Supporting Model Engineering since 1970

Federation of Model Engineering Societies

NEWSLETTER

August 2025

Editorial

We are now less than a month away from the FMES Rally hosted by Rugby MES on 6th September. Although Rugby does not require pre-booking (except for camping) if you are intending to go please email them at george.cannon@hotmail.co.uk as soon as possible to give them an idea of numbers. The invitation notice and details of Rugby's extensive facilities follow.

Bob Polley reminds us that FMES still require a treasurer. Please contact info@fmes.org.uk if you can help with this important function.

There are details of the launch of two new initiatives: the first is a series of articles on producing scratch built models which are available in the website library. The second is the launch of a private Facebook page for the use of members of affiliated societies. Details of both follow in this newsletter.

We are grateful to Bristol and Plymouth societies for permission to reprint articles from their respective newsletters. The Bristol article describes their work with young engineers which also prompts a reminder for entries for the FMES Trophy/Polly Model engineering Prize competition. The Plymouth article describes fitting steel tyres to locomotive wheels.

There is an overview of Martyn's Law that may impact the organisation of club events in the future, an update on the ongoing work being done to develop safeguarding guidelines and details of updates/changes to the requirements of Companies House for the identity verification of directors and filing of accounts.

Colin Walton, Boiler Registrar advises he will now accept scanned WSoE documents electronically and Jim Hollom describes how the library and access to documents continue to be developed.

We look forward to seeing as many of you as possible at Rugby on 6th September.

Tony Lee

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Chairman's Chat

There are a couple of things that I want to chat about in this newsletter.

The first is that the FMES has now been without a treasurer for several months despite many appeals for a volunteer to take on the role. Does the word treasurer put folk off, how about if it's changed to book keeper, does that still seem too difficult a role for someone to fill? What's needed is someone not necessarily with a background in finance but probably just a common sense approach to monetary matters. With the use of modern accounting software the task should not be too difficult.

So what happens if nobody fills the role. The use of a professional book keeping/accountancy business has been explored and the cost, even though the amount of work entailed is minimal, would run into a few thousands of pounds. This financial outlay would mean the FMES having to make savings in other areas, cutting back on existing services and not developing new ones and/or greatly increasing affiliation fees. Neither of these options are desirable.

A solution might be for someone to "look after" the day to day incoming and outgoing monies, the recording of the financial activities of the FMES with these then at the financial year end, if necessary, being passed to a professional to put into a form acceptable to the tax authorities. So, come on, there must be someone willing to join the other volunteers, who are looking after the many areas that make the FMES tick, and take on the important role of looking after the finances.

For the second chat I will start with articles in the early part of 1902 in the Model Engineer magazine which details the explosion on the Serpentine in Hyde Park of a model boat boiler, with the boats destruction, the injury of two people and the subsequent enquiry. It was found that the boiler was made from a brass tube with flanged copper end plates, the whole being soft soldered together and there was no safety valve. A disaster waiting to happen.

Things have changed over the intervening years between then and now with the boiler test code prepared by the MELG (Model Engineers Liaison Group) being used for the examination, testing and certification of steam boilers owned and/or used in our hobby. The MELG is made up from volunteers from the main (8) organisations involved in our hobby and should be thanked for the great deal of work and diligence that goes into the production of the test code. Clubs appoint suitably experienced/qualified people to carry out the testing and certification of their members boilers, a job that occasionally results in "differences of opinion".

So remember the club boiler inspector(s) is a volunteer, their aim being to ensure the safety

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of your boiler, yourself and everybody else. They may require remedial work, the changing of a fitting to a different material, the renewal or overhaul of an injector or water pump, etc. So don't moan, it will be in your own and everybody's best interest to prevent an occurrence like that in 1902 and also remember that your certificate is like a car's MOT, it may be valid for a period of time but your boiler still needs proper care and maintenance. As a last thought, when was the last time you read a copy of the boiler test code, it might seem boring but it's there for your own guidance and safety.

Bob Polley

A New Venture

What do the letters FMES mean to you? We hope that the FMES is viewed as a "go to" source of information for Club Management Committees and individual ordinary members. The FMES Committee and Specialist Support Groups is comprised of highly experienced model engineers from a whole range of subjects from Club Management to Technical Advice. An important long-term objective is to provide a secure base on which the next generation (and beyond) can build and ensure the continuing survival of the wonderful world of model engineering in whatever form it might take.

Almost inevitably in this age of ever-increasing legislation, much of this work is carried out by the apocryphal men in dark suits. However, we must not forget the practical side, and with this in mind we are announcing a new venture.

One of our Committee Members has as their speciality producing scratch-built models of Railway Wagons in 5-inch gauge, and under the *nom de plume* of The Wagon Man, has produced a series of Articles on their personal perspective on this fascinating branch of the hobby. They have been written for the average modeller, with the development of practical skills in mind, but it is hoped that the more experienced model maker will find something of value.

They will be found in the Library Section of the Federation Website at

https://fmes.org.uk/wagon-project

The intent is that the series will be interactive with the reader, and are seeking your reactions/comments. Please submit these via info@fmes.org.uk

A Senior Committee Member

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Federation of Model Engineering Societies Rally

2025

Hosted by the

Rugby Model Engineering Society

Saturday 6th September 2025

The Rugby Model Engineering Society is pleased to invite you and your members to attend the FMES rally, hosted by the RME, on Saturday, 6th September 2025.
The society has a 2 ½", 3½ & 5-inch gauge raised track approximately 731 meters long and one of the longest ground-level 7¼ inch gauge tracks of roughly 1 mile in length.
A current boiler certificate will be required for any model running steam. Proof of club membership and insurance certificates are required for running models at the rally.

- A locomotive of any type up to $7^1/_4$" gauge
- A limited number of driving trolleys are available.
- Road vehicle of any type up to 4" scale.
- Clocks which will be displayed indoors.
- Static Marine (no pool or pond to run on)
- Static aircraft (no airfield to launch from)
- Any stationary engine, running or static.
- Dioramas, which will be displayed indoors.

ALSO

- Refreshments on the day to include a buffet lunch.
- Car parking is available on-site.
- The Australian Association award will be made at the rally.

If you are intending to come, please email george.cannon@hotmail.co.uk
To assist planning the Rally, Rugby MES will be grateful for the following information: contact tel no. or email, number/names attending, club or home location, gauge of loco if you wish to run one and, not least, an indication if lunch is wanted and for how many – information which will be much appreciated to help our onsite caterers.

