



LeedsLines

Newsletter of The Leeds Society of Model and Experimental Engineers

Editorial

In an attempt to make navigating the electronic version of the newsletter easier I have included bookmarks in this edition. They should be available using the most common 'PDF Reader' offerings. Feedback on any problems or otherwise would be welcomed.

The beginning of March saw a well-attended 'Pre-Season Checks and Safety Training Day' and the first running day of the new season, with several drivers passing favourable comments on the smoothness of the new track sections.

Recent Wednesday evening talks have been interesting and well-attended with topics as diverse as The Doncaster Works, both steam and diesel eras, and The History of Radio from the beginning up to the present day and the very latest methods of broadcasting

From the Chair

Jack Salter

A new generation of Apprentices, a new generation of Model Engineers?

You cannot have failed to miss seeing all of the publicity for Government sponsored apprenticeship schemes, these now include engineering apprenticeships and not just childcare or retail.

Does this mean that there will be a new generation of model engineers to follow in our footsteps?

I will declare a vested interest here, not only do I work for the Government Department promoting such schemes, but my youngest son has decided that university was not for him and has started an apprenticeship as a Toolmaker, apparently the skilled men training him are around retirement age, the work they are doing was being moved overseas but is now coming back to the UK.

How do we attract this new generation to our hobby when there are so many other attractions? I suggest that we carry on being welcoming to new members of all ages and skills, continue to be seen enjoying ourselves at portable track events, and be receptive to new ideas, ways of working and aspects of the hobby.

We cannot expect new members to come to us as fully fledged steam engineers, I expect that they will get involved with other aspects of the hobby at first, I remember being puzzled that model engineering drawings did not have tolerances or clearances marked on them, how much more difficult will it be for a 100% metric generation!

If we show tolerance (excuse the pun!) and patience I am sure that there will be another generation of model engineers following on behind us in this most fascinating of hobbies.

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Steam Oil – worth the money?**Kevin Slater CEng**

Being a 'Steam Queen' (as Steam qualified sea-going engineers have become known since they have dwindled in number over recent years) I have always had an interest in 'oil'. The fact that I served my time with Shell may have something to do with it and may also explain why, to this day, I have a marked preference for Shell products.

Everyone can relate to the agonising dread of putting the wrong oil into a certain machine and, believe me, on a ship there are plenty of permutations from which to choose. Not generally quite as bad as the volunteer working as my Assistant Engineer when I was with Tall Ships Youth Trust who topped up the main engine crankcase oil 'via' the cooling system header tank!

But how important is it to get the correct oil? When I was Chief Engineer for Star Clippers a passenger approached me and told me that he was a recently retired Oil Scientist who had spent the last 40 years formulating oils for BP and, to cut a long story short, he ended up giving a 'lecture' to all the on-board Engineers. This was pretty heavy stuff and quite a bit 'went over my head' but that may have been due both to the fact that I didn't pay enough attention during chemistry classes at school and the wine that I had supplied to 'encourage' him to speak to us! The one salient point that I do recall, even today, from that talk was that the difference between various types of oil (hydraulic, cylinder, diesel/petrol/LPG automotive, hot/cold climate, gearbox, etc.) can be a matter of adding less than 2% of 'extras' such as detergents, dispersants, antioxidants, anti-wear agents, anti-foaming/air separation compounds and friction modifiers which are put into the products for their benefits in a specific application.

Since my involvement with the Model Engineering hobby and, more recently and in much more depth, with the Steamboat world I am often asked for recommendations about oil. Is it really necessary to fork out for specific oils for specific jobs? The short answer is YES especially when it comes to Steam Oil. Steam Oil is the lubricant that is used to lubricate the bits of the plant that are exposed directly to steam i.e. the valve gear and cylinders/pistons and it has very specific requirements.

