlines:

- All Party Parliamentary Group IH gains support from government ministers, and hears presentation from Historic England – see report in *IA News* 187 p7
- Best Creative Reuse of an Industrial Building Award presentation made
- Restoration Grant Scheme continues its success story
- Subscription increase for 2019
- Numbers down, but downloads of *IA Review* reflects changing types of 'membership'
- Communications Team put in place
- 5-year Action Plan agreed
- Hope University chosen as 2020 agm conference venue
- Planning Case Work, links with bodies other than the CBA discussed
- Student wins travel bursary to investigate US 19th century oyster industry
- Spring visit to Hungary, more details.

All administration of APPG IH meetings, previously handled by the AIA and others, has now been taken over by the team supporting Nick Thomas-Symonds MP, but Nick still wants AIA to be involved giving advice on the broader IM&T sector, examples of good practice, speakers, representation from sector organisations etc.

Best Creative Reuse of an Industrial Building Award. The Railway Carriage Works, Inverurie, incorporating housing, offices and the Garioch Heritage Centre received the award and presentation of the plaque and a certificate to Malcolm Allan Housebuilders was made by Keith Falconer on Saturday 15th September.

Restoration Grants. As reported to the Nottingham Conference the scope of the Restoration Grant Scheme has continued to increase year upon year. This year we received 27 applications for projects seeking over £400,000 and were able to offer eight grants totalling £126,500 to the eight, very varied, projects that were agreed by Council in June. The Panel of judges was joined this year by Geoff Wallis and his expertise in the restoration field is greatly valued.

Treasurer's Report. John Jones gave an update on our financial position 2018 to date. Expenditure on the annual conference is the largest single item of expense in any year, but with no final invoice received from Nottingham University as yet, the financial outcome is still

unknown. And, of course, other significant items of expenditure, for example the payment we make to Taylor & Francis for the *IA Review* is not yet received. To date there is a slight drop in membership (see later) and that is reflected in a small drop in subscription income. Overall, the financial position is satisfactory with no nasty surprises anticipated in the remainder of the year.

During the agm at Nottingham it was intimated that subscriptions would have to be reviewed. This we did at the meeting and it was agreed that they would have to rise for 2019. All classes will rise by £3. This will be the first increase for six years. We have managed to hold the subscriptions at that level for those six years due to savings made in administration costs, in savings on the contract we have with Taylor and Francis for the *Review* and transferring production of the *IA News* to T&F.

Membership Report. At the end of September membership stands at 492. The third quarter increase is 15, made up of 11 new members, and 4 renewals. Year to date we have recruited 32 new members. Unfortunately, the bad news is the number of lapsed memberships. To date 33 have lapsed, that together with 11 cancellations, means a net loss of 12. T&F launched a campaign in September to encourage lapsed members to re-join us, whilst individual approaches have been made by Council members.

Action Plan. Periodically Council likes to look ahead and establish how best to achieve our aim of promoting the value of industrial archaeology and heritage. A provisional plan, developed by Ian West, David de Haan, Mike Nevell and Tegwen Roberts, was presented to Council. A number of amendments were agreed, and have been incorporated in the final version. The Action Plan discussion resulted in the forming of a Communications Team (Ian West, Chris Barney and Tegwen Roberts) to act on publicity matters.

Conference Secretary's Report. John McGuinness arrived at the meeting fresh from a visit to Liverpool where he had been exploring venues for a conference in that city for 2020. Meanwhile, the 2019 conference, 9 to 14 August, was discussed. John will shortly be visiting the Cannington campus of the Bridgewater & Taunton College in Somerset to examine the accommodation we have been offered.

As for 2020, after John's visit to both Liverpool University and Hope University and listening to his findings Council decided that the latter university would be a better choice.

In order to make things fairer it was further decided that in future the website would not be open for conference bookings until after the mailing of paper booking forms had been received.

AIA Practical Day 2019. It was agreed that the North Wales Slate industry would make a suitable subject for investigation. Local contacts would be made, initially by the Chairman.

Planning Casework Report. Amber Patrick has since June commented on seven industrial

archaeology cases. Following our last Council meeting Bill Barksfield notified affiliated societies of our planning consent system. This has resulted in three cases being referred to us, two of which Amber has commented on.

Council discussed developing better links with the Ancient Monuments Society, the Twentieth Century Society and the Victorian Society, as well as the Council for British Archaeology, to improve the access to planning cases.

Publication Editors' Report. *IA Review*: Ian Miller reported that the second issue for 2018 is progressing and on schedule for the end of November. Two of the articles have already been published online. Meanwhile, the first issue for 2019 is moving forward and will contain articles on a wide variety of subjects. However, some of the articles are delayed for a number of reasons and publication will not be until June.

Article downloads for the first six months of 2018 are almost three times as high as the same period in 2017. In total, in the twelve months to end June 2018 there have been 9,800 full downloads of *IA Review* articles, all producing royalty income for the Association.

Awards. An applicant for a Peter Neaverson Travel Bursary was successful and was granted up to £1,500 to study the physical remains of the nineteenth century oyster industry in the U.S. The fruits of this research are expected to be published in *IA Review*.

Field Visits Report. Two Country House Comfort & Convenience tours are planned for 2019, one a new tour, The Weald of Kent and Sussex in June, and a repeat of the tour in the North West in September/October.

A spring tour to Hungary is planned for 13 to 19 May 2019. This will cover a wide area of the country stretching from Miskolc and Ozd in the north to Pecs in the south. There are details on the website and an 'interested' list is open.

The International Committee for the Conservation of Industrial Heritage (TICCIH). The next TICCIH congress will be in Montreal, Canada in 2021, by then there will have been several intermediate conferences on specific subjects, such as one in December in Paris on WWI at which event a TICCIH Europe Section will be formed.

Industrial Heritage Support Officer (IHSO). The former officer, Shane Kelleher left the post in January and has been replaced by Joanna Turska. The project's Business Plan has been updated and Guidelines for the Industrial Heritage Networks (IHNs) have been drafted. They will be uploaded to the IHSO website and the new IHNs website once both go live.

