Sussex Industrial Archaeology Society Newsletter

Number 156 **October 2012**

Alan Green, most excited to find not just one! but a fair number of examples of Fareham chimney pots in the Artefact Store during the society tour of the Weald and Downland Open Air Museum in September, see the report inside and *Newsletter* 141 for more details. (*Martin Snow*)

Newsletter 156

Contents **October 2012**

Editorial

Welcome to *Newsletter* 156. This summer(?) a number of members have been out and about on visits arranged by your Committee and various people have kindly (arm twisted?) prepared reports, thanks to them for doing so. It is such items that make this a ***News****letter*.

The society's winter lecture series starts in October (see page 3) please note the talk on Sir Harry Ricardo, promises to be most interesting following our visit to the works.

An ancient industry is that of the winning of salt at 'salterns', where sea water was allowed to evaporate, the residual salt (and other minerals!) were then collected - very simplified description. The process tended to leave evidence in the form of mounds. The Adur valley had several areas where there were collection of these. I recently obtained a copy of a recent dissertation, by Pat Thomas, on *Medieval salt production* that focuses on both the Adur Valley and Hooe Level areas. I am sure if anyone is interested a PDF copy could be arranged.

Included is a picture from 1968 of the mounds, since lost, near Dacre Gardens - the housing near the Shoreham Cement Works. Partly showing in this picture, by Eric Holden, is the former Tin Tabernacle (a corrugated iron Mission Hall) erected around 1920, and was redundant by 1968 and later demolished. The site is now under the new road that avoids the houses at that point. It is of interest to me as I have only been able to locate two ground level views of this interesting iron product.

Does any member know of any other views of this former building, indeed of any 'Tin Tabs' in Sussex.

Forthcoming SIAS Events

Malcolm Dawes

All talks are to be held at West Blatchington Mill Barn, Holmes Avenue, Hove.

Saturday 20th October, 7.30pm. ***Transport of the Masses***

Illustrated talk by local historian Ian Gledhill on the development of the ubiquitous tramcar in the UK with a particular look at the history of trams in Sussex.

Saturday 24th November, 2.00pm. ***AGM of the Sussex Industrial Archaeology Society - followed by Peter Hill's talk on Pills, Potions and Patience***

Many members will know Peter in his past role of Chairman of the Sussex Mills Group; however for 30 years he was a proprietor Pharmacist in Hove and as a result has a wide knowledge of medicines and treatments during the 20th century. An entertaining talk looking at the major changes in pharmacy with the added bonus of a display of Peter's collection of pharmaceutical memorabilia.

Saturday 26th January 7.30pm. ***Aspects of Southern Electric***

David Brown of the Southern Electric Group will give an illustrated talk on The Southern and its electric traction. His best selling two-volume book on the subject, *Southern Electric – a New History,* was published by Capital Transport in 2010.

(Note: At 2.00pm approx, at the same venue there is a Brighton Circle talk, "***Photographs from the Hopkins-Brown Collection"*** these are mainly of Marsh locomotives - SIAS members are welcome to attend).

Saturday 2nd March, 7.30pm. ***Sir Harry Ricardo – a true pioneer of the internal combustion engine***

Dave Morrison, Senior Operations Manager at Ricardo UK will be reviewing the work of Sir Harry Ricardo covering his life and research and development from 1903 to the 1950s. He was a pioneer of high performance combustion systems working on numerous engine developments for cars, motorcycles and aircraft.

He developed Ricardo's into a highly regarded research and development company working with the motor industry across the world and with its base in Sussex adjacent to Shoreham Airport.

Date for your diary

Saturday 27th April. ***SERIAC***

South East Regional Industrial Archaeology Conference for 2013

Organised by Kent Archaeological Society and to be held at Dartford Grammar School, Dartford, Kent. Programme and booking with the next newsletter.

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 e-mail to *malcolm.dawes@btinternet.com*

Weekend 20th- 21st October. ***Sussex Branch Line Weekend***
Branch Line trains from 1880 to dieselisation
Bluebell Railway. 01825 720800. www.bluebell-railway.co.uk

Sunday 21st October. ***Industrial Transport Day***
Industrial trains and vehicles in action during the day. Amberley Museum. 01798 831370. www.amberleymuseum.co.uk

Sunday 21st October. Autumn meeting of Mills Group
Details in Mills Group Newsletter

Monday 22nd October, 7.30pm. ***Heading west – a journey from Brighton along the Coastway West***
Railway Correspondence and Travel Society talk by SIAS Chairman John Blackwell. London Road Station, Shaftesbury Place, Brighton. www.rcts.org.uk

Tuesday 23rd October, 7.30pm. ***The Secret Sussex Radio Network***
The Special Duties Section of the British Resistance during WWII with reference to the Eastbourne Area. Eastbourne Local History Society talk by Stewart Angell. Non-members £1. St.Saviour's and St.Peter's Church Hall, South Street, Eastbourne