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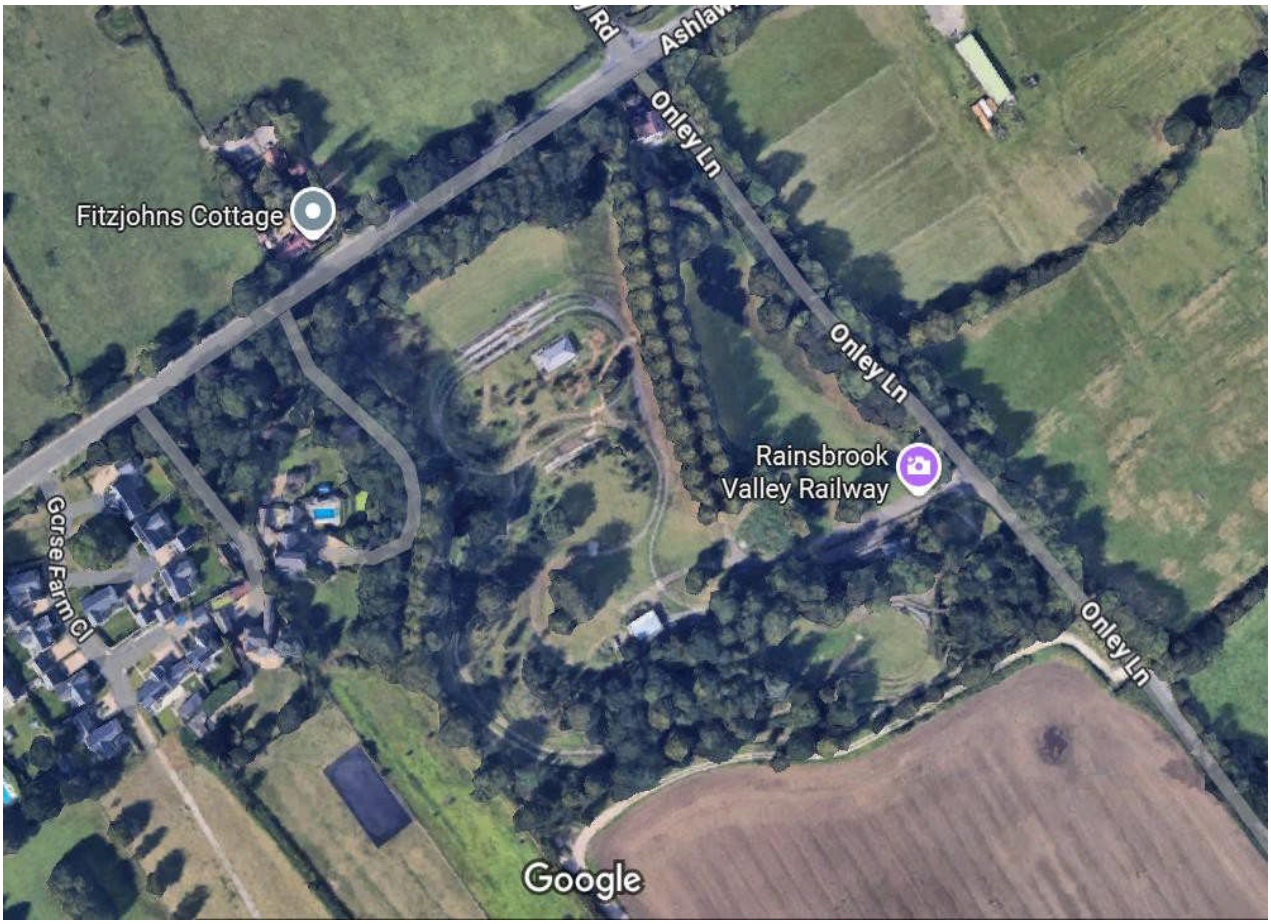
Our address is:

Rugby Model Engineering Society
Onley Lane
Rugby CV22 5QD.

Site entrance can be found using the following What3Words

Wool.chase.agreed

Camping is permitted with pre-booking only by contacting the rally organizers via email at george.cannon@hotmail.co.uk site does not have sewage or waste disposal systems.



We look forward to seeing you in September

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Federation of Model Engineering Societies

Annual Rally

Saturday 6th September 2025

Hosted by the

Rugby Model Engineering Society

This year's Federation rally will be hosted by the Rugby Model Engineering Society at their Rainsbrook Valley Railway site on Saturday, 6th September 2025. If bringing a steam locomotive, please remember to bring a current boiler certificate. Proof of club membership and insurance certificates are required for running models at the rally.

The RMES boasts an impressive 2½, 3½ & 5-inch dual gauge raised track with a running length of approximately 731 metres. A lifting table enables easy unloading of locos directly onto the raised track steaming bays. A traverser allows locos to join the main line from the steaming bays.

There is an even more impressive 7¼ inch gauge ground-level track of approximately 1 Mile. The ground-level track has sidings, passing loops, and station with 3 platforms that are regularly used during busy times. Various gradients up to a maximum of 1 in 85 provide interesting experiences for visiting locomotives.

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To aid the unloading of 7¼ inch locomotives into the ground-level steaming bays, a lift is used; locomotives then move into the steaming bay. Once steamed, locomotives can access the main line using a yard and turntable.

The tracks are one of the longest in the Midlands and come complete with landscaping, an extensive signalling system, and easy unloading and loading of engines to enhance the experience of driving at the RMES. Both track stations are adjacent to a newly built clubhouse with 5-star rated catering facilities where refreshments and lunch will be available. The railways' signalling system adds to the realism of a fully functioning railway on public days, whilst a reduced set provides a high level of intrinsic safety to its visiting drivers and passengers.

It's not all about railways, the RMES encourages the inclusion of traction engines in a variety of scales, static engines, internal combustion, carriages, 3D printing, and steam road vehicles, examples of which are invited to the rally in September.

The annual FMES Rally Competition award will be presented to the owner of any model, be it:-

- a locomotive of any gauge up to 7¼” gauge,
- road vehicles of any type up to 6” scale,
- clocks which will be displayed indoors,
- static marine (no pool or pond to run on)
- static aircraft (no airfield to launch from)
- any type of stationary engine running or static
- dioramas which will be displayed indoors

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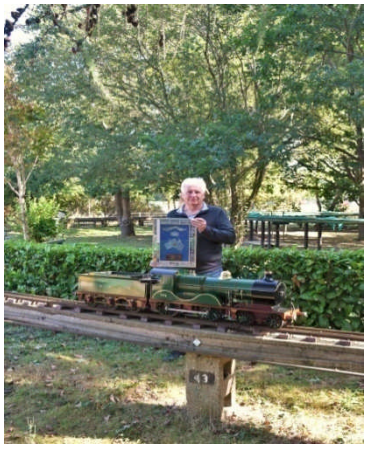
Entries considered will need to have been built or significantly modified by its owner. Such qualifying models will be invited to enter the FMES Autumn Rally Competition which will be judged by a member of the FMES, RMES, and a suitably qualified model engineer. The competition rules and FAQs can be found at the FMES Web Site



Alongside the FMES Rally Competition, there will also be an opportunity for prototypical outline locomotives to be judged in line with the Australian Association of Live Steamers (AALS) rules. Entrants will need to be a working steam locomotive of a Commonwealth prototype in any gauge between 2½ inch and 7¼ inch. The AALS competition rules and FAQ's can be found at https://tinyurl.com/277b7erm

Competition for the AALS Trophy shall be open to all members of Clubs and Societies affiliated to FMES and such members may nominate their locomotive for judging. If deemed appropriate, the Judges may include other locomotives present on the day but not nominated.

