



NEWSLETTER

February 2025

Editorial

The New Year and after has seen a succession of bad weather events and I hope that Clubs and Clubs' members have not been too badly impacted.

January also saw the sad passing of FMES Finance Director, David Goyder who will have been well known to many of you. There follows a reflection by Bob Polley of David's contribution to the Federation.

The AGM takes place on Saturday 1st March and this year the venue is The Whitewebbs Museum of Transport at Enfield. The Museum is a short distance from the M25 but does just fall within the London ULEZ zone which you need to be aware of. Details follow.

The last Newsletter included a request to Clubs for feedback on insurance and young engineers. It is reported in this Newsletter that response so far has been disappointing and perhaps an opportunity missed. Input from any Club who now feels moved to contribute will of course be welcomed

The technical library continues to develop with the hard work put in by Jim Hollom in particular. I know Jim will be very pleased to hear from any Club who is willing to give access to their own archive of club articles.

Also included is the announcement of the Sweet Pea Rally to be held at Guildford and a brief background resumé of Colin Walton who will be taking over the duties of Boiler Registrar.

Tony Lee

Chairman's Chat



How does one remember someone who gave of his time for over 10 years in serving our hobby as a director of the FMES and even longer his local club. I refer of course to David Goyder who we lost earlier in January, we will all have our memories and they will all be different. David was born in 1941, he served for a period in the Canadian navy before his career in business in Canada, the USA and the UK. It was this business experience that he brought to the FMES in 2014, taking on the role of news letter editor. Ill health saw him step back from this role in

late 2018, but 2020 saw him "back in harness" when he took over the position of FMES treasurer, a role he was still carrying out when he passed. I am sure you will join me in remembering David, his service to our hobby and in sending condolences to his wife Janie, his family and his many friends.



I must apologise if my following words seem premature but the loss of David means the FMES needs to fill the role of treasurer. David had intended to "retire" from this role in the fullness of time when his replacement had been found but now the FMES needs to fill this role sooner rather than later. With the aid of modern software accounting systems the role is not as onerous as it once was, so how about it, could you serve our hobby and take on the role of treasurer? Get in touch for a chat if you feel you could put something back into the hobby that I'm sure will have given you pleasure over the years.

Don't forget that the Fed's AGM is on March 1st, if at all possible attend as this is your chance to meet folk from other clubs, to have your say on matters pertaining to the running of the Fed and learn what the Fed has done and intends to do in the furtherance of our hobby. If that is not enough enticement then don't forget you can have a look around the host museum and partake of a buffet lunch. Hopefully see you there.

Bob Polley



NOTICE OF ANNUAL GENERAL MEETING

The Annual General Meeting of the Federation of Model Engineering Societies will be held on Saturday 1st March 2025 at the Whitewebbs Museum of Transport, Whitewebbs Road, Enfield, EN2 9HW.

This is an important event in the FMES calendar, and we ask that members of the Federation give consideration to sending delegates to represent them at the meeting.

The Federation Trophy and Polly Model Engineering awards for young engineers will be presented at 12.00 pm prior to the AGM.

A buffet lunch will be available to delegates at 12.30 pm, followed by a workshop session on risk assessments, and the formal business of the AGM will commence at 2.00 pm.

The museum will be open from 10.00 am, with free entry for delegates to explore the displays, galleries and buildings. The AGM will be held in the café area on the first floor of the old pump building. A lift is available to the first floor.

Information about the venue can be found at <https://www.whitewebbsmuseum.co.uk/>

All documents relating to the AGM are available in the Reports and Newsletters section of the website www.fmes.org.uk under the heading 'Documents for the 2025 Annual General Meeting'. Access to this section requires logging in to the members area of the website, however direct access to the documents without logging in to the members area is available using this link

<https://fmes.org.uk/project/documents-for-2025-annual-general-meeting/>

Please confirm the name of your delegate(s) attending or register apologies for absence, preferably not less than 10 days prior to the meeting to peter.squire@fmes.org.uk

