

Sussex Industrial Archaeology Society Newsletter



Visit to Gatwick Aviation Museum
Model of Beehive
Group viewing one of the aircraft



Newsletter 183

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Editorial

Welcome to *Newsletter 183*.

Regretably the walk planned for 15th June had to be cancelled by the leader, after the last *Newsletter* went to press, Hopefully it will be possible to replan for a future date. It was not possible to satisfactorily organise a replacement in time, but do note the visit to the Spa Valley Railway, detailed on page. Please do be sure to always register for visits and walks in case of the need to change plans at short notice.

Several full reports fill the pages this bumper issue. I do have one or two items and book reviews held over, but I always welcome contributions, suggestions, or images.

New Book Release

Eastbourne History Tour

Kevin Gordon

Eastbourne History Tour offers a fascinating insight into the fascinating history of this town on the coast of East Sussex. Author Kevin Gordon guides us around its well-known streets and buildings, showing how its famous landmarks used to look and how they have changed over the years as well as exploring its lesser-known sights and hidden corners. With the help of a handy location map, readers are invited to follow a timeline of events and discover for themselves the changing face of Eastbourne.

Price: £7.99 - ISBN: 9781445692272 - 96 pages - 50 illustrations

Visit our website - www.sussexias.co.uk

Forthcoming SIAS Events

Malcolm Dawes

Saturday 31st August. *Visit Spa Valley Railway and guided walk around The Pantiles, Tunbridge Wells*

A ride on a steam hauled train and a walk around historic Tunbridge Wells – a day full of interest to conclude our visits for the summer.

Meet at Enridge Station at 1030. The Station is clearly signposted off the A26 between Crowborough and Tunbridge Wells. There is a car park (£2.50) and some possibilities of parking on the approach roads. We will be catching the 11.15 train (scheduled to be steam hauled) to Tunbridge Wells West. Buy your tickets from the Spa Valley Office on Platforms 2/3 (adult £10.00, over 60 years fares reduced by £1.00). There is a limited selection of drinks and snacks at the station. Southern trains from London Bridge, East Croydon and Uckfield call at Platform 1.

We will arrive at Tunbridge Wells West at 11.45. There will be a guided tour around this historic station and the engine shed used by the Spa Valley Railway.

This will be followed by lunch – the Station has a restaurant and there is a good choice of pubs and cafes down the road at the Pantiles.

After lunch we will meet at the southern end of the Pantiles where Brian Austen will explain the history of the Spa and point out the most important buildings such as the Corn Exchange and the Theatre. Brian is also planning to bring along samples of the wares produced by Tunbridge Ware makers. If time allows we will have a look at the plaster work in the Chapel of King Charles the Martyr and also the impressive Victorian Central Station.

It is planned for the group to catch the 4.10 from Tunbridge Wells West which arrives at Eridge at 4.35. This is scheduled to be a Heritage Diesel train.

Please register with Malcolm Dawes if you plan to attend. 01273 5618567 or malcolm.dawes@btinternet.com

Saturday 9th October 7.30pm. *The Brighton Belle*

David Jones will trace the history of the 'Brighton Belle' from its early days as the steam hauled 'Southern Belle' through to the electrification of the Brighton Line and the naming of the new Belle in 1934. Following the end of services in 1972 the dispersal of the 15 electric Cars is covered together with the formation of the 5BEL Trust in 2009 whose aim is to bring back the 'Brighton Belle'. David will then cover the subsequent extensive refurbishment programme of the first four vehicles ready to take to the main line as the new luxury 'Brighton Belle' dining train quite soon. This will be held at West Blatchington Mill, Holmes Avenue, Hove BN3 7LF

Please see the Mills Newsletter for details of Mills Group activities

Events from Other Societies

Malcolm Dawes

Detailed below are events organised by other societies, which may be of interest to our members. If you have details for future events please send these to:

Malcolm Dawes, 52 Rugby Road, Brighton, BN1 6EB

or email to malcolm.dawes@btinternet.com

Saturday 20th July, 10am to 4.30pm. *Sussex Vintage Model Railway Collectors Annual Exhibition.* Knoyle Hall, Knoyle Road, Brighton. Confirm details at www.sussex-transport.co.uk/svmrc

Sunday 21st July. *Classic Car Summer Show.* Classic motor vehicles and accessories from the 50s, 60s, 70s and 80s. Up to 200 cars on show. Amberley Museum. 01798 831370. www.amberleymuseum.co.uk

Saturday 27th July. *Toy and Rail Collectors Fair.* Horsted Keynes Station, Bluebell Railway. 01825 720800. www.bluebell-railway.co.uk

Sunday 28th July. *Worthing seafront bus rally.* Open Top and Classic Buses running a free service and on display on Worthing Seafront www.worthingbusrally.co.uk

Saturday 3rd August, 10am to 4pm. *Open Day at the Brede Steam Engines.* Steam and working industrial engines. Situated 6 miles from Hastings on A28 to Ashford. 01323 897310. www.southernwater.co.uk/visiting-the-giants-of-brede

Weekend 3rd- 4th August. *Tinkers Park Rail Gala.* Model Railway Show and Southdown Bus Event on the Sunday at Hadlow Down. www.tinkerspark.com

Sunday 4th August. *Historic Cycles Day.*

Bicycles from 1800 to the present day. Procession with riders in period costume. Amberley Museum. 01798 831370. www.amberleymuseum.co.uk

Weekend 10th- 11th August. *Steam through the ages.* Different railway eras recreated throughout the railway. Victorian at Sheffield Park, 2nd World War at Horsted Keynes and Seaside Holiday at Kingscote. Bluebell Railway. 01825 720800. www.bluebell-railway.co.uk.

Sunday 11th August. *Historic Commercial Vehicles.* Also, a special communications day. Amberley Museum. 01798 831370. www.amberleymuseum.co.uk

Monday 12th August 7.30 pm. *The Brighton main line in Sussex.* Southern Electric Group presentation by John Blackwell. £3 non-members. Deall Room, Southwick Community Centre, Southwick. www.southernelectric.org.uk

Wednesday 14th August 7.40pm. *Irish Trams and Trolleybuses.* Tramway and Light Railway Society – Sussex Branch, talk by Peter Williams Visitors £1.50. Deall Room, Southwick Community Centre, Southwick.