The RMES is based at Onley Lane Rugby CV22 5QD. Anyone who visits the RMES for the FMES rally should be able to enjoy the variety of attractions along with the company of like-minded, enthusiastic model engineering hobbyists.

On-site, there is a Club House café that will provide refreshments throughout the day, along with a buffet lunch at midday

Camping is permitted with pre-booking only by contacting the rally organisers via email george.cannon@hotmail.co.uk with the caveat that ALL waste be taken home as the site does not have sewage or waste disposal systems.

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A New Facebook Page

A new Facebook page. No, not the main FMES Facebook page. That remains unchanged so please keep viewing and 'liking' it to promote the page and keep up to date with FMES announcements. The new page is set up as a private group exclusively for the use of members of FMES affiliated societies.

The idea is that members can have a voice within our own community of FMES clubs and their members rather than broadcasting tothe wider world. The content will not be driven by FMES; FMES communications and announcements will continue to be made via the website, email and the newsletter. The content on the private group page will be created by those members wishing to take part and posting. The page is accessible from the main FMES page and is "private" in that the posts are only made by and visible to members who have joined the group.

To be a member of the private group, click on the link in the "Featured" section on the main FMES page and then click the "Join" button on the private page. The only information we require from you is the name of the FMES affiliated society of which you are a member. The request to join will be approved as soon as possible (generally within 24 hours) and you will then be able to post and see other posts.We imagine that it will take some time to build up a useful following, so please join and then look at it and post occasionally to drive growth and value. The following paragraphs are displayed in the "About" section of the private group page and define the principles of the page:

About

This page has been created by FMES as a place where members of affiliated societies can share their experiences, ideas, suggestions and opinions on relevant topics with others in FMES's community of model engineers and their clubs. Posts should be about model engineering in all its facets or related subjects and we look forward to your participation in this less formal environment.Whilst posts on this page will be moderated by FMES administrators, contents will not be validated or be a statement of an official FMES position. Any requests for an official FMES response should use the existing method of sending an email to info@fmes.org.uk

The page is set up as a private page and this allows you to request to join if you are a member of a society affiliated to FMES, the only information we will require is to know of which society you are a member. Any posts you make will be visible to other members of the page but not to Facebook participants in general. Moderation is intended to be light touch but with the usual rules including no abuse, bullying, politics, religion, offensive or illegal content, etc. with any misdemeanours summarily deleted.

The page will not be used for buying or selling activities by individual members. However, if a member society has a particular reason for wishing to advertise a sale, it should initially send a message with details to one of the administrators for consideration.

This is a new initiative we are trying that has been prompted in part by comments received at the last AGM to try to encourage more dialogue between clubs, their members and FMES. We are feeling our way with it so things may develop, or not, in ways that we haven't anticipated. We look forward to seeing your posts.

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The Young Engineers & The 'Ellie' Project

A report by Norman Rogers & Nicola Dellard-Lyle

In 2020 Norman wrote an article about two junior members building Stuart engines in the Ashton workshop with help and guidance from some helpful BSMEE members. It was planned to provide regular updates, but Covid intervened, and that particular project died. However, all is not lost because we now have a new group of junior members so it's time to share something more with you.

As many will know attracting new members is difficult, and attracting junior members is almost impossible. The industrial and leisure landscapes have changed dramatically since most of us were kids and the concept of making anything is getting lost. There have been various attempts within the hobby to try and address the issue but with variable results so how did we attract a new group of junior members?

Part of the story emerges from DerekTaylor and his 'meet and greet'activity in the ticket hallway at the railway where he displayed a locomotive and other artifacts and chatted with people about their interests etc. This resulted in a number of applications for

membership including family groups which in turn lead to a number of new junior members. That then raised a question, or perhaps a dilemma, what can the Society do for them beyond the obvious attraction of the railway? A project was needed, and inspiration came from Alan Bartlett and Derek Taylor … let's build an 'Ellie' steam tram in 16mm scale and not just one … but one each!

Tom is with us from the original project and has been joined by seven junior and three not-so-junior members in the re-launched junior's workshop. Workshop sessions are held every Saturday with the Society providing all materials and workshop support for this. To complement the project the garden railway is being modified to create additional running space.

To aid manufacture Bernard has produced component drawings and both lathes and the mill are fully utilised during each session. Fortunately, two of the machines are DRO fitted so working in metric isn't too difficult for those brought up on imperial, but an agile mind is still required - it seems easier to go wrong in metric!

As might be imagined there was an air of trepidation on the first day. How would it go? Theworkshop environment must have seemed quite intimidating for the

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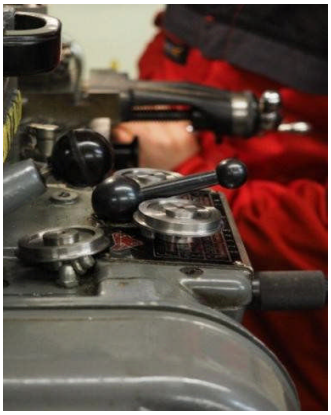
junior members along with the jargon and terminology being spoken. As “seasoned” model engineers we’re comfortable with most of that; we’re also used to making mental calculations as we work, but this is a new world for the junior members so it’s very important to go at their pace, understand what they think of it all, what they talk about afterwards, do the processes made sense? We’ll hear from them shortly.

Construction of the model follows well established practices. The frames were marked out and cut from $^{1}/_{8}$” mild steel plate and held together with corner posts and buffer beams. This exercise provided an immediate introduction to materials, measuring, marking, sawing, turning, milling, filing, drilling, riveting and tapping. The 8BA taps made it without a single breakage and no fingers were lost!

Axles are 4mm silver steel running in bronze bearings and the wheels were a multi-stage process from a billet of mild steel.



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Early February witnessed chassis building almost complete, cranks and coupling rods remaining to be done.The engine unit and gear cutting were being prepared for, and boiler work got under way. Rob Norbury built the pilot boiler in January and by the end of February quite a number were almost complete and ready for inspection by the boiler tester!

So,that's the story so far from a model engineering perspective however there is always another story to be told, as Nicola shares with us now:

As blue, black and red clad figures bustle into the workshop we all see faces awash with curiosity, excitement and maybe a little
trepidation. The start of the'Ellie'project was a brand-new venture for many of those involved. Yet another offering from the Society, this project brings a whole new element of interest forthese young members as they try their hands at engineering in a comprehensive workshop.

Despite this being new ground to explore, it was clear from the start that the project would be a success on so many levels. And how could it not be- there is always an air of warmth whenever we arrive…of course this Winter has frozen us from the ground up, but that hasn't stopped the smiles and laughter(or theflow of tea and coffee!).The welcoming faces and brimming knowledge of the instructors has, week on week, inspired our children to return and to learn. Nothing holds them back, not even the incredibly unique way they are all suddenly able to learn - very hands-on, with clear instruction and plenty of (if not complete) independence now the students' knowledge of the machinery is growing and growing.