Sunday 4th November. ***London to Brighton veteran car run***

Tuesday 6th November, 2.45pm. Railway Signalman's life at Polegate
Local retired signalman Patrick Harmer will give a talk on his railway career in Polegate 1948-1998. Eastbourne Local History Society.
Non-members £1. St.Saviour's and St.Peter's Church Hall, South Street, Eastbourne

Wednesday 7th November, 7.00pm. The Georgian town house and how it worked
Neil Burton, architectural historian. A Regency Society talk ranging from town planning to the construction and design of houses.
Non members £3. City College, Pelham Street, Brighton

Monday 12th November, 7.30pm. ***Kodachrome slides of the past 30 years***
Southern Electric Group, Sussex Branch presentation by Andrew Marshall. £2 visitors. Deall Room, Southwick Community Centre, Southwick. www.southernelectric.org.uk

Saturday 17th November, 2.30pm. ***The Country Houses and Estates of Brighton and Hove c.1500-1940***
Brighton and Hove Archaeological Society Local History talk by Sue Berry. Non-members £3. United Reformed Church Hall, 102 Blatchington Rd, Hove. www.brightonarch.org.uk

Wednesday 21st November, 7.45pm. ***British Bus Fleets***
A look at the colourful pre-NBC Bus Fleets. Sussex Transport Interest Group talk by Brian Bennett. £2. London Road Station, Brighton. 01273 512839

Tuesday 27th November, 7.30pm. ***The Walter Gardiner Photographic Collection***
Martin Hayes will be commenting on one of Worthing's important archives. Worthing Society evening meeting. Visitors £3. There will also be a nominal charge for refreshments. Worthing Library Lecture Theatre

Saturday 8th December. ***Steam train excursion from Three Bridges to Bath***
Photographic opportunities in Sussex. www.railwaytouring.co.uk

Wednesday 9th January, 7.30pm. ***Discovering Lavant***
Chichester Local History Society talk by local historian Andrew Berriman. £2. New Park Centre, New Park Road, Chichester. 01243 784915

Tuesday 5th February, 2.45pm. ***Sussex Mills***
Eastbourne Local History Society talk by Peter Hill. St. Saviour's and St. Peter's Church Hall, South Street, Eastbourne

Do please always check details before traveling.
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.

The Colonel Stephens Society Christmas Card

This year's card (see back cover for a sample) shows a Hundred of Manhood & Selsey Tramway train cross the lifting bridge over the canal near Hunston. The well-known and respected transport artist, Jonathan Clay, has painted the original from which the cards are reproduced

The greeting inside is "Merry Christmas and a Happy New Year". Each card is 21cm x 15 cm, landscape

The cards are sold in packs of five at £6.25 inclusive of UK postage including with envelopes. Minimum order is one pack of five cards

Orders with name and address, stating the number required with a cheque or postal order payable to 'The Colonel Stephens Society' should be sent to: Nigel Bird, Bryn Hir, Llwynygroes, Tregaron, Ceredigion, SY25 6PY

Eastbourne's Green Water – Further Thoughts

Ron Martin

In *Newsletter* 152, I speculated about the source of the alleged green water at Eastbourne as being from Motcombe Pond. I have had no comment from any reader until quite recently when Paul Sowan has sent me an extract from *A Short Account of the Antient Parish of Merstham* by the Rev. R. I. Woodhouse (1911). In this publication he stated that in 1817 " The Bourn broke out at the old wellhead and commenced its progress with unusual violence, after a succession of heavy rains, for some days. It was a very green hue. On March 3rd the Bourn from the old wellhead suddenly ceased; on enquiry this was occasioned by re-opening the tunnel, which had been closed from the masonry having fallen in".

No further explanation was given as to the source of the green water but this does indicate that these things do occasionally happen in public water supplies

SERIAC Bursary

The committee of the South East Region Industrial Archaeology Conference (SERIAC) has it in it's power to make awards of a bursary to assist individuals in their research into topics of IA, this can be used for expenses incured, including publication.

The awardee is required to make a presentation of their work at the annual conference, usually held in April each year.
This may be in the form of an illustrated talk and/or display boards.

There is an award available for the current year Anyone seeking to apply should sent a written description of their planned research to Ron Martin (General Secretary) contact details on page 23.

Late News

As the *Newsletter* was being finalised, the sad news concerning the death of member Alan Brown was received.

Alan, an engineer, was a long standing active member of SIAS being particularly associated with the Coultershaw beam pump.