Saturday 17th – Sunday 18th August. *Saddles and Steam.* Celebrating every mode of transport from horses to the invention of the combustion engine. Weekend of horse displays, steam engines, World War vehicles and classic cars. Weald and Downland Open Air Museum. Singleton, Chichester. www.wealddown.co.uk

Weekend 24th- 26th August. *Hellingly Festival of Transport.* www.ehvc.biz

Friday 30th August - Sunday 1st September. *Ale at Amberley Beer Festival.* Over 70 real ales, ciders and perries, many from Sussex and Kent. Hot food and visiting food stalls. There will be a stage with music at all sessions. Steam rollers, traction engines plus visit the Museum during the day. Booking recommended for the evenings. It is planned to run a dedicated bus service for the event. Above details are provisional so check web site nearer the date. Amberley Museum. 01798 831370. or www.amberleymuseum.co.uk.

Sunday 1st September. *Horsham bus rally.* Open Top and Classic Buses running a free service and on display at Hop-Oast Park and Ride. www.worthingbusrally.co.uk

Saturday 7th September, 10am to 4pm. *Open Day at the Brede Steam Engines.* Steam and working industrial engines. Situated 6 miles from Hastings on A28 to Ashford. 01323 897310.

Weekend 7th- 8th September. *Laughton Country Fair,* Laughton, East Sussex. www.heritagefield.co.uk

Monday 9th September 7.30 pm. *Past and Present – a video journey down the Brighton Line.* Southern Electric Group presentation by Colin Burnham. £3 non-members. Deall Room, Southwick Community Centre, Southwick. www.southernelectric.org.uk

Wednesday 11th September 7.40pm. *More wheels on reels.* Tramway and Light Railway Society – Sussex Branch, cine film presentation by Geoff Lomas. Visitors £1.50. Deall Room, Southwick Community Centre, Southwick.

Friday 13th September 8.00pm. *The Victoria Industrial Estate.* The first industrial estate in the town. Burgess Hill Local History Society talk by Peter Liddell. Burgess Hill Museum. Cyprus Hall, Cyprus Road, Burgess Hill. www.burgesshillmuseum.co.uk

Weekend 14th- 15th September. *Miniature Steam Engine Weekend.* Visiting exhibitors with their working miniature steam engines. Steam engines running on railway around the museum. Amberley Museum. 01798 831370. www.amberleymuseum.co.uk.

Weekend 14th- 15th September. *Open weekend at Fernhurst Furnace.* Tours of the furnaces, charcoal burning, musket and cannon demonstrations, cookery and refreshments. 1 mile west of Fernhurst. SU879283. www.fernhurstfurnace.co.uk/events

Sunday 22nd September. *Autumn Bus Show and Running day.*

View and ride on a variety of historic buses.

Amberley Museum. 01798 831370. www.amberleymuseum.co.uk

Saturday 28th September. *Scooter Day.*

Head back to the 50's and 60's to celebrate scooters.

Amberley Museum. 01798 831370. www.amberleymuseum.co.uk

Saturday 28th September. *Tinkers Park Open Day at Hadlow Down*

Road, Rail, Steam and Fair Organs. www.tinkerspark.com

Sunday 29th September. *Land Rover Day.*

Celebrate the classic Land Rover.

Amberley Museum. 01798 831370. www.amberleymuseum.co.uk

Saturday 5th October, 10am to 4pm. *Open Day at the Brede Steam Engines.*

Steam and working industrial engines. Situated 6 miles from Hastings on A28 to Ashford. 01323 897310

Weekend of 5th - 6th October. *Autumn Countryside Show*

Heavy horses, vintage tractors, steam powered ploughing and threshing. Weald and Downland Open Air Museum. Singleton, Chichester. www.wealddown.co.uk

Sunday 6th October. *Autumn Historic Transport Gathering.*

End of season gathering of vintage cars, motorcycles, commercial vehicles, steam engines, diesel and steam locomotives.

Amberley Museum. 01798 831370. www.amberleymuseum.co.uk

Wednesday 9th October 7.40pm. *Then and now – Part 4.*

Tramway and Light Railway Society – Sussex Branch, presentation by Chris Warren. Visitors £1.50. Deall Room, Southwick Community Centre, Southwick.

Wednesday 9th October 7.30pm. *The Selsey Tramway.*

Chichester Local History Society talk by Joe Whicher. Non- members £3. New Park Centre, New Park Road, Chichester. 01243 784915.

Weekend 11th- 13th October. *Autumn Steam Gala.*

Visiting locomotives – check web site nearer the date. Bluebell Railway.

01825 720800. www.bluebell-railway.co.uk

Monday 14th October 7.30 pm. *It's none of my own work – a selection of pictures acquired by Paul Snelling*

Southern Electric Group event. £3 non-members. Deall Room, Southwick Community Centre, Southwick. www.southernelectric.org.uk

Wednesday 16th October 7.45pm. *Gone but not forgotten*

The cross-county services from Brighton. Sussex Transport Interest Group talk by Andy Gibbs. Visitors £2.50. London Road Station, Brighton.

www.sussex-transport.co.uk/stig

Thursday 17th October 8.00pm. *Mass Observation Project*

Mass Observation Projects Officer, Kirsty Patrick, will provide an insight into the work of the Mass Observation during World war II. Wivelsfield Historical Society event. Visitors £2.50. Wivelsfield Church Hall.

Note change of venue. www.wivelsfield-historical-society.co.uk

Sunday 20th October. *Autumn Industrial Trains*. Narrow gauge trains in action, plus demonstration runs with the road machines and contractor's monorail. Resident steam trains running around site. Amberley Museum. 01798 831370. www.amberleymuseum.co.uk

Sunday 3rd November. *London to Brighton veteran car run*.

AIA Conference.

Friday 9th August to Wednesday 14th August.

This year's conference will be held at the Bridgewater & Taunton College.

Information for members on Heritage Open Days in September.

Many buildings are opened up to the public during September as part of the Heritage Open Days event.

Many of these buildings have an industrial archaeology interest.

Events outside of London run from 13th to 22nd September.

Details from www.heritageopendays.org.uk

Events in London are for the weekend of 21st -22nd September.

Details from www.londonopenhouse.org

Do please check details of events before travelling

The details of these meetings and events organised by other groups are only included as a guide and as a service to members: inclusion here is not intended to be seen as an endorsement.