There is often a lot of quiet concentration in the workshop, alongside the buzzing and occasional screeching from machines. It is wonderful to see the level of interest and determination from everyone involved, with hours spent in a morning or afternoon dedicated to one seemingly small element of the project build. Only children (and adults alike!) who are loving their work and are comfortable in
their environment are able to put so much dedication into such time frames. It is both a learning process and a sense of deeper settling of
what they truly love. So, as we parents observe the work being done, we are noticing the quiet joy, too.

A milestone for many of the young engineers has been the assembly of their Ellie chassis. Something that is really beginning to look the part and can even by moved along on the Ashton Court Railway model track."I did it!" - words spoken with the utmost pride from
grinning lips, as youngster's hands securely cradle their creations.Tiny pieces of metal crafted afresh from whirring cutting machines, which they are only just (if quickly!) getting to grips with, and all pieced together with such care.

Those landmark days saw numerous wide grins and exclamations of pride – from participants and volunteer instructors – and we know there are many more of those days to come, because this is a long-term project and the children are all here forit.

Parents and Grandparents have all watched in awe at theamazing progress these young engineers are making. It is refreshing to see
The confidence that is growing in many of the children, whilst using techniques and mental skills that are brand new for them. The thing I have continued to notice since the Ellie project began (and overall, since our family became BSMEE members) is the natural way all of the skills being learnt are spreading into other areas of life and being translated across the board – now that is where life learning, hands-on skills and immersive social experiences show their impact … andof course, it helps when the people in question really, really love what they are doing!

As was said earlier this is really about what the Society can do for a group of junior members and their supporting family so what do they think of it so far?

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"I really like the Ellie Project because the skills I'm learning will be really useful for the future. I'm getting experience of reading drawings and using machines, which I find really interesting. Making my own Ellie tram will be a real achievement."

"I really like the Ellie Project because we are making our trams from scratch, which is more interesting than building something from a kit. I enjoy learning how to machine parts - which I've never done before. I also enjoy learning about the metals we are using and how each one feels different to machine."

"I've really enjoyed learning loads of new skills. It's been really fun learning about the tools and machinery. I like that I can have a piece of metal at the start of a session and by the end I can see how it's going to be part of my Ellie tram. I think that's why I really
Enjoyed putting together my chassis.The tutors have been amazing, they explain everything really clearly, they make it interesting and
fun.Thankyou very much."

"It's fun learning how the machines work, like the lathe and milling machine. It's interesting finding out what they do and how to set them up and use them. I like that I've made all the different parts of the engine not just bought something and put it together."

"It's a really fun project and it's been great learning howto use the machinery and getting to know the engineers. It's very satisfying starting to put together the parts that I've made, I have particularly enjoyed making the boiler. I am very excited that I will have my own working steam engine that I have built."
During this project it's been really interesting learning how all the different machines operate and allowing us to create the necessary components to build this little engine.When starting thi sproject I didn't realise how much work was needed to get a loco to the stage of a functioning engine, it's been an amazing opportunity to be involved in this and has given me some experience on tools and machining practices which I'll be using in my future career. The mentors have been amazing helping us and giving up their time to allow the
Younger generation to understand more about the creation of steam locos and the amount of work that everybody puts into them. I'm really grateful for all the opportunities and help that has been given during this project and I can't wait to see the 10+ Ellie's all
togetheron the 16mmrailway.

A parent writes*:*

What a wonderful project. We have loved seeing our son's confidence grow and how proud he Is of his achievements.We feel incredibly lucky to have this opportunity for him to learn all these skills, and to spend time with such experienced engineers. He is so inspired by it all and it has further fuelled his passion for engineering. It's a highlight of the week.

We are so very grateful for the huge commitment given to this project, for Alan for all his work on the logistics and for the tutors who are so committed and patient. They give such a good balance of showing how to do something and then allowing the kids to do it themselves. And it's been very enjoyable for us too to be part of this wonderful community.

And from Alan Bartlett:

As the initiator of this project I am thrilled that it has progressed so well. Everyone involved has been giving positive feedback and I thank all the tutors that have given their time freely.

And from us:

Alan you seem to have got this just right! All photos accredited to the Ellie project members

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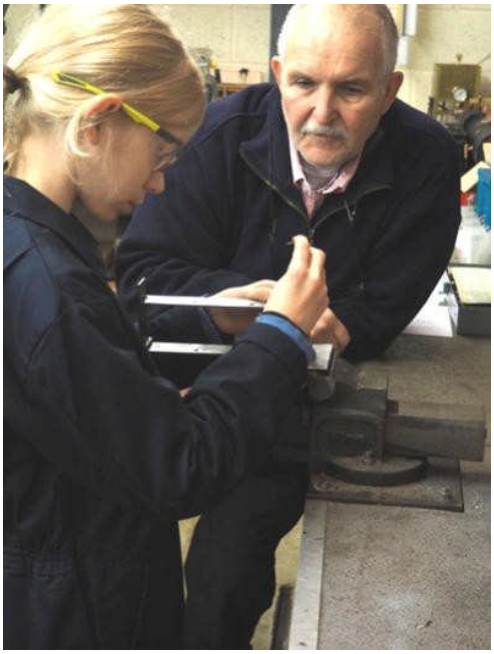

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FEDERATION TROPHY &

POLLY MODEL ENGINEERING PRIZE

2025 competition

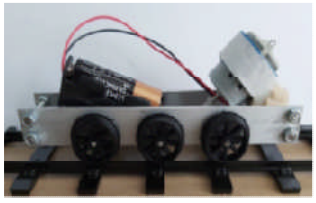
We have, with our co-sponsors, Polly Model Engineering Limited, held this competition for many years and as a result have had the pleasure of judging (a difficult job…) portfolios submitted by the entrants for prizes and a trophy that is presented at our annual AGM. It is getting time to start reminding potential entrants to make an application for this award (and any sponsors of young engineers in clubs) for the 2025 competition. The closing date for this is 31st December 2025 although you can submit entries any time up to this date.

The rules for the competition can be found here on the website along with past winner reports, the entry form, and some useful FAQs to help you decide whether you can enter and what to say in your portfolio. For club officers, there is a printable notice for display if wished. The portfolio is up to you, however it should include a description of what you did and learned, challenges that you overcame and any other information that you think supports the application, including photos. The judges are seeking to reward young people (up to 24 years old) who can demonstrate a practical development of model engineering skills and club engagement, whether as a newcomer or as a more experienced hobbyist.

The submission process is electronic in that all material should be submitted as pdfs (including scanned signatures of support) and sent to info@fmes.org.uk and entitled 'Polly award submission'.

Archie Paul, with one of his engineering examples, winner 24 competition, receiving his prize from Bob Polley of FMES.

Spencer Priddy, with one of his engineering examples, winner 22 competition, receiving his prize from Julia and Matt from Polly Model Engineering Ltd.