STOP PRESS

The British Enginerium is starting a series of 'Open Days' on Sunday 28th October 2012 - 11.00 - 4.00

For more information see their web site - www.britishengineerium.org

- Info Wanted -

Coach House, Courtwick Lane, Wick

There exists at Courtwick Lane, in Wick, Littlehampton, a building, now known as The Coach House, which was once part of Court Wick Farm, which then became Court Wick Park and is located at TQ 0196 0380. Some years ago this stood in isolation in the fields, but encroaching housing now touches its boundary. It fascinates me as it had a bell tower, complete with bell, and I assume that the bell was used to call time for the field workers. A recent visit also made it clear that there was also a clock face, but what I don't know is whether this is just a later adornment, or whether there had once been a working clock there. I have spoken with the owner to get more information, but he is also keen to learn more as there is no clock mechanism installed any more. I have been to the Records Office in Chichester, but have not been able to glean any information there, so I now ask if member of SIAS who may have an interest in such buildings who may be able to provide a little more information for both myself and the owner.

I am keen to know if the building did have a clock and whether the bell was used with the clock, or just used to toll manually. If there was a mechanism, more details on it would be welcome, if known. I look forward to hearing from you in due course and send my thanks if you can help at all.

Norman Langridge

Sutton Hall - Isfield Hydraulic Ram

I have received the following; if you can help Terry with information please contact him via me, contact details on page 23.

I am a member of the Sussex Ouse Restoration Trust and am currently engaged in the restoration of the lock structure at Ifield.

During my time at the lock I have always been interested in the local history, the navigation and the paper mill that once stood at the site. As such my attention has been drawn to the site of a hydraulic ram that once fed the water tanks at nearby Sutton Hall.

It has now come to light that the ram was donated to the British Engineerium about 20-30 years ago.

The museum is currently closed, Sutton Hall hold no archive material concerning the ram and I just wondered whether any SIAS members have any knowledge of its existence or operation?

Any information would help fill in more background to the site and area surrounding the lock in general.

Terry Owen

Visit to Weald & Downland Open Air Museum, Singleton
Saturday 22nd September
Alan Green

It is several years since the Society paid a corporate visit to the Weald and Downland Museum and we could not have chosen a better time to put this right than Saturday 22nd September. Not only was it a bright sunny day, this was the event weekend for 'Raising the Frame' of Tindall's Cottage, the latest building to be re-erected at the museum, and celebrating the tenth anniversary of the museum's much vaunted Gridshell building. Both occasions had also been marked the day before with an all-day conference on timber roofs which I had attended – and jolly good it was too.

Sixteen SIAS members assembled at 10.30am and our Officer in Charge, Martin Snow, managed to negotiate a special entry rate for those who were neither friends of the museum or otherwise able to gain free admission.

Our day started with a private tour of the museum's Artefact Store situated in the basement of the Gridshell. Our guide, Chris Denham, explained the construction of the Gridshell before leading us into the store where our eyes were confronted by the ultimate boy's toy box. The vast space is filled with racks containing, *inter alia* architectural fixtures and fittings, tools for all trades, farming implements, domestic items, lavatory pans, signs, bottles, horse accoutrements, bricks, tiles, pipes and chimney pots. The highlight for me was the collection of Fareham chimney pots which, unusually for this particular artefact, could be seen close up and handled. Indeed there was simply too much to take in in one go so several of us had to come back for another look during the afternoon. Our guide, very knowledgeable on the collection as a whole, was suitably impressed by the specialist knowledge SIAS members were able to give him on some of items he shewed us.

We then repaired to the site where the timber frame of Tindall's cottage was being erected. This Sussex cottage, which came from Ticehurst, was, surprisingly built as recently as 1725. I say *surprisingly* because the substantial timbers appeared to be very much older, and we were to learn that, in fact, they were so, having been salved from an earlier structure of seventeenth, or even sixteenth, century origin. The small team, who did not seem to mind their activities constituting a spectator sport, were using some very un-Georgian equipment though, including tower scaffolding and a set of aluminium shearlegs with a chain hoist. However, the basic ancient skills were patently still there. Interestingly the whole structure was being secured until completion with temporary, loose-fitting steel pins which will be replaced with hand-made wooden pegs, firmly driven home to stiffen up the frame.

By the end of the afternoon much of the west and south wall frames had been erected, but hopes for the same degree of progress the following day where being overshadowed by a dire weather forecast.

Other attractions included displays about timber framing, lectures on Tindall's Cottage and the Gridshell and the sale of substantial bacon rolls, the tempting smell of which was wafting up the hill directly towards the crowd watching the building operation. This last was a very clever marketing ruse – and one that worked perfectly. Another cunning plan was the selling of pegs and tiles for the new building which could be marked in (very 21st century) felt-tip pen with the purchaser's name.

We all had a truly splendid day but this would not have been the case had we gone on the Sunday when the predicted monsoon (of the sort that beset our Littlehampton visit back in August 2009) duly struck, bringing conditions that would have deterred both frame erectors and visitors alike. One fears that there were quite a few of those bacon rolls left over.