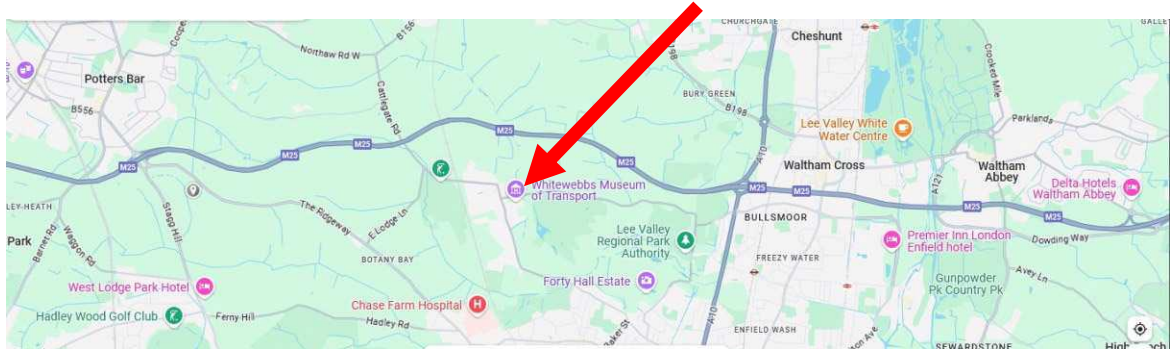
I look forward to welcoming all delegates to the meeting.

Peter Squire

Honorary Secretary FMES



The Whitewebbs Museum is just inside the M25 north of London, between junctions 24 and 25 and can be found following the post code at EN2 9HW.

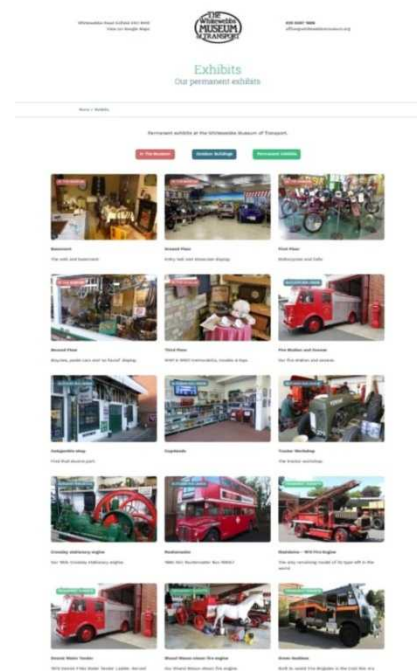


Please note that the venue is INSIDE the London ULEZ zone and cars failing to meet the emissions requirements will need to pay £12.50 per day or face a £90 fine (if paid within 14 days otherwise doubled). To check if your vehicle meets the ULEZ emission standard, use the TfL website link to find out:

<https://tfl.gov.uk/modes/driving/check-your-vehicle/?intcmp=52335>

The Whitewebbs Museum of Transport has a wide range of transport related items and vehicles. The exhibits are arranged on five floors in the main building and outside where there are a number of larger vehicles.

Delegates attending the AGM will be free to explore the exhibits – the Museum is open from 10am prior to the award of the FMES & Polly Engineering Award presentation at 12 noon, followed by lunch, workshop and AGM business.



FMES Boiler Registrar

After many years as the boiler registrar for FMES, David Mayall has decided that it's time to pass on that responsibility to someone else. Therefore with effect from the AGM, Colin Walton will take over as the FMES Boiler Registrar. I expect more will be said at the AGM but as an initial introduction, Colin has provided the following resumé.

Just A little info on myself.

I'm A Mechanical Engineer City and Guilds 1 & 2 Late 70s to early 80s, a long time ago. Spent most of my time in the Garage trade, now I restore and modify Classic Vehicles. Yes I'm still working, opened my own business over 20 years ago, still going strong, but I've gone down to part time only 4 days a week.

I've never advertised it, it's always been word of mouth

I've always been interested in steam, but life and other commitments have got in the way. Around 5 years ago I got offered a model to add to my collection, a live steam engine. Once I started rebuilding it I was hooked and joined a local club for help - [Southampton Society of Model Engineers]. So now my home workshop has been converted into a model machine shop with quite a few steam related models in various states of repair.

