



## NEWSLETTER September 2017

### i) COMMENTS

There are a few comments this month:

- **The Clock Focus Group.** The Clock Focus Group is still meeting prior to the club meeting at the beginning of the month. John Powell reported that although it was a small meeting on the night, he hadn't had much trouble getting everyone together.
- **The Workshop.** The lathe operation log book is now functioning. The safety book for the machines in the workshop has been started and is ready for inspection.
- **The PEEMS Newsletter.** The PEEMS letter has been posted on the PEEMS website since March, and the site permits the reading of all of those newsletters. Because of the new format, colour photographs can be presented, and there is no limit to the amount of content that can be published on the website. Last month a link was provided in the newsletter to a video of Brian Stephenson's engines at Pickering Station. This means that video as well as photos can be provided in the Newsletter. Obviously, content will vary from month to month, depending on the number of model exhibitions, excursions, talks, and articles that occur. PEEMS still needs to provide for those members who don't have internet access, and last month the newsletter, consisted of 13 pages, (which is so far, around the average per month). To keep copying costs within reasonable limits, and to make sure members get full content and not an abridged version, the newsletter is printed in black and white, on both sides of the sheet, with two pages per side. This means that the 13 pages of the last edition was copied onto four sheets. There have been no complaints so far!
- **The Railway.** The railway is now closed for the year. The various railway events have been reported on during this year, and there have been noticeable successes and disappointments. Once insurance and other incidentals have been taken into account, profit accounted for forty two percent of revenue (excluding travel costs borne by PEEMS members). Peter Bramley said that he was disappointed with the Driffield show, because although the railway made money after a lot of hard work, the location at the show was not good. There are a number of issues relating to the future operation of the railway, and the Chairman suggested that these must be discussed at the PEEMS Annual General Meeting on the 1<sup>st</sup> November. Mike Sayers proposed a vote of thanks to Peter for all the work he had done for the railway and the Club.
- **The PEEMS Exhibition At Pickering Station.** This was a four day event. The exhibition location is in the event room on platform 2, whereas train passengers embark and disembark on platform 1, and need to cross the bridge or make the detour adjacent to Bridge Street. Sometimes when the train is in, the exhibition room can't be seen on the other side. This means that the number of people visiting the exhibition was possibly lower than it could have been. Although the exhibition was well promoted on the North Yorkshire Moors Railway website, and there was an advertising banner at the entrance, the profit PEEMS made was, according to Pete Bramley, "next to nothing". The revenue has to be split 50:50 with the railway, and PEEMS has to pay for insurance. As with the PEEMS railway, the Club will have to decide how mounting an exhibition at the station should be approached in the future. Maybe a greater presence on the platform 2 itself would attract people across, and/or more signage on platform 1. It should be noted that the previous exhibition held on the NYMR Gala Day was regarded by many as a success. As enthusiasts we are very keen to display our models, and talk to other like minded individuals. It's not primarily about making money, but costs have to be borne in mind.

## ii) FORTHCOMING EVENTS

- **Club Meeting. Wednesday 4<sup>th</sup> October “Bring and Brag”**
- **Bob Polley Open Day. Sunday 8<sup>th</sup> October**

Bob has sent PEEMS an invitation to another of his “Open Days”. YorkMES (York Model Engineering Society) is (hopefully) coming to Bob’s grounds to, in Bob’s words “to play trains etc”. Bob, as in the past, would like to extend a warm welcome to PEEMS members to come along as well (with or without models).
- **Workshop Morning. Tuesday 17<sup>th</sup> October 10am to 12 noon.**
- **Excursion to the National Railway Museum In York. Wednesday 25<sup>th</sup> October at 10.30am.** This will be an organised tour of the museum’s workshops. After the visit, members are free to visit the rest of the museum. Individuals need to organise their own transport to the venue, either by car sharing, travel by bus or by train.
- **A Visit To JCB in Rocester (nr. Uttoxeter, Staffordshire).**

