

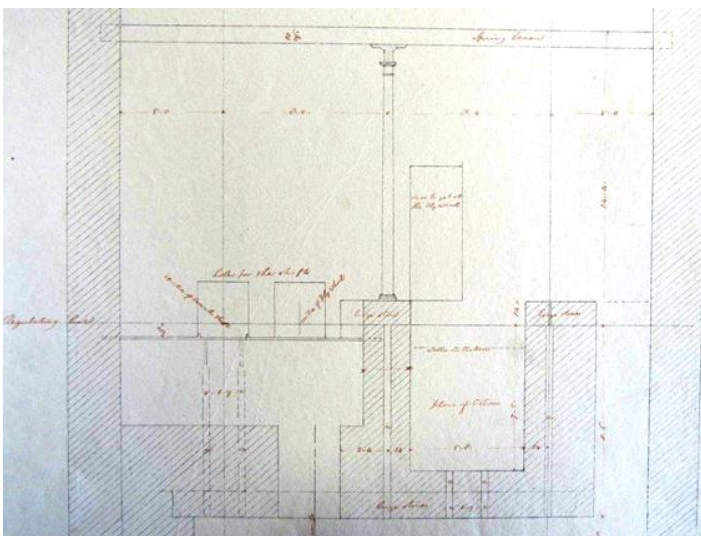
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BOULTON AND WATT ENGINE AT KENNETPANS DISTILLERY, 1806

Industrial archaeologists are sometimes in a fortunate position to be able to connect archival to physical evidence. The millhouse at Kennetpans Distillery, near Alloa, which the Society recently visited courtesy of the owner and Rory MacDonald of Historic Environment Scotland (carrying out essential remedial works there) is a case in point.

Drawings in the Boulton and Watt Collection in the Library of Birmingham are very informative and yet there are differences in detail to what was actually built. A plan, overleaf, and an internal section, below, show the 1806 engine, the second to be installed there for Mr Stein by Boulton & Watt. The preceding 1786 engine had been damaged by fire in 1805. The circular recess still evident in the ashlar wall was for a 15-foot diameter flywheel, the central square hole being its axle. The off-centre square held a bearing for the crank wheel which geared up the flywheel to rotate more quickly -43 revs per minute to drive the mill stones. The four smaller square socket holes accessed the holding-down bolts, two below each bearing box, the masonry holes going right through the wall and not as shown vertically down to the footings. The door gave access to the flywheel, for maintenance, or perhaps for setting it going each time the engine was started. The crank wheel bearing box still has cast iron shoes embedded in the masonry, shorter than shown in the long section drawing overleaf.



Right: flywheel recess, holes for centre of flywheel and its off-centre crank gear, with square holes to access holding-down bolts. The doorway (where a ladder leans)



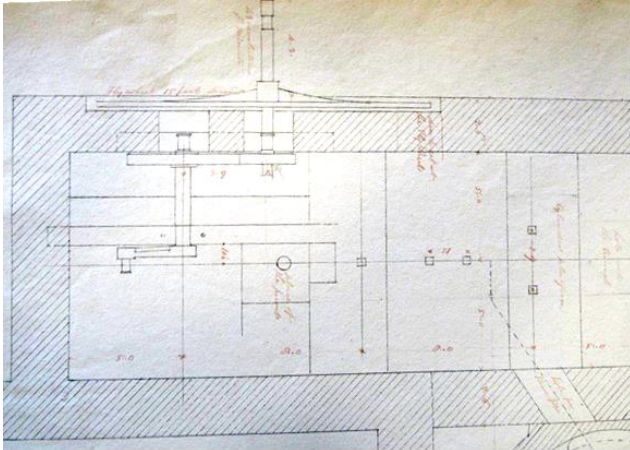
Left: 1806 Boulton & Watt's reversed sectional drawing through the engine, which gives the same arrangement as the view (right) from the millstones

was later widened to the right and made into an arch.