The SIAS group listen to guide Chris Denham detailing the unique construction of the Downland Gridshell that the museum was celebrating 10 years since completion. Pictured before plunging into the depths of the Artefact Store. (Martin Snow)

Coultershaw Mill and Lordings Waterwheel 16th July

Malcolm Dawes

June this year broke all records for rainfall and the storms and flooding that occurred the weekend before our proposed visits to these two innovative power generating schemes meant that the visits only narrowly escaped cancellation. Volunteers at both sites had to clear piles of debris that had been dumped onto the sites by the swollen rivers. But we also had some luck in that, very unusually for June 2012, we had a couple of dry sunny days and by the day of the visits the river levels had returned to normal. At both sites the debris had magically disappeared and we had a very successful and interesting day.

The morning was spent at Coultershaw Mill where Robin Wilson the Chairman of the Coultershaw Trust showed us the newly installed Archimedes Screw Turbine. The project has been promoted by the Coultershaw Trust with the help of grants from the South Downs Joint Committee Sustainable Development Fund with the construction financed by the Leconfield Estate. There had been problems with the preparatory work over the last year, with three coffer dams having to be constructed on the upstream side. However, the installation of the massive 6-ton turbine in the old wheel pit of the corn mill was accomplished in just a few hours on 15th March. Since then the turbine had been connected to the grid and we were all able to see the proof as there is now an electronic display in the Mill indicating the amount of power being generated.

The Trust has been awarded HLF grants for restoring some of the historic buildings and creating educational facilities. Future plans include restoration of the engine house, the old warehouses and construction of a new footbridge to ease access across the site which will enable visitors to safely reach the old canal lock. Members of the group were given guided tours around the site and as a bonus the historic beam pump had been set to work providing an interesting comparison between power generation schemes from very different eras.

The afternoon was spent at the Lordings Waterwheel on the Wey and Arun Canal near to Billingshurst. The visit had been arranged with David Junkison who spent the day along with a team of volunteers from the Way and Arun Canal Trust ferrying us across waterlogged fields to the site of the Lording Waterwheel. When the visit had originally been arranged we had assumed the fields would be suitable for driving cars to the site but of course in mid-summer 2012 the access track consisted of deep mud. Not to be deterred the team from the Trust had arranged for a Land Rover to get us all to the site.

The Lordings waterwheel is a very unusual device in that it uses the flow of the local river to provide the power to lift river water into the canal. The wheel is 4m. diameter and when rotating at a leisurely 2rpm manages to lift 250cu.m of water in a day. The wheel has recently been rebuilt with galvanized vanes and stainless steel spillways and now helps to ensure that the water level in the length of canal at Lordings is kept to acceptable levels. We were shown around the wheel clambering up and down ladders so that we could understand how this very clever device managed to continually supply water to the canal bed with just the flowing river as the power source.

The final bonus was that it did not rain all day and the sun was seen at least for some of the day. An excellent couple of visits to see some very unusual power devices. And our thanks to the volunteers at both sites who worked so hard to ensure that we all had such an enjoyable day.

Members viewing the Archimedes screw turbine (left) and sluices at Coultershaw, taken from the road bridge. The original watermill waterwheel was to the left, when the old turbine was installed for the mill the wall at the left was built and rubble dumped in the gap, this had to be stabilised for the new turbine. The engine house is just visible on the right, the power shafts to the mill ran across the top of the sluices. (Malcolm Dawes)

World Record for Team GB - 150 Years Ago

John Blackwell

On September 5th 1862 Henry Tracy Coxwell (1819 – 1900) and Dr James Glaisher (1809 – 1903) attained the greatest height on record about 37,000ft (7 miles) in a balloon (without the use of breathing apparatus or pressure suits). Coxwell, the son of a naval officer, was educated for the army, but became a dentist. From boyhood he was excited by the ascents of balloonists but it was not until 1844 that he made his first ascent. By 1848 he had become a professional aeronaut and showman making ascents all over Europe.

Glaisher was an eminent meteorologist and made a series of balloon ascents with Coxwell as the "pilot" to investigate what happened to water vapour as it rose into the atmosphere. The site chosen for these ascents was Wolverhampton gasworks in Stafford Road as it was sufficiently inland to prevent the balloon being blown out to sea and the gasworks could supply gas to inflate the balloon; coal gas although some reports state that hydrogen was used. Coxwell had undertaken to build the balloon, at his own cost, which was 55ft in diameter 80ft in height and had a capacity of 93,000cu ft.

The details of the ascent are taken from a letter to *The Times* from Glaisher published on September 10th 1862. The balloon carried 17 scientific instruments including thermometers, barometers, a dew point hygrometer and a camera. It took off at 1.03pm, the air temperature being 59° F. Within ten minutes they had risen one mile and the temperature had fallen to 39° F. Shortly after they passed through 1,100 ft of cloud and emerged with a bright blue sky above. Glaisher attempted to take a photograph of the sea of cloud below but they were rising too fast, if taken this would have been the world's first photograph of such a phenomenon. In 45 minutes they had achieved a height of five miles, exceeding the previous record, and the temperature had dropped to minus 2° F.