As mentioned in the previous newsletter, a visit was proposed to JCB’s World Headquarters Visitor’s centre. We now have a firm date for the visit of **Tuesday 12<sup>th</sup> December**. There is a charge of £30/person, for both the visit and a lunch, which we have been told is excellent. In order for the Club to confirm the booking, please could you let Jim Everett know if you want to go by Friday 29<sup>th</sup> September. His contact is by Telephone: 01653 668452 or by e-mail [jimeverett1@btinternet.com](mailto:jimeverett1@btinternet.com). To facilitate the visit, Jim will be asking for payment at the next club meeting on Wednesday 4<sup>th</sup> October.

## iii) THE NEWCOMEN SOCIETY.

Tony Leeming would like to make PEEMS members aware that the Newcomen Society which meets at the Kelham Island Industrial Museum, in Sheffield, has interesting talks each month by leading experts. The talks start at 6.00pm finish around 8.15pm and are free and open to all. There is no need to book seats in advance. If a group is attending and wish to sit together, a block of seats will be reserved. To show the range of talks on offer, a programme is presented at the end of this newsletter. Satnav indicates that the location is 84 miles from Pickering and is an hour and a half journey time each way.

## iv) ITEM REQUIRED: Pistol Drill Required For The PEEMS Workshop.

A request is being made for a mains operated pistol drill, for permanent use in the PEEMS workshop. If you have a spare one you could donate to the workshop, it would be much appreciated.

**v) CLUB MEETING. Wednesday 6<sup>th</sup> September.**

**Bruce Pickering: "The History Of Photography"**

At the club meeting, we had a very informative talk from Bruce Pickering about the history of photography, with historic cameras, lenses and components on display. There was also an impressive demonstration of "carbon printing".

Bruce introduced us to the various negatives that have been traditionally available to photographers. Whilst most of us are familiar with the 35mm negative (1.375"), which come in rolls, single negatives of larger sizes have been used with the type of cameras shown below:

- i) 5" x 4" are 150mm across the diagonal, compared with 35mm negatives which are 50mm across the diagonal.
- ii) 5" x 7" are 210mm across the diagonal
- iii) 10" x 8" which provides about a 36 times larger area than the 35mm, and is 300mm across the diagonal.



All these negatives are still available "off the shelf". The important feature of the larger negative is that with the larger size, more data is captured which means more detailed enlargements. One problem with a bigger negative is that large banks of UV light are needed (rather than an enlarger) to get the required exposure with many of the old printing techniques, such as Salt Prints; Kallitypes and Carbon prints. These are all contact printing techniques of the type Bruce is interested in producing.

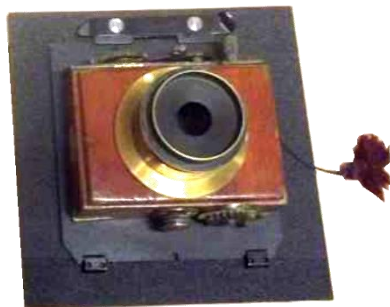
With the greater data capture of the larger negatives, so the cost increases. For example, Ilford charges £132.84 for 25 negatives of 8"x10" which are an off the shelf item, but there is a single run per year for not so common sizes, and a box of 25 sheets of 20"x24" will cost £786.36. Non-standard size negatives have to be ordered in June/July for delivery in October.

Colour film is very expensive. A 10" x 8" negative, for example, is about £20, and costs £18 for development.

Bruce set up the three cameras on tripods, shown on the previous page, for inspection:

- The Korona – View. This camera was built in 1903. The camera has been provided with an extra brace to give it more rigidity.
- The Agfa. Agfa was a German company, which merged with the American company Ansco in 1928. At the time Kodak was amalgamating a number of companies, but Agfa-Ansco was too big to take on. From World War 2 the Agfa part of the name was dropped.
- The Wista-Field is still being manufactured. There are still seven or eight large format camera companies in the world, and six or seven shops in the U.K. which stock large format cameras and film. Wista is a Japanese company and the camera costs around £700. Some large format cameras can cost over £2,000. The nearest large format camera manufacturer in this country is at Queensferry in Wales who manufactures the camera with an ABS plastic body.