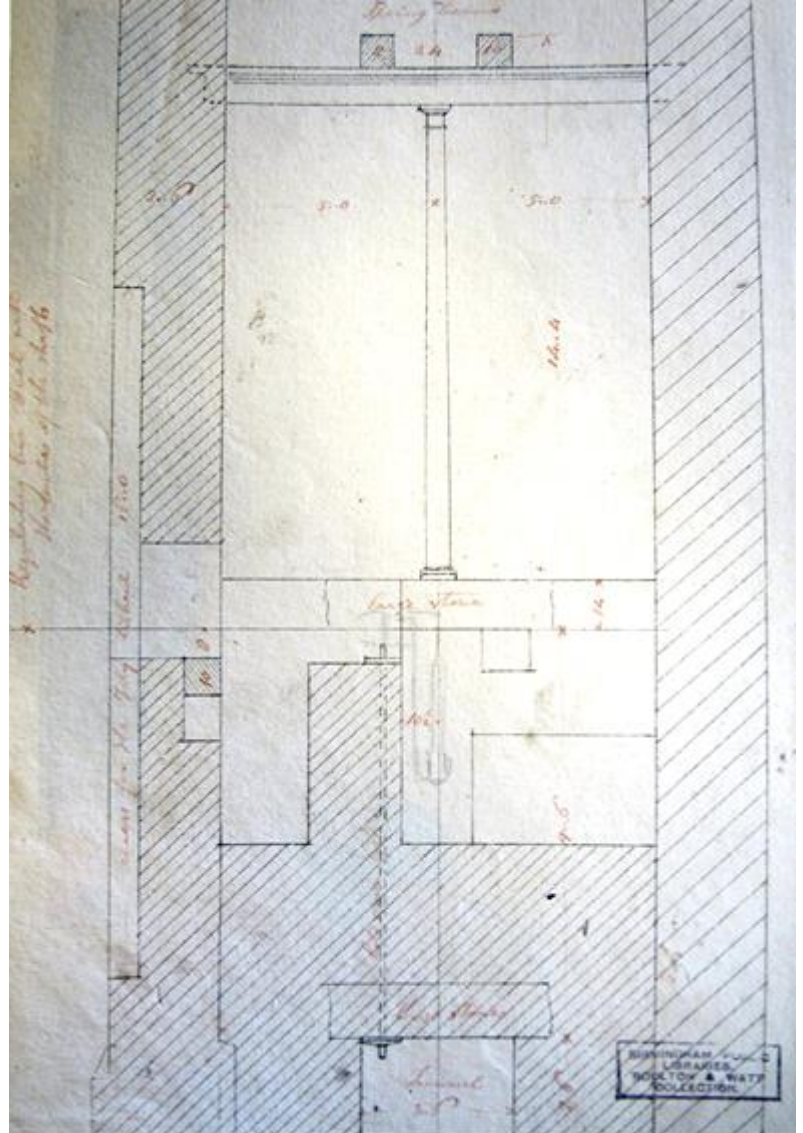
The photo shows the same flywheel recess, and that the door had been widened as an arch. The method James Watt had devised for copying drawings meant that each copy retained in Birmingham is reversed so that left is right, and vice versa. As the sectional drawing is from within the engine house, the various openings look to be in the same location as in the photo looking at that wall from the side of the mill stones rather than the engine.

The predecessor engine of 1786 (the first rotative engine in Scotland) required many more drawings because at that date most of the parts had to be made locally. Considered by James Watt Jr in 1803 to have had "too much communication with the mill" there appears to have been no separating wall. Its

physical evidence is partly overlaid by that for its replacement, but certain features like the circular haystack boiler were kept or replicated to be deployed for the new engine, alongside a wagon boiler already installed between the dates of the two engines. Neither engine had a long working life due to fluctuations in tax hitting sales in London markets. Examination of the different types of stonework will help elucidate their history and benefit studies made of other early steam engine houses. Impetus may be given by events marking the 250th anniversary of James Watt's patent separate condenser, and 200th anniversary of his death in 1819.



The rotative shaft comes directly from the centre of the flywheel and is drawn here as made of iron. Most flywheels are usually with the rest of the engine inside the engine house. A spur gear was activated by a crank to the left of the longitudinal centre line below the beam. The Douglasfield engine in Verdant Works Dundee of 1802 has instead sun and planet gearing that avoided a time-limited patent on cranks. The section (right) shows the beam rocking on a breadthwise iron entablature and iron column standing on large stones that survive. This is instead of a bob wall that would be used at a Newcomen or Cornish engine, or a timber framework, as for the first 1786 engine here. Other large stones supported the cylinder, with long bolts drilled through them to keep them steady, unlike earlier timber constructions.



Mark Watson

Drawings by courtesy of Archives and Collections, the Library of Birmingham

NOT YET HOIKED OUT OF HAWICK

“From Wool to Wearer: the Romance of Pesco Underwear” is an 18-minute silent film about the unshrinkable underwear made there in 1913. It is one of the resources of the Scottish Screen Archive that is now splendidly housed in Kelvin Hall. Long-established Borders knitwear firm, Peter Scott Ltd starred in that film, but encountered difficult trading conditions in August 2016. The knitwear firm was first established in the town in 1878, was bought over in 2010 and again last year by Hong Kong-based Artwell, securing jobs for 32 of the 170 staff previously employed. The temporary closure was a second blow to the town in just over six months, with Hawick Knitwear going into administration in January.