Steam Oil is intended to be introduced into the steam flow ahead of the cylinders where it is atomized and emulsified and is carried in the steam flow to all surfaces the steam touches. Because these surfaces are usually slightly cooler than the entering steam, a tiny amount of condensation takes place and whatever oil is emulsified within the condensate is deposited on an exposed surface. Unfortunately, some steam does not condense within the cylinders and finds its way either to the atmosphere on a puffer or to the feed system on a condensing plant. For condensing plants this necessitates various recovery techniques to prevent the oil making its way around the circuit and ending up in the boiler. This is another reason for using 'proper' Steam Oil as it has better separation due to its tallow content allowing it to be filtered out (hopefully) – technical term: good demulsibility. Oh, the joyful memories of watches spent as a Junior Engineer on oil tankers, especially if fitted with cargo heating, fishing traces of oil from the surface of the hotwell by blotting it with scraps of newspaper – what fun!

When a working steam engine has been properly maintained and lubricated, steam oil, heat, pressure, metal oxides, and time combine to form a dark, protective skin on the internal cylinder parts. This is especially true of cast iron. If you ever get the chance to peek inside the cylinders of an older, well cared for steam engine you will see that the bore is a deep matte black. Steam is actually quite an abrasive fluid and the combined flow and temperature of steam will scrub other less tenacious oils off the moving parts very quickly leaving exposed wearing surfaces vulnerable to damage.

Whilst the difference between many lubricants may be less than 2% of additives, that 2% makes a big difference and in the case of Steam Oils the percentage of additives runs much higher. They can contain as much as 6% tallow plus other additives, specifically oxidation inhibitors. Before refined petroleum became widely available, common animal tallow was the standard lubricant for steam engines and it is the tallow which contributes much of the sticking qualities of steam oil and makes it behave like molasses when cold.

I must admit that as a 'young gun' I was out to question everything that was 'established practice' and was a firm believer that new equals better. I have grown up since then! Steam Oil has been around for over 150 years and, whilst I am sure that it has been tweaked over the years, this is a very good case of "if it ain't broke, don't fix it".

Fortunately there is still a market for Steam Oil in industry and so it continues to be produced (and developed?) but can be a challenge to obtain in small quantities. Many Model Engineering Societies buy in bulk and sell/give it to their members and a couple of stockists (Heritage Steam Supplies being an obvious one in the UK) sell it in small amounts (at a premium!).

Steam Oil is offered by most refiners in various ISO viscosity 'weights' from around ISO380 to ISO1500, and the higher the ISO number, the thicker (more viscous) the oil. The higher the ISO grade the higher the steam pressure and super-heat for which it is suited. The ISO viscosity preferred, and most often sold, for small scale live steam operations, and indeed for all steam applications where steam pressure does not exceed 150psi and where there is little or no super-heat, is ISO460 or thereabouts.

Some guys use ISO600 oil, and while not prohibitively heavy, it is in my opinion a bit too heavy for our small scale loco/boat engines. But if, as some people I know have said, a heavier viscosity works for you then I'd see no reason to change.

Another relevant point is that some refiners offer 'compounded' and 'straight' versions of the same oil. In general, compounded oil should be used by 'puffers' and straight oil should be used by 'condensers' as it is easier (relative term!) to separate out in the hotwell. One of the compounding additives is Neatsfoot Oil, produced from sheep and cattle bones no less, and this has good anti-corrosion properties. There is, therefore, an argument for 'condensing plants' to use compounded oil for the last run of the season.

Is it working: Is the oil getting to wear (pun intended) it's needed? The obvious check: Is the level in the reservoir going down! You should be getting water draining out of the bottom of a displacement lubricator and you should see the level drop in a pressure or gravity tank. However, that only tells you that the oil is going 'somewhere' – what you really need to know is that it is going to where it is needed. On the basis that it is going in at the correct place i.e. upstream of the engine, you can pretty much assume that it will be doing its job if there is surplus coming out at the other end. In a steamboat that puffs this will be a slight mist around the top of the funnel, similarly on a locomotive or traction engine. On a condensing plant the 'excess' will make itself known in the hotwell.