We were shown a very old 1860 lens, which was used for wet plate photography. Wet plate photography requires the plate to be coated, sensitised, exposed and developed within 15 to 20 minutes. Some photographers actually developed the glass plate inside the actual camera, creating a portable dark room.



1860 Lens



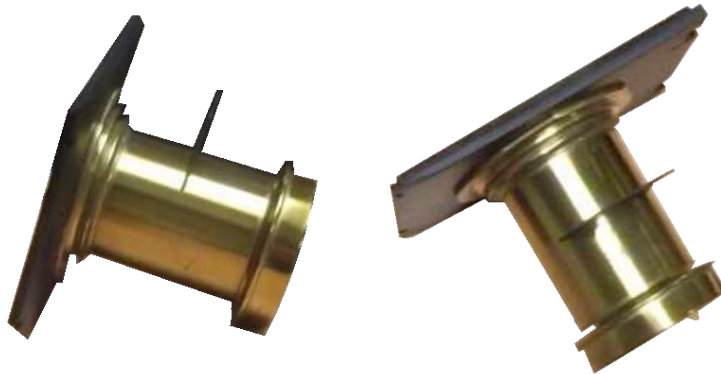
1890 Lens

The Bradford Photographic Society went to the Farne Islands in the late 19th century. They took 200 glass plates to coat expose and develop on site in portable darkrooms, and had typical exposure times of about 30 seconds as the speed of their plates was about 2 - 3 ASA. They had a simple shutter of a lens cap. The lenses they used originally was a cemented doublet which is two lenses cemented together with Canada balsam to create a single lens. This allowed a lot of light through, which was needed for the slow speed of the glass plates used, but lost sharpness away from the centre of the lens. The next development in lenses occurred in the late 19th century where light was forced through the centre of the lens by means of a disk that acted as an aperture, making for easier focusing and sharper images.

Dry plates were explained next. These come wrapped in paper. Once installed in a plate holder with a removeable cover, the cover could be removed, the shutter opened and closed, exposing the plate and the plate recovered. This process was faster, (a matter of seconds), and a slow lens (lets in less light) could be used. These plates can be developed later in a darkroom, and don't need to be developed 'in situ' like wet plates.



Lenses: The rapid rectilinear lens has a lens at each end of the barrel which reduces distortion a lot and often comes with slots into which the appropriate Waterhouse stop can be dropped. This allows control over the amount of light that passes through the lens, just as selecting an aperture does on a modern lens.

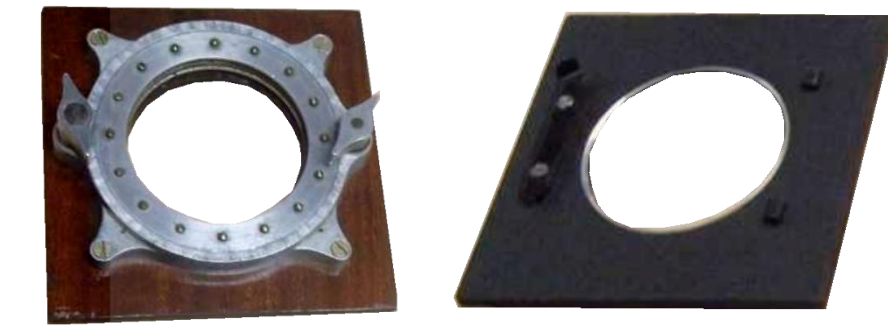


The  $f$  number is the ratio of the focal length of the lens to the diameter of the aperture (entrance hole). It is a measure of lens speed.  $f = \text{focal length} / \text{aperture diameter}$ . A 100mm focal length lens with a 10mm diameter aperture would be  $f$  10.