Facebook Page Statistics. To the end of September, there has been an increase of 265% in posts on the Website and the number of active members was 785.

The next Council meeting will be held in March, 2019 at Leicester University.

Bruce Hedge

Using the online version of articles in *Industrial Archaeology Review*

Your AIA membership entitles you not just to copies of *Industrial Archaeology Review* but also to online access which can be even more exciting than reading the print version! You need to be able to log in to the online version maintained by our publisher, Taylor and Francis – tandfonline.com/loi/yiar20. If you cannot remember the password you were given when Taylor and Francis took over from Maney, all you need to do is to respond to the 'forgotten password' message and create a password that you will remember! If you get stuck, just contact Customer Services team at support@tandfonline.com who will be happy to help. Your username will be the email address you provided for your AIA membership. If you have forgotten this or it needs updating, please contact Customer Services directly.

All the back numbers of the journal were digitised by Maney and this has, of course been maintained by Taylor and Francis. You can therefore search for information by typing in a keyword – just try 'textile mills' in the search box for 'this journal' and see what you come up with! You can also, of course, search by place to find articles that have been published concerning your own locality. When the particular article is located you will be able to read it straight from the webpage (the HTML) and are offered a choice of downloading a PDF or an interactive PDF: the latter enables you to comment on the text and save your comments if you wish, as well as to zoom in and enlarge the text and images. Both can then be saved to your own library. You are also now able to listen to the article or download it as an audio file. To listen to any section of an article, simply highlight the necessary wording in the webpage and press the 'play' button.

In modern publishing, articles are given a DOI or Digital Object Identifier. This means that they can be searched for digitally and the full text made available, provided you do have access to that particular publication. For example, if you go online to the article I have written on '40 Years of *Industrial Archaeology Review: A Personal View*' in volume 40.2, published in 2018, you will see that I have referred to many past articles in the journal and cited their titles and their DOIs in the endnotes. If you click on these on the webpage or in either form of the PDF, this will bring up the entire article on the Taylor and Francis website. By using this method, it is possible to go straight to cited webpages and you are also able to jump to sections of the article by clicking on the heading in the sidebar on the left-hand side of the webpage, and share links to articles via social media and email by clicking on the 'share' icons on the top right-hand side of the article's webpage.

It is now also possible for authors who contribute to *Industrial Archaeology Review* to include other material in the digital version of their articles. These can include videos and 3D models as well as additional tables, diagrams etc. So we look forward to even more exciting articles in *Industrial Archaeology Review*! Do please try the online access if you don't already.

Marilyn Palmer, Book Review Editor

Planning reform

The Government have asked for comments on their proposed plan to amend permitted development rights, to allow the demolition and redevelopment of commercial sites for residential purposes. Listed buildings would still be protected, but it would put a lot of non-designated industrial heritage at risk.

At present there is the need for a full planning application and the current system encourages change of use rather than full redevelopment which would probably provide a higher density. The intention of the proposed changes is to bring forward as many appropriate sites as possible and it is suggested that this may be more focused on smaller sites.

Responses to the consultation had to be submitted by 14 January and the AIA has responded at some length.

Heritage Alliance

On behalf of the AIA, I attended the 2018 AGM of the Heritage Alliance (of which we are members) in the Queen Mary Undercroft of the Old Royal Naval College, Greenwich. This event is very well attended by representatives of all the non-statutory groups concerned with the protection of a wide variety of heritage sites, from the National Trust to the Historic Vehicles Owners' Club. There were about 200 people attending, many of them young heritage professionals. It is a very good event for networking and I was able to talk to Duncan McCallum, the Policy Director for Historic England, about the proposal to end their publishing programme. See page 12.

This meeting was the last of those being chaired by Loyd Grossman and his final speech referred to the variety of heritage, with industrial archaeology specifically referred to! Loyd also revealed that between 2009-2018 – the period of his chairmanship – there had been 17 separate ministers in the DCMS, which does not say much about continuity of policy. On this occasion, we were addressed by the current holder of the post, Michael Ellis, who stressed again the value of the Heritage Council set up by his predecessor which brings together representatives of the various government departments which have a stake in heritage. Another speaker was Duncan Wilson from Historic England who announced their latest Heritage Counts initiative, which this year is concerned with Heritage and Society. He also dealt with the progress being made with the £55 million set aside for improving historic high streets and showed some images of Derby – few of these seem to cover industrial buildings.

Marilyn Palmer

New AIA Research Grant Scheme

The AIA exists to promote the study, preservation and presentation of Britain's industrial archaeology and heritage. The research grant scheme underpins the study aim of the Association. It does that by:

- encouraging individual researchers to study industrial archaeology subjects;
- encouraging the development of industrial archaeology skills within commercial units, the main repository of professional skills in the subject;
- supporting local industrial archaeology and industrial heritage societies in exploring and understanding their local areas;
- helping to develop the next generation of industrial archaeologists.

Funding and Application Process

The total fund available in any single year is £1,500 and multiple grants may be given up to this maximum in a single year. The AIA may consider part-funding a wider grant application or project as long as the AIA grant is a significant part of the bigger application / project. Proposals should be submitted on the application form, which is available from the Association's website at with a deadline of the 10 January. Successful applicants will be notified by the 31 March in each year.

Applicant Requirements

- Anyone working in industrial archaeology in the UK – volunteer, student, academic or professional.
- Societies or organisations can apply but need to nominate an individual as the lead.
- The kind of work supported includes excavation, field survey, and documentary analysis but does NOT include conference attendance (we have separate funds for such support).
- The grant must form a significant part of the overall research funding being sought or must support a distinct and discrete element of a wider research project.
- The researcher must acknowledge the role of the AIA in supporting their work in any publicity.