On the other hand it is pleasing to report the re-opening of a part of the Turnbull Dyeworks, or Langlands Mill, as premises for the relaunched J&D McGeorge Ltd. The firm will bring the property back to its original use as a textile mill creating 20 posts in 2017. A spokesman for the firm said it was

delighted to revive the brand in Scotland aimed at "top-end couture houses around the world." The J&D McGeorge brand had its history in Dumfries with a large mill on the town's St Michael Street which operated into the 1990s.

DUMFRIES: Rosefield Mills, opened in 1885 by Charteris Spence & Co., were the largest tweed mills in Dumfries. Resembling the Doge's Palace in Venice its frontage was built in 1886 before Templeton's in Glasgow (1889). Tweed production ceased around the 1930s and the mill buildings were adapted to other uses, but have been decaying for many years. Now the Dumfries Historic Buildings Trust is urgently appealing for funds to acquire and restore the mill. The trust would be most grateful to hear from anyone who is able to support them with donations or loans for the purchase and restoration of this mill, to ensure it has a secure future, will become a useful building once again, and an asset to Dumfries.

Find the trust on Facebook or email if you can help in any way with this project, at mail@dumfriestrust.org.uk. Donations eligible for Gift Aid mean the trust can claim a further donation from HMRC. DHBT is a registered Scottish Charity, SC042851.

EDINBURGH FIRE MUSEUM AND UNION CANAL VISIT

On 4 May 2016 the Society enjoyed a two-centred visit to the Fire Museum and to the eastern end of the Union Canal. The Fire museum was in the 1897 Laurieston Place fire station, an elegant, purpose-built, red sandstone edifice designed by then city architect Robert Morham. Our capable and enthusiastic guide took us through the exhibits from a hand-operated pump of 1806, up to a modern, but now superseded, diesel fire engine. It is surprising that wooden ladders were in use until 1955.

The history of the fire service in Edinburgh really emerges from inchoate disorganisation when a dispute between two insurance-funded fire services, inhibiting any actual attempt to extinguish a conflagration, was resolved by an onlooker who intervened to settle the conflict. That person, James Braidwood, was subsequently appointed by the city to head the city fire service and in the nine years (1824 – 1833) of his management of the Edinburgh fire service he established the training and operational practices that became the basis for all modern fire services. One of these was that personnel were required to abseil down the North Bridge. Subsequently he moved to London where he served as head of the fire services for a further 28 years, only to die there in a fire.

In 1986 the station was closed, as it was no longer capable of accommodating modern fire apparatus, and was subsequently taken over by a volunteer group who established the current collection. Almost unbelievably there is a question hanging over the future of the museum as the Fire Service has sold the premises to Edinburgh University and the Museum people expected to be required to quit by the end of the year. There is, apparently, an understanding that alternative premises will be found, but it is impossible that any other will have the unique characteristics of the current site and allow a similar exposition of the operations of the fire service in the past. The building is an exhibit in itself but it closed its doors in October.

After lunch we reassembled at the new terminus of the Union Canal, the original now swallowed under 20th-century developments that started with the construction of the former ABC /Regal cinema, now Odeon. The canal, a contour canal, was established primarily to bring coal to Edinburgh and succeeded in this as, when it opened, prices fell significantly.

Leamington Lift Bridge was built in 1906 and restored to working condition in 2002. We were fortunate enough to see it in operation. Its sturdy construction is necessitated by its need originally to support the heavy traffic of Fountainbridge. When operated it is raised nine feet, sufficient to allow the passage of a narrow boat with a bit of clearance.

Latterly the canal functioned primarily as the source of water for the North British Rubber Works in the adjacent Castle Mills. The company at one time employed 4,400 people but is now closed and much of the 22-acre site has been swept clean [by Scottish and Newcastle, ed]. However, there is still extant an imposing baroque-esque doorway of *circa* 1920. This will become the home of Edinburgh Printmakers' Workshop. Even though the works is closed, the company still has a presence in Edinburgh as the Hunter Boot Company.