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The following article is reproduced with the kind permission of Plymouth Miniature Steam and the author Ian Jefferson

Fitting steel tyres to a locomotive

A few days ago I was asked for some advice on how to fit steel tyres to a locomotive. This had come about because the locomotive in question was clocking up a fair few miles and being a small wheeled design, the wear was quite rapid, to the point where the wheels were becoming double flanged. This was not a surprise to me as Hernia used to suffer this problem, to the extent that the wheels had to be reprofiled every couple of years until we fitted steel tyres. That was almost 20 years ago, since when no attention has been needed and there is little sign of wear. So whilst I was making the wheel sets for Fred, I fitted tyres, from new. I am doing the same with my own projects, to avoid the problems associated wear of cast iron wheels.

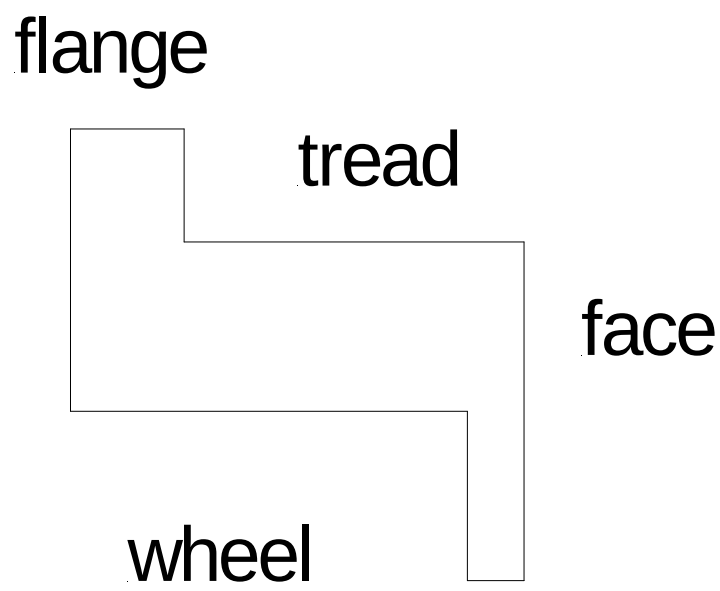
So hopefully these notes will help anyone else contemplating fitting tyres to an existing locomotive, or to the wheels of a new locomotive. I have included some pictures taken whilst preparing the wheels and tyres for Fred, in the hope that they may assist.

The first stage is to look and measure. Either by reference to the drawings or the existing wheels, establish the maximum diameter over the flange and the wheel width. You also need to establish the inner diameter of the tyre, this will occasionally be marked on the drawing, but will usually be identified by the step on the face of the wheel casting or failing that, the inner edge of the rim. You will now have the 3 critical dimensions, needed to obtain the material. But what about tools? Fairly obviously you need a lathe and it must be capable of taking the wheelset between centres, or with care, chuck and centre, having due regard for any crankpins. Ideally you also need micrometers, both internal and external; vernier callipers can be used but great care is needed to ensure you get the dimensions right! If you are fitting tyres from new, then they will be fitted to the wheels before mounting so the need to be able to support the set between centres is no longer relevant.

So to the material. There are essentially 3 options; the first being thick walled tube, but finding the right size and someone prepared to cut some slices from it may not be easy; the second is to get sawn blanks, but these need to be either drilled and bored out, or trepanned out to make them into rings; the third is to get laser or flame cut rings. The size you require will be based upon the dimensions you obtained earlier but you need quite generous machining allowances; with approximately 2mm for each commercially sawn surface (blanks or thick walled tube); for laser cut, again 2 mm, not because of accuracy, but because of heat effects, this being even more significant with flame cut, where at least 3-4mm should be allowed for each surface, and do not forget that even flat plate will need about 2mm to get rid of surface scale and imperfections. A word of warning about thick walled tube, the bore can be appreciably eccentric with the outside, so allow a couple of millimetres for this! As for sources, local to Plymouth, Woodberry Chillcott will do sawn blanks and flame cut rings, Plymouth Metal Centre (Avon Steel) may also be able to do likewise.

So whilst you wait for those lovely bits of steel to arrive, it is back to the drawing board. The section of the tyre you will need to produce, is as in the sketch below. At this stage, the embryonic tyre that will be produced should have an outer diameter that is 1 or 2 mm over the finished tread diameter,

with a distinctly oversize flange. These must be finished to size after fitting as they will change size during fitting. However the critical dimensions to be established, are the seating diameter of the tyre and the wheel rim width. This diameter is rarely given on a drawing, as the assumption is made that tyres will not be fitted, so a compromise situation has to be established. As a guide, I would suggest that the tyre should represent 35% – 45% of the total thickness of the rim and tyre. A thin tyre is unlikely to burst (just have a shorter life), whilst a thin rim could fracture if an impact occurs, but the tyre must be rigid enough not to distort excessively during machining. If the wheels do not have an identifiable rim (eg. disc wheels) then the equivalent diameter will be the inner tyre diameter as identified earlier. The wheel rim width may be indicated on the drawing separately from the total tyre width but may have to be inferred from the castings, the difference between the total tyre width and the rim width being the flange on the face of the tyre, which in 5" gauge (standard gauge stock) will be about 1mm thick or slightly less. You should now have the dimensions for the tyre, being the diameter of the tread, the thickness of the flange (not normally critical at this stage), the total width of the tyre, and the 2 critical ones of the diameter of the wheel seat and the depth of the recess to accept the wheel rim.



The most important thing to remember is that the tyre has to be shrunk on to the wheel such that this fit will hold the tyre on the wheel. So the wheel seat in the tyre must be made smaller than the corresponding diameter of the wheel. The amount of this difference in size (interference fit) should be between 1 and 1½ thousandths of an inch per inch of diameter. Thus if the nominal seat diameter is 4" and the tyre is bored to 4.000" diameter, then the wheel should be 4.004" to 4.006" diameter (I would err towards the larger size). You can see now why micrometers are most desirable! If you prefer to work in millimetres then it is still a matter of multiplying the diameter by 0.0015 to determine the interference.

So to start cutting metal! I would always prepare the tyres first, as it can be easier to machine the wheels to accept the tyres, than reverse. One of the first jobs is to clean up any flame cut edges if this is relevant or to trepan out the centre if you are using sawn blanks. If you have never come across trepanning before, it uses a tool similar to a parting tool with a heavy clearance angle on the left side, driven into the face of the steel blank. Obviously care needs to be taken to ensure the

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clearance angles are adequate, as it will cut a circular groove. Also the process can be carried out from both faces in order to keep the tool (and hence the depth of cut) short. At least you are left with a disc from the centre, which can usually find further use. And so to preparing the actual tyre. There are a number of ways to approach this task, but I would suggest the following sequence, being the one I use.

Start by holding a ring by its inner diameter, leaving the outer face clear of the chuck jaws. Face off the ring, sufficient to get a clean surface, although this is the face of the tyre, it will be finished later. Next reduce the tread portion, leaving it over diameter by 1-2mm and under width by a similar amount leaving the flange appreciably oversize; these will also be finished to size later. This ring can now be removed and the next treated similarly and so on until all are done to this stage. The next stage is to hold each ring in turn by the tread just cut, taking care to ensure it is held securely, but without excessive pressure to create distortion. Start by boring the wheel seat diameter, taking care to get the diameter correct and leaving the flange on the face of the tyre(at the bottom of the bore), over thickness by about 1mm, finish this using a tool with little or no tip radius to keep the corner of the recess square. The remainder of the boring can now be completed, by sizing the inside of tyre face. Finally face off the back of the tyre, such that the depth of the recess is the same as the width of the wheel rim. This completes one tyre, apart from removing all the sharp corners, then it is simply a matter of repeating this for all 4,6,8 or however many tyres are required.