Shelf life: Will steam oil spoil if kept too long? I don't know about this, but I once had a bottle of steam oil which had been "lost" for a very long time, for at least 10 years, and when found it appeared to me to have the same appearance and odour as the new stuff. There may very well be conditions under which steam oil might spoil, or sour, especially if it contained organic fats, but I don't think spoilage should be of too much concern to small quantity users such as us.

Cold Running: Steam oil requires steam and heat to do its job. If no heat is present it's not much more liquid than molasses and is probably as much a hindrance as a help. For cold running, such as testing on compressed air, a conventional machine oil of some kind should be used. I use machine tool slideway lubricant partly because it is good for this application and partly because I always have plenty sitting around the workshop!

Digressing into Machine Tool lubes for a second or two: I've owned Harrison lathes for some years now and the maker's lubrication chart calls for a Shell oil called "Tellus 68" for the majority of applications on the machine. Tellus 68 is a common ISO68 'weight' (the name is a bit of a give-away!) hydraulic oil. This is the oil used in hydraulic drive and piston/cylinder-actuated machine power systems and is one of the most widely used oils in the world. It is an excellent all-round machine lubricant and, incidentally, is widely used in steam turbines. I also found it to have a consistency and a chemical formulation, including rust inhibitors, which are difficult to improve upon for general machine tool and workshop use. Having said all that, and despite my historic allegiance to Shell, I have now standardised on Mobil Vactra for all my machine tools because my Jones and Shipman Surface Grinder specifies this oil for its combined hydraulic system and slideway lubrication.

I hope these few notes on steam oils and lubricants will be of use to some of you and dispel some of the questions which seem to spring up from time to time. I will say that, all considerations of cost and convenience aside, the most compelling reason for using a good steam oil is that not only does it protect our investment, but the unmistakable sweet, rich, aroma of hot steam oil adds measurably to my live steam experience. That alone is worth the price.

H. Clarkson & Son

A synthesis of work by Martyn Myer, emended to reflect correspondence with Herbert Clarkson in 2007, and material kindly furnished by Geoff Shackleton and Adam Harris. Illustrations from Geoff Shackleton reproduced with permission of Blackgates.

Harry Clarkson started his modelling life as an amateur in 1925, entering his clockwork and electric O gauge and Gauge 1 models in early *Model Engineer* Exhibitions. He also contributed to the magazine. Harry was apprenticed to Fred Unwin a York Ford dealer, (a firm that later became The Polar Motor Co.) In 1930 he was employed as maintenance man at the Assembly Rooms, York and later took a job with Olympia Oil and Cake Mills near Selby until his army reservist status resulted in his being called-up.

In May, 1940, Harry was invalided out of the army as a result of a serious injury to his right leg; he returned to Olympic but by 1946 the heavy nature of the job had caused further damage to his leg and he decided to 'go it alone from home' as 'Clarkson's of York'. 'Home' in this case was a garden shed in Barlby, near Selby, where he worked from 1947 to 1949 when he acquired the business of the Smith brothers in Monkgate, York. The first Clarkson catalogue was issued in 1947.

In 1950 Clarkson's won the contract to supply a large number of display models of the best of British-built locomotives for the 1951 Festival of Britain. Having completed an apprenticeship as a toolmaker with Cookes/Vickers Instruments Harry's son, Herbert, joined the venture and formed the family firm. By Herbert's return from National Service Clarkson's had become 'H. Clarkson & Son.'



Picture by
[Snapshotter46](#)
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'River Mite', Ravenglass and Eskdale Railway, Cumbria

The main expansion after 1951 was in the field of industrial modelling, where the firm had a good reputation and enjoyed considerable commercial success. Clarkson had an addiction to turbines and built many which were cut-away to show the individual rotors rotating in the correct relationship. Indeed there was very little that the firm wasn't prepared to make, even up to a 30 foot long working model of a steel rolling mill for India, which Herbert went to India to set up for Davey United who had commissioned it.

Commissions also came from museums including the NRM in York and Smithsonian in the USA.