Subscriptions Over Due

Several members have not renewed their subscriptions.

This could be your last Newsletter you are sent if you have not paid up.

Please check your bank statement to see if a payment has been made.

Or contact the Membership Secretary Peter Holtham.

SERIAC 2019

John Blackwell

This year's SERIAC was hosted by Kent Archaeological Society at Dartford Grammar School. It was well attended by some 170 delegates with a high standard of presentations.

From Ragstone to Riches

Dr Simon Elliott

The speaker is an archaeologist and Roman historian who described his research into the Kentish ragstone quarries. The mineral wealth was one of the main reasons for the Roman invasion of Britain in 43 AD. Ragstone is a durable grey limestone found in the Maidstone area of Kent. There is evidence that stone was being quarried in this area from around 50 AD and was used as a building material for the first forum in London. Simon has identified five quarries: Allington, Boughton Monchelsea, Dean Street, Quarry Wood and Teston, used during the Roman period. The industry developed on an industrial scale, fulfilling the need for stone in urban building, villas and roads, across the south east especially in London, reaching a climax in the late 190s AD when London Wall was constructed. Two miles in length, it enclosed what is now the City of London, and was in places up to ten feet in thickness, reaching a height of 20 feet, and using over a million blocks of stone. The stone was quarried by driving metal wedges into the quarry face to form cracks until the stone became loose. This deadly dangerous work was carried out by slaves, convicts and prisoners of war. Transport was by the Rivers Medway and Thames to London. The river Medway rises in the

Sussex weald and flows through Kent into the Thames estuary near Sheerness, a total of 70 miles, being tidal from Allington, the first quarry, but in Roman times was likely to be further downstream. The journey to London of about 80 miles took two days, transported in a vessel such as Blackfriars 1, a sailing barge discovered in 1962 which sank when carrying a cargo of 26 tons of



London Wall : Cripplegate



London Wall : Tower Hill

Kentish ragstone. Simon speculated that the Classis Britannica, or Roman Navy (a logistical supply fleet rather than a fighting force) acted as a contractor, similar to that suggested for the iron working sites around Hastings, evidenced by a Roman road from Rochester to the north of Hastings, passing close to the quarries; much of it now the A229. By the third century AD an economic and political crisis had enveloped the Roman Empire, the Classis Britannica disappears and the quarries cease production.

Tutsham Oil Mill

Terry Bird

This was situated on the Upper Medway five miles south of Maidstone and was built for Lord Barham (First Sea Lord in 1805) to the design of John Rennie in 1806. The mill was modernised about 1880 and equipped with the latest Anglo American machinery supplied by Rose, Downs and Thompson, the Hull engineering firm. The mill was destroyed by fire in 1885. Terry's original interest was caught by an on line sales item for oil mill machinery illustrations from The Scientific American dated 1881 on which he based his presentation. A steam driven turbine powered the machinery which could produce nine tons of oil and 18 tons of seed cake from 37 tons of linseed (the seed of flax). Three vertical roller frames crushed the seed (the old system used stamps and screw presses as at Barcombe Oil Mill) and fed it into a steam kettle which heated the seed to form an embryonic seed cake. A hydraulic press exerting a pressure of seven and a half tons expelled the oil from the cake. The residue was trimmed on a paring table to a uniform size suitable for cattle feed. The finished products were transported out by barges which also brought in the raw materials, linseed and coal for the boilers. The building is now a ruin but was originally 184 feet long by 64 feet wide and 9 feet tall to the eaves. Terry's images of the remains allowed us to envisage the layout.



Ruins of Tutsham Mill

Sound Mirrors

Robert Hall

Sound mirrors were built on the south and north east coasts of England between about 1916 and the mid 1930s when they were superseded by radar. These 'listening ears' were intended to provide early warning of incoming enemy aircraft. Anti airship detection started a few months from the start of WWI in December 1914 on the Kent coast. Arc lamp searchlights, powered by acetylene, together with experimental listening posts were set up. Sound detection was primitive, a pair of trumpet detectors mounted on a wooden frame and connected to the operators stethoscope indicated the angle of elevation. Soon another pair of detectors, at right angles to the original pair, also allowed the azimuth or bearing to be picked up. The first airship to be and 'lit up' was detected in early 1915; whether it was shot down is not recorded. The first sound mirror, scraped out of a chalk face, at Binbury Manor near Detling Airfield in Kent appeared in 1915. After trials it was suggested to the war office that it would have been better situated on a hill 400 yards from the sea, this led to the earliest surviving sound mirror 15 feet in diameter, on the white cliffs of Dover above Fan Bay, dating from 1917. This was also cut into the slope of the chalk cliff but lined with concrete. Buried in the 1970s as part of a project to clear eyesores from the landscape, which fortunately preserved it, and recently excavated it can now be viewed as part of the National Trust's Fan Bay Deep Shelter (WW2) Experience, together with a later similar, 20 feet diameter mirror, from the 1920's. Sound mirrors



worked by concentrating sound waves into a central focal point, a listener using a stethoscope would be stationed at this point in front of the curved surface. Later a microphone replaced the stethoscope. Prototypes with spherical concrete bowls inclined at an angle of fifteen degrees were constructed at Joss Gap North

Sound Mirror Fan Bay 20 foot

Foreland (N.E. tip of Kent) and Fulwell near Sunderland. Following WWI the need to detect faster flying aircraft at longer distances increased the diameter of the mirrors and led to curved wall mirrors 200 feet long such as those at Denge (Dungeness) and Valetta in Malta.



Sound Mirror Fulwell

A visual tour with Robert, of those still extant included the lesser known example at Selsey.



