



NEWSLETTER

April 2022

Let's see one of these on our ponds



Gersurveyor X, a GEOxyz offshore support vessel. The vessel is used amongst other tasks to survey offshore wind farm sites. It has a length of 20.56 metres and a beam of 7.5 metres and can accommodate 12 passengers and 3 crew. Gersurveyor has a maximum speed of 25 knots (Courtesy of Geoxyz)

... And this quarter we have clubs coming alive!
And A Princes in Meccano,
A dissertation on insurance (worth reading for your well being),
The steam launch continues,
And of course 'Young Engineers' and the Polly Awards

EDITORIAL

Are we entering a period of 'good news'? Clubs coming alive again, ponds cleaned out, tracks checked and got operational, open days planned, rallies marked in our diaries, visits planned, it seems so. Judging by the number of certificate books our boiler registrar is sending out it appears many expired tickets are being updated.

There is some serious business this month. Our insurance matters are enough to excite most model engineers and we publish a position paper produced jointly by the Federation, NAME and Walker Midgley, it deserves careful study.

But also keeping with our aim to try to feature all

aspects of model engineering, we do have a Princess Royal loco in Meccano, quite a work of art. The poor old "Lizzie" developed a leak in her boiler and it appears quite an expensive one too. So modellers need not despair, it happens to the big boys as well.

Those interested in steam launches may be interested to find a continuation of the late David Beale's story of his building his steam launch 'Cherubino' back in 2016. Notwithstanding his consummate skill as a model engineer one has to salute a man who names his launch after a character from a Mozart opera! Model engineers have many skills and interests!

David Goyder, Newsletter Editor

CHAIRMAN'S CHAT

The AGM held both physically at the Avoncroft Museum and online using zoom is now behind us. With no one else putting themselves forward the existing members of the FMES committee were re-elected to serve for another 12 months. To be blunt, this is a situation that can not go on forever. Committee members, like everybody else, are not getting any younger and will eventually have to "retire". If nobody comes forward as replacements then the FMES committee will no longer exist and if this happens then the FMES also will no longer be able to exist to serve clubs as it has done successfully for so many years.

We need people to eventually take over from existing committee members and so if you think you could fill this role please do not hesitate to come forward. You will not be thrown in at the deep end as it should be possible to shadow an existing member to learn the ropes. Much of

the work done is now carried out using electronic means, for instance committee meet by zoom, and travel and time spent on FMES matters is kept to a minimal. So how about it, why not give it a go and serve the ME community and our hobby in general. If you put yourself forward and find it is not for you, nobody will think badly of you. Moan over!

Looking to the immediate future, let us hope that the situation regarding Covid continues to improve and our hobby can continue to return to a pre pandemic level although it may still take time for some activities to achieve this. Finally, now that the weather should be more amenable to outdoor activities, can I wish you a happy seasons steaming, sailing, flying or whatever your ME activity is.

Bob Polley, Chairman

Would you like to be Newsletter Editor?

I hope so!

I am now 81 years old and getting a little slower than when I started this lark some eight years ago. At that time, my first edition was for June 2014 having taken over from John Walker, who had just retired from the position. He had done a splendid job for the past few years.

Somehow I was talked into giving it a try and so here we are eight years later with my retirement in the offing. Rather like an elderly steam loco I have had to go back to the main works for some repairs, we call it the Southampton General, and they recommend that I be put on a branch line so that I can continue to be a "really useful engine" but not go too fast!!

What is involved? Being slightly computer literate helps. Having access to publishing software is useful

but with the new systems we are putting in I would be surprised if MS Publisher is not included. I use the version that came with my laptop, works a treat.

You will find that many clubs or societies are very happy to send you copies of their own newsletters where you will find just how erudite model engineers are, and how willing they are to share their ideas.

One just finds topical items of interest. For example the item about 'HRA smoke rule exemption' came from the current 'Steam Railway Magazine'.

Your colleagues will feed interesting articles as well. So all in all it is a collective effort that you will enjoy.

Let me know if you are interested!

Regards David Goyder
Hon Newsletter editor,

AGM and Polly Awards at the Avoncroft Museum of Historic Buildings at Bromsgrove, March 12 2022.

The highlight of the AGM is the annual presentation of the Young Engineers' Polly Awards ably managed by Mike Chrisp and shown below

Matthew Kenington

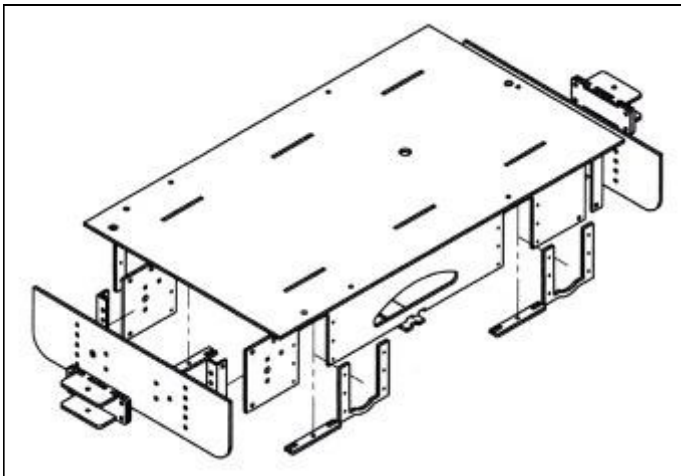
Matthew was awarded the Winner's Trophy, £50 Polly Model Engineering Ltd. voucher and £50 Federation cash prize.