I expect there's a lot more I could say, but writing about myself isn't easy. Also as you can see I'm not a writer!!

Sweet Pea Rally 2025 – June 14th and 15th

Guildford Model Engineering Society

GUILDFORD MODEL
ENGINEERING SOCIETY

32ND SWEET PEA RALLY

Saturday 14th & Sunday 15th June 2025



5" and 3½" raised track & 5" and 7¼" ground level track.

For further information please email
sweetpea2025@gmes.org.uk

Guildford Model Engineering Society,
Stoke Park, Guildford, Surrey, GU1 1TU

www.gmes.org.uk



The Sweet Pea Rally is an annual event for owners of Sweet Pea locomotives and its variants – Sweet Violet, Sweet William, and Metre Maid. The Rally has been held up and down the country for over 30 years, such is the popularity of these locomotives. In 2025 it will be hosted by the Guildford Model Engineering Society at its site in Stoke Park, Guildford, Surrey, over the weekend of Saturday 14th and Sunday 15th June.

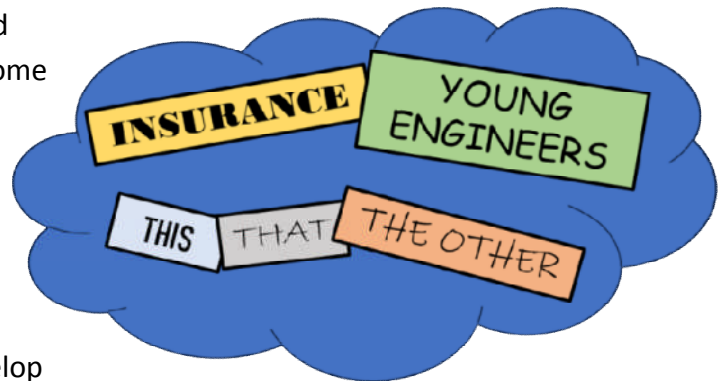
The Sweet Pea Rally will be run on the Society's dual gauged 3½" / 5" raised track which is 1405ft long, where curves are typically 60ft to 70ft in radius with a short length of 50ft radius, and the dual gauged 5" / 7¼" ground level which is about 990ft long with a minimum radius of 68ft. The raised track incorporates anti-tip rails.

For further information and an entry form, please contact GMES via sweetpea2025@gmes.org.uk

Insurance update...with a sting in the tail

You may remember from last year's AGM workshop report and subsequent requests (including via the newsletter) that we asked clubs to send us their thoughts on changes to the insurance policy that they would like to see. The purpose of this was to establish if there was any change that was fairly common and worth Walker Midgley developing maybe some more options or other changes.

The long and short is that we have had THREE responses to these requests from over 220 clubs. Whilst these three all had sensible comments, this is not sufficient representation for us to spend time to develop proposals and then to ask Walker Midgley to go into bat to try to get these implemented. Whilst the cost of insurance is always an issue (and two of the three comments reflected on this), this also reflects the world we live in and affects *all* insurance as most of you will know.



This is not a unique phenomenon: we do ask for clubs to respond to occasional requests and we seldom get any significant response to guide us. The request in the last newsletter for Young Engineer feedback and interest in some clubs joining a 'YE group' has also received very little response, and we need to return to this in the future if we are going to push more Young Engineer support.

We know that emails generally get through to the intended recipient's email system – the 'primary contact' (assuming of course that the club has updated us with any changes they require to this contact) but that is where we lose track. The only way we can contact clubs is through the contacts we hold, through this newsletter and through articles and news on the website, on Facebook and at events, especially the AGM. There is a current opportunity to come and be represented at this year's AGM (with a workshop). Usually, the only way we know if anything at all gets through to clubs and members is the small sample that we see as a result of membership of our own clubs and this is disheartening.

The upshot of this is that we think there is a missed opportunity for clubs to have their say on matters that affect them, or to help us design support for important factors in running their clubs, but we are a little non-plussed how to further this one. It may be that you are missing notices or even seeing the newsletter. If you think you are missing things, please do get in touch to check contact details and also check your spam filters and folders. If you still seem unable to contact us by email, then use the 'contact us' form on the website.