Sound Mirrors at Denge (Dungeness)

Castle Hill Brick and Tile Works

Tim Allen, Oxford Archaeology

An archaeological record undertaken when the A21 was widened near Tonbridge between 2015 and 2017

Brickmaking here is believed to have started in the 1820s. Old maps, Tithe and O.S., were consulted and showed, a moulding shed, five rows of hacks, two kilns, a pond, clay pits and a cottage. The clay was dug and left exposed to the elements until ready for use. Wet clay (watered from the pond) was fed into the top of a pug mill churned to the correct consistency and extruded at the bottom ready for use by the moulders. The green (freshly moulded) bricks were dried in the open, covered by triangular wooden hacks before firing in the kiln. Excavations revealed the sites of two pug mills, the plan of the moulding shed, the area where the hacks were placed and two kilns. Each pugmill (probably introduced after 1850) would have consisted of a vertical shaft with several blades



Pugmill (mills archive)

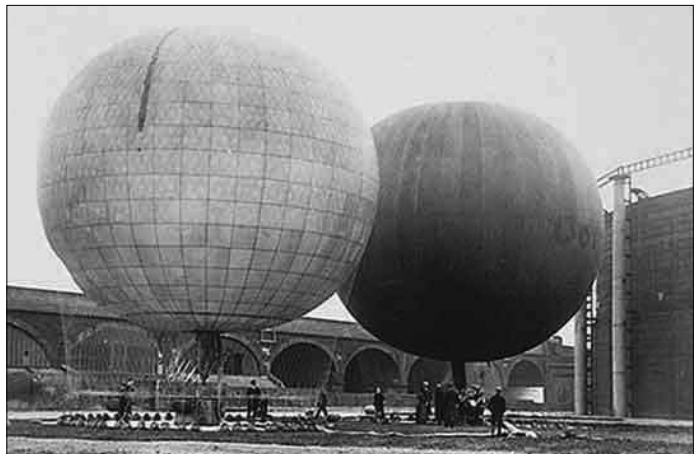
attached which revolved inside a drum. The excavation revealed that pugmill stood in the centre of a sunken area, around the perimeter of which a horse would have walked harnessed to a long beam attached to the top of the mill's shaft. The earlier kiln (the only one shown on the 1836 Tithe map) was found to have three firing holes for the brushwood fuel and a loading hatch at the rear at a higher level, similar to that at Asburnham but not set into an earth bank. The 1880s kiln was probably of the scotch type fuelled by coal and producing 40-50 thousand bricks, twice as many as the earlier kiln.

Short Brothers Aviation at Rochester

Elizabeth Walker

Elizabeth is the great great niece of the three Short brothers, she realised that their contribution to aviation history was almost forgotten and certainly underrated. She researched the family history and commenced a project to publicise their achievements. The brothers were Horace (1872-1917) an engineer and designer and builder of planes, Eustace (1875-1932) a balloonist and flyer, and Oswald (1883-1969) an inventor and later head of the firm. As boys living in Derby their interest was awakened on

seeing a coal gas filled balloon complete with aeronaut rising from the nearby gas works. This enthusiasm found them in Hove at the turn of the century manufacturing and flying spherical balloons. Moving their balloon works to Battersea, under the railway arches, it was here Horace designed



Short-Brothers balloons at Battersea (English Heritage)

and built a heavier than air machine – this did not fly. Friendship with C S Rolls led to a meeting with the Wright brothers and a licence to build copies of their design of which six were constructed at new premises on the Isle of Sheppey. In 1910 Horace designed the S27 bi-plane in which four naval officers were trained to fly leading the formation of the Royal Naval Air Service. Oswald designed air bags fitted on the undercarriage struts and beneath the tail enabling the plane to land on water. Deciding to concentrate on production of seaplanes led to a move to Rochester. In 1915 the S184, a folding wing torpedo carrying seaplane, again designed by Horace contributed to the war at sea. Eustace continued with the development of balloons and in 1917 the company received an order from the Admiralty for two airships. For this new

venture two enormous hangars were built at Cardington in Bedfordshire along with housing and offices for the staff. Despite this investment nationalisation came in the same year, 1917, ending the company's involvement. Horace died that year and Oswald took over management of the company. Hard times followed the end of the war and the company diversified into



Shorts Empire flying boat

the manufacture of sailing barges, bus and tram bodies and even a carpet sweeper but Oswald never lost faith in the aircraft construction and championed the use of the lightweight metal 'Duralumin' instead of wood and canvas. In 1925 Eustace died, after successfully landing on the River Medway at Rochester he suffered a heart attack at the controls. Development of a long range civilian flying boat was realised in 1928, the Short Calcutta, which entered service with Imperial Airways. Improvements led to the civilian 'Empire' and military 'Sunderland', an anti submarine flying boat. Entering RAF service in 1941 Short's built the first four engine bomber the 'Short Stirling'. The Rochester works received heavy bombing and some production was transferred to a satellite factory on the shores of Lake Windermere where 35 'Sunderland's were built. In 1943 Short brothers were nationalised (again) under Defence Regulations and by 1947 the Rochester factories were closed and operations transferred to Short Brothers and Harland in Belfast an abrupt and untimely ending to a forward thinking aircraft manufacturer. The presentation was delivered as a lecture but with a display of historic photographs in the auditorium these would have been better incorporated into a presentation.

Crossness Engines

Petra Cox

The speaker is the Learning and Outreach Officer of the Crossness Engines Trust. 1858 was the year of the well known 'big stink' in London caused by high temperatures reacting with the effluent which had drained into the Thames from London's many underground rivers making it effectively the Capital's main sewer. The solution was a sewage system designed by Joseph Bazalgette, Chief Engineer of the Metropolitan Water Board, with over 1,000 miles of street sewers feeding into six interceptor sewers, three to the north of the Thames and three to the south. The southernmost on the northern side was built on land reclaimed from the river bed forming the Chelsea and Victoria Embankments above, also designed by Bazalgette. Sewage flowed eastwards to Abbey Mills pumping station at West Ham on the northern side and Deptford on the southern. Pumping engines at these two locations raised the sewage from the underground sewers into northern and southern outfall sewers so that it could flow by gravity to Beckton on the northern