A member of Hereford SME, Matthew is 16. He was awarded the Southern Federation Trophy & Polly Model Engineering Prize 2020 with his convertible driving car for use on ground level or raised railway tracks.

Matthew joined Hereford SME in 2017 and quickly became involved in the society and its activities. Benefitting from help and guidance, he soon demonstrated proficiency in the safe use of machines available in the society workshop and continues to develop his engineering skills.

When progress on a 7¼ in. gauge ride-on tender in the society's workshop was interrupted by Covid, Matthew transferred his activities to the home workshop. His well structured and copiously illustrated portfolio details the design and construction of the project. Commercially available processes are used for custom components, including laser cut parts from Matthew's own CAD files.

Matthew is always available to assist with tasks essential for operating successful society open days and public running days. He's pleased to help younger members develop their driving skills and on running days is always involved with locomotive preparation. He's an asset to and a valued member of Hereford SME.



The Annual presentation of the Young Engineers' Polly Awards cont'd

Matthew Laister

Matthew was awarded a Very Highly Commended Certificate and £50 Polly Model Engineering Ltd. voucher.

A member of the Pimlico Light Railway club, Matthew is 16.

An early interest in building models from plastic and etched metal kits led to Matthew's first model engineering project, a simple oscillating steam engine, involving manual and machine workshop skills, measurement, safety awareness and simple design work. Coupled to a refurbished, salvaged unit, this simple engine is now part of a complete steam plant.

Making good progress with the club's training scheme until Covid struck. Matthew continued working in the home workshop under the guidance of his father, a qualified engineer. He is currently working on a simple slide valve engine.

Matthew and his father are working together on a *Polly* locomotive and Matthew is refurbishing his own second hand *Metre Maid* locomotive.

A keen Air Cadet, Matthew attends his squadron two evenings a week. He plays tennis one evening a week, is a top student in his engineering class at school and is pursuing his Silver Crest STEM certificate and Bronze DoE award. His engineering bias has been recognised at school and he has been put forward for an engineering Arkwright Scholarship. Most of his remaining time is currently taken up with revision for his GCSE exams, restricting opportunities available for his model engineering activities.

"A joy to work with" and a good club member, Matthew proved himself extremely competent in all the tasks set for him in the club workshop and, had the Pimlico Light Railway continued to run for the public, on attaining the age of 16, he would have been a very capable and responsible young driver.

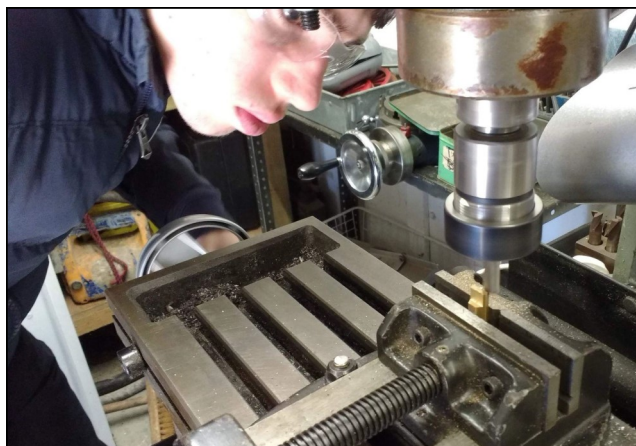


Daniel Bell

Daniel was awarded a Highly Commended Certificate and £50 Polly Model Engineering Ltd. voucher.

A member of Hereford SME, Daniel is 17. He was awarded the Southern Federation Trophy & Polly Model Engineering Prize 2019 with his steam outline road vehicle built using parts from a discarded mobility scooter.

When he first joined Hereford's young engineers club, Daniel was unsure what he wanted to do but his enquiring nature and guidance from experience members soon led him to discover the challenges involved in model engineering.



The Annual presentation of the Young Engineers' Polly Awards cont'd

By listening, learning, heeding the advice given and keen to discover more, Daniel has become clever and full of ideas. Access to his school workshop where he could develop his ideas further, his involvement with Hereford SME and the award of the prestigious Messier-Bugatti-Dowty Certificate of Achievement have provided a sound basis for an engineering apprenticeship.

Daniel's portfolio describes the design and construction of a Stirling engine, his current project, for which he has been encouraged by advice from members of Hereford SME and the Stirling Engine Society.

With full parental support, Daniel can usually be found at society events from the outset and is often last to leave. Maintaining the highest standards, he is a competent stationmaster, guard and driver able to drive fare paying passengers on the railway. A valued and respected member of the society, *"Daniel is just the sort of young person most model engineering clubs would wish to have as a member"*.



Tom Williams

Tom was awarded a Commended Certificate and £50 Polly Model Engineering Ltd. voucher. A member of Hereford SME Tom is 21.

Tom takes pride in his work and achievements, is a competent welder and safely able to use the machines available in the society's workshop.

To avoid having to power up a large locomotive on running days to assist with shunting stock, Tom has built a pedal powered 7¼ in. gauge track cycle that he calls his 'Pedalino'. Assistance from senior members of the society, together with his own efforts have allowed him to realise his ambition. His competence and workmanship can be judged from the result.