Next came "Iris" blades and 'dial up'  $f$  stops.

Barrel lenses have no shutter, (originally relying on a lens cap, or opening and closing a flap) and Bruce explained that different lenses from the same manufacturer had different mounting threads! The flanges that mount the lens to the lens board are often lost making it difficult to mount many old lenses without some ingenuity.

Iris lens boards hold the lenses which are adjustable for a range of lenses but these are rare and snapped up quickly when they come up for sale, sometimes costing as much as £250.

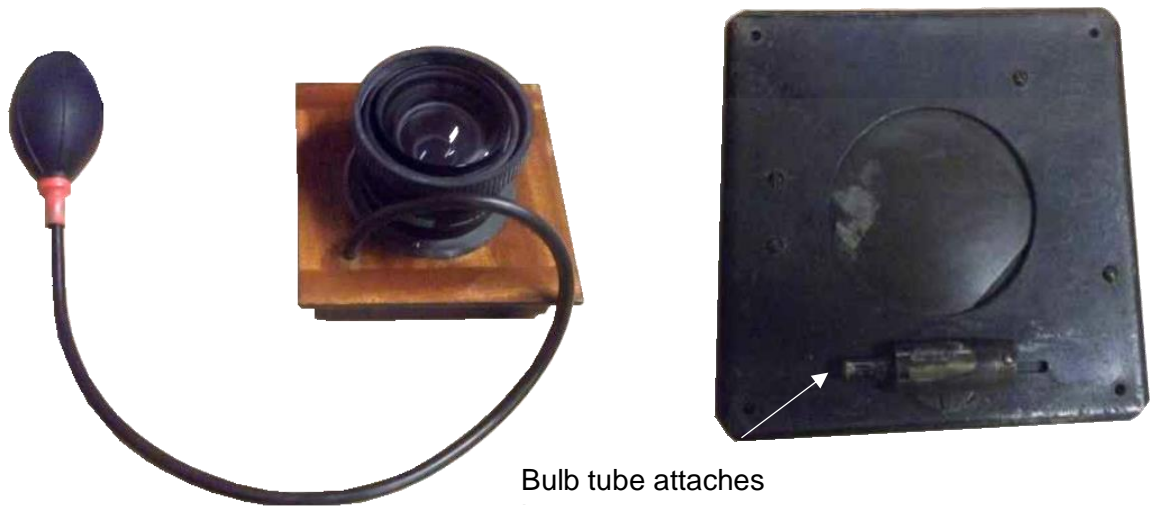


Telephoto lenses: An example was given for a traditional bellows camera, with 400mm lens which needs a distance of 400mm from the focal point to the film plate. The telephoto lens is designed to focus at 280mm, so that the draw on the bellows is less than it would be without it.

Shutters were then explained. Original cameras had no shutters, and a flap or lens cap was opened for 30 seconds.

A Packard pneumatic shutter was demonstrated on the Korona – View camera. When air is blown into the shutter by pressing the bulb, the shutter opens, Releasing the bulb closes the shutter. This type of shutter is still made today, and is regarded as high end optical equipment. Modern Packard shutters can also be electro-mechanical and are generally fool proof. They come in at various sizes up to about 8" diameter.

We learnt that the 'B' setting on the camera is the 'Bulb' setting.



Thornton Pickard made a lot of cameras including the famous "Ruby" (1890-1907). This was a wooden folding field camera which incorporated the Thornton Pickard roller blind shutter. Shutter action can vary between 1/70th to 1/12th second.

There is also the rim-set shutter, where the shutter speed can be set and the mechanism is clockwork. A typical rim-set shutter is the first generation Compur shutter from the 1930s. The Compur – Rapid shutter is from 1945.