Things then started to go wrong for Glaisher. With the balloon still rising and temperature dropping he found his sight dimmed, and unable to reach a flask of brandy called to Coxwell for help, but he was unable to assist as he was up in the ring of the balloon. To this ring were attached the cords which restrained the gas envelope, made of American Cloth, and the ropes suspending the basket. Power of speech was lost and the ability to write, finally at a height which Glaisher estimated to be about five and three quarter miles he lost consciousness. Meanwhile Coxwell up in the ring also felt insensibility coming over him and with his hands black and nearly frozen managed to open the gas relief valve by pulling on the cord with his teeth and then somehow clambering back down and rousing Glaisher by shouting "Take an observation; now do try". This was indeed a narrow escape because as a

balloon rises, air pressure reduces and the envelope of the balloon expands, until finally bursting and plunging the basket and occupants to the ground. With gas escaping the balloon descended and landed at Cold Weston some seven miles from Ludlow. The flight had taken two and a half hours.

What height did they reach? Glaisher was able to resume observations during the descent and believed, from his calculations based on temperatures, pressures and rates of ascent and descent, that the balloon must have reached 36,000 or even 37,000 feet, or seven miles. Coxwell made his last ascent in 1885. He probably moved to Seaford in the 1870s, the 1881 census shows him living at 4 Cinque Ports Road (now Blatchington Road) and in 1891 at Sandford House (Connaught Road) then in East Blatchington parish. He died at Seaford on the 5th January 1900, and is buried in Seaford Cemetery Alfriston Road where the inscription on his gravestone includes the words, ".....height of more than seven miles. This is the highest point ever reached by man, having thus in life approached more nearly than [any] mortal the gates of the infinite."

At some time he allegedly had a balloon manufactory in Richmond Road Seaford. This road opposite Morrison's supermarket has been redeveloped in recent years and only one possible building, with a bay window, remains which could mark the site. Any further information would be most welcome. The railway which arrived in 1864 had an adjacent goods yard which may have been used for the transportation of the balloons.

AIA Conference in Essex, August 2012

Ron Martin

Essex has many similarities to Sussex in that they are both largely rural and maritime counties, both having a long coastline. In fact we were told that Essex has the longest shoreline of any county in England – probably accounted for by the multitude of tidal creeks in the estuaries of the Stour and Blackwell Rivers. They both have a close proximity to London, but there the similarly ceases. Whereas Sussex has the Downs and the high ground of the Weald, Essex is largely flat comprising boulder clay with small outcrops of chalk, the highest point being a mere 300 ft above OD.

The surprising thing about Essex is that several major 19th and early 20th century industries of national importance were located within the county. These were Ford Motor Company in Dagenham, although no longer in Essex, Crittalls Windows at Braintree and Silver End, Bata shoes at East Tilbury, Courtalds at Braintree, Bocking and Halstead. and Marconi at Chelmsford.

The rural nature of the county was shown by the number of mills both corn and fulling which were built to process grain. We visited Beeleigh Mill which was originally water powered but was converted in 1845 to steam with a compound beam engine. There is a magnificent cast iron hursting carrying the stones and the whole site is being restored by a trust. Another mill we visited was Flatford Mill owned by Golding Constable and made famous by his son John's paintings. There is a lot of waterways associated with the mill and also a recently restored dry dock (see below) which John Constable featured in one of his paintings.

The maritime nature of Essex was brought out in Harwich where we visited the Lightship LV18, the last of the Trinity House manned light ships, which has been restored to operating condition. We also visited Trinity House Headquarters which is responsible for all port pilotage, lighthouses and buoys around England. We also visited the Low Light, which in association with the High Light was used to aid navigation into the port and also saw the man powered crane.

The restored dry dock, featured by John Constable. (Ron Martin)

Essex had a certain number of iron founders supporting the farming community and

one of these, Crittalls, diversified towards the end of the 19th century into making windows. After the WWI Francis Crittall got together with other manufacturers and they designed the standard steel casement based on a Z-section, which was aided by support from the Ministry of Health, which endorsed the qualities of steel windows and which then became so familiar though the 20s to 40s and were the most widely used window at that time.

In order to accommodate their workers, Crittalls built the village of Silver End where we saw architecturally designed flat-roofed houses.

From an early time Essex had a tradition of woollen weaving but these were added to by Dutch immigrants in the 16th century. The main cloth produced was "bays" which later became baize and "says" that was a type of serge. These both required fulling and there were a large number of fulling mills in the county. The industry declined by the end of the 18th century but was revived when the silk textile industry filled the gap and the principal firm which carried on this was Courtalds in Bocking and Halstead. One of their main products was black crepe which became very popular following the death of Prince Albert. We visited the former silk mill at Halstead, now a restaurant.

Another industry which was set up in Essex was the Bata shoe factory. This was founded in 1894 by Thomas Bata in Zlin in what is now the Czech Republic. After WWI, due to the danger of protectionism a new company was set up - The British Bata Shoe company with a factory at East Tilbury, Altogether 13 blocks were built as well as 362 housing units and many other recreational facilities, all on which are still extant although the making of shoes ceased in the 1970s.