Covid lockdowns halted progress on Tom's Pedalino until summer 2021 when workshop sessions resumed and work could continue. Principal areas of recent progress include fitting a braking system and gearbox, both using components from a donor cycle.

At the time of his nomination, remaining work involved painting and the addition of embellishments. Final touches will include couplings and lights.

A competent driver, Tom is always available to assist with the assembly of trains on open days. He's respected, able to get on well with everyone, a competent train guard and happy to assist with station ticket duties.



Strategy and Young Engineers: a workshop

Two years ago, at STEAM, we tried out holding a 'workshop' for an hour. This was to enable us to gather information from clubs about their desires and comments concerning the future and strategy of what was then SFMES. We followed this up after the meeting at STEAM with emailed requests to all clubs asking for more information to give those not present chance to place their input. The result was a mass of information that we collated into a strategy... and our progress on this was explained at the most recent AGM meeting, held on March 12th at Avoncroft Museum. At the end of the first workshop, I asked for a show of hands for those who liked the idea of workshops... and the response was very positive. Workshops work best with people in a room, and so this year we seized the opportunity to hold another workshop. The subject was 'Young Engineers' and the reason for this was because we recognised in the Strategy that a pro-active and developing service to support 'Young Engineers' was a very worthwhile aim that FMES could potentially make a strong impact with. The workshop created a good level of interest and, judging by the comments collected so far, has identified good benefits for a club supporting a 'Young Engineer section', but also some difficulties as expected from previous work carried out by Ivan Hurst a few years

ago that some may remember. It is the difficulties, when collated, that will help identify how FMES could support the activity and enable more clubs to gain the benefits from a young engineer section, as well as more young engineers being supported throughout the UK.

We have not finished collecting comment however, and we will be sending to clubs' primary contacts a request for an appropriate person in their club to answer a survey. This will allow ALL clubs to return their response and therefore help us decide what to do and what impact to expect.

When we have the information, we will analyse it and prepare our proposals for agreement and dissemination to all clubs.

We regard this as a starting point for a potentially significant enhancement in our impact on the hobby and we were very pleased at the workshop to introduce Peter Kenington as a new volunteer to co-ordinate our Young Engineer activity. We wish to create a team approach to this and will welcome others, particularly when we have evolved our design for what we can do, as then we will have ideas about what skills and experience we will need. If you have a desire to assist in some capacity, please do not hesitate to contact us at

young.engineers@fmes.org.uk .

Paul Naylor



The Modern warship especially for the Marine Modeller



**Guidance on Public Liability Insurance for visitors under the
Club & Society Insurance Scheme arranged by
Walker Midgley Insurance Brokers**

Applies to

This guidance is to Officers of societies welcoming visitors to use their society facilities and to society members who visit other societies.

Background

Public liability is liability to third parties. It is liability that arises following damage to third party property or injury to third party persons (injury means bodily injury, mental injury, death, disease, illness, wrongful arrest or false imprisonment). Cover is provided for the society and also for all members 365 days per year whilst they are undertaking modelling or model engineering activities of all and every kind including when they are 'on their own'. The Public Liability cover extends to include the liability of one member to another member and cover applies to members of all ages - there is no upper or lower age limit.

A club & society public liability policy provides cover for damages awarded following injury to a third party person or damage to third party property caused by a negligent act of the club or society or by a negligent act of a club or society member.

The geographical limits are the United Kingdom and Europe (for members who are permanent residents of the UK, the Channel Islands or the Isle of Man the geographical limits of the cover are anywhere in the United Kingdom or Europe. For members who are not UK, Channel Islands or Isle of Man permanent residents the geographical limits of the cover are anywhere in the United Kingdom, the Channel Islands or the Isle of Man).

Wives, girlfriends, partners and friends are often "roped in to help" on occasions when more hands are needed and it should be mentioned that, as they may not be members, the public liability cover may not extend to include them although this will depend on the circumstances surrounding the incident giving rise to the claim. In order to ensure their inclusion consideration should be given to including such helpers as members (perhaps a separate 'associate member' category).

The limit of indemnity for Public Liability cover (£2m to £5m available) applies to any one event. Legal defence costs are included with an indemnity limit of £250,000 representing the total amount payable in respect of all costs and expenses arising out of claims during any period of insurance.

Visitors

Visitors to societies fall into two main categories: -

- those who take part in the operation of the society, for example by running a locomotive or assisting in the operations – a 'participating visitor'.

those who visit as members of the general public, for example on public open days, and take no part in the running of the Society. They may take rides on the trains either fare paying or by donation or gratuitously - a 'general visitor'.

There are also those that visit by reason of their work for example delivery drivers, these can also be classed as a general visitor.

Synopsis

When people attend a society as a participating visitor (with or without an operable model) neither they or the host society will be automatically covered by Public Liability insurance unless measures, such as outlined here, are put in place.

Guidance for societies

As mentioned above the club and society policy provides cover for the society and all members, it therefore follows that there is no public liability cover provided for general visitors, who by definition are not members.

All visitors have a duty of care to others. Those who visit as members of the general public (general visitor) do not need to prove evidence of public liability insurance in the same way as you do not need to if you are visiting a heritage railway or going to the local football club to watch a game on Saturday afternoon.

Those who visit in order to take part in the operation of the society by running a locomotive, or assisting in the operations, (participating visitor) fall into a different category. They, by their actions, are in a position to influence the safe running of the railway and the safe running of the society activities and therefore the host society must check that the participating visitor has the appropriate public liability insurance in place. If the participating visitor proposes to run a steam powered model the host society must also check that the boiler has a current boiler certificate.