The Sinar shutter release is about £500 because it has unique cables. The cables are about £200-£300 alone. Without cables the shutter is useless. The Sinar shutter Bruce demonstrated had been modified for the Korana-View camera, and allows barrel lenses to be used with a modern shutter.



Film and Film Holders: Each film holder holds one sheet of film. When loading film into the holders in the darkroom, a red light can't be used, so the films are provided with notches. This means in the total darkness in the darkroom, the operator can know which way up the film is, and the correct direction of the emulsion. A halation layer prevents light getting through on the backside. Two films can be put in a holder 'back to back, so once one side is exposed, the holder is reversed to expose the other side.

Some typical film holders:



Bruce demonstrated some of the capabilities of the professional cameras on display. Using the Agfa he showed that lenses can be tilted and closer focus can be achieved. He explained that when the bellows are extended to achieve 2 x focal length of the lens and an object is placed in front of the lens by the same amount then the object will appear life size at the back. By tilting the lens, the plane of focus can be changed. By back tilting, an object can appear bigger. The bellows can allow the lens to move sideways giving the capability of looking around immovable objects. If an object is high up, the lens can be tilted to concentrate on the object and get rid of unwanted foreground.

A final mention was made about wide angle lenses. With this type of lens you can get light loss at the edges, so the middle gets more light which can be stopped with special filters that are darker in the centre and get lighter towards the edges.



Finally we were given a demonstration of Carbon Printing. Early techniques used cyanotype processing. This was an iron based process rather than the silver based process used by Fox Talbot. An iron solution is applied to a sheet of paper or similar, and a contact "blue print" is the positive image produced when the paper is exposed to a source of UV light through a negative. The resulting image is a deep blue. A tray of tea or coffee, containing a lot of tannin can be used to turn the blue into brown.

Fox Talbot patented a method of producing a light sensitive solution. Silver nitrate when mixed with salt (sodium chloride), produces silver chloride which darkens when exposed to light. Albumin was later used instead of salt.

Using carbon printing, printing can be done on most objects including glass and ivory. The beauty of a carbon print is that it will outlast any material onto which it is printed. Carbon printing uses lamp black (soot) mixed with gelatin. Sugar is added to make the mix pliable. The solution is then allowed to set which normally takes about 24 to 48 hours. The sheet of gelatin produced is full of lamp black. The gelatin sheet can then be sensitised with ammonium dichromate dissolved in Acetone. The EU has banned it as it can be carcinogenic, although the Chinese are still happy to sell it. About two hundred people in the world are carbon printing, with about four using colour, which is complicated because adjustments have to be made for the different shrinkage rates of the three colours pigments.

To make a contact print, the Dichromate is brushed on the gelatin plate and allowed to dry. Once dry, a negative can be placed on the plate and exposed to UV light.

Bruce had pre-exposed a negative onto this sheet of gelatin as it took 1 hour of exposure, and demonstrated how he mated it with a sheet of plastic in some cold, degassed water, and after applying pressure with a roller, he left it between 2 sheets of blotting paper for 20 minutes. This plastic - gelatin sandwich was then placed into warm water at about 40C and the gelatin that had not been hardened by the UV exposure began to melt. After some minutes, all that remained was a 3d image on the sheet of plastic, where the blackness of the image was caused by the depth of the gelatin. Bruce passed this image around for everyone to see the 3d effect.

Normally, with this process, the image will be inverted, (although Bruce got around this by reversing the original negative!). Getting the correct orientation of the image requires double transfer. The image has first to be transferred first to a temporary plastic sheet, and then to the final paper, or glass treated with silene.

The final support paper is usually sized with a chrome alum or formalin which hardens the gelatin. Bruce uses the Formalin hardener as it doesn't stain the paper (and chrome alum is toxic). Care has to be taken with formalin because it can affect the lungs.