Successful Applicant Process

- The research work should be completed by the successful applicant within 12 months of the approval of the grant by the AIA.
- Research grant payments will be staged with half the amount passed on to the successful applicant on approval, and the rest on presentation of the report (see below).
- On completion of the research the successful applicant must submit a summary (of up to 200 words) and a detailed final report. The summary will be included on the AIA website and in IA News. Publication of an article based upon the final report may be considered for our journal, *Industrial Archaeology Review*.

For further information contact - research-grants@industrial-archaeology.org

Historic England Heritage Angels Awards 2018

Hosted by historian Bettany Hughes, the presentation of the Historic England Angel Awards for 2018 took place on 27 November at the Gillian Lynne Theatre in London.

Picking out entries and winners of direct industrial archaeological interest, the Bulmer Brick & Tile Company in Suffolk received the award for the Best Craftspersons or Apprentices on a Heritage Rescue or Repair Project. For more than 80 years Bulmer Brick & Tile in Suffolk has been extracting London clay to make bricks by hand for heritage projects. This is a family firm run by Peter Minter whose extensive knowledge of the fabric of old buildings has enabled his business to grow from a small firm matching bricks for individual customers to a thriving business working on large scale prestigious projects. The Award is for the craft of traditional brick making. The AIA visited the works during the Essex conference in 2012.

Among the runners up for this Award were the Allen Smelt Mill volunteers, Northumberland. This smelt mill is a rare remnant of the lead mining industry of the North Pennines. The mill was at the centre of this industry in the Allen Valley between 1600 and 1897 but was in a perilous condition and all but lost beneath rubble and vegetation when work began to rescue it. Volunteers played a vital part in recovering the mill's remains and providing the impetus for a substantial rescue and restoration of this industrial heritage site.

Sponsored by Selectaglaze, The Award for the Best Major Regeneration of a Historic Building or Place, for projects over £5 million, went to the The Historic Dockyard Chatham, Kent. This Royal Dockyard on the Medway River has built ships for the Royal Navy for nearly 400 years. Its closure in 1984 left a chasm for local communities whose lives had revolved around the dockyard for generations. The problem for the Chatham Historic Dockyard Trust was how to regenerate an 80-acre site and make it self-sustaining. An entrepreneurial strategy of 'preservation through re-use' has created a thriving multi-purpose site for future generations and a major tourist attraction in South East England.

Also shortlisted for this Award was The Cromford Mills Creative Cluster and World Heritage Site Gateway Project, Derbyshire. The Cromford Mills in the Derbyshire Dales are home to inventor Sir Richard Arkwright's first mill complex and birthplace of the modern factory system. The ground-breaking restoration of what is known as Building 17 at this UNESCO World Heritage Site has made his work the focus of international interest, just as during the early Industrial Revolution. The site was used latterly as a colour works producing pigments for paints and dyes and the building was severely contaminated – at one point its rescue was considered impossible. It is now a self-sustaining complex hosting a visitor centre and 45 offices.

The Andrew Lloyd Webber Foundation supports the Angel Awards scheme across the UK. The awards launched in 2011 in England were followed by Scotland in 2014, Northern Ireland in 2017 and Wales for the first time this year. Andrew Lloyd Webber and a judge from each home country chose one project as the overall winner from the 20 winning projects across the UK. The 2018 Overall Winner, was The Foyle Civic Trust in Northern Ireland. The Walled City Partnership, Townscape Heritage Initiative in Derry, has been behind the injection of over £10 million into the repair and restoration of more than 30 of its historic buildings.

Robert Carr

Principles of selection for listing buildings

The DCMS has recently published the updated 'Principles of selection for listed buildings' which sets out the statutory criteria and general principles applied by the Secretary of State when deciding whether a building is of special architectural or historic interest. The following criteria are used by the DCMS to assess the buildings' importance:

- Architectural interest;
- Historic interest
- Group value;
- Fixtures and features of a building and curtilage buildings;
- Character or appearance of conservation areas.

The assessment is based on general principles including: age and rarity (the more ancient is a building, the more it is likely to be included in the list), aesthetic merit, significance and representativeness, national interest and state of repair.

Government announces its endorsement of the Slate Industry to the World Heritage List

The Gwynedd quarrying landscapes and transport systems submitted the application to join the World Heritage List in 2012. Every country can support one site per year from those inscribed in the tentative list to become part of the World Heritage List. On 23 October, Heritage Minister, Michael Ellis, announced the Government's endorsement of the Welsh quarrying landscapes.

Welsh slates have been extensively used since the Roman period, but from 18th century the industry grew significantly, shaping the surrounding landscape. The nomination comprises seven areas, representing different forms, traditions and communities associated with quarries.

The European Industrial Heritage of the First World War Paris Conference 6-8 December 2018

A total of 18 papers were presented by delegates, widely distributed over Europe. The subject matter was very varied and some could be said to have stretched the meaning of Industrial Archaeology.

The opening paper concerned a canning factory in Budapest which was turned over to munitions work during the war. The paper on French airship hangers, built for the French army but taken over by the French navy and relocated, was based largely on old postcards, since of these hangers, only one remains.

The metallurgical Society's site in Campo Tizzoro was active in both world wars and included a large development of workers' houses. For me the most interesting features were the extensive air raid shelters with very distinctive access towers, although these were, of course, a Second World War feature.

The story of the fate of the ribbon mills in Comines on the Belgian border showed their destruction, reconstruction and then use as barracks etc. by the German army. We were shown some interesting photos of the inside with the machinery still in place and naked soldiers being de-loused.

In many ways the most relevant paper was from Germany, showing the remains of a very substantial factory to make soda for explosives. It was clear, that just as Britain was cut off from some basic ingredients for explosive manufacture, so was Germany.

The paper on munitions production in Sweden was interesting since Sweden was neutral. As a consequence it fell behind in arms manufacture and after the armistice imported German engineers to help it catch up. One consequence was the formation of the Saab Company to design and manufacture aeroplanes.

Mark Watson gave an interesting paper on the pros and cons of giving World Heritage listing to sites directly related to warfare. In defence of this notion he cited a number of battlefield sites which had been listed but on other grounds.