Clarkson's was a well-equipped enterprise with its own in-plant foundry (opened in 1962) as well as the usual machine shop and fabrication areas. Such was its range that the company often took on difficult, small-run engineering work for larger local firms.

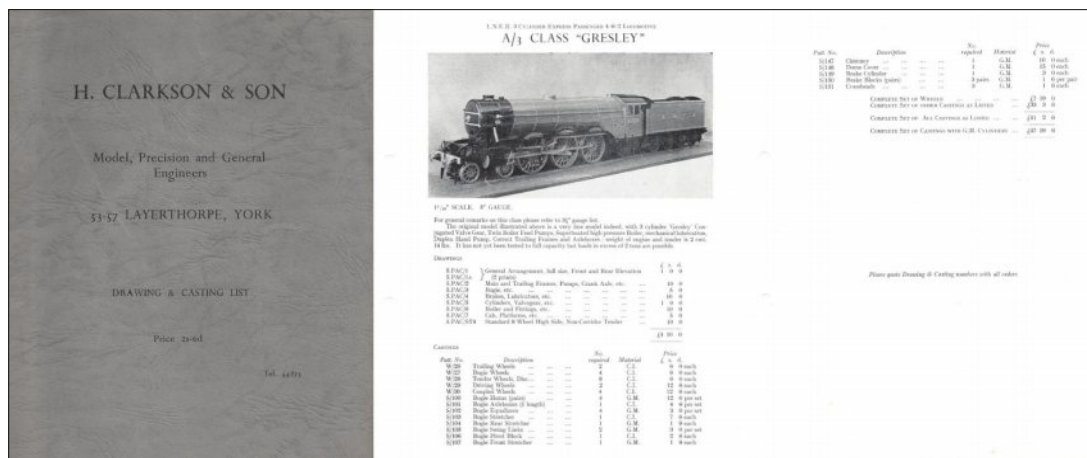
Both father and son were steam enthusiasts nevertheless, and their range of drawings and castings increased steadily over the years, often as a reflection of NRM and private commissions. Further designs on the Clarkson list had their origins in the work of another York modeller, H.P. Jackson, of a similar generation to Harry Clarkson.

During the 1920s Jackson had a radio and electrical shop at 96, Micklegate, York which also catered for modellers' needs. Jackson displayed a number of his locomotive designs in gauges from 1¼" to 7¼" in the shop window and had his own raised 2½" gauge track at the rear of the property. Herbert recalled that Jackson 'was almost reclusive in his working habits and begrudged the time taken by callers, even if they were customers.' In 1929 Jackson and a group of model powerboat enthusiasts formed the York City & District Society of Model Engineers.

Having sold up and left York to work for Henry Greenly in Middlesex, Jackson returned after a couple of years to open his own model design business. At this time he designed the 3½" gauge LMS pacific *The Princess Royal* and a 2½" gauge LMS 'Duchess' for description in *Model Engineer* during 1939.

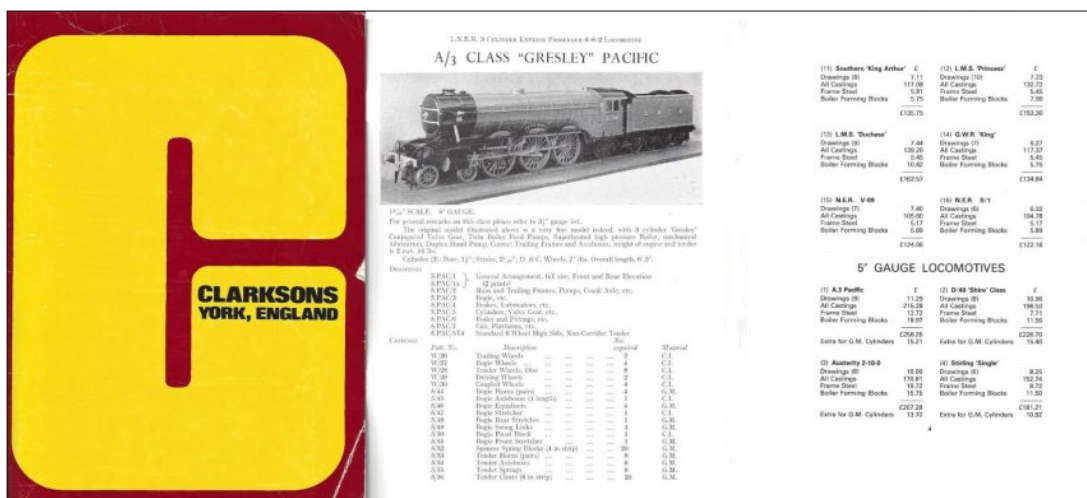
Both Harry Clarkson and H.P. Jackson were described by Herbert as 'cantankerous curmudgeons with strong fixed opinions [who] ought not to have got on but [] did'.