Now that you have completed your tyres, they need to be measured. Measure the bore of each tyre at several points, checking for any abnormal measurements, then take the average and actually write it on the tyre, at least you then know the size of each one! Also record the depth of the recess. Now the required wheel diameters can be established, being the diameter of the tyre bore plus the interference amount, make a list of these as well.

Now it is time to start machining the wheels! Assuming they are on their axles mount the set between centres and verify the concentricity of the journals. If they are not acceptable, or no centres are present, then remedial action will be required before work can start (it is probably worth doing this earlier in the proceedings). If the wheels happen to be new, then this work can be done with them on whatever mandrel you are using. Firstly, reduce the diameter, removing any existing flange and tread, until the desired diameter is reached; keep checking as the diameter gets close. It is probably best to start with the largest target diameter first, so that a slightly heavy final cut need not result in a ‘scrapper’. Next face off the rim, to remove the ’cast’ tyre face, reducing the thickness of the rim to the corresponding tyre recess depth. Make sure you stop this facing a few thou smaller than the inner diameter of the tyre front flange to avoid incorrect appearances, particularly with balance weights. Finally take a chamfer between the diameter and the face, sufficient to ensure that it will clear any radius in the root of the tyre. Mark the wheel with its diameter, to ensure that it can be matched up with its tyre later. Continue until all the wheels have been machined and identified and finally match them up with their respective tyre, which at this stage will not fit!

Now for fitting the tyres! All solids expand when heated; OK, so water has not read the rules! But the amount always seems to be so very small you may wonder how a tyre could ever be fitted by this method. There was a small conundrum that circulated a few years ago, that asked ‘How long is the carpet in Concorde?’ the answer being that it depended upon how fast she was flying, for at full speed, the skin friction heated the airframe such that it grew by almost 1 foot! So back to our case;

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the coefficient of expansion for steel, is quoted as 0.00000633/°F or 0.0000114/°C which means that for every 100°C a 1" piece of steel will expand by approximately 1 thou, remember that a hole will expand at the same rate. Thus to achieve clearance over the interference on our wheels, it should be sufficient to heat the tyres to 200°C, but the clearance would be so slight that we need a bit more, so we need to heat the tyres to 3-400°C to ensure that they will fit!

However a slight deviation before we fit the tyres! Although the shrinkage (hoop stress) is considered more than sufficient to permanently hold the tyre in place, the rolling action can cause fretting and other strange effects at the wheel/tyre interface, so a secondary form of fixing is always applied. There are a number in use in full size practice, but many of these require the use of high pressure rolling facilities so the easiest for us to adopt is riveting. This involves putting a number of rivets through from the face of the tyre flange and the wheel rim to the inside. These being countersunk on the face and rear of the wheel and machined flush when the tyre is being finished. For scale 5" gauge stock, 1/16th diameter (annealed welding wire) at every second or third spoke is quite successful. For disc wheels 6 or 8 will be appropriate and of larger diameter if possible.

So to fit the tyres. Support a tyre face down on 3 firebricks, such that there is clearance inside and below for any crankpins or other obstructions. Have the corresponding wheel close at hand, but away from the hearth area. Heat the tyre gently and evenly until you are sure it is up to temperature. Any hint of redness means you are there. Keep the heat on for a minute or so to ensure that it is at an even temperature. Remove the heat and promptly lower the wheel squarely into the recess; there should be adequate clearance, so at any hint of trouble, lift the wheel (a small hammer can help) and start again. Once the wheel is seated, walk away and get a cup of tea (or whatever you prefer). Leave it all to cool for at least 20 minutes. And repeat for the rest of the wheels.

You should now have your wheels or wheelsets ready for final machining. But first that ring of rivets as secondary securing. This is a relatively simple matter of carefully drilling, countersinking and riveting each wheel in turn. If you are working on new or dismounted wheels, then such rivets need to be cleaned off, before returning the wheel to the backplate for final machining. If the wheels are mounted, then the rivets can be tidied during the machining. As a 'last resort' if there is any doubt about the security of a tyre, then a ring of socket grub screws can be drilled and tapped into the wheel/tyre interface from the rear, securing each with a little 'loctite'.

And so to the final machining; this is a matter of bringing the tyres back to the intended dimensions as specified on the drawings. The only considerations being that you are machining steel and not iron, so chatter is a greater risk; also the diameters must be matched with greater care, as the wear resistance is greater, so a mismatched wheel could cause more problems. Additionally correct (conical) profiling is more relevant, once again due to the greater resistance to wear.

And so for the sake of a few hours work, your wheels should be good for many hundreds of miles. Remember that even now tyre reprofiling is a regular activity on the main line and for certain classes, periodic tyre replacement is still needed, after all the South Devon Railway are doing this with great regularity!

Ian Jefferson

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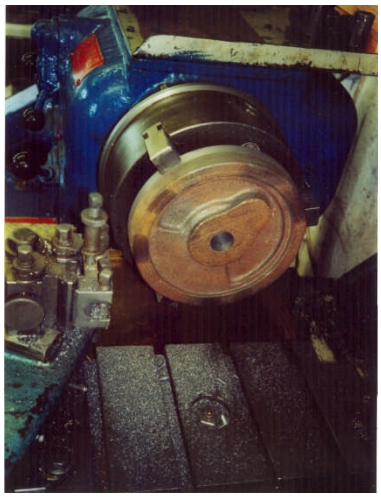
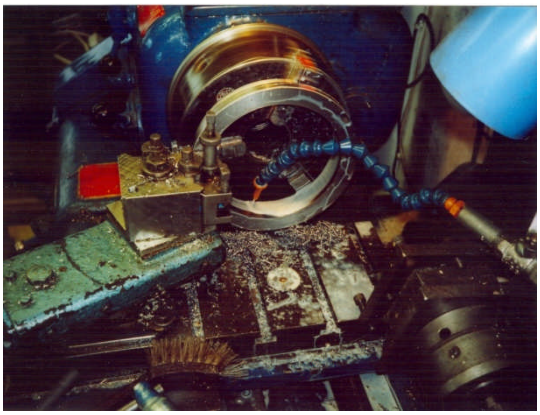


A wheel casting showing the dummy face

Preparing the tread ona flame cut ring. The original surface can be seen on the inside of the ring



Starting to bore a ring

A pair of prepared tyres. One from the front and the other from the rear

Preparing a wheel casting to receive its tyre

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Web page news

Last year we introduced a comprehensive document search facility to FMES website enabling you to find information on specific items in particular those hidden away in the archived newsletters.

This year we have introduced the important concept of a library which brings together all the many, currently 365, documents which now available to all users from within the website's media library.