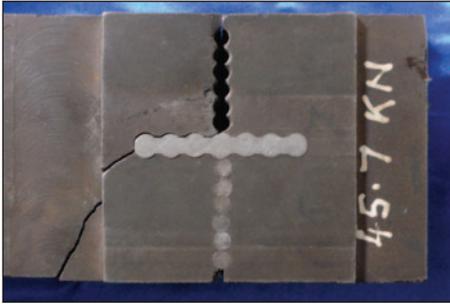
My own paper was on *War workers' housing in England, 1914 to 1918*. I was able to show houses on a number of sites, mainly in the London area including Well Hall, Eltham, Crayford Garden Suburb, the Austin village in Birmingham, Roe Green and Aeroville in North West London and Rafbrough and Pinehurst Cottages at Farnborough.

Foot note: I am trying to study all the purpose built estates for war workers of the First World War. Any help with documentary or archival sources would be very welcome.

John McGuinness (johnmcg41@outlook.com)

Metal Stitching – an Appreciation

Having made two unsuccessful attempts to describe metal stitching, I was overjoyed to see in the last newsletter a superb account of this process from Geoff Wallis – someone who has wide hands-on experience of stitching iron. The illustration in *IA News 187* speaks volumes; a good example of how the right picture can be worth a thousand words. This article not only



clearly describes the process but it is a very clear and concise history of metal stitching.

To the novice, at first sight metal stitching appears a rather unlikely process – like walking on water. The first stage is straightforward; you clamp the metal together and put stitches across the crack – well and good. However you then screw in studs along the crack which appears counterintuitive. Won't the studs open up the crack again?

Perhaps the following thoughts will give readers more understanding of why metal stitching works.

The eminent structural engineer Frank Newby often reminded us that tension in a structure produces rigidity. Early in his career Frank worked for Felix Samuely. One of his first jobs in 1951 was to monitor the tension in the cables of the Skylon at the Festival of Britain. This remarkable steel tensegrity structure no longer survives but it was a familiar topic of conversation at the time. Somehow intended to symbolise Britain, there was even a music hall joke that it symbolised the British economy as it had no apparent means of support.

As an example of how tension in a structure can produce rigidity, consider the example of putting up a tent. Apart from the tent poles which can take a compressive load, everything else is floppy. When you erect the tent you stretch out the canvas and put tent pegs into the ground at suitable intervals. You also use guy ropes to support the tent poles and tighten these as well as stretching out the canvas. Finally we arrive at a rigid structure with the canvas and the guy ropes in tension, these components made from flexible canvas and cords. Tension has produced a rigid structure from floppy materials.

You have to appreciate that in metal stitching considerable tension is being produced. The stitches and the studs are producing opposing forces which lock the joint rigid and, in the same way that a screw holds pieces of metal or timber together, movement in a direction parallel to the

axes of the studs is prevented by the studs' screw threads. The studs inserted along the crack tension the stitches. This is an example of prestressing and the studs are packed closely together so that they seal the crack and make it watertight.

Towards the end of his article, Mr Wallis tells us that a stitch repair is more likely to fail if the stitch has a free edge. The photograph shows such an example. This test piece, which failed at a load of about 4.5 tons (45 kN), was on display at the Dorothea 40 celebration in 2015.

Robert Carr

Steeple Jack

Further to Steeple Jack's adventures in Lancashire, there is another set of his memoirs, called 'Steeple Jack's Adventures' about the same man's career in Scotland and some parts of Ireland and England. Born in Dundee in 1829 he served as a sailor for four years, losing any fear of heights. He was known as Jack having been a Jack Tar, or sailor. Although three of the sons who followed him into that profession were killed in falls, Weight lived to write his memoirs. Many of the chimneys and steeples that he wrote about can be identified today.

Mark Watson

"Work it Out 2018"

ERIH's **Work it Out 2018** event was a great success involving over 3000 participants in 32 sites in 10 countries Search – **ERIH work it out** – to see images and a composite video of the event:

The ERIH Board decided to build on the success of this year's event and organise a similar event in 2019.

Work it Out 2018 was very effective in attracting young people to the participating ERIH sites and the subsequent exposure on social media helped to raise the profile of the sites, particularly among younger audiences.

I encourage all ERIH member sites in the UK to consider being part of the 2019 event – the event can be adapted to each site's physical layout, resources and local circumstances. Having heard some of the very positive feedback from sites that took part in this year's event, I have no hesitation in encouraging UK sites to participate in Work it Out 2019.

Jonathan Lloyd ERIH National Representative, UK & Ireland

I can strongly recommend readers to take up the links in Jonathan's letter. I think you will be surprised and, I hope, delighted. This is so far outside the normal experiences of members of the AIA that it may come as a shock to see how other countries attract young people to historic industrial sites but I think we should learn from it if our subject is to flourish in the future. Even if it is too late to become involved for 2019 I hope that the event will be held again and I look forward to seeing participation at sites throughout the UK.

Ed.

And the band played

Further to the informative article on industrial chimneys (*IA News No 186*) by Robert Carr and correspondence by Roger Holden I attach a photograph of the mill chimney at India Mill, Darwen.

The mill owner was renowned for his ambition to build a chimney in Italian campanile style to fulfil his ambition to create a piece of architecture which would dominate and be a credit to the town. He



India Mill, Darwen

had the opinion that Darwen was completely lacking in any buildings of merit.

On special occasions the town's brass band performed on the parapet at the top of the chimney.

Roy Murphy

William Morris Cranes and Brush Electrical

Just to set the record straight the name of the crane maker (*IA News 187*) was Herbert Morris who often gets confused with William Morris of arts and crafts and wall paper manufacturing fame.

Bob Cooper

Oh dear – rarely has the editor made such a boo boo – however it should be mentioned that Bob is the only reader to point out the error – so perhaps the editor shouldn't feel so bad!