Marconi came to England in 1896 and set up his factory in Chelmsford in 1899 to manufacture radio receivers. This was truly the birthplace of radio. In Sandford Mill, a former waterworks site, there is a lot of Marconi's equipment.

The highlight of the visit as far as I am concerned was the visit to Stowe Marie airfield. This was created in 1916 in response to the threat from Zeppelin and Gotha attack on London. At one time there were 300 staff and 24 aircraft based there but the site was abandoned in 1919 and reverted to agriculture. The buildings were used for storage and accommodation and with the exception of the hangars have remained unaltered since that date. The site is being carefully restored and is still used operationally by light aircraft. We also visited Tilbury Fort, built in the 17th century but added to considerably in 1712.

Another great day for me was the visit to Bulmer Brick and Tile Co. which still make bricks to order in the traditional way all bricks being thrown by hand and fired in two 1930s beehive down-draft kilns. My day was made when I found an angled mathematical tile on site!!! This brickworks has been featured on television twice in the past few weeks.

I have not been able to describe all I saw in a packed programme of events making it a very well worth-while occasion.

Next year's Conference is to be held on 9th - 15th August , 2013 in Dundee.

Ricardo PLC Tour

Joseph Whicher

On Saturday morning 8th September a small but enthusiastic group of S.I.A.S. members assembled at the Shoreham Technical Centre and Headquarters of Ricardo PLC, now a worldwide organization at the forefront of automobile and related engineering.

We were greeted by three extremely knowledgeable guides, namely Anthony Smith and Dave Morrison of Ricardo's, backed up by Howard Spencer who works for English Heritage who support the company opening its doors to participate in the Heritage Open Day scheme.

There were three main aspects to our tour;-

i. A talk on the history of the Ricardo family and how the company came into existence, including how the site at Shoreham had been chosen.

ii. A thoroughly explained look at some of Harry Ricardo's early engines now preserved.

iii. And finally, an all too brief insight into what the company is capable of and is doing today with a hint of things to come.

Harry Ricardo, who was born in 1885, had an interesting family background with lineage traced to a Sephardic Jewish family from Portugal. He had a great-uncle, David Ricardo, who was a politician and economist on his father's side and a grandfather, Alexander Rendel, on his mother 's side who was a notable civil engineer. The family home was 13 Bedford Square, London and as Harry grew up he became fascinated by the combustion process of the internal combustion engine and whilst still only 16 attended a lecture at the Royal Institution by an eminent scientist on the thinking behind stratified combustion with the perceived likelihood that it would lead to improved fuel efficiency. With a workshop in the basement of his London home and co-operation from the machine shop of Regent Street

The first engine designed and built when he was only 16

Polytechnic he set to and made a single cylinder engine which he designed to incorporate stratified combustion. In 1905 the engine was installed to pump water from a well at the family's country residence at Graffham in West Sussex where it successfully supplied water for many years.

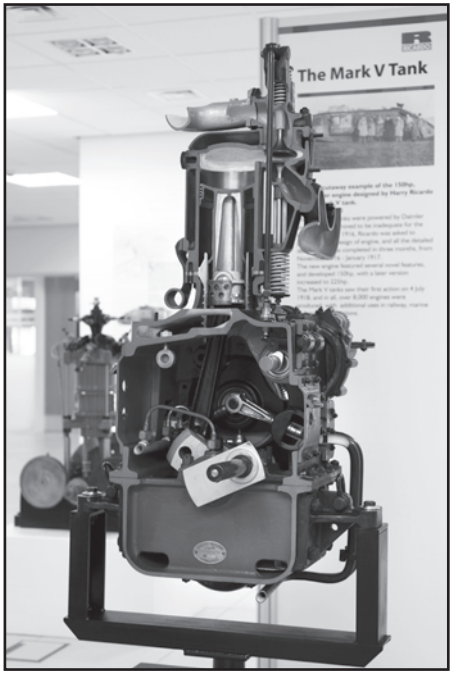
From home to school at Rugby and on to Cambridge and, during, his first few years work as a civil engineer Harry Ricardo had experimented, tested and designed engines as a hobby. All of which was made clear to us by the several early engines he had made or designed himself which are now lovingly preserved and on display at Shoreham. By 1915 with financial assistance he set up a company called Engine Patents Ltd which is the same company that is today better known by the title Ricardo PLC.

It was obvious that not only was he a clever man but he had the devotion to his ideas to see them brought to a successful conclusion and usually of real commercial value.

His work for the British Government in rectifying problems with the engine used in our tanks during the First World War was clearly demonstrated in the display area at Shoreham by a sectioned tank engine. After the war he was handsomely rewarded for this work. On a similar engine he had developed in his own workshop to capture air trapped below the piston on its downward stroke to be utilized for supercharging.