This major new facility becomes the master repository and index of all documents available to users of the FMES website. It now includes access to Insurance, law, young engineers, health & Safety, exhibitions and pressure vessels documents as well as technical, projects and general interest.

Major topics including Pressure vessels, Health and safety, Young engineers continue to have their own web page but have been updated with links to the relevant documents now held within the library.

The project section of the library is recent significant interesting addition to the library which has seen the addition of two new projects.Restoring Old Rube, a large old narrow gauge US 7.25" gauge locomotive and a series of scratch built wagons, see announcement on page xx of this newsletter in addition to the building of the A1 Peppercorn locomotive in 26 parts.

We are keen to continue to expand the library so if you have articles or projects that we can add then please contact us.

Jim Hollom

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The Federation Boiler Registrar

Copies of Written Scheme of Examination for the Boiler Registrar

I've had a few enquiries on the return of the pink slips for our records.

As most things are sent electronically these days, so I am happy to accept a copy of the Written Scheme of Examination by email or messenger. Please scan or take a picture of the **white** copy, as the pink slips are almost impossible to read from a picture

You can still send them by post if you prefer, I am happy with either method. However you send them to me, please make sure that the certificate is filled out correctly and all fields are populated.

Copies without Boiler Number, Owner, Model, Scale, Club Affiliation Number or Date cannot be registered and will be returned.

Thank you

Colin Walton

Missing Certificate set

We have a report from a member that a blank certificate set has gone missing from their pad.

Please watch out for certificate number C210459 as it might be used to support the sale of a model with an untested boiler.

Please be aware when purchasing a model or when a 'new' pressure vessel is introduced to your club.

Supplies of certificate pads etc.can be ordered using the SHOP page on the website:
https://fmes.org.uk/shop-2/

and the order will go direct to Colin, or you can contact him by email using colin.walton@fmes.org.uk or by phone on 07745 687159

His address for sending WSE forms is:

12 Lytham Road
Midandbury
Southampton
SO18 2BP

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Updates and changes at Companies House

Identity verification

Companies House has recently announced two changes that will impact on clubs/societies registered there.

The first is identity verification requiring All company directors and people with significant control (PSCs) to verify their identity to prove who they are.

This is a new legal requirement under the Economic Crime and Corporate Transparency Act 2023 to help prevent people using companies for illegal purposes.

The role out of identity verification is as follows;

8 April 2025: the new identity verification requirements come into effect on a voluntary basis.

Autumn 2025: mandatory identity verification for all company directors and People with Significant Control (PSCs) on incorporation and appointment.

12-month transition period: existing directors and PSCs will have a year to comply with the new requirements and so will be required to have completed identity verification by **Autumn 2026**.

For individuals with bio-metric documentation such a passport or photo driving licence, and an up-to-date Android or I Phone, the procedure is straight forward, taking about 20 minutes, and there is no charge

- If you're using an iPhone, it must be running iOS 14 or higher and be either:
- an iPhone 6s or newer if your photo ID is a UK driving licence
- an iPhone 7 or newer if you're using any other type of photo ID
- For an Android phone (for example, Samsung or Google Pixel), it must be running Android 10 or higher.

Individuals will also need to create a GOV.UK One Login if they do not already have one.

If you cannot verify online and you live in the UK, you may be able to verify your identity in person at a Post Office. You'll need to use the 'Verify your identity for Companies House' service first to find out if you can verify this way. This route uses GOV.UK One Login to verify your identity and is free of charge.

A third route is to ask an Authorised Corporate Service Provider (ACSP) to verify your identity on your behalf. For example, an accountant or solicitor. This is also known as a Companies House authorised agent.

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You can do this from any country, but your agent must register with Companies House in order to become authorised. They must be registered with a UK Anti-Money Laundering (AML) supervisory body.

When an agent has agreed to verify your identity, you will need to provide documents from an approved list as evidence of your identity. They may charge a fee for their services.

Filing of Accounts

From 1 April 2027, all companies will need to file their annual accounts using commercial software.

Companies House will be closing web and paper-based systems for account filings on that date.

Whether you file accounts yourself or through an accountant or agent, you'll need to use software from that point forward.

From 1 April 2027:

- accounts must be filed digitally using software – web and paper filing options for accounts will no longer be available from this date
- profit and loss accounts will be required for small and micro-entity companies
- other changes are planned, including updates to audit exemptions and accounting reference periods – we'll share more information about these in the coming months

Companies House helpfully point out that

If you do not want to buy commercial software, you can hire a professional (such as an accountant) to file on your behalf. A professional can help you file and stay compliant - but you're still legally responsible for your company's accounts, records and performance.

And that…….

Companies House does not endorse or recommend particular products. Contact providers directly for support or guidance.

Initial reports from FMES members are that many of the software packages listed by Companies House are not appropriate for micro-entity companies.

To date, I have no recommendation of a particular software package for clubs/societies to use.

Collating the experiences of members working their way through this challenge will be helpful to those who must file later in 2026.

I would be pleased to receive comments and suggestions from experiences with any of the software packages listed by Companies House so that guidance can be passed on to others

Please send your notes on experiences with the software packages to peter.squire@fmes.org.uk

Peter Squire

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Martyn's Law

You may not have heard of Martyn's Law. Unlike some frivolous 'laws' that engineers know only too well (for example, those due to Murphy and Sod), this law is only too real and is named after a young man named Martyn Hett who was killed in the Manchester Arena bombing in May, 2017. His mother is credited with driving forwards a new Act of Parliament to oblige those responsible for certain events and premises to consider how they would react in the event of a terrorist attack.

The new legislation is fully entitled 'The Terrorism (Protection of Premises) Act 2025' and came into force on the 3rd April 2025. It is commonly known as 'Martyn's Law'. There is a fact sheet available for this at https://homeofficemedia.blog.gov.uk/2025/04/03/martyns-law-factsheet/.

Clubs already have a burden to manage their response to other legislation, much of which is familiar, and another is unlikely to be welcomed in our essentially amateur environment BUT it is a part of the moves made in our country and society to remind and guide those responsible for the management and operation of all events and activities likely to attract numbers of people with the attendant risk of some individuals or groups seeing an 'opportunity' for their cause.This article is to raise awareness and provide some information for club managers for research and to decide their actions.

The first aspect is to state that although the Act is now law, there is a TWO YEAR preparation period (ie until at least April 2027) for responsible people and organisations to understand their obligations and prepare their response. This is also the time being allowed to establish a new regulatory function to implement the requirements. This will be within the 'Security Industry Authority', an existing body described here https://www.gov.uk/government/organisations/security-industry-authority.

The fact sheet lays out the intentions and scope of the Act, and we recommend that clubs should become familiar with this and subsequent announcements as clarity develops. Here are some apparently important aspects that may be of interest to clubs, summarised from the fact sheet linked to above (but are no substitute for reading the full information available):

- The Act requires…… that those responsible for certain premises and events consider how they would respond to a terrorist attack. In addition to this, at certain larger premises and events, appropriate steps to reduce vulnerability to terrorist attacks must also be considered.
- The Act establishes a tiered approach, linked to the number of individuals it is reasonable to expect may be present at the same time at premises and events.
- The tiers are based on the number of people expected to be present at an event or in and around a premises. If 200 (to 799) people are expected at an event with, at least, asingle building, then this falls into the Act requirements as 'standard duty'. 'Enhanced duty' applies to events with 800 or more people that may NOT be in any building(s), and that has some sort of controlled access (eg tickets or other means) by the public ('200' and '800' means a total number of people, public, staff or otherwise). Less than 200 people at an event or in a premises appear to be outside the requirements of the Act.