King's Cross – A Walk to the Heatherwick Roof



Approach to the new coal drops area

photo R Carr

If you start from the recently built entrance to the King's Cross & St Pancras underground station in King's Boulevard which leads from King's Cross suburban station northwards towards the King's Cross goods yard and proceed northwards from there you will come to the Regent's Canal; crossing the canal you get a good view of the Cubitt Granary. Left of this you will notice the converted gasholders described in *IA News 187*. In front of these holders you will then be struck by a dramatic change to the coal drop buildings: an intrusive curving roof has been placed on top of them.

This is the controversial 'kissing roof' by Thomas Heatherwick which has received enormous criticism – from architects as well as conservationists. Conservative opinion was likely to be critical but a considerable number of the rude comments, some especially so, have come from architects. Was some of this criticism just 'sour grapes'? One wonders.

Thomas Heatherwick, born in 1970, is an English designer and founder of the Heatherwick Studio based at King's Cross. He was involved in the design of the Olympic Cauldron, the current London Routemaster bus and the 'Seed Cathedral' for Shanghai Expo 2010. Other work includes the Rolling Bridge at Paddington Basin which won the 2005 British Structural Steel Award. This bridge unfolds across the Basin every Friday at noon.

More recently Heatherwick has been involved in the design of the Bombay Sapphire gin distillery in Hampshire which opened in 2014. This consisted of the renovation of a 300 year old paper mill, Laverstoke Mill on the River Test. Twenty three existing buildings were restored and Heatherwick added a curving roof to the skyline in some ways reminiscent of the 'kissing roof' for King's Cross.

What can we say here about Thomas Heatherwick's new work at the coal drops? The ground floor and first floor now accommodate retail

outlets most of which have opened to the public. The most interesting part, the interior of the kissing roof, is still closed to the public. Photographs on the internet indicate that structurally the new roof is a splendid work, a masterpiece of laminated timber. When we can get up there to admire this new enlarged attic, as the designer intends, some hostile opinions might change? The problem comes from the exterior view where the significant change in the roof line has altered the character of the western part of the goods yard.

This is a price we may have to pay to make this part of the goods yard commercially viable. To attract sufficient numbers of shoppers to the coal drops to spend money, something as dramatic as the kissing roof is probably essential. To the general public these buildings, if simply

conserved as they were, would not stand out enough to attract popular attention.

The coal drops were listed grade II in 1983 and although the redevelopment has been carried out sympathetically – the re-tiling of the roofs was carried out with astonishing care for authenticity – Heatherwick's 'kissing roof' has involved the loss of historic material at the northern end. Presently, approaching from the south there appears to be a total lack of signage explaining what the coal drops were built for. Some visitors seemed to think that the buildings were some kind of warehouse. Perhaps coal, which in the heyday of the coal drops was largely used for domestic heating, is too dirty and unpleasant a subject to raise in connection with premises now intended for the sale of luxury goods and fine dining. So rather like factory chimneys, this is something you are advised to forget.

However, if you now go to the north side of the coal drops there is a very good display of material on hoardings which is more than adequate. Moreover, just to the east of here is the King's Cross visitor centre with displays, takeaway literature and a fine model of the coal drops as they are now with the Heatherwick roof.

Originally, the coal drops consisted of elevated railway lines along which coal wagons with bottom doors could discharge their loads into hoppers below. At ground level coal merchants would bring their carts beneath the hoppers, weigh and bag their coal and then take it round the streets of North London to their customers.

The King's Cross railway lands are becoming an exceptionally prestigious location, Google and Facebook are already moving in. When things settle down we will doubtless get more used to Thomas Heatherwick's roof. Already the shock of the new is beginning to subside. In due course and after repeated visits it could well become a much loved addition to the scene.

Robert Carr



Thomas Heatherwick's 'kissing roof'

photo R Carr

A Data Base for I A is spreading nationally

The database, originally devised by GLIAS member Chris Grabham, has been developed into an online web-based system by the Yorkshire Archaeology Society's Industrial History Group.

The online system, which includes a large number of images, uses the Web to provide mapping details as well as the usual feature of links to 'everything' (even Wikipedia). The current Yorkshire Database can be viewed at industrialhistoryonline.co.uk/yiho/

The system has spread beyond the boundaries of Yorkshire and GLIAS are in the process of transferring the long established CD-based London data to the system. Other local societies are considering following suite.

Yorkshire Industrial Heritage On-Line

Data Entry Form - Page 1 of 2

Fields marked with an * must be completed before the form can be submitted.

Site Details 1 - Location

Site Name*	<input type="text"/>		
Key Words/Site Description/Uses*	<input type="text"/>		
Grid Reference	<input type="text"/>		
Location	<input type="text"/>		
Viewing the site	<input type="text"/>		
Street	<input type="text"/>	Village, Township or Suburb	<input type="text"/>
Town*	<input type="text"/>	Post Code	<input type="text"/>

Site Details 2 - Administrative and Protected Status

When entering data onto the web site select the appropriate fields from the drop down menus

Civil Parish in which the site is located	<input type="text"/>	District/Unitary Authority/Borough	<input type="text"/>
Ceremonial county in which the site is located*	<input type="text"/>	Pre 1974 county in which the site was located	<input type="text"/>
Site's protected status (if any)	<input type="text"/>	Site's current use or condition	<input type="text"/>
For Listed Sites Only			
Listing Number	<input type="text"/>	Monument Number	<input type="text"/>

Yorkshire Industrial Heritage On-Line

Data Entry Form - Page 2 of 2

Site Details 3 - Site Description

Year of construction or first known use	<input type="text"/>	Year of demolition or last known use	<input type="text"/>
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Site Description

Continue on extra sheets if necessary
Please provide a description of the site in the box below

Site History

Please provide details of the history of the site in the box below

Site References

Please provide details of any known references to the site in the box below

Site Details 4 - Record Audit Trail

Site Visited By	<input type="text"/>	Date Site Visited	<input type="text"/>
Contributor	<input type="text"/>	Date of Data Entry	<input type="text"/>
Society	<input type="text"/>		

A remarkable railway in New Zealand

Passenger trains and trams can cope with relatively severe gradients, but they are more problematic for freight services. It is therefore remarkable that KiwiRail's Tranz-Alpine route 100 miles across New Zealand's South Alps is in daily use delivering coal from Westport on the west coast to Christchurch on the east over a 1 in 33 gradient.