The canal is now given over to leisure pursuits. We were privileged to have two guides, one from Scottish Canals and one from the Scottish Waterway Trust, who helped place the canal in the economic and engineering context of its time and underlined the prospects for its future exploitation. And, by the way, I had the unexpected pleasure of observing a tenement designed by the, perhaps insufficiently celebrated, Victorian architect FT Pilkington.

Andrew Young

VISIT TO CAITHNESS and ORKNEY 30th JUNE –4TH JULY 2016 by the PANEL FOR HISTORICAL ENGINEERING WORKS (PHEW) Scottish Group

The 42nd annual Scottish PHEW tour was the most ambitious and rewarding of a remarkable series of trips begun by Roland Paxton in 1975. Sandra Purves working with Jenny Bruce provided five days of coach and ferry travel, exploring history and on-going engineering activities in Caithness and Orkney.

From Inverness there were brief stops northward at Dingwall Canal, the Fleet Mound, and Helmsdale Bridge (places described in *Civil Engineering Heritage Scotland: Highlands and Islands*). At Berriedale Braes we pondered whether this could be the site for Scotland's answer to the Millau Viaduct. Within one of the A9 hairpins we visited Berriedale Church, a 19th century T-plan church with harled exterior, one of the Parliamentary churches, in the Highlands designed by Thomas Telford, built in 1826 by William Thomson and William Davidson on land gifted by Mr Horne of Berriedale Estate. It closed as a church in 2008 and is now a charity run by the Berriedale Church and Cemetery Association. There Jenny Bruce had arranged a display showing the many and various connections Telford had with Caithness. Thence to Whaligoe Steps and Wick.

Ackergill Lifeboat Slipway preceded a fascinating visit to Bridge of Wester. There Willie Watt showed the extent of work undertaken by the firm "Subsea 7" pre-fabricating "Flow-Line Bundles" for the final extraction phases of the more mature North Sea Oil fields. A "Bundle" of all the pipes and cabling required to link a new remote underwater wellhead to a long-established offshore platform is positioned and secured inside a large single carrier pipe. At Wester Bridge the carrier pipe can be as long as 7.7km (the Conoco Philips Enochdhu bundle in 2014). The assembly is carried out on a strip of land extending from the shoreline at Sinclair's Bay landward for 7.8km on permanently constructed conventional railway tracks with 75lb/yard flat bottom rail on a 976mm gauge supported by timber sleepers at 1m pitch. After assembly the complete carrier pipe is launched and towed to site using Subsea 7's controlled-depth tow method. Bridge of Wester is a most impressive site which began activities in 1980, 2001 being its busiest year to date.

Our next visits were to Scrabster Harbour and the nuclear research facility at Dounreay Fast Reactor. There a brave face is put on the task of decommissioning and the myriad safety requirements for what was once seen as the future source of all energy. The day was completed by Meadow Well in Thurso, Dunnet Head Lighthouse, and a modern processing plant –Rock Rose Distillery at Dunnet.

A recurring theme of the visit was the changing pattern of energy sources. In the UK as a whole solar-energy surpassed coal over a whole day for the first time on 9 April 2016 while electricity produced by coal fell to zero several times in May -the first time the UK has been without electricity from coal since the world's first centralised public coal-fired generator opened at Holborn Viaduct, London, in 1882.

A different way of thinking about energy is apparent in Orkney. The islands generate from renewable sources 125% of the electrical energy needed, so the main problem is lack of capacity on the lines back to the mainland. A study in 1987 formally recognised the resource potential of Orkney. Tides run strongly through the islands and in the Pentland Firth. The Osprey wave energy device was installed off Caithness in 1995.

Nowadays Orkney's energy resources are:

Onshore wind	40 MW existing/planned
New onshore wind	100-200 MW
Wave	500-1000 MW
Tidal	500-2,500 MW
Offshore wind	1000 MW
Wave leases	550 MW
Tidal leases	500 MW
Micro & other	2.5 MW
Gas & other	20 MW
EMEC sites	5 + 7 MW
Total	= > 5,000 MW deliverable capacity



Fuel pumps, Lyness, Hoy

Our first stop in Orkney was the European Marine Energy Centre (EMEC). MD Neil Kermodé gave a presentation on the testing work undertaken there. Thus we had a start at being able to identify the various configurations of wave and tidal current energy conversion machines to be seen around the archipelago in the course of the next two days.