Crossness Beam Engines (Worth a visit to see in their full glorious colour scheme)

and Crossness on the southern side of the Thames. Here it was pumped into huge reservoirs each holding 25 million gallons of sewage and released on the ebb tides out to sea. The works were completed between 1859 and 1865 when Crossness pumping station was opened by the Prince of Wales. The buildings at both Abbey Mills and Crossness pumping stations are the work of architect Charles Henry Driver and display his trademark decorative cast iron work, although this was never to be viewed by the general public. The station has four beam engines, designed by Bazalgette, one in each corner of the engine house, manufactured at James Watt's Birmingham works and delivered to site by canal and river. Named Victoria, Prince Consort, Albert Edward and Alexandra the engines could raise six tons of sewage on each 9 foot stroke a distance 30 to 40 feet into the reservoir which occupied six and a half acres. Although a wonderful example of Victorian ingenuity and engineering Bazalgette's scheme, in essence, transferred the problem 14 miles downstream from Westminster to the Erith marshes. In 1878 disaster struck when the pleasure steamer Princess Alice collided with a collier, broke into two and sank. At the same time sewage was being released and of her 900 passengers over 600 died, some by ingesting toxic sewage. This ultimately brought about the cessation of raw sewage being discharged into the river. A chemical treatment and sedimentation tanks were installed in 1887 separating liquids and solids, the resulting sludge being carried out to sea in 'pump and dump' sludge boats nicknamed by locals 'Bovril Boats'. This method of disposal continued until as late as 1998, the later vessels being similar to SS Shieldhall. The beam engines served the capital for ninety years until 1955 then slumbered until a trust was

formed in 1987 to undertake restoration, Prince Consort ‘steamed’ again in 2003. If you have not yet taken the opportunity of viewing the largest working rotative steam engine in the world the next ‘steaming’ days are 21 July and 25 August. Abbey Mills is normally open to the public on London Heritage weekend in September. Both are definitely worth a visit.



Crossness original 12 Cornish boilers

Rochester Bridge

Tim Belcher-White

Engineer to the Rochester Bridge Trust

A bridge crossed the river here on the line of Watling Street, the Roman road running from London to Dover. Built soon after the Claudian invasion of 43 AD, this first bridge across the Medway was built on nine stone piers. In 1381 the river froze and when it thawed flood waters and ice carried the old Roman bridge away. It was replaced by a medieval bridge constructed between 1387 and 1389 on a new alignment 100 yards upstream with eleven stone arches and a wooden draw bridge spanning one opening. In 1399 an endowment provided for free crossing and maintenance for the bridge in perpetuity, later becoming the Rochester Bridge Trust. It is the only surviving independent medieval bridge trust. Although repaired many times, after 500 years of service it was near to collapse and was rebuilt in 1856 on the site of the Roman crossing by a cast iron bridge of three arches designed by William Cubitt. The Admiralty insisted on passage for high masted naval vessels and a swing bridge, instead of a fourth arch was constructed at one end. In the event this never opened. Damage to the spans, caused by several ship collisions, became so severe that reconstruction was undertaken between 1910 and 1914. Three new steel bowstring trusses were constructed above the existing roadway and the 1856 piers and abutments heightened. The original cast iron spans were then demolished, giving increased clearance for shipping. Two lanes for road traffic became insufficient for the increasing number of vehicles by the 1960s and an ingenious plan for a new bridge alongside was devised. Immediately downstream between the 1914 road bridge and the still operational railway bridge stood a second railway bridge built in the 1850's but disused since the 1920s, a legacy of the nineteenth century rivalry between the London Chatham and Dover and the South Eastern Railways. This bridge was ‘rebuilt’ with a reinforced concrete roadway resting on twin welded steel box girders supported by the original, but reinforced, abutments and piers of the old railway bridge. The new bridge opened in 1970. The Trust continues to maintain both bridges and the delightful medieval bridge chapel on the Esplanade at the eastern end of the bridge.

Visit to Crawley Museum and Gatwick Aviation Museum

Alan and Diana Durden

On Wednesday 8th May, a dozen or so members gathered at Crawley Museum for a visit.

We began by browsing through a collection of photographic and other items relating to the Manor Royal Industrial Estate – these had been made available to us by the museum staff and we were able to see photos and plans of factories where one or two members had been employed in their working careers. We then toured the galleries which contain interesting displays pertaining to the history of the town from Tudor times to the present day. We were also told of a forthcoming exhibition about Crawley's industries to be mounted later in the summer, so watch this space or check the Internet!

After a lunch break, we reassembled a few miles away at Gatwick Aviation Museum, which is located adjacent to the airport. Derek Bryan welcomed us and then handed over to Simon Hodges who gave us a history of Gatwick. In the late 19th century there was a horse racing course on the land where the airport now exists. A small flying club later had its home here in the 1930s and then became a relief aerodrome for London Croydon Airport, coming to be known as Gatwick Aerodrome. In 1935, the first terminal was built, known to all as The Beehive – now a Grade 2 listed building. It was eventually redundant as a terminal when the CAA closed it. Gatwick is now the busiest single runway airport and runs at full capacity every 50 seconds! Most of the British airlines have flown in and out of the airport over the years, including Concorde.

We then were given a guided tour of the museum by Derek and began by looking at the Hawker Sea Hawk which, having first flown in 1948, then entered service with the Royal Navy as a carrier-borne strike fighter in 1955 and was deployed in 1956 during the Suez Crisis. It was powered by a Rolls-Royce Nene engine which was displayed near the aircraft; this had a centrifugal compressor.

Our next 'port of call' was the Gloster Meteor T7, the first British jet fighter and the Allies' only jet aircraft to achieve combat operations during the Second World War. This was powered by a ground-breaking turbojet engine, pioneered by Sir Frank Whittle.

We then moved on to the de Havilland Venom, which is currently undergoing restoration – it was partly made of wood as aluminium was scarce at the time of production!

Staying with the de Havillands, we next inspected the Sea Vixen T.T. Originally designed as a carrier-borne fighter, it first flew in 1951. On retirement from front-line duties, it was converted for drone and target towing duties.

Two more Hawkers were also on display, one being the Hunter T.7A, a two seat advanced trainer, which first flew in 1951; this was the same type as that which sadly crashed at the Shoreham Air Show. The other, the Harrier GR3, was the world's first VTOL jet aircraft to enter military service. It first flew in 1966, entering Squadron service at RAF Wittering in 1969. Its Rolls-Royce Pegasus turbofan engine employs a simple thrust vectoring system that uses four swivelling nozzles, giving the Harrier thrust both for lift and forward propulsion.

We then passed along to the English Electric Lightning F.53, which was the end result of a supersonic research programme by English Electric. The aircraft exceeded Mach 2 for the first time in 1958. Holding the impressive statistic of reaching from ground to 55,000 feet in one minute, it was affectionately known as the "Frightening" in RAF service!