Geoff Wallis

The single track rises to 740m (2,440 ft) where at Arthur's Pass a eight km (five mile) long tunnel takes it under the summit. Construction of the 3 ft 6 inch gauge railway started in the 1880's but financial and technical difficulties delayed its completion and the tunnel was not finished until 1922, at which time it was the longest tunnel in the British Empire.

Such a long tunnel requires artificial ventilation, so one end is closed by an automated door and fans draw air through from the far end. It is said that the reduced pressure can produce fog in the tunnel when a train restricts the airflow.



Six GE locomotives head a 30 wagon coal train exiting the Otira Tunnel at Arthur's Pass

photo Geoff Wallis

Although the straight tunnel has a punishing uniform gradient of 1 in 33 it is used for daily freight traffic, as well as the famous Tranz-Alpine Express carrying tourists between Christchurch on the east coast and Greymouth on the west. Doubled General Electric locomotives dating from the 1970s haul 2,000T coal trains up to the pass,

but the extreme gradient near the summit requires the assistance of *four additional* locomotives. These couple to the head of each train as it arrives at Otira station, day and night, to help haul it over the summit to Arthur's Pass station and then return the ten kilometres to Otira to await the next train.

The British Archaeological Awards 2018

In 2018 the British Archaeological Awards were presented at Central Hall Westminster on 15 October. The ceremony was rather better than usual – we sat at small tables, like the Oscars or Turner Prize. The audiovisual presentations were excellent and even the wine and nibbles seemed better. Professor Carena Lewis was the compère for the evening. She will be well-known to many of you for her contribution to the popular television programme *Time Team*. Carena made it quite clear that the British Archaeological Awards are the Oscars for archaeology.

This short note will just mention those entries of direct industrial archaeological interest. Both happen to have a considerable maritime content.

The award for the Best Community Engagement Archaeology Project was awarded jointly to SCAPE – Scotland's Coastal Heritage at Risk Project and CITIZAN – Coastal and Intertidal Zone Archaeological Network. The shared award which went to SCAPE was for the detailed investigation of shipwrecks on Newshot Island on The River Clyde. Here about fifty craft, principally mud punts, had been abandoned and left to decay. The photograph shows the joint winners.

Before 1760 only very small craft could navigate up the Clyde as far as Glasgow, the depth of water at Glasgow Bridge being only about 4 feet. A comprehensive programme of dredging carried out over the following 200 years achieved a depth of water at Glasgow itself of almost 40 feet. This was a major civil engineering achievement – constructing what was essentially a ship canal from the sea almost to Glasgow Bridge in the centre of the city. A description of this fascinating work is outlined in the book *Clyde Navigation* by John F Riddell published in 1979.

The first steam bucket dredgers were introduced on the Clyde in the 1820s, five being built between 1824 and 1841. These discharged dredgings into small flat-bottomed wooden craft known as 'mud punts'. Later improvements replaced the mud punts with self-propelled hopper barges which could discharge their load through bottom doors. With subsequent use in mind, many of the obsolescent mud punts were taken to Newshot Island and over time essentially forgotten.

Here on this Island, some way towards the mouth of the Clyde between Erskine and Clydebank, is a remarkable graveyard of vessels. Apart from the numerous mud punts – before the steam-propelled hopper barges were introduced – more than 350 of these punts were in use. There are three or four burnt-out schooners and a really remarkable survival. This is an early diving bell barge built shortly after 1852. This small iron craft is remarkably intact; even the diving bell itself survives and it is believed to be by far the earliest surviving example in the world. Owing to silting, Newshot Island is now attached to the mainland and is part of Newshot Local Nature Reserve.

The Thames Discovery Programme entered for the Best Archaeological Project was highly commended; among the many exciting pieces of work undertaken was the investigation of ships' timbers on the foreshore at Charlton, where shipbreaking took place. These are from large wooden warships which were broken up at the end of the nineteenth century. It has been to some extent possible to identify which vessels these came from and further identification work is currently being undertaken.

At Charlton there is archaeological evidence of one of the most dramatic periods of naval development – in less than 40 years the ships of Nelson's navy were replaced by steel battleships, propelled by steam engines and armed with large guns in turrets. Apart from underwater shipwrecks, this could be the only surviving physical evidence of British warship construction from the last years when timber still constituted a significant part of a warship.

Robert Carr

'Man at Work'

A most unusual, perhaps unique, museum and gallery is to be found at the Milwaukee School of Engineering.

The Grohmann Museum Collection '*Man at Work*' comprises of more than 1,400 paintings, sculptures, and works on paper from 1580 to the present. They reflect a variety of artistic styles and subjects that document the evolution of organized work – from farming and mining to trades such as glassblowing and seaweed gathering. Later, it is machines and men embodying the paradoxes of industrialism – dark factory interiors with glowing molten metal juxtaposed with workers.

The earlier paintings depict the early forms of work, such as men and women working on the farm or at home. Later images show trades people engaged in their work, – the blacksmith, chemist, cobbler, cork maker, glass blower and taxidermist. The more recent works include images of machines and men, often commissioned by the factory's owner, are mostly exterior views of steel mills and foundries surrounded by hefty trains and tracks or dark factory interiors where glowing molten metal is juxtaposed with factory workers and managers.

Most of the paintings are by German and Dutch artists, but also include American, Austrian, Belgian, Bohemian, Danish, English, Hungarian, Flemish, French and Spanish.

The Grohmann Museum is named in honour of Dr Eckhart Grohmann, a Milwaukee businessman and avid art collector, who donated this collection to Milwaukee School of Engineering in 2001. He grew up visiting his grandfather's large marble processing business and quarry operation in Silesia, Germany (now within the borders of Poland). It was there, watching the stone cutters and sculptors select raw material that would soon become a work of art, that he developed his appreciation and

admiration of work. To Grohmann, hard work is not an idealized concept but a principle of life.