Between these reminders of history in the making we saw Barony Mill, Twatt Airfield (HMS Tern) and the Churchill Barriers. Work started on the barriers in 1940 and was completed at the end of the war. Italian prisoners of war used in the construction work made a personal contribution to the area: an ornate chapel constructed from salvaged materials testifies to the benign regime at the site managed by Balfour Beatty. 250,000 tonnes of locally-quarried rock was dumped into 20 metre deep channels, topped by 66,000 large concrete blocks and a road link between the islands. Four barriers in total extend for close to 2 miles. With tidal energy turbines installed at Barrier No.1 it would be possible to generate an estimated 16.7MW when the tide is at full flow whilst 8.6MW could be generated at Barrier No.2.

On the island of Hoy we saw Longhope Lifeboat Museum, the very intact Hackness Martello tower & battery, and a glimpse of Cantick Head Lighthouse. We were engrossed in the Scapa Flow Visitor Centre & Museum next to a Lyness oil tank. Then back to Kirkwall harbour and Hatson to view several marine energy devices out of the water between trials at various EMEC sites.

Our last day came too quickly with the morning ferry back to the Scottish mainland and the journey south (via bridges at Dornoch Firth, 1991, Cromarty Firth, 1979, Kessock, 1982) reached Inverness with that feeling that everything deserved more time than we were able to spend. My thanks again to Sandra Purves and Jenny Bruce for a superb trip.

Dr Robert C McWilliam (a slightly longer version is in PHEW Newsletter 152)

The Association for Industrial Archaeology (AIA) conference is planned to take place in Caithness, with visits also to Orkney, in June 2018. SIHS is affiliated to AIA and markwatson1865@gmail.com will be glad of offers of assistance. The civil nuclear archive centre, just opened in Wick, will be a boon.

See back page for the 2017 PHEW tour in preparation.

DYSART, Fife, has a vaulted tower windmill (right) that was made into a folly after its initial purpose ceased, with little brick battlements added to make it a landmark. Now Fife Council has embarked on repairs before vegetation would dislodge more of the bricks and perhaps threaten the masonry. The photo shows newly laid turf where a long-disused coal mine shaft had recently reappeared, and had to be grouted. Might windmill and shaft be related, the windmill having gained a pumping function at some time? The challenges of living in a mining landscape!



PORTSOY SAIL LOFT, dating from the 18th century, has been transformed from the condition shown below (in 2012) into a 25-bedroom bunkhouse in a partnership between the North East Scotland Preservation Trust (NESPT) and Portsoy Community Enterprise (PCE). NESPT will next examine the options for Mill of Benholm, a corn mill (above left) tea room and allotments in former Kincardineshire, its training purpose having ceased to be run by Aberdeenshire Council in 2016.



SILVERBURN PARK, LEVEN, FIFE, was leased to David Russell by Charles Maitland Christie of Durie in 1854. He rebuilt Silverburn House and established a flax mill and retting business. The brick-built flax mill was steam powered and one of the first buildings to be roofed with a 'new material' called

corrugated iron. The Flax Mill is category B-listed in terms of its conservation importance to local history. It looks nothing like a spinning mill, so its primary purpose is assumed to be retting of flax.

The mill closed c.1930 and in 1973-74 David Russell's great-great-grandson, Major Russell (of Tullis Russell Paper Works) gifted the house and grounds to Leven Town Council, but also ensured through the National Trust for Scotland that the "subjects should remain forever as a quiet area used for the benefit of the public in general and the people of Leven in particular for nature trails, quiet parkland and organised camping". In the mid to late 1980s the former Kirkcaldy District Council undertook a job creation programme to reinstate Silverburn House as a residential centre for visiting parties (Scouts and Guides, school picnics, caravan rallies *etc.*). At the same time it developed a "mini-farm" in the steading, which closed in the first decade of this century, and Silverburn House became dilapidated and had to be closed on health and safety grounds. Now Fife Historic Buildings Trust is examining options for use of this complex that will still benefit the people of Leven.

PAISLEY'S SILK MILL: Blackhall House is believed to be the only remaining purpose-built silk throwing mill in Scotland. However the four storey C-listed brick building is set to be knocked to the ground as Vinemeadow Ltd prepare for a new development. Renfrewshire Council's Planning and Property Policy Board refused consent to demolish the building and redevelop the site for residential purposes. The council's decision was subsequently overturned, however, on appeal to the Scottish Government, so an important part of Paisley's textile heritage will be destroyed for housing.