Outside in the sunshine we looked at the Shackleton, powered by four Rolls-Royce Griffon turbo-prop engines. Developed by Avro from the Avro Lincoln bomber (itself developed from the famous wartime Lancaster bomber), it was used by the RAF as a long-range maritime patrol aircraft from 1951. It was named after the polar explorer Ernest Shackleton. Its engines are run from time to time but this is an expensive process, apparently.

Our tour, given with the distant background roar of aircraft taking off (mostly EasyJet, it seemed!) was most comprehensive and informative and we were grateful to the museum staff for giving their time to share their enthusiasm for these military craft with SIAS.



Shackleton

The Boys on the Plaque - Dr. Geoffrey Mead

March Evening Meeting - Report by John Blackwell

March's evening meeting saw a welcome return of Geoff Mead, geographer, local historian and new editor of Sussex Industrial History.

When Holy Trinity church on the corner of Ship Street and Duke Street was being converted into the *Fabrica* art gallery a WW1 memorial board which had been boarded over was discovered. It was unusual in that it listed not only those that had fallen but also those that had served and returned. Geoff and a *Fabrica* friends group undertook research into these names using the 1911 census and discovered where some resided and their occupation. This gave a snapshot into the economic activity of a resort town at the time of WWI. The Brighton Medical Officer of Health Report for 1919 (available for various years at The Keep) shows even then that the principle employment groups were service industries, hotels boarding and lodging houses, followed by laundry workers, (no washing machines then and significant trade from with the first group) and thirdly shop workers. At that time Brighton was a much smaller town, it was not until the creation of Greater Brighton in 1928 that the agricultural areas that surrounded it were incorporated. There was plenty of manufacturing with the railway works to the north and east of the station employing over 3,000. In Lewes Road a new factory for the Reason Manufacturing Company had opened in 1902 making domestic electrical control gear, meters, fuse boxes, etc. By 1914 this company had been absorbed by Allen West (originally their tenants) who became a major supplier of switchgear for industrial and military use until the 1970s. The town had two major breweries Tamplins in Richmond Place and the Kemp Town Brewery in Seymour Street and nearby, in Eastern Road, Evershed's soap and candle factory. Homing in on streets near the church Market Street we find the Municipal Fruit and Vegetable Market and the Floral Hall although the produce from farms and smallholdings surrounding Brighton seemed to spread around the Town Hall every morning! In Middle Street was a timber yard and Fryco's soft drink manufactory whilst Ship Street housed three coal ordering offices (a reminder that coal used to be unloaded on the beach), a boiler engineers, and ironmongers Along the seafront hotels and high class shops, none of today's fish'n chips or sticks of rock, and below the promenade fishing boats and the fish market. Strangely none of the boys on the plaque were fisherman possibly they worshipped (or not) in one of the many churches and chapels in the old town. Of those listed one was identified as working in a market garden, possibly in Centurion Road or in the British Nurseries in Kemptown. 18 were involved with manufacturing, several in the printing trade possibly at Walter Gillett's in Market Street, another a riveter at the railway works, others a gas fitter and a watchmaker. In the service industries

vehicle drivers, waiters and an actor (resting?) and many in the retail trade, including secondhand furniture, the way most newly weds furnished their first home. As the twentieth century progressed the fruit and vegetable market was moved away from the city centre in the 1930s to the less salubrious area of Circus Street as was the fish market in the 1960s. Engineering and manufacturing following WW2 moved to industrial estates such as Hollingbury and Bevendean. Large department stores closed in the last quarter of the century i.e. Hanningtons and Wades others gravitated to Churchhill Square shopping mall. The major employers are now local government, the NHS and the universities not railway or laundry workers. The story unfolded in Geoff's inimitable style with informative visuals from street directories of the period, photographs from the James Gray collection, and a gem of an album of pencil drawings rescued from a skip. Geoff's anecdotes included a 'would be' bus conductor in full uniform who boarded a tour bus Geoff was guiding, promptly issued everyone with a ticket and remained silent but attentive for the remainder of the tour. Geoff's grandfather was a well known auctioneer and furniture remover in Bond Street until the 1970s and the evening finished with a superb image of his fleet of removal vans outside the Royal Pavilion.

Thank you Geoff for an evening that was fully appreciated by a large and knowledgeable audience.



Assisted wiring Roy Plummer

Roger Kevern gave a talk to the Sussex Industrial Archaeology Society in January. During question time one of the members asked what was meant by 'Assisted Wiring'. He had spotted a notice at the Milne Electrical Collection and wondered what it meant.

A little research has produced the following.

Before nationalisation of the electrical supply industry (1947/8) many local authorities offered assistance to householders and presumably other potential customers, who either had no electrical wiring or whose wiring was substandard or dangerous.

One would like to imagine that was the caring face of local authorities. I think not! No - let us not be too cynical – it was a service welcomed by the public. A large number of dwellings had no electricity and many had substandard wiring.

The authorities set up hire purchase agreements for repayments and often employed contractors to do the wiring. Not only that but they also hired out apparatus such as heaters, boilers, ovens and lighting. From the Minutes of the County Borough of Croydon in the 1930's thousands of such items were on hire or hire purchase. This meant that they would sell more units. Croydon generated its own power. The old 'A' station off the Purley way was opened in 1896.

From the Minutes of the County Borough of Croydon November 1930 – October 1931.

The 1927 HP scheme using contractors and repayments over 5 years had 500 installations. But 5 years was being considered as too short a payback time for smaller houses. A new scheme proposed payback over 10 years. An 'all in rate' at £8 allowed 7 lighting points and 1 - 5amp plug and socket (for irons etc). The 'flat rate' at £6 allowed 5 lighting points and 1- 5 amp plug and socket. Annual interest 16s 8d. could be paid off by 2d a unit surcharge. If less than 100 units used per annum the outstanding interest had to be paid in cash. Any excess due to using more than 100 units would be returned. Oh, and if you wanted you could have up to 2 extra points for £1 2s 0d cash.

An acquaintance recollects repairing boilers etc for the hire trade in Eastbourne in the 40s/50s. The Eastbourne Council name was riveted to the apparatus to identify it as Corporation owned.

Another retired employee, of what was SEEBOARD, remembers women being employed to maintain and repair domestic items in a workshop at the old SEEBOARD showrooms in Castle square Brighton.