All club & society policies issued by Walker Midgley include a supply of public liability certificates which members can use to provide evidence of insurance when

**Guidance on Public Liability Insurance for visitors under the
Club & Society Insurance Scheme arranged by
Walker Midgley Insurance Brokers Cont'd**

visiting other societies. This certificate is called the Club Certificate of Public Liability. If the participating visitor is a member of a society insured by Walker Midgley that participating visitor should have one of those certificates. The participating visitor may have a certificate issued by Walker Midgley in the participating visitor's own name which is equally acceptable.

Where a participating visitor cannot provide evidence of public liability insurance the host society has the option of making the participating visitor a 'Day Member' which will mean that the participating visitor is no longer a participating visitor but is a member and hence has public liability cover under the host society policy. In order to be a Day Member the participating visitor does not have to be a member of another model engineering society affiliated to Federation of Model Engineering Societies, Northern Association or 7 1/4" Gauge Society, or even be a model engineer – just someone you wish to be a Day Member. Some societies choose to restrict day membership to participating visitors from other societies of the same Federation or Association that the society is affiliated to, that is a matter for the society to decide.

Societies offering day membership to participating visitors for the purpose of providing public liability insurance are recommended to include within their constitution an appropriate class of membership and set out the rights and limitations of a Day Member, for example public liability cover, no voting rights etc. The cost per day and any limit on the number of days in any period that someone can be a day member should also be clearly stated.

It is recommended that any participating visitor

operating a model, is given a briefing on the safety measures and any Bye Laws of the host society pertinent to the model being operated.

When a participating visitor to a society presents a copy of the **Club Certificate of Public Liability Insurance** from their own society, they should be asked to 'sign-in' on the visitors record for the host organisation, providing as a minimum their name and address. Details of the Club Certificate of Public Liability Insurance, the society issuing the certificate and which scheme, should also be recorded.

The second members certificate of Public Liability which is issued to societies is called the **Individual Club Members Certificate of Public Liability Insurance**. It is envisaged that this certificate will only be used on the rare occasion that a club member will be acting purely in their personal capacity, ie not visiting another society or going on a club event or activity or a club outing to another society and the like. An example of this could be if they are asked, as an individual, to take their loco to their local village fete because the organiser knows they have a model loco. In these circumstances, the limit of liability is £1m per claim (and £2m in the annual aggregate).

Guidance for individuals

A member of a Society that has public liability insurance under the Club and Society Insurance Scheme, arranged by Walker Midgley Insurance Brokers and underwritten by Travelers Insurance Company Ltd, can obtain a copy of either the Club Certificate of Public Liability Insurance from their society. Presenting the copy of the certificate when visiting another society will provide evidence that

Your Treasurer has two Examiners, thank you.

Many thanks to Robert Kirchner of Romford Model Engineering Club who has fulfilled his first duty in the role as examiner for the Federation accounts. In fact, he made sure the 2021 accounts were correct and reported such at the March AGM.

As Robert said to me when we first discussed this, it is useful to have a second examiner as we can make sure the Examiner and the Treasurer do not run off with the family silver, although I might add with all the

Covid, not quite sure how far anyone would get!

The good news is that we now have an Associate Examiner so it appears the family silver is safe and the membership can relax. He is Ian Keleher, Secretary at Harlington Locomotive Society

Thanks,
David Goyder
david.goyder@fmes.org.uk
Hon Treasurer

Guidance on Public Liability Insurance for visitors under the Club & Society Insurance Scheme arranged by Walker Midgley Insurance Brokers concluded

they have public liability insurance when away from their home society without the need for day membership of the society being visited.

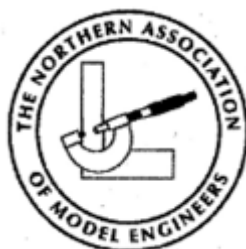
A copy of the public liability insurance certificate is also available under the Club and Society Insurance Scheme, arranged by Walker Midgley Insurance Brokers for Northern Association of Model Engineers, Federation of Model Engineering Societies, and 7 $\frac{1}{4}$ " Gauge Society, all are acceptable.

An individual who does not have a copy of the Club Certificate of Public Liability insurance certificate and requests day membership of the society being visited, should confirm with the host society that the host

Jointly prepared and published by.

society does have public liability insurance cover in place and not assume this to be the case. The individual should also be aware that by becoming a day member they take on all the liabilities of being a member and become jointly and severally liable if the society is unincorporated.

When a member of a Society that has not purchased insurance under the Club and Society Insurance Scheme, wishes to visit other societies, they have the option of taking out a Personal Public Liability Policy in their own name and presenting the certificate when visiting another organisation. Such insurance cover is relatively inexpensive. Anyone requiring details should contact Walker Midgley Insurance Brokers direct.