In the spring of 1966 Clarkson acquired from Bill Jackson, his late father's (H.P. Jackson's) drawings and patterns. The 'H. Clarkson & Son' catalogue around 1967 listed twelve designs in 3½" gauge (6 by Jackson) and two designs in 5". Clarkson's had an enviable reputation for high quality, authentically scaled and detailed models, but really only for construction by experienced and skilled model engineers as their drawings tended to be a little vague from the critical measurement point of view. Harry Clarkson's attitude to model engineers was that they should be engineers first and modellers second, whereas Greenly's and LBSC's designs told the modeller what to do to produce a running representation rather than a true scale model.



Pages from the 1966 catalogue

By 1979 the catalogue included 20 designs in 3½" gauge, 11 in 5", one in 7¼" gauge (the 'Tennant' 2-4-0,) 11 different stationary engines and four items of workshop equipment. Inflation, or the inevitable upward march of prices over time, can be judged by comparing Clarkson's catalogues: an early one shows the price of a set of 5" A3 castings as £41/2/6 but in the 1979 issue the same set of castings cost £258.20.

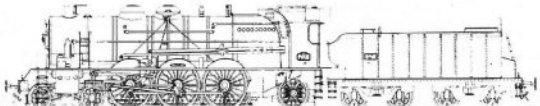


Pages from the 1978 catalogue & price list

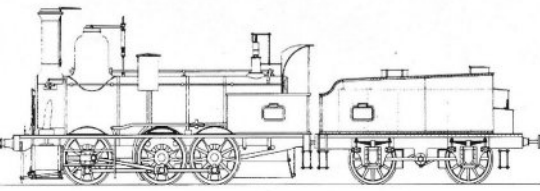
Research suggests that 'H. Clarkson & Son' was also known and respected in Europe. An interesting flier, undated but no earlier than 1963, has turned up stating that Clarkson's had been appointed as exclusive agents for drawings and castings of 'STEAM - PARIS'. The flier illustrates two SNCF locos for which drawings and castings were available.

Clarksons of York *The Model Engineers*
ARE PLEASED TO ANNOUNCE THAT THEY HAVE BEEN APPOINTED
EXCLUSIVE AGENTS FOR THE DRAWINGS AND CASTINGS OF
STEAM - PARIS

Drawings and Castings available now for:



3 1/2" GAUGE PLM (SNCF) 2-3-1 C 2 cyl PACIFIC



5" GAUGE PLM (SNCF) "BOURBONNAIS" 0-6-0

COMING SOON: 7 1/4" GAUGE "CRAMPTON" and a "RADIQUET"
STATIONARY STEAM PLANT

Whilst not cheap — The Pacific drawings cost £30 and the castings £185, the "Bourbonnais" costs are £16 and £160 respectively plus carriage and VAT, the drawings and castings are of very high quality. The drawings are metric and in French, but we will issue a glossary of terms. The "Bourbonnais" is suitable for the beginner and seems to us to be an eminently suitable engine for passenger hauling as, with its short tender and open cab, the controls are easily reachable, without risk of severe backache!