Also on show was a complete car he designed for a French producer in 1924 called a Le Zèbre Z10. Its engine, of course, had his latest ideas in combustion chamber design. Not only did he develop the petrol engine but his patent of the Comet Combustion Chamber for compression ignition engines led to the diesel engine becoming a contender for road transport. Another exhibit was a 1936 Citröen which was the first commercially available production car with a diesel engine – an engine designed for Citröen by Ricardo.

Linked to engine design Recardo realised that fuel needed to be categorised into order of quality and this brought him considerable work for, and involvement with, the Shell Company. He developed a scale known as the "Toluene Number" which has been further developed into the "Octane Rating"



A sectioned WWI Mark V Tank Engine

One of the first commercially avilable diesel cars - the Citröen 'taxi'

scale which we see on the pumps when we fill up our car with fuel today.

The company he founded in 1915 gradually became more involved with automobile manufacturers around the world and some copied or infringed his patents which caused him much distress as well as court cases. However, in a few instances manufactures failed to understand the finer technical points of combustion chamber design and were forced to come back to Ricardo's after attempting to make illegal copies which had become a commercial failure.

In the second World War much of the firms work was in the aero-engine field which brought them into close contact with Rolls-Royce. One story worth recounting is that in the latter part of the war Me410 fast fighter bombers could out run the RAF's Mosquito night fighters. Harry Ricardo had long proposed an oxygen enrichment system for the RAF's Merlin engines to provide a temporary but significant boost to speed but the Air Ministry was not initially in favour. Opinion was swayed when a German plane was downed and found to have a bottled gas supply to its engine. Although this turned out to be a red herring – the German system was only a cold start device – this was sufficient to encourage the introduction of Ricardo's oxygen enrichment system. The increased performance of the RAF's Mosquito led immediately to a significant increase in Me410 losses over England and a rapid curtailment of their use.

Needless to say Harry Ricardo's abilities and services were recognised and in 1948 he was knighted. He had been a fellow of the Royal Society since 1929 and in 1944 he was elected President of the Institution of Mechanical Engineers

Military involvement is still a part of Ricardo's remit and to be seen in a corner of the car park was a modern contribution the company has made to the British Army called "The Foxhound" which is a light but highly protected patrol vehicle designed to provide greater protection against mine and IED blast than any other vehicle in its class. A feature of the vehicle is an interchangeable body pod so it can be adapted for various missions.

To round off our visit we were taken view to the production area where the engines for the McLaren MP4-12C high performance sports car are assembled. The engine weighs less than 200kg and is probably the most fuel efficient for its power output (600 hp) and weight in the world. The most obvious features of the assembly plant being the clinical cleanliness throughout the work area and the use of advanced computerization at all stages to ensure consistant quality.

The exploded McLaren MP412C engine on the gallery overlooking the production line.

The progressive engineers within the company have grasped the need to embrace all possible systems to propel transport of every kind in the future. There is plenty of evidence at the Technical Centre to reveal their involvment with wind and wave power generation and the necessary hardware required but one could not expect them to reveal too many of their secrets!

After having the oportunity to study the architects drawings of the first engineering laboratory and workshops which Ricardo had built to resemble Sussex cottages at Shoreham, and which still stand on the site, several of our party later took the oportunity to walk further along the road to see them.

We left feeling very grateful for the insight we had been alowed into this remarkable organisation and the thorough and professional way our guides had explained so much in the time available.

As we all got back into our own cars we had plenty to think about. Which part or which system of our motor had its roots in a Ricardo design and development regime? Answers on as many sheets of paper as necessary.

(All images courtesy of Ricardo PLC)