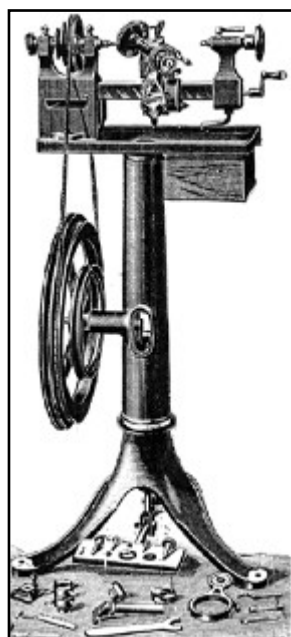
Another venerable lathe..... By Paul Naylor

A couple of issues ago I described my Pittler model B lathe. I would not describe myself as a lathe collector, but I don't like to see interesting (and small) examples of elderly lathes get thrown out and so I have acquired a few over the years. When I saw another and older version of the Pittler for sale, I could not stop myself buying it.....

Originally treadle operated, it had been motorised and had a fabricated system of drive belts added but underneath it was pretty original, albeit scratched and battered. It came with a selection of parts that meant it could be restored to 'as supplied'. It seems to be from c1890.

It has many of the features of my other Pittler B, but is lacking the most interesting part – the unusual feed screw drive. I do not suppose that as a tool it is particularly of use or interest these days, but it is the most architectural and stylish of my lathes! I rebuilt it and added the treadle drive back, matched the paint colours and removed all of the more recent additions. Unfortunately, the previous conversion included replacing the 4-step headstock pulley with a 5-step pulley, and so I had to add an adjustable belt tensioner under the lathe table (just visible in the photo). If

anyone has a Pittler 4-step pulley let me know! Although not quite up to 'living room ornament' standard (and it is surprisingly heavy) it is nevertheless a pleasant addition to my 'man cave'!



Left—Original advertisement. Right As rebuilt.

PRINCESS ELIZABETH IN MECCANO

The following article, written by David Pickup, is a brief history of its planning and subsequent construction.

My first recollection of Princess Elizabeth was sometime during the second World War; probably around 1942. My elder brother was the proud owner of a number 4 Meccano outfit, which I wasn't allowed to touch for fear of being over-enthusiastic and damaging the parts. However, when no one was around, I would look at the Instruction Manual. On its rear cover was a picture of the superb Hornby '0' gauge model of 6201. I could only dream of having such an engine for myself as 5 Guineas was well beyond the financial scope of a working class family. The years passed and my interest in Meccano stayed with me into adult life: only being interrupted during my teenage years when I discovered such things as girls and beer!

A few years ago during a visit to Steamtown at Carnforth, we saw a large picture of 6201 taken at Hereford in 1980. Until then I hadn't realised that this superb engine had been preserved. Enquiries followed and I learned that 6201 would be on display at Crewe Open Day in October 1991. A day out followed and Princess Elizabeth looked magnificent. After much examination, which included a memorable climb on to the footplate, the thought came into my head that this could be my next Meccano model.

Much thinking time followed as how things could be built so as to achieve the greatest realism. Drawings were obtained showing all basic dimensions, also the excellent publication produced by Clive which contains many photographs. It seemed impractical to build a model capable of running along a track as this would require a lot of space. A compromise was to leave the driving wheels clear of the track to allow rotation and operation of the motion. The scale was determined by the size of the circular parts in the Meccano system. The driving wheels are 5 1/2" in diameter and as the wheels on 6201 are 6' 6", this results in a scale of 14:1. It is not possible to build accurately to scale with Meccano due to the 72" hole spacing but with larger models this limitation is effectively reduced and results in an acceptable overall appearance. Building was over a two and a half year period but this was mainly evenings and weekends when time allowed.

We have taken the model to a number of steam rallies. Glynn and Margaret (Hague) paid a visit to one such



Locomotive 6201 "Princess Elizabeth"

Scale approx. 14:1

It took 2½ years to build in his spare time.

It would not be possible to build today as red plates have not been available since 1958.

The whole model is built from Meccano parts except for, Chimney (Neck of pop bottle)

Water feed (Block of wood)

Steam pipes (Copper tubing)

It would cost approx. £3,000 to build if the parts were available now

event where we had Lizzie on display. Much interest and enthusiasm was shown which resulted in us taking the model to the last two record run lunches. It was so pleasing to have such interest shown by Society members both for myself and my wife Jean who, by the way, had given invaluable help during the building process, when a dozen hands would have been useful. As with all Meccano models, the idea is to build something and then dismantle it. This is not likely to happen to Lizzie now, as I have received threats against my person if I were to do so!

I hope the model continues to run satisfactorily for a while yet, otherwise she may have to join her big sister for a major overhaul....

Clive Majonnier, Chairman, The Princess Elizabeth Locomotive Society has produced the life story of the "Lizzie" in a limited edition book of just 500 copies. The proceeds of the book will all go to the cost of the overhaul of the loco after the discovery of a leak around the firebox near the throat plate. Odd snippets of information emerge when a book such

as this is produced such as, The "Lizzie" has been owned by the Society for longer than it was by the LMS or BR.

The Queen did not actually come face to face with her namesake until 1987

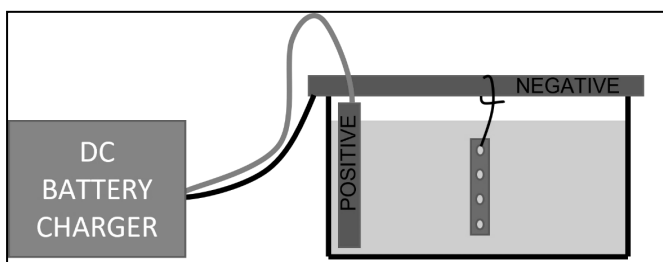
Those interesting in this icon can learn more at www.6201.co.uk

RUST REMOVAL BY ELECTROLYSIS By Paul Austin

Whilst watching 'The Repair Shop' on BBC, you may have seen them removing rust from parts using electrolysis. Having replicated the set up myself and given a brief description at the Bits & Pieces evening in December, David has asked me to pen an article with a bit more detail. I will explain the method, make some observations from my experiences and describe its limitations.