There were 88 letters of objection to the proposal, with people citing the building's importance to Paisley's heritage. Residents felt that Blackhall House should be retained and that a new use should be found for it. Objectors also felt that other parties should have been given the opportunity to acquire it. Tom Chalmers of Paisley Heritage Tours said: "In the run up to our bid to be UK City of Culture in 2021, we know that the tangible buildings and intangible cultural heritage of our textile history are vital to our future. Can we have another look at our abandoned silk mill -the last one in Scotland? Is demolition really the only option for this magnificent mill building?"

Built for D Speirs and Son in 1848, Blackhall Mill made thread from raw silk. As availability of that material dwindled, weavers began to focus on cotton which put Paisley on the international stage for more than 100 years. The site was converted to a paper mill in the 20th century and later became offices. Since then it has fallen victim to vandals and metal thieves, and is in poor condition.

Historian Liz Gardiner added: "There was hope for restoring some of the silk mill for community use. This is one of the last remaining silk mills in Scotland and it is devastating to the town to hear that it will be demolished. These buildings are very special and to have Blackhall House torn down while we are bidding for City of Culture is outrageous." (From *the Gazette* 8 February 2017)

BALLATER RAILWAY STATION was opened in October 1866 by the Great North of Scotland Railway, and played a crucial part in the growth of Ballater. The building ceased to be used by rail in 1966, but since 2001 had housed a tourist centre, shops and a restaurant.

A 2015 fire was devastating as the building is wooden (see bulletins *passim*). Reinstatement work and a new exhibition space extending along the old platform started in February 2017. A £3 million plan by Aberdeenshire Council to reinstate the building has support from a Historic Environment Scotland Building Repair Grant. The familiar swan-necked iron lamps, the porte-cochere (covered entrance way), and outstanding decoration including stained glass will be restored, says Aberdeenshire Council.

More railway news: the turntable at Ferryhill in Aberdeen is being refurbished, the better to turn round steam locomotives. A Glasgow-Edinburgh milepost from trackside is now displayed in Haymarket station, through the auspices of the Railway Heritage Committee and Railway Heritage Trust.



Saturday 18 March **SIHS Burns Doo**: Beechwood Scout Hut, Newhouse Rd, Stirling.

10.30 AM start. Hear:

Prof John Hume on the Emergence of Industrial Archaeology

Elizabeth Bryson (Glasgow Society of Field Archaeologists) on North Woodside Flint Mill.

Speakers are wanted for short talks after lunch. The cost, including lunch, will be £11.00 per head, collected on the day. To allow catering arrangements to be finalised please advise Andrew Young if you will attend and if you can offer a talk (which is not compulsory: audience is also welcome)

Andrew J. Young, 53 Midton Rd., AYR. KA7 2SQ ajyou@btinternet.com Tel: 01292 260983

Saturday 27 May: **SIHS AGM** will be in Biggar Museum, South Lanarkshire, at 11.00. Please notify attendance as above if you would like lunch and a tour of the museum (£10, or £9 concessions). No booking is required if only joining the AGM.

Future events mooted may include the Briggait and East End of Glasgow; a foundry visit in Bo'ness, and something in Eastern Scotland. Watch the website and consider whether you would like to organise any of these, or something different and/or to stand for the committee at the AGM.

Other Events for calendars (not arranged by SIHS):

Friday 24 March 2017 **STICK AGM and Spring Event**. The Scottish Transport and Industrial Collections Knowledge network will meet at Fairfield Govan Heritage Centre, 1048 Govan Road, Glasgow G51 4XS. Details here: <http://www.stickssn.org/site/>

Fairfield's offers a series of interesting spring talks: <http://www.fairfieldgovan.co.uk/heritage/events/>

30 June-2 July 2017 **PHEW tour**: the Forth and Upper Tay Valleys from a base in /near Edinburgh. See the Tummel-Garry hydro scheme, Stanley Mills, Dunkeld Bridge and the Union, Forth and Clyde Canals. For details, contact Sandra Purves 0131 556 450-3 or spurves@btinternet.com

SITUATIONS VACANT. Have you a way with words, your finger on the pulse of news about industrial heritage in Scotland? Would you like to take on the editorial of this lively bulletin? Our current editor Tony Jervis feels that it is time that he relinquish this non-remunerated duty. We will all miss his inimitable puns and in depth knowledge of railway routes. Mark Watson provided layout and photos in this issue.



Follow us on twitter- already 410 followers in less than a year! @Scotindustria

On Flickr? Find our group Scottish Industrial Heritage and upload your images there.

Our newly re-launched website is at www.sih.co.uk . Our gallery contains 1400 pictures taken by our late treasurer Eric Watt showing Scottish industrial sites from the last four decades of the 20th century, and several SIHS visits.