Paul Naylor

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Using up stock to make a locomotive

Potential projects are like buses, when you want one, they are hard to find (or choose) but when you are busy with other things, they come along in droves. I know how people end up with a 'stock' or unfinished (or un-started) projects: because something interesting goes past the door at a price that is 'unrefusable'.

I was nearly through my 5" gauge mogul project (see below) when, looking for something different to do after, I bought a Honda CD175 motorbike of 1978 vintage in need of TLC. Why? Well, I had one when I was a teenager and it is supposed to be the memory that strikes the chord. This one is all there and a good change for me from steam...it is just waiting now for the time and therefore it's story that will have to be later. The reason is a 40 year old mammoth (to me) 7.25" gauge 2-8-0 that I had been given, with a sort of hope that I would recondition it in commemoration of its builder. This is another story though, but is an 'unrefuseable project' to add to the list. So I put a spurt on to finish the mogul.



The mogul (a 2-6-0 wheel arrangement) is for 5" gauge and is actually a Heinz loco. That alone gave problems later when choosing a name (see below). I always remember John Cross (a fellow club member) saying once to me it's your loco so paint it whatever colour you like', and so I extended this principle to the whole thing.

In 1920, the Great Northern Railway were asked by The Caledonian Railway to provide a mogul design loco for their hilly passenger work. The result was a loco based on a K3 (then called H4) but with some Gaelic modifications and a Caledonian Railway livery... yes, well, this is a story that contains virtually no defence whatsoever for what I did, it just sounds more plausible than my real reasons.

Rather more prosaically, my reasons for selecting this as a design were broad and practical:

- Round top boiler because I did not want to make a wide firebox/Belpaire type thing.
- Britannia style cylinders because I had a pair 'in stock' that came from a box of bits I was given ages ago, partially machined.
- Slightly smaller driving wheels than a K3, and six coupled, because I had some good quality castings from a box of clearance castings from 'Old Reeves', also ages ago, and the stroke matched the Britannia cylinders.
- A mogul because I also had two spoked bogie wheel castings from a long-forgotten source.
- An A3 size smokebox because I had an A3 saddle casting left over from my A4 build.

Casting (pardon the pun) around for a suitable design as a basis, the K3, but with two not three cylinders, seemed nice looking and suitable to be appropriated.

Other factors included that I liked the Caledonian livery and potentially 'highland style' names and I had suitable materials in stock (like frame material and buffer beams, stretchers etc) to use up.



I had some 3mm copper plate and 14mm OD firetubes left after my US engine boiler build and only had to buy a shell 'pipe' and several tons of silver solder to make the boiler, which is of a standard construction following published guidelines, although I did do some strength calculations to support the design.

The boiler got through its initial shell test OK thanks to our club boiler test colleagues in 2024.

I believe in making the machined bits first as these are a less expensive commitment, and if the resulting chassis works fine 'on air', then this gives me the confidence to do the costly and copper bit.

The model is a '10 foot' model: it looks OK and 'normal' from 10 feet. Closer, and you see the over scale metric nuts and bolts (some Allen head), and some simplified arrangements between the frames. The latter include a bogie with a centrally sprung axle and bogie frames that can swivel, ball and socket connections to fasten it to the chassis, a single rotating sprung four-way valve for drain



cocks (probably this will be the Achilles heel...), driving wheel springs between the top of the horn blocks and the axle boxes – with adjusters) and a hand feed pump made from a solid block of nylon with bronze/brass bushes. Thinking it needed weight (I needn't have worried), I made the frame stretchers from 12mm thick 'planks' of steel. I could not face buying an acre of 16-gauge brass for the tender body, so this is 16-gauge steel but with an internal tank for the water made from 5mm thick PVC sheet glued and screwed together. The paint sticks better as well....

The design of the Walchaerts valve gear was interesting and my calculations perforce ended up with non-horizontal anchor links as a result of the constraints provided by the other parameters. This may affect the movement slightly, but it still seemed to work fine (on air).