In the Amberley electrical collection we have an 'Assisted wiring Hire Purchase

Card' From Reigate Corporation with the following information.

Number of points (presumably lighting points) 9. Price of installation £11 0s 6p.

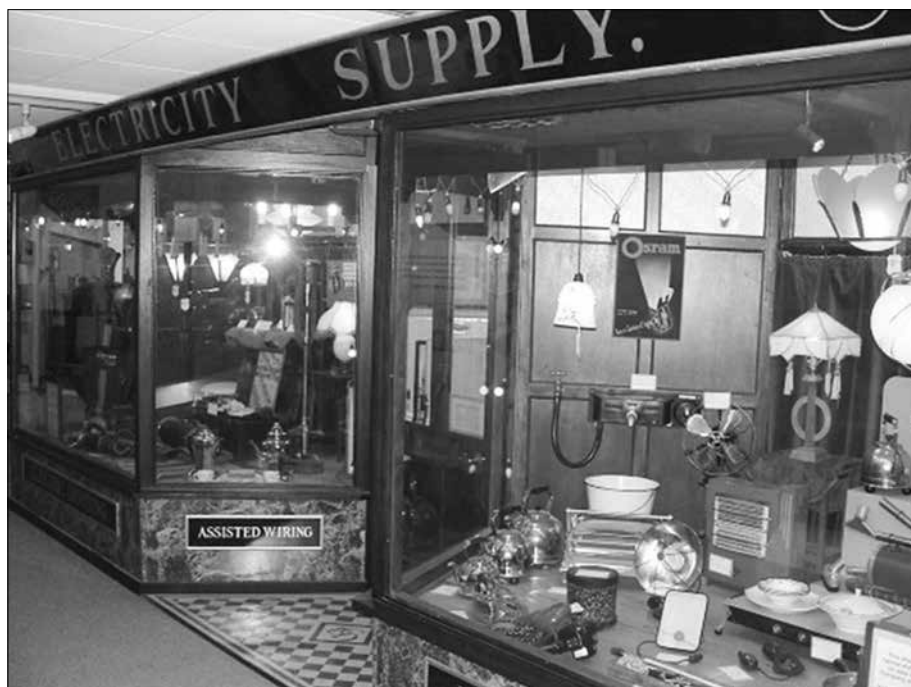
Re-payment being collected by 2d extra charged per unit, until paid for.

Commencing date was. 26th September 1929. The record inside the card shows it was paid off on 19/10/37.

When the prepayment meter was emptied excess monies were returned to the consumer and any deficit being immediately payable. Excesses and deficits occurred on roughly equal occasions but the deficits add up to more. The suggestion is that the consumers did not feed the meter just prior to the meter reader calling - when that was known.

The card consisted of a piece of card about 9 x 8 inches folded in half with two pages inside. The pages were fixed at the outer edges and backed with carbon to enable to meter reader to take a copy record of each entry. The front gives details as above and the back has the usual conditions including a warning that if the card was lost or damaged it will be replaced at the cost of 3d.

To put costings into context the average factory worker's wages in 1920 was £204pa (females lower!) and in 1940 rising to £248pa. Women were paid about half that.



The replica shop front at Amberley Museum

SIAS - and The Importance of Being Listed

Alan H J Green

The Town and Country Planning Act of 1947, as well as setting out a national structure for town planning, introduced a system for giving statutory protection to historic buildings by placing them on a register, known colloquially as “listing”. Three categories of listing were allocated namely - in descending order - Grades I, II* and II. There was also a Grade III that gave no actual statutory protection and was abolished in 1970. It has since been replaced by the Local Lists maintained by Local Planning Authorities*. Anyone wanting to alter a listed building has to apply for Listed Building Consent to their planning authority, and in the case of Grade I buildings Historic England’s consent also has to be obtained. Authorised demolition of listed buildings can occur but fortunately it is fairly rare.

Work started in earnest in 1950 when Government Inspectors carried out surveys to identify buildings deemed worthy of being listed.¹ The early citations and descriptions were sometimes rather vague, suggesting in some cases that the inspector had not even visited the site. The listing process is now much more rigorous and anyone putting forward a proposal is expected to have done their homework in order to provide convincing evidence to justify the case.

Initially any pre-1700 building was guaranteed to achieve listing, but whilst most 17th C and Georgian buildings were considered highly eligible, Victorian and 20th C ones did not attract so much empathy. Indeed there was a threshold of 1939 for the latter, and industrial buildings, including those relating to transportation, were not looked upon with anywhere near as much favour as churches and grand houses.



Fig 1 The former Firestone factory in Brentford, controversially demolished in 1980 just before becoming listed. This outrage demonstrated the Importance of Being Listed. (20th Century Society)

A turning point for industrial and 20th century buildings came in 1980 when, over the August bank holiday, the fine Art Deco Firestone Factory in Brentford, West

* Although not giving statutory protection, local listing is a material planning consideration and could save a building from demolition or unsympathetic alteration. Anyone can propose a building for local listing to their local planning authority – details should be available on their website.

London, was unceremoniously demolished by its new owner (Trafalgar House) ahead of its being listed. This caused a national outcry and such was the backlash, Michael Heseltine, the then Secretary of State for the Environment, caused a new survey of historic buildings to be carried out, identifying important twentieth century buildings in particular in the hope of preventing another Firestone outrage. More legislation, the Planning (Listed Buildings and Conservation Areas) Act 1990, enhanced the listing criteria, introducing the concept of curtilage listing of adjoining structures and allowing certain (typically add-on) sections of buildings to be specifically excluded from the listing.²

Responsibility for listing passed to English Heritage in 1984, but getting industrial buildings listed was still not easy, English Heritage seemingly taking the attitude that there was no need to list more than one of any one type. This I discovered with Chichester Bus garage where it was felt that as the prototype in Bournemouth was listed there was no need to list this one as well. (!)

Over the last few years the attitude to industrial buildings has softened and John Minnis, an architectural historian with English Heritage, famously got 26 signal boxes listed in 2013, and subsequently most of the remaining LB&SCR signal boxes have been added. These important and once familiar structures are fast disappearing under resignalling schemes. Even garages and petrol stations are now being advocated as worthy of listing.