Equipment

- A plastic container – big enough to fit the component(s) to be cleaned
- Battery charger – a simple lead acid DC charger, the higher output the faster it cleans (I use an old 1.5 amp charger)
- Mild Steel Sacrificial electrodes – I use some old 10mm round steel bars (rebar). One needs to be large enough to span the tank.
- Washing soda and water
- Some electrical wire to connect the electrodes



Small bits of wire to suspend the parts

The equipment should be assembled as in the diagram.

How to use

You **MUST** set this equipment up outside in a well ventilation area as the process generates hydrogen and oxygen gas (we are not trying to convert our workshops into space rockets).

Fill the plastic container most of the way with cold water adding 1-2 heaped teaspoons of Washing Soda (Na_2CO_3) per litre of water to produce you electrolyte solution. (DO NOT USE OTHER CHEMICALS as some electrolysis reactions can result in toxic gases)

Place one of the electrodes into the container, this is you positive electrode, it needs to extend 3 to 4 inches above container edge to allow for connecting to the battery charger. The electrodes don't have to be spotless but cleaning off heavy rust back to clean steel helps speed up the process. I use some plastic clamps to stop the electrode falling over in the container. Over time the electrodes will erode hence using old

scrap steel rods.

All parts to be cleaned should be degreased prior to electrolysis, as grease can act as an insulator. The parts need to be suspended from the negative electrode, without touching the positive electrode already in the container. The parts must be electrically connected to the negative electrode, there are different methods to achieve this depending on the size and shape of the part. I have used small gauge steel or copper wire for items with a hole in, old bike chains to support rods and a grid of steel square mesh to support flat sheets. If you have lots of small parts, you can lay multiple bars across the tank, but they must all be connected in parallel.

Connect the battery charger, attaching the **NEGATIVE LEAD to the parts** to be cleaned and the **POSITIVE LEAD** to the electrode on the edge of the container. Make sure that the electrodes and the work pieces are not touching before switching on. Turn the charger on, if everything is working correctly after a few minutes, small bubbles will start to appear at surface.

Leave this running for a couple of hours, when you want to check the progress **switch off battery charger** before removing a component being cleaned, at this stage it will most likely be black with a few rusty deposits. Give it a rub in some clean water, the deposits should come off as a black sludge, sometimes it is necessary to wire brush this off to get a totally clean finish. If the component is still quite rusty, return it to the solution reconnect battery charger and give it a bit longer. When you are satisfied with the finish, rinse well and dry quickly to avoid surface rust. As with back to bare metal cleaning the parts will



RUST REMOVAL BY ELECTROLYSIS By Paul Austin (Cont'd)



L to R - As removed from the track, straight out of the electrolysis bath, after 2 rinses.

need to be painted or protect swiftly to stop rust reforming.

You can use the electrolyte quite a few times before changing it, the process slows down as it starts to degrade. When it is time to disposal of the solution, it is water with a high iron concentration and a little bit of washing soda, it is safe to pour on the garden but do avoid iron hating plants! You can also settle out the solids and pour the liquid into the sewers before drying the sludge on some newspaper and sending to landfill.

Observations

This method will work on all sized parts, I have cleaned smaller parts like old Meccano, using a small metal

flat strip I shook it occasionally to change the contact areas. To date I have had limited success with small parts (M6 bolts and smaller). I find that I get better results using an ultrasonic cleaning tank.

When cleaning hardened steel; chisels, saws, knives etc, it is possible this method can result in hydrogen embrittlement, so you may need to heat treat the parts after de-rusting.

The limitations of this method are how big a container you can devise, online I have come across people using Damp Proof Course (DPC) plastic, railway sleepers and a DC welder to clean a trailer chassis!

Safety precautions

Please carry out in a well ventilated area preferably outside - hydrogen (negative) and oxygen (positive) are produced around electrodes. The electrodes and parts must be steel, avoid any other metals - stainless steel produces nasty by-products like chlorine

Site battery charger away from any potential splashes, rain, and other liquids.

Turn off battery charger before removing or adjusting any metal or sparks might cause gases to explode if it has built up anywhere around container. Also avoid any flames or cigarettes in immediate area of container.

Washing soda solutions are alkaline and will irritate eyes or skin, so use suitable eye protection and gloves. Wash off any spillages or splashes with plenty of clean water.

There are many websites that contain more detailed descriptions on how this works. One of the easiest to follow, with additional picture is:

www.instructables.com/Electrolytic-Rust-Removal-aka-Magic/.

Thank you to High Wycombe Secretary David Savage and Author Paul Austin for permission to reprint this article.

Boiler Inspectors Seminars

The Joint Federation of Model Engineering Societies and Northern Association Boiler Inspectors Seminars are back in business There must be a lot of catching up to do.

In March 2022, the North Midlands seminar was held at Wolverhampton.