53-57 LAYERTHORPE, YORK YO3 7XB Telephone 0904 54873

As the main model-engineering contractor to BR, Clarkson's made a number of models for display at mainline stations such as Kings Cross. Herbert recalled that the firm made 1" to 1' models of Deltics.

In 1966 Clarkson's built a 15" gauge 2-8-2 for the famous Ravenglass & Eskdale Railway in the Lake District: its name, *River Mite*, was revived from an earlier R&ER locomotive. The 0-8-0 frames of the Poultny steam tender no longer coupled to the R & E's *River Esk* were used as the basis of the new locomotive and *River Mite* got a new boiler from the Bedford firm of Gower. At the beginning of December 1966 its journey all the way from York to Ravenglass on a vehicle towed by a steam traction engine was a spectacular piece of publicity.

Memorably, one day in the early 1970s Ian Macdonald met Clarkson's *père et fils* when he visited the Layerthorpe works to clarify some dimensions for his father's 5" gauge A1. Primary mission accomplished, the conversation with Herbert had moved on to injector troubles. Passing through, Harry paused, listened for a moment or two and joined in something like this, 'I'll tell you what to do with injectors, young man: when you find one that works, take it off and put it in your waistcoat pocket!' Punch line delivered, he made his exit. ('Always leave them wanting more' – P. T. Barnum.)

At its height 'H. Clarkson & Son' had some 20 employees, but after Harry retired in 1978 the firm, now branded 'Clarksons of York' (*sic*), experienced financial difficulties: production ceased in 1983. Mr. B. Elliott, a steam enthusiast and Managing Director of 'Elliott's Bricks', acquired the company but was unable to run it as a viable concern for long.

Originally one of Clarkson's customers, Adam Harris became a partner after Harry's retirement and set up a subsidiary, "Camden Miniature Steam Services" [the dealing part of 'Clarksons'.] Harris later kept the connection with Clarkson's going by marketing the plans etc. for the Jackson and Clarkson designs. By spring of 2013 Blackgates had acquired the Clarkson designs and patterns.

Harry Clarkson died on 26th April 1985.

After the closure in York Herbert followed in his father's footsteps by re-locating Clarkson's to an East Riding shed, this time quite a big one that had been a trout hatchery near Brighton. Thereafter Herbert worked for himself, building and restoring models, making specialist parts for the restoration of aircraft and for the National Railway Museum. In 2000 some of his models were displayed in the Millennium Dome.

Not for nothing was the early Clarkson catalogues' covers' description, 'Model, Precision and General Engineers' carried over to the Brighton letterhead. To the hatchery came a wide variety of engineering projects: ornamental spigots, then copper welding tips by the thousand, one day maybe repairs to agricultural machinery, another the improvement of a rig to fold cardboard packaging. It took some weeks and seemingly miles of stainless steel rod for Herbert to complete the refurbishment and extension of a conveyor belt from a fire-damaged bakery.

Steam locomotives were established at the heart of the repertoire, however, and Herbert Clarkson's last project was a group of four 5" gauge 'Schools' in which he planned to cover most of the variations to the class.

Although 'H. Clarkson & Son' is well known in the model engineering world for its small steam locomotives, Herbert estimated that steam locomotives comprised only five percent of the firm's output: he felt that it would be a pity if the firm were remembered for such a small proportion of its work.

Herbert died on December 24, 2014.

Ian Macdonald

Working Party Update – April 2015

Hon. Sec. Geoff

Track renewal: Since my last report in January a large amount of work has been done on track renewal and unexpected problems meant that the track was only available two days before the first running day of the year on Sunday 8th March.

There were no less than four working party days in the week prior to the first running day.

Track renewal is now complete on the main and station loop tracks and around the bend to the start of the back straight. On the bend by No.1 golf tee it was found that some rectangular cross-sectioned beams were fitted at places where trapezium cross-sectioned beams should have been and some beams were found to have a top surface which was not flat.