In my work with Chichester Conservation Area Advisory Committee I have made a number of applications for listing of buildings in the city but with only varying degrees of success. These included the Victorian barracks, which was about to be redeveloped, and the theatre at the former Graylingwell Mental Hospital, designed by Sir Arthur Blomfield, which was then in the hands of a developer who wanted to demolish it. Both these applications failed dismally, despite – as I thought – my having come up with some scintillating new facts about their local importance to gild their architectural merit. In both cases I came up against the “it’s-nice-but-there-are-better-example-elsewhere-that-are-already-listed” syndrome. The keep building at the barracks still stands, but sadly the Graylingwell theatre has been demolished. In February 2009 the Society was contacted by Neville Harrison of the South Downs Joint Committee to seek assistance with saving Southease Swing Bridge over the River Ouse. This structure, dating from 1880, had a two-tonne weight restriction and the Environment Agency decided that, rather than strengthen it, they would replace it with a new single-span structure, a scheme for which they were about to make a planning application. Ron Martin and I visited the site to inspect and record the structure, and our report was used by the Joint Committee in a listing application to English Heritage. It had been obvious from our inspection that the superstructure was neither in an advanced form of decay nor life-expired as had



Fig 2. Southease Swing Bridge across the River Ouse, seen in 2009 when it was under threat of demolition and replacement by the Environment Agency. It was subsequently listed Grade II and saved. (Author)

been alleged, and was thus capable of being refurbished. It was duly listed Grade II³ forcing the Environment Agency to repair and restore it rather than replace⁴.

Following a SIAS tour which included a visit to Singleton station designed by the revered T H Myres, our Chairman, John Blackwell, suggested that I make an application to have the goods shed listed which, considering my somewhat chequered track record in this field, did not seem to be a recipe for guaranteed success. We had wondered about including all the remaining buildings but, bearing in mind that Myres' Horsted Keynes was already listed and in much better condition, we decided we would stand a better chance with just the goods shed as it was the sole survivor of the five built to Myres' designs⁵. I duly made the application and sat back expecting the usual response. Much to everyone's surprise, it was accepted in 2013 and moreover the inspector was wildly enthusiastic about the merits of the building in her citation.⁶



Fig 3. Singleton goods shed, the sole survivor of five built to T H Myres's designs. which has now been listed Grade II . (John Blackwell)

Since the restructuring of English Heritage in 2015 listing responsibility has lain with Historic England, and unexpectedly in November 2018 we received an email from

them about their proposal to list the other railway buildings at Singleton and inviting our comments – we had become a consultee! Needless to say we supported the proposal wholeheartedly and added information to the draft description. In March

2019 the station building, gents' lavatory and water tower were all listed Grade II.⁷ Furthermore, in the citations the Society's published works on T H Myres and Singleton were referenced.

SIH 46 carried an article by John Blackwell about Brighton Tram Shelters in which his researches cast doubt on the accuracy of the listing citations and descriptions of the ones in the Old Steine.⁸ John asked me to carry out some more research, including site inspections, which shewed that the citations were indeed in error – see SIH48.⁹ John was keen that we ask Historic England to amend the said citations in the light of our findings which we did, submitting some suggested new wording supported by our evidence. At the same time we alerted Historic England to the risk posed to these buildings by Brighton & Hove City Council's Valley Gardens project. Our submission was accepted and again the Society's published work on the subject is referenced in the new citations.¹⁰

With the Cameron government's relaxation of planning controls and extension of permitted development rights, and the alarming national decline in the number of local authority conservation officers, our built heritage is under its greatest threat since the philistine 1960s. The Director of the Twentieth Century Society, lamenting in his December 2018 report the decline in conservation officers said:

What this all means in practice is that some historic buildings will be irreparably damaged, if not lost completely for want of specialist expertise or the lack of a convincing advocate to speak up for them. Once lost a building is gone for ever.

Listing and local listing is very important and societies such as ours can play an important part in being a 'convincing advocate' helping to ensure that historic industrial buildings of merit do not join the ranks of the gone forever. SIAS has been doing its bit for several years and it is gratifying to note that we are now seen by Historic England as a worthy consultee on listing matters.

1 Background information published on the Historic England website

2 *ibid*

3 Listing entry NHLE 1393389

4 See SIAS *Newsletters* 142, 146, 147 and 149 for the full story of the saving of Southease Swing Bridge

5 Green, Alan H J The Railway Buildings of T H Myres for the London Brighton & South Coast Railway, *Sussex Industrial History* No 46, SIAS 2016.

6 Listing entry NHLE 1026116

7 Listing entry NHLE 1460651

8 Blackwell, John The Brighton Tram Shelters *Sussex Industrial History* No 46, SIAS 2016

9 Green, Alan H J More on the Corporation Bus and Tram Shelters in Old Steine, Brighton *Sussex Industrial History* No 48, SIAS 2018.

10 Listing entries NHLE 1380683 and 1380714

Mystery Photo

Do you know your IA?



This image is from one of the varied collections of IA slides donated to the Society.

In this case by Joe Whicher. Please Joe, if you can remember this one, don't tell anyone!

So what is it?
Where? You may be surprised?
When would it have been built.
Why was it needed

Answer in next *Newsletter*

The excavated circle featured in *Newsletter* No.182 is shown on the property at The Long House at Westdean with owner Robin Lloyd surveying the plot.

The overgrown plot was thought to be an ornamental pond. However an elderly neighbour informed the owner it had been the base of an auxiliary fuel tank c1943 for RAF Friston fighter base. The rectangular base being a overflow sump.

Thanks to Peter Tyrrell for the image and information.

Please keep you eyes open for unusual features on your travels, or it may be something you pass every day, but the rest of us are unfamiliar with. Social media , Facebook, Youtube, etc are growing with increasingly interesting groups that I find impossible to keep up with, if you spot one please let me know.

I am always looking for examples of our IA heritage.

If possible, let me have an image or link, either for this feature or to provide inspiration for a future article(s).

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Subscribing to the Sussex Industrial Archaeology Society gives automatic membership to the Sussex Mills Group

The Sussex Mills Group also produces a *Newsletter* that is sent to members with this *Newsletter*



See Page 25. The former Corporation tram shelter in Old Steine, Brighton. Listed Grade II in 1993 it was subsequently converted into a café - but now has an updated and corrected listing citation (Alan HJ Green)



Rochester Bridge, See SERIAC 2019 Report at page 15