Visit to St. Leonards and Hastings 11th August 2012

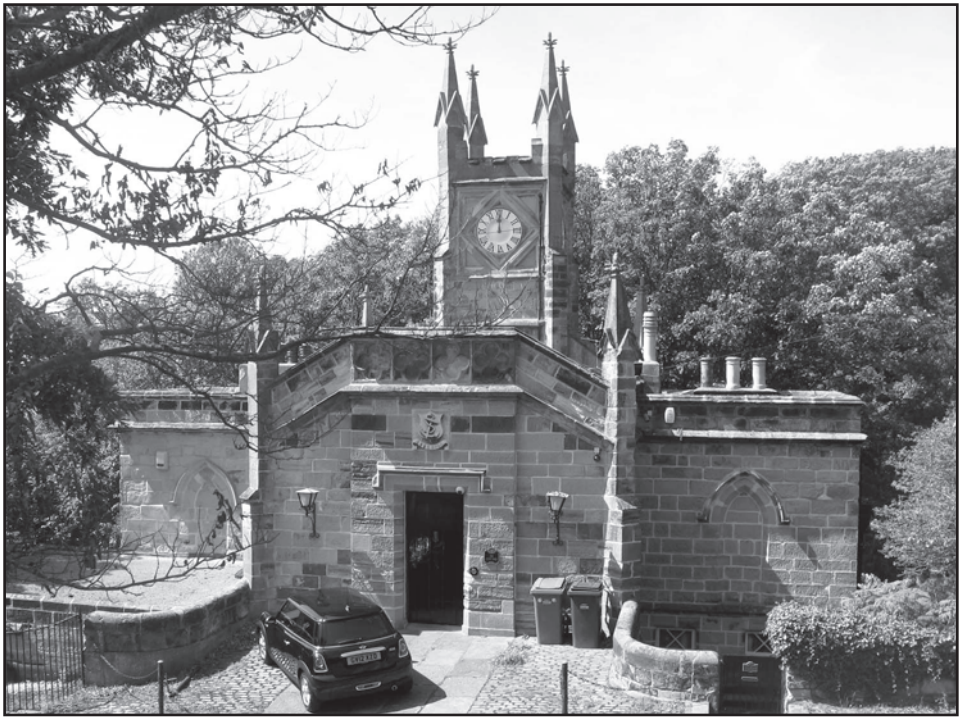
Alan and Diana Durden

About twenty people assembled, in bright sunshine, on the seafront opposite the Royal Victoria Hotel, St. Leonards, where we were given a short history of the development of the hotel by a member of the Burtons' St. Leonards Society, before moving across the road to continue our tour. Burtons' St. Leonards is the first example of a planned regency seaside town. Built and landscaped by James Burton, it comprised tall neo-Classical terraces along the sea-front, their design influenced by his work with Nash in Regents Park. Behind are St. Leonards Gardens, around which Burton built grand villas. His work was later extended by his son Decimus. Two of his siblings were Septimus and Octavia, so their father obviously had a propensity for Christian names with a numerical flavour!

The Royal Victoria Hotal, S ts Leonards. (Alan and Diana Durden)

We looked at the Assembly Rooms, the South Lodge, and a double villa before entering St. Leonards Gardens. Of special interest was the gothic Clock House built in 1828 and North Lodge, where Rider Haggard, author of *King Solomon's*

Mines, had once been a resident. Crown House, Burton's own home, was one of our last ports of call, and one of the most important buildings in Burtons' St. Leonards.



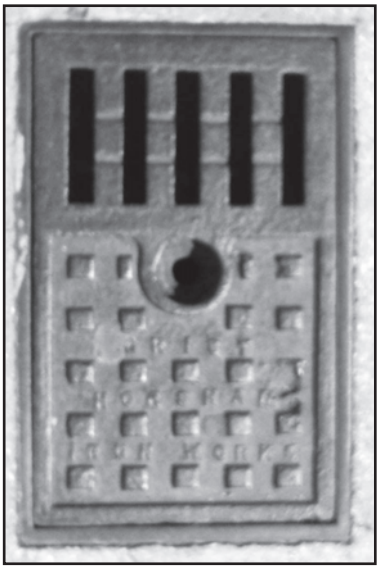
The Clock House, St. Leonards. (Alan and Diana Durden)

After a lunch break, we re-assembled at Hastings Museum in Bohemia Road, where we wandered around various displays, including those on John Logie Baird's television pioneering. Having gone to Hastings to convalesce in 1923, Baird proceeded to carry out the experiments that led, in 1925, to the transmission of the first true television image. There were also fascinating displays on local history, notably for IA enthusiasts the now extinct St. Leonards Bathing Pool, which opened in 1933 and was designed and constructed by Sidney Little, the "Concrete King."

Our final destination was the Old Town. We stopped in the High Street, where we learnt from Brian Austen about the importance of libraries in the development of the town, in particular Powell's Library and Barry's Marine Library.

We then proceeded to visit the Old Town Museum, where we spent some time looking at different exhibits showing life in Hastings, thus concluding a very informative day in these two seaside towns. Many thanks to Alan Green for arranging the day's visit.

Mystery Photos



(Martin Snow)

Do you know your IA?

Where are these to be found, what are they for (I'm not certain either)?

Note the raised pattern on one and the same style impressed into the other.

Update

The machine in *Newsletter* 154 is located at Coultershaw in the Engine House, he other side of the river from the beam pump. The building was erected to house this engine that was used to supplement the enery from the waterwheel, later replaced by a turbine in the pit where the recently commissioned modern electricity generation turbine is now installed.

The engine was sold and was found lanquishing at a local site, arrangement were made for it to be returned. It is unlikely that it will ever run again, but it is good to have the original engine sitting on the concrete base.

Please continue to look out for examples of IA items and, if possible, let me have a picture, either for this feature or to provide inspiration for a future article.

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This year's Christmas card of a Selsey Tramway train crossing the Chichester Canal is available from The Colonel Stephens Society was painted by Jonathan Clay. More details on page 5. Members will recall the ceremony reinstating rails on the northern abutment of this bridge, reported in *Newsletter 143*

A double banded Fareham Chimney Pot, in the Artefact Store at the Weald and Downland Open Air Museum, Alan Green who has studied these had not noted such an example before. (*Martin Snow)*

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