A Seminar for Boiler Inspectors will be held on Saturday 7th May 2022 kindly hosted by the Wimborne Society of Model Engineers. The seminar is open to delegates from Model Engineering Clubs and Societies affiliated to either Northern Association of Model Engineers or Federation of Model Engineering Societies.

The number of delegates is limited to 40, so attendance is by reservation only.

Please contact the secretary of either NAME or FMES for details.

All that is needed is a space that could accommodate 40-ish people and some space to do a hydraulic test and steam test on a loco or boiler provided by the society. The national organizations (FMES and NAME) pay for buffet lunch and drinks so there is no cost to the host club. Please contact Peter Squire at,

peter.squire@fmes.org.uk or phone 01327-342167

Model Engineer to Marine Engineer—Part 2

By David Beale, late of the Leeds Society of Model and Experimental Engineers

In our last issue we told you the story of David Beale, a prolific model engineer. His story came from the "Leeds :Lines", newsletter reproduced by the kind permission of the Leeds SMEE.

Sadly he died on 10 January 2016 just after writing this article. Its publication was held up until April 2016 edition where we continue his history of building steam launches.

Boiler Considerations

Most enthusiasts find the boiler and all the regulations relating to construction, safe maintenance and operation to be a major hurdle. It need not be difficult or onerous if the various stages are undertaken in the correct order. So many times one hears of people having completed a boiler before even discussing the project with a boiler inspector.

The majority of steamboats are coal fired others using central heating oil and a minority using propane. The latter categories have more onerous safety requirements to comply with water-way licensing regulations.

I have constructed two boilers of the type shown in photo 1, this design is a three drum arrangement similar to the Yarrow with an upper large steam drum and two lower smaller mud drums. This basic pressure frame is a welded steel construction with helically wound copper steam generating tubes silver soldered into nozzles. A true Yarrow type is installed in SL Mosquito and is shown in photo 2, note the hairpin superheater located below the steam drum where it benefits from radiant heat.

Boiler Construction

But before you are put off by too many decisions let us get back to the interesting time spent in the workshop.

Potential enthusiasts will see the boiler as a most daunting prospect, either expensive to buy or shrouded in bureaucracy for the home constructor. Boilers are satisfying to make and can offer a new challenge, I hope to convince you of this.

First and foremost obtain a boiler design that has been approved by a Competent Person, or produce your own drawing and have it approved. Next decide who will inspect your boiler during its construction and

later when it is commissioned and put into service. When you have found a suitable boiler inspector contact him to discuss your intentions and ascertain what his requirements are.

My design was one of the many approved designs available through The Steam Boat Association (SBA).

My inspector was happy for me to purchase certified materials in compliance with those specified on the design drawings. Where formal certification was either expensive or not readily available the inspector was prepared to accept invoices which detailed the standard of the material. It was profitable to shop around, prices varied considerably and my order was comparatively small. It was easy to obtain 6 metre lengths of tube but ½ metre was often attracting extremely high cutting costs.



Photo 1



Photo 2



Photo 3



No doubt these standards have been replaced by Euro Norms but suppliers still recognise British Standard references.



Photo 5 (left) shows how a reducing tee is used to provide a dome and an excellent access port for the boiler inspector.

My Myford Super 7 was used to make weld preparations and bore the holes necessary for nozzles and other fittings.

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Photo 6 shows an end cap being prepared to accept a downcomer tube.

The steel pressure vessel was jigged with appropriate weld gaps onto a stout wooden board. Wooden spacers were used between the bottom drums with steel ties as shown in Photo 3, to hold the assembly ready for welding. I was permitted to use tack welds to help hold things together on the understanding that the qualified welder would totally remove them. Unless your welding competence is to the required standard you will require the services of someone acceptable to your inspector.

I have spent a career working in power station maintenance where competent welders were readily available for private work. I recognise that welders may not be so readily accessible to all and to overcome this difficulty designs are available that require no welding whatsoever. An interesting and satisfying task was winding the copper coils, this was achieved using my Harrison M300 lathe, the Myford has neither sufficient centre height or robustness.

The coils are $\frac{1}{2}$ " o.d. x 18swg wall thickness and are wound left hand and right hand with a helical lead of $1\frac{1}{8}$ " to permit intertwining as seen in Photo 4. With copper prices being high it was considered sensible to adopt a winding method that would prevent both damage and distortion to the tube. Photos 7 show the arrangement where a shaped roller follows the helix in the hard wood former.

Most lathes will not cut a helix with such a coarse pitch and to produce the formers it was necessary to remove the leadscrew drive gears and to fit a chain drive. A router or other wood cutting tool is mounted on the tool post and the helix cut in the same way that one would cut a screw thread.

I readily accept that a large lathe is required for the above process and if this is not available at home or the club workshop a fellow club member may be interested in the challenge. Alternatively consider a design where



Photo 6



tubes are formed using a bench mounted pipe bender.

The finished pressure vessel is shown in Photo 8 (left) the coils having been silver soldered into the headers using EasyFlo 2. An economiser coil is shown formed around the top of the steam drum, this takes advantage of waste heat in the flue gas to heat feed water before it enters the bottom

headers.

At this stage my boiler inspector required a hydraulic test, all outlets were plugged and twice design pressure was applied for 30 minutes. With this satisfactorily completed the boiler casing could be completed. Photo 1 shows the finished boiler ready to go into the boat. Do not under estimate the work content required to make a gas tight casing. You may not like a painted sheet steel finish and choose a wooden exterior more in keeping with Edwardian elegance, the choice is yours.