*Many thanks to Bruce for proof reading this article, and providing corrections.*

## **vi) The Locomotive Project**

Currently the locomotive project is on hold as I await an order of 5 and 6 BA nuts, bolts, washers and screws in order to finalise assembly of the Deeley valve gear. Hopefully this will be done in time for the loco to be displayed at next month's "Bring and Brag".



## vii) ITEM FOR SALE: Stema Engine

The following is an e-mail sent from John Keyman to Tony Leeming :

I enclose a few notes and photos of the engine which I have. It was built around 18 years ago by my Father and has been untouched since then. As I get older it is becoming difficult for me to move due to the weight and I am now thinking of selling.

The model is a 2 inch gauge agricultural engine from Model Engineer magazine October 1978 through 1979. I have the build drawings and I thought there was a boiler certificate, but sadly I am unable to find this rather important document. I believe the model has run on compressed air, but it has not run on steam.

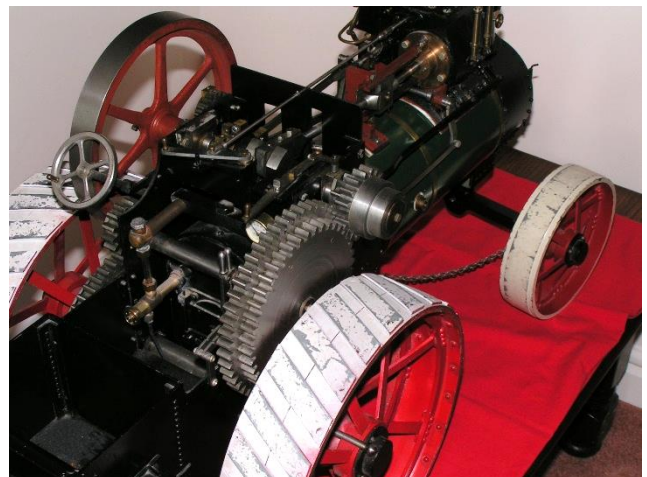
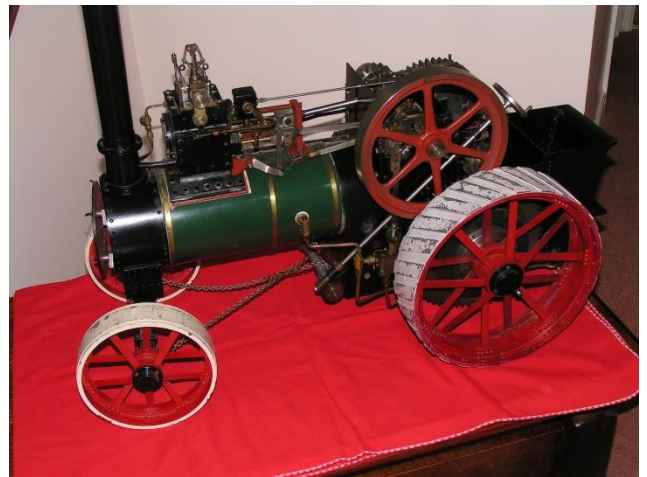
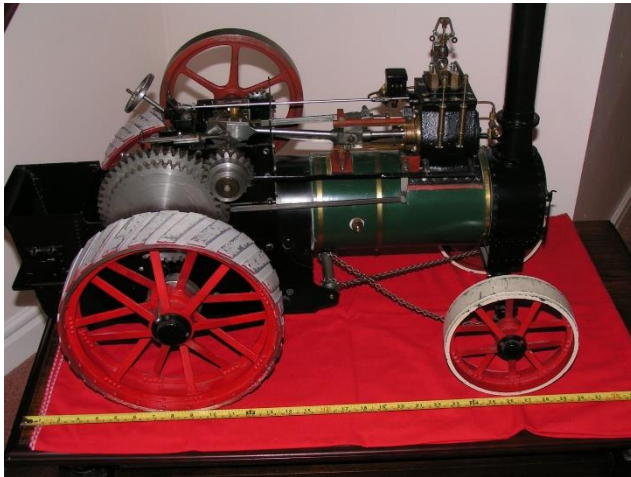
Some work is required to finish things off, as you can see from the photos all of the large machined parts are present, any missing small parts could be made by hand or with a small lathe. It's a good project for someone.