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- There are some exceptions to the above including events etc. that already meet other legislative requirements to deal with this risk, some public transport and freely accessible spaces or premises that are not controlled (eg a public park without restriction to access)
- The 'responsible person' is the person responsible and in control of the event for the event specifically. The following example is cited: *For example, if a concert is to be held in a park and the company putting on the event takes control of an area of the park for the purposes of that concert, the company putting on the event will be the responsible person.*(FMES comment: this may be equivalent to a club in a park allowing controlled access to an event such as a public open day).

- 'Standard duty' requires that the responsible person will be required to:

  - *notify the Security Industry Authority (SIA) of their premises; and*
  - *have in place, so far as reasonably practicable, appropriate public protection procedures.*

  'Appropriate public protection procedures' seems here to include mainly what procedures are in place should an incident occur and are focused on safety of attendeesduring and after an incident.
- 'Enhanced duty' requires that the responsible person will additionally be required to have procedures and processes to reduce the risk of an incident happening in the first place.

FMES comment and recommendations:

The above is an awareness raising guide only and no club should act exclusively on the information presented above. It would appear that some events and premises operated by some clubs *could* fall within the parameters above (for example, track open days with many visitors, club managed exhibitions etc.) and so each club should conduct research using the information available from Government sources to understand their responsibilities under this Act, and, in view of the developing clarity of the Act, maintain a watch on the requirements.

At this stage (May 2025), there appears to be a limited amount of further information, most high-ranking search results seem to be about raising awareness using similar information to that above and in the links. It is likely that more examples may be developed to assist clubs will become available as time wears on.

FMES recommends that responsible club officers familiarize themselves with the essentials as indicated above and maintain a watching brief over the forthcoming years to understand what may apply to their specific situation.

Clubs that lease facilities (a track in a public park for example) should consider any requirements being considered by their landowners or council. Some councils are embracing Martyn's Law in their on-line advice, however it seems limited at present to directing people to one or other of the links below.

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If a club with a facility in a public park controls entry to less than 200 people and is therefore apparently under the minimum standard size attendance BUT has a queue formed of people waiting for entry outside the club facility (for example in a park) that make the total over 200, then this will presumably exceed the minimum standard and place a responsibility on *someone*, whether the club or the landowner or both.

As with other applicable legislation, Clubs are responsible for implementing any necessary actions that they deem appropriate to respond to legislative requirements: FMES are unable to provide specific guidance.

Useful links:

Martyn's law fact sheet:

https://homeofficemedia.blog.gov.uk/2025/04/03/martyns-law-factsheet/

Security Industry Authority (SIA):

https://www.gov.uk/government/organisations/security-industry-authority

ProtectUK information (ProtectUK is a platform that provides freely available counter terrorism and protective security advice. It supports business, government and community organisations in the public and private sectors who are responsible for venues and public spaces):

https://www.protectuk.police.uk/martyns-law/martyns-law-overview-and-what-you-need-know

FMES May 2025

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SAFEGUARDING

We presented our plans in the last newsletter regarding our work towards supporting clubs and the topic of 'Safeguarding'. As mentioned before (and doubtlessly not news anyway to our member clubs), this is a difficult subject – however we are making progress and have pressed on with a lot of work with our partnered professional. After a long and instructive meeting (a 'real meeting', held in Reading), we were able to 'sign off' a lot of work carried out by Peter Kenington (principal author for FMES) as appropriate and correct. We also identified a need to develop more of a standardised definition of what 'Safeguarding' is in 'our' context, and this needs some more introductory additions that we are working up now for confirmation. It is fair to say that we, at the meeting, recognised a slightly different driver to this legislation than it being 'simply another law to follow' and we will be keen to try to explain this in due course.

We know enough now to make a few comments to set expectations appropriately:

- The information that we are producing is long and detailed but has been put together to make clear what the requirements are in principle and why they are needed. It will probably be issued in stages for easier consumption (to be confirmed).
- It will NOT be(and never will be) a 'tick box'form or process: there is no way to deal with this other than to understand the legislation and demonstrate appropriate understanding and responsibility for each specific circumstance. In this respect it will probably be somewhat akin to Health and Safety requirements: HSG2020 (see this on the website at https://fmes.org.uk/Health-and-safety-library/) here requires each club to carry out risk assessments, so whilst the *process* can be a standardised one (and in the case of safeguarding, this may be where we eventually get to), the *specificdetails* need to be the club's own.
- We seek to 'demystify' the requirement (that is not just about 'young people' but *all* 'vulnerable' people) for safeguarding and, eventually and if the demand is there from member clubs, to be able to provide suitable information to guide decisions.

If you have any comments for our interest now, please let us know at info@fmes.org.uk, however we will be actively seeking these later when we have publicised the first response.

Paul Naylor/Peter Kenington

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FMES Committee

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Vice President	Mike Chrisp
Vice President	Ivan Hurst
Chairman	Bob Polley
Secretary	Peter Squire
Treasurer	TBA
Vice Chairman	Paul Naylor
Safety Officer	Robert Walker

Management Team: Peter Harrison, Jim Hollom, Peter Kenington, Tony Lee, Melvyn O'Connell, Colin Walton

INSURANCE CLAIMS AND INCIDENTS

All claims and reports of incidents should be notified in the first instance to Walker Midgley FEDERATION INSURANCE BUSINESS Managed by Walker Midgley Insurance Ltd

It will be useful if Clubs also advise FMES when an incident has been reported. (Information held in confidence – internal use only)

info@fmes.org.uk

Publications Available from FMES

The FMES publications listed below are available from our stand at rallies and exhibitions or by post. Please make contact first by email, initially to info@fmes.org.uk or use the 'shop' option on the website. The figures below are for single items and do not include postage. We will minimise postage costs for multiple items. Please make cheques payable to 'Federation MES' or use BACS to Sort Code 20-71-82 Acct 43755967.

Examination & Testing of Miniature Steam Boilers BTC 2018 - Orange Book Free
Vol 1: 3 bar litres to 1100 bar litres; Vol 2: under 3 bar litres; Vol 3: LPG tanks under 250 ml.

Boiler Test Certificates - Pad of 50	FREE*
Written Scheme of Examination - Pad of 50	FREE*
Small Boiler Test Certificate - Pad of 50	FREE*
Boiler History Record Card - Pack of 10	£3.50
Plastic wallets to hold certificates size A5	£0.75
HS 2020 Passenger-carrying min railways 'Guidance' post included	£4.00

Colin Walton Tel:+ 07745 687159 Email: colin.walton@fmes.org.uk

* 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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