Boiler Types

A water tube boiler giving a large heating surface within a small footprint is the Odfeldt or Lune Valley type. The construction principles are very similar to those adopted for the Black-staff type described

above. The copper coils are formed and silver soldered into a steel core. The whole is then encased to give a vertical cylindrical boiler. Photo 9 shows the complete pressure vessel undergoing a hydraulic test at 300 lb/ins 2 this being twice design pressure. The vertical steel column seen in the foreground accommodates the water level gauge. This arrangement



Photo 9

requires all external connections be they steam or water to be made via the top flange. Any connections made at the bottom of the steel cylinder would be exposed to continuous radiant and convective heat and would require continuous cooling to prevent them burning out. An intermittent feed from say an injector or pump would not provide the necessary cooling and the tube would eventually fail.

The boiler is a very rapid steamer and more suited to oil firing applications where the heat source can be regulated quickly.

Firetube boilers provide more leisurely management due



Photo 7

Model Engineer to Marine Engineer—Part 2 concl'n, Part 3 (start)

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to their large internal volume when compared with water tube types, but are much heavier. They are much easier to clad with insulation and finish with attractive timber. Water tube boilers often require a separate frame or crinoline to hold the insulation and onto which a metal cladding is secured.

Photo 10 shows a typical vertical fire tube boiler suitable for a launch of up to 18ft in length. A locomotive type boiler is often used where side firing optimises the best use of hull accommodation. Photo 12 shows an example of this type being



Photo 10

readied for testing.

For the very ambitious why not try a monotube steam generator, I made one for a road vehicle with satisfying success. The leisurely pace of a steamboat makes the all



Photo 12

essential balance of steam take off, water feed and firing much more easily achievable. No traffic lights or hills to contend with on the water. Photo 11 shows my arrangement but I would not recommend a monotube for your first steamboat, although a number of successful

examples do exist a vertical fire tube type would be my recommendation. Once again approved vertical fire tube

Part 3 The Engine.

Many model engineers that have built locomotives or traction engines will find the construction of a steam launch engine and auxiliary components relatively straightforward.

Again there are decisions to be made:

- * Single cylinder or multi cylinder.
- * Simple or compound expansion.
- * Type of valve gear to be used.
- * Direct coupling to propeller shaft or indirect via chain or belt.
- * Will the engine exhaust up the funnel or into a condenser.

You will see that the complexity of the steam plant is increasing but totally satisfactory results may be obtained with a simple engine exhausting up the funnel, again as in locomotives and traction engines. In this application boiler feed water is either carried on board or drawn from the river or canal. The downside of exhausting up the funnel is the irritation caused by the noise it can produce, steamboats tend towards a quite tranquillity except for that annoying and elusive engine knock!

If the condensate is reused the oil must be removed to prevent internal contamination of the boiler, this is usually achieved in the hot well with baffles and oil absorbing materials. This closed cycle is essential if you intend steaming on dirty canal water or on sea water, the alternative is to carry on board an adequate supply of fresh water.

I operate a simple total loss system by exhausting the steam into a keel condenser which overcomes this noise problem but requires

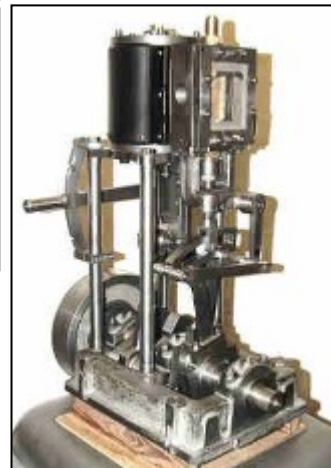
removal of the oil before discharging to the waterway.

My choice for both SL Cherub and SL Cherubino was for a simple robust single cylinder engine. My very first engine was a Stuart Turner 5a but this rapidly developed knocks and rattles. The lesson here was that the 5a is a large model and not a small workhorse. Bearing proportions are minimal particularly the small end, a component that is also unlikely to receive adequate lubrication. The steamboat engine is called upon to work at full power for many hours unlike many model locomotives and traction engines.

My choice has been to build single cylinder engines because of their simplicity and for my hull size adequate power was readily attainable. Castings were purchased for a 2½" x 2½" which has a three bearing bedplate that is shown being line bored in photo 1, below. The finished engine is shown in photo 2, ready for painting.



Photo 1 above, Photo 2 right



Part 3 The Engine concludes in the

Publications Available from Federation of MES

The FMES publications listed below are available from our stand at rallies and exhibitions or by post from David Mayall. Please make contact first by phone or email to get combined postage costs when ordering more than one item. (See note below). The figures shown here are for single items only. Please make cheques payable to 'Federation MES' or use BACS to Sort Code 20-71-82 Acct 43755967.

Title	From Our Stand
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Vol 1, 3 bar litres to 1100 bar litres. Vol 2 under 3 bar litres. Vol 3 LPG tanks under 250 ml.	
Ditto - Pack of 5	£2.50
Boiler Test Certificates - Pad of 50	...FREE*
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HS2020 Passenger-carrying min railways 'Guidance' post included.....	£4.00

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* These publications are issued free of charge to fully paid up member Clubs and Societies ONLY, and are NOT available for general sale. For delivery by mail, the cost of postage and packing is £5.00, and must be borne by the Club/Society placing the order.

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