Grohmann is the former chairman and president of Milwaukee's Aluminum Casting & Engineering Co., a firm he acquired in 1965 and developed from a small foundry of 35 employees to a company ten times that size when he sold the business in 2007. A successful entrepreneur, he co-founded Central Control Alarm Corp. in 1980 and developed it into the leading alarm company in Wisconsin.

The Heritage at Risk Register

The Heritage at Risk Register 2018 reveals that in England, there are 5,160 entries on the 2018 Heritage at Risk Register, 94 less than in 2017. They include

- 1,489 buildings or structures (Grade I and II* listed secular buildings and structural scheduled monuments and GII listed secular buildings in London)
- 911 places of worship
- 2,151 archaeology entries (non-structural scheduled monuments),
- 99 parks and gardens entries
- 4 battlefield entries
- 4 protected wreck sites

In addition, at least 502 conservation areas are at risk of neglect, decay or inappropriate change.

Civic societies across the country are filling a gap left since the 37 per cent reduction in conservation officers across England. Following on from the budget, we are going to have to expect further pressure on local government in future years. Civic Voice is appealing for more volunteers to join their Big Conservation Conversation campaign to make the case for conservation areas.

ST Cervia

On 27 November it was reported from Ramsgate that fire crews and divers were assessing the ST Cervia which was taking on water 'due to a large hole; that the crew sandbagged'. Since the leaks in the tug were discovered, teams of specialist engineers have worked to stem the flow of water from several sections of the hull.

The Cervia volunteers' newsletter reports that the concrete patches have greatly reduced the ingress of water. But, continues — "these are only short term repairs, nobody can predict how long they will last, and given that the hull was constructed at the same time, it cannot be ruled out that there could be more erosion, resulting in further leaks in the future. So, for now the volunteers are concentrating their efforts on cleaning the main engine, which was immersed in eight feet of salt water, and the aft deck which resembles a building site, back to the previous condition."

Local Society and other periodicals received

Abstracts will appear in *Industrial Archaeology Review*.

Bristol Industrial Archaeological Society Bulletin, 156, Autumn 2018

Cumbria Industrial History Society Bulletin, 102, December 2018

Dorset Industrial Archaeology Society Bulletin, 53, January 2019

Greater London Industrial Archaeology Society Newsletter, 298, December 2018

Hampshire Industrial Archaeology Society Focus on Industrial Archaeology, 91, December 2018

Histelec News: Newsletter of the South Western Electricity Historical Society, 70, December 2018

Historic Gas Times, 97, December 2018

ICE Panel for Historical Engineering Works Newsletter, 159, September 2018

Midland Wind and Watermills Group Newsletter, 122, December 2018

Northamptonshire Industrial Archaeology Group Newsletter, 148, Autumn 2018

North East Derbyshire Industrial Archaeology Society Newsletter, 72, November 2018

South West Wales Industrial Archaeology Society Bulletin, 133, October 2018

Suffolk Industrial Archaeology Society Newsletter, 143, November 2018

Surrey Industrial History Group Newsletter, 220, November 2018

Sussex Industrial Archaeology Society Newsletter, 180, October 2018

Sussex Mills Group Newsletter, 180, October 2018

The Trow: Cotswold Canals Trust Magazine, 183, Winter 2018

WaterWords: News from the Waterworks Museum, Hereford, Autumn 2018

Worcestershire Industrial Archaeology and History Society Newsletter, 53, November 2018

Histelcon 2019

Histelcon 2019 will be organised by the IEEE UK and Ireland Section at Strathclyde University on 18 and 19 September 2019.

The proposed primary theme is 'historic computers' with an aim to include paper on those inventions and developments which have not already been the subject of extensive historical publications, and to include the contribution special purpose processors have made to the development and use of advanced digital signal processing in many application areas. Sessions to cover other aspects of technology history in the electrical, electronic and related fields will also be provided for.

SWWERIAC 2019, 6 April 2019

to be hosted by the Bristol Industrial Archaeological Society (BIAS)
Saltford Hall Saltford BS31 3BY

Speakers:

Geoff Wallis: Restoration Work on Brunel's Swivel Bridge at Bristol Docks; Mary Miles: Recording Watchet Papermill; Joanna Turska: Industrial Archaeology in Britain: A Review of the Sector; Steve Grudgings: Hemingfield Colliery – Work in Progress; Representative of Oxford House Industrial History Museum, Risca: The Black Vein Explosion of 1860 and the Miners Graveyard; Eric Miles: Sentinel: The Rescue and Restoration of a Steam Shunter from Keynsham's Somerdale Works.

Visits

Walk around Keynsham to explore the town's Industrial Past – (Mike Bone); Bitton Railway Opened in 1869 by the Midland Railway. Now run by volunteers. (Eric Miles); Kingswood Museum inside 18th Century brass mill at Warmley. Admission £3. (Alan Bryant).

Saltford Brass Mill dates from the 1720s. Limited number only. Availability of visit subject to weather and winter water levels. (Patrick Beazley).

Booking form available for download on www.b-i-a-s.org.uk,

AIA Weekend 6-7 April 2019

The Slate Museum, Llanberis
Talks and Tours with David Glynn
Full details on the AIA website

SIA Conference Chicago 6-9 June 2019

For the first time since 1991, and only the second time in its history, the Society for Industrial Archaeology Annual Conference will be held in the industrial metropolis of Chicago.

Well-known as the nation's rail hub, hog butcher for the world, steel producer extraordinaire, home of the company town of Pullman—the question really becomes, what didn't Chicago manufacture? The city was once the hub of the nation's electronics, candy, and printing industries. More musical instruments were produced in Chicago than anywhere else. Bicycles? Chicago was the hub of that industry too. How about pinball machines, jukeboxes, and furniture? Needless to say, Chicago was and is the hub of a diversified manufacturing economy, owing to its central location on Lake Michigan and the Chicago River, transportation connections, and skilled workforce.