A total of ten beams were removed and refitted on the bend and, using an industrial laser and engineers' Cookes level, the gradient at each pillar is now within two millimetres of the ideal. Flatness was restored on four beams using levelling compound.

To obtain the required gradient the station leg of the north traverser has had to be 'chopped' and lowered and new steel side rails welded on. This proved time consuming as the traverser not only has a gradient but also has a varying tilt between inner and out rails from one degree at its start to three and a half degrees at its end as the track leads into a bend.

Other work

This has included making the turntable, offloading traverser and carriage shed bendy beams lockable to prevent unauthorised interference, repairs to the portable track riding car, re-wiring the club portable track trailer, commissioning a new warning signal in the tunnel, jet washing the traverser foot boards and leaf clearance.

I would like to thank all working party attendees and those members doing work on Wednesday evenings for making the extra effort to help with the track renewal project and other work. It is not easy for retired members to spare a day a week to help and even harder for those members who work full time who have still found the time to help out.

Harrogate Exhibition 2015

Delivery of Exhibits

Thursday 7th May.

Please see Geoff on arrival.

Arrive after 1-30 pm please. If you will be later than 6 pm please let Geoff know. You must register your exhibit at the organisers desk and obtain a white display card attached to which is your entry ticket for all three days. The white display card must be left with and be visible with your exhibit.

Collection of Exhibits.

Sunday 10th May.

On Sunday pm Geoff will collect up all the white display cards and get them signed *en bloc* by an exhibition organiser. Removal of exhibits from the stand is from 4.30pm, with removal from the hall after 5pm. To exit the exhibition with your model you must be in possession of the relevant signed display card.

LEEDS STAND STEWARDS.

The steward's rota has been drawn up and Geoff will e-mail or phone you during the week prior to the exhibition by way of a reminder and to check that your slot is still convenient for you. The exhibition is open from 1000 till 1700 on Friday and Saturday and 1000 till 1630 on Sunday.

Early/late stewards should be at the stand before morning opening and remain at the stand until the public have cleared the venue.

If you do not hold an exhibitors pass please collect your one day stewards pass from the exhibition organisers desk on the day of your stewarding having gained entry via the **exhibitors entrance**.

If you require any further information please e-mail

Leedssmee@sky.com

or phone **01977-798138**

Society Officers and Committee

President:	Arthur Bellamy
Chairman:	Jack Salter
Secretary:	Geoff Shackleton
Treasurer:	Nigel Bennett*
<u>Committee:</u>	John Hunt
	Steve Russell*
	Peter Smith
	Nick Morley

* Boiler Inspectors plus

Tony Wall
Martyn Chapman

Leeds S.M.E.E - Dates for Your Diary – Spring 2015

Working Party	Steaming Days/Meetings
Working Parties every Monday whilst track renewal takes place <i>Excluding Bank Holidays</i>	1 st April – ‘Trophy Night’
	12 th April – Running Day – Leeds Trophy
	15 th April – ‘Small Scale Locomotives’
	3 rd May – Running Day
	6 th May – Members Hints and Tips
	8-10 th May – Harrogate Exhibition
	20 th May – Copper Boiler Making
	7 th June – Running Day
	17 th June – Mid-Summer Steam Up
	28 th June – Running Day

Working Party dates are Mondays, nominally twice a month, but avoiding Bank Holiday Mondays

Newsletter by E-mail

You can save the Society postage costs by electing to have the newsletter, in pdf format and in full colour, delivered to your personal E-mail address.

Simply e-mail your request to **Glynne Hughes** and it should happen automatically.

Send articles for inclusion in the newsletter to the **Editor** or via mail to the Club Secretary

The Society web page can be found here

<http://www.leedssmee.btck.co.uk/>

Please note the society now has a new web address although visiting the old web site will provide a link to the new one.

**THE VIEWS EXPRESSED IN THIS
NEWSLETTER ARE NOT NECESSARILY
THE VIEWS OF THE COMMITTEE**