I'm not sure what might be the best way forward without a boiler certificate, this would now be out of date although if I had one there would be more confidence with the build. I would appreciate any suggestions you may have, I would prefer to sell the engine to someone locally rather than involve an auction house.

Regards John Keyman

You can contact John by e-mail at : [<keyman@jhandcbr.myzen.co.uk>](mailto:keyman@jhandcbr.myzen.co.uk)

Or by telephone at **01347 878 647**



## The Newcomen Programme



**Newcomen Society, South Yorkshire**

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### **Meetings Programme 2017 -2018**

Meetings are held at Kelham Island Museum, Alma Street, Sheffield S3 8RY, between 6.30 – 8.15pm unless otherwise indicated. Visitors are always very welcome and no charge is made for attending the lectures.

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**Monday 25<sup>th</sup> September 2017, 6.30 pm**

**Phil Judkins:- *Enigma: Cruise Missiles, Rockets and Superguns***

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**Monday 23<sup>rd</sup> October 2017, 6.30 pm**

**Stephen Cater:- *Gun barrels, Muskets to Tanks***

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**Wednesday 22<sup>nd</sup> November 2017, 6.30 pm**

**Richard Byrom:- *William Fairbairn and the Iron Girder Bridge***

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**Monday 22<sup>nd</sup> January 2018, 6.30 pm**

**Prof. Russell Thomas:- *History of Gas Manufacture in the UK***

This is a joint meeting with the South Yorkshire Industrial History Society

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**Monday 26<sup>th</sup> February 2018, 6:30pm**

**Michael Bailey:- *Brunel's Fan***

This is a joint meeting with the Stephenson Locomotive Society

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**Tuesday 13<sup>th</sup> March 2018, 5:30pm Ken Barraclough Memorial Lecture  
Holiday Inn Royal Victoria, Sheffield**

**Norman Bonnor:- *History of Satellite Navigation***

This is a joint meeting with the Sheffield Metallurgical and Engineering Association and the South Yorkshire Industrial History Society. This talk is open to all and there is on site car parking providing you register your car at reception. The talk is followed by the **SMEA Members' Dinner**. Contact Dr Ken Ridal (0114 230 5650 or [kenridal@stonedelf.fsnet.co.uk](mailto:kenridal@stonedelf.fsnet.co.uk)).

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**Monday 23<sup>rd</sup> April 2018**

**Robert Kerry and Andrew Gordon:- *Hip and knee replacement – a surgeon's perspective***

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**Monday 21<sup>st</sup> May 2018 Society Visits AMRC and AESSEAL, Rotherham**

The society has organised a visit to the Advanced Manufacturing Research Centre (AMRC) on the morning of Monday 21<sup>st</sup> May 2018, followed by an afternoon visit to AESSEAL. On both these visits members will have opportunity to see some of the most advanced engineering and manufacturing in the world.

Full details of the visit will be circulated nearer the time, but if you would be interested in attending please let me know as soon as possible as numbers are strictly limited to 20 members and places will be allocated on a first come basis. [meetings.syorks@newcomen.com](mailto:meetings.syorks@newcomen.com)

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### **Travel to Kelham Island**

For directions to Kelham Island Museum please visit:- <http://www.simt.co.uk/find-us>  
For further information please contact John Suter on:- [meetings.syorks@newcomen.com](mailto:meetings.syorks@newcomen.com)

### **Contact**

If you would like to contribute to the Newsletter, the contact is:  
Neville Foster Tel 01751 474137 or e-mail [nevf123@outlook.com](mailto:nevf123@outlook.com)