Moreover, it also became a centre for innovation in the development of industrial buildings, high-rise architecture, and urban planning – for instance, the first planned industrial parks in the nation were constructed in Chicago.

We are excited to show just some of the city's industry, transportation heritage, and industrial archaeology during this conference. Pre and post conference tours are also planned.

For full details consult the SIA website.

Watt's the Story: Celebrating James Watt in 2019

2019 is a big year for James Watt anniversaries – he gained the patent for his revolutionary separate condenser 250 years ago on 5th January 1769, and he died exactly two centuries ago on 25th August 1819.

Professor Colin McInnes, James Watt Chair and Professor of Engineering Science at the University of Glasgow, has commented that James Watt's inventions were key to the huge step change in efficiency that drove the industrial revolution. He also observed that, "His initial is stamped on every light bulb, measuring the electrical power it delivers, but also reminding us of the sheer intellectual light he brought to the world".

Professor McInnes is a member of a group dedicated to ensuring that Watt's achievements are properly celebrated in 2019. Chaired by Historic Environment Scotland, it has funded the creation of a website aimed at drawing together topical information and co-ordinating Watt-related events. Although based in Scotland, the group is working closely with colleagues in England, notably Dr Malcolm Dick at Birmingham University and the Science Museum in London.

If you would like to contribute any Watt-related story, information or details of events to the website, please go to the site at jameswatt.scot, or contact the webmaster via email at: adrian@thepstore.co.uk.

*Miles Oglethorpe,
Head of Industrial Heritage, Historic Environment Scotland*

6 April 2019
SOUTH WEST & WALES
REGIONAL IA CONFERENCE
Saltford Hall, Saltford
 See page 23
www.b-i-a-s.org.uk

6-7 April 2019
AIA WEEKEND – THE SLATE
INDUSTRY
The Slate Museum,
Llanberis
 Deals on the AIA website

13 April 2019
SERIAIC 2019
Dartford Grammar
School
 hosted by Kent Archaeological Society

10-11 May 2019
WORKSHOP
 The Changing Role of Consultants
 1850-2000
 Maison Francaise d'Oxford
 See page 15

11 May 2019
EMIAIC 96
Kirby in Ashfield
 Organised by The Railway and Canal Historical Society
 The Mansfield and Pinxton Railway (1819)

6 – 9 June 2019
SIA CONFERENCE, CHICAGO
 See page 23

9 – 14 August 2019
AIA ANNUAL CONFERENCE,
SOMERSET
18 – 19 September 2019
HISTELCON 2019
Strathclyde University
 See page 23

5 October 2019
ESSEX IA GROUP
INDUSTRIAL HERITAGE FAIR
Chelmsford
 Full details to follow in future Newsletters

20 – 27 August 2020
AIA ANNUAL CONFERENCE,
LIVERPOOL

IMPORTANT NOTICE

IA News would like to publicise your event, particularly if it will appeal to members outside your area BUT if you don't tell the editor IT WILL NOT HAPPEN. The production schedule is long and it is no good leaving it to the last minute.

For events before the end of May, copy information needs to be with the editor by email before the end of December to make the edition distributed in February.

Likewise for events before the end of August information by the end of March (distribution in May) and events before the end of November then information by the end of June (distribution in August).

Two items readers may feel are 'over the top'

I am sure most readers will have received emails like that below (addressed toaianewsletter) but the editor feels that this is a prize winner and worthy of a wider publication.

Hello My Darling

My Darling Excellency, am Miss Annia, a Franco-Ivoire and Adopted Child of late Dr Joshua. Lee N'Guoroma, Who was a Former Prime Minister and Minister In charge of Oil and Gas in Republic Of Cote'D Ivoire from 2000 to 2010, mainly during the country political crises and Later became an Oil Tycoon in Kuwait, Dubai and Saudi Arabia.

And one of Shareholder in Al Furat Petroleum Company in Arab Nations (AFPC) the leader in the region in Reservoir Management. Private shareholder in General Petroleum Corporation and Exxon Mobil Petroleum Development (EMPD) based Kurdistan Region of Iraq before his sudden death.

Before the sudden death of my father in a private hospital here in Abidjan, he secretly called me at his bed side, when I sat down to listen to him, he started crying and complained that the world is too wicked because of what is passing through and he also revealed this to me that he has a sum of amount money deposited in UBA Bank for Oil Field investment.

He also explained to me that it was because of his wealth that he is suffering of the poison he received from his family member suspecting to be my uncles that desperate to inherit his inheritance after years of his suffering. That I should seek for your assistance as reasonable foreign partner in your country through the Catalog he bought on his last business trip to your country before his death, he say it's where I will transfer this money under your watch and use it for proper investment purpose through your directive and also continue my education under your guidance in your country there.

And I have write the Bank consultant firm And they told me that once i introduce my late father business partner to them, the bank will carry the transaction of 'U.S \$120 Millions' through their ATM VISA CREDIT CARD transfer for security reason, although, i don't know what the bank means by Visa Card transfer.

Thanks Yours Lovely Miss Annia Lee Joshua



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Final copy dates are as follows:

- 1 January for February mailing
- 1 April for May mailing
- 1 July for August mailing
- 1 October for November mailing

The AIA was established in 1973 to promote the study of Industrial Archaeology and encourage improved standards of recording, research, conservation and publication. It aims to assist and support regional and specialist survey groups and bodies involved in the preservation of industrial monuments, to represent the interests of Industrial Archaeology at national level, to hold conferences and seminars and to publish the results of research. The AIA publishes an annual Review and quarterly News bulletin. Further details may be obtained from the Liaison Officer, AIA Liaison Office, The Ironbridge Institute, Ironbridge Gorge Museum, Coalbrookdale, Telford TF8 7DX. Tel: 01325 359846.

The views expressed in this bulletin are not necessarily those of the Association for Industrial Archaeology.



The royal coach in the Musei Centrale Montemartini – see page 11

Photo: Martin Green