A recent push to get it finished, including a display track, means that I now have a nice ornament (I think), that will please no perfectionists and one day I might get it out for its steam trials...I did take the time to do all of the plumbing and fittings including vacuum brakes.

I started in 2015 with an LNER loco K3 loco profile drawing and finished late 2024, although there were many idle months (as far as it was concerned) in this time. I now have access to all of my workbench for the first time in 9 years, shortly to be clogged up – probably - with Old Rube bits. Thank goodness I painted it as I went along!

Oh yes, the name: well, I can hardly call it an established loco name, so I scoured Highland folklore for a suitable name. I settled on 'Brollachan', which, apparently (in Gaelic) means 'shape shifter of the night' which I thought apt (and better than '57 varieties').

Paul Naylor



Volunteer with REMAP!

Firstly, a big thank you to the Federation for giving us this opportunity to get in touch.

If you haven't heard of us, REMAP is the UK's only charity providing custom-made equipment, free of charge, for disabled people.

Our engineers and makers use their skills in metalwork, woodwork, plastic, and electronics to create innovative solutions, ensuring disabled people can live more independent lives.

In fact, every year our volunteers help an average of 3,000 people experiencing disability. If you'd like to take a look at some of our projects, they're on our website here: <https://remap.org.uk/solutions/>

We're always looking for new people in branches across the country, particularly engineers and makers, and we have some excellent volunteers already with a background in model engineering.

If you have some spare time and would like to use your skills and experience to make a real difference, please take a look at our website and consider applying at: <https://remap.org.uk/get-involved/volunteer/>

In the meantime if you have any questions or would like more information please do get in touch with me at volunteer@remap.org.uk

John Tipper

Volunteer Recruitment Officer

Library News

FMES on-line technical library



Now contains over 240 articles

Since the last newsletter the content of the FMES technical library on the FMES web site has increased significantly. It now contains over 240 articles ranging from construction, models, workshop hints and tips to articles of general interest. We have added a new section specifically for projects, The first one is the construction, in 24 parts of an A1 Peppercorn in 5" gauge by a member of the Worthing SMES.

The 'knowledge base' that we are developing allows anyone interested to see what others have done or been interested in: every model engineer has stories and 'wrinkles' to recount and this library will allow you to share these so, please put pen to paper, or dust off older things. We are also interested in stories about how you got involved in model engineering, or the value the hobby has to your career to encourage others.

Jim Hollom

An example of content held in the technical library follows:

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Measuring axle weight on locomotives

This document was written by Mike Wheelwright and was originally published by Worthing and District SME in their newsletter in the Autumn of 2014.

Some while ago I discussed the effect of springs on weight distribution in locomotives, both large (4' 8½") and small. Calculation shows that the position of the centre of gravity is the dominant factor in the distribution of weight among axles and the adjustment of springs (pre-tension) is used to set the frame horizontal while altering spring stiffness only results in a minor transfer of load from one wheelset to another. Doubling Thomas should have a look at the development of the LMS Class 8F that carries a 3C boiler rather than the longer 3B used on the Class 5P5F: at first sight it would seem to be sensible to use the same boiler, but the design of the freight engine came out "backside" heavy so the barrel was shortened by 12" and the boiler moved forward to get an even weight distribution.

Now let's have a look at the practicalities of sorting out the weight on a 5"G engine using my Midland Compound as an example, it is a particularly challenging example because model 4-4-0s are notorious for being front heavy, thereby losing valuable adhesion weight, and in this prototype the extra front end weight of the third cylinder is obviously going to make things worse. The solution is to put in ballast as far back as possible while keeping an eye on weight as the construction progresses. I made a first estimate of finished weight and position of the centre of gravity (c-o-g) when I was at the stage of wheeled frames with cylinders, by weighing what I had already made and estimating the weight and c-o-g of boiler, motion, smokebox and platemwork.

At that point I had not yet designed the boiler, so as a guide I calculated the weight of the one in Martin Evans's "Ivo Peters" S&D 2-8-0 that in full size carried the same boiler as the Compound. In the end the actual boiler turned out at 32 lb with c-o-g 1" ahead of the throatplate, just 4lb less than estimated, so the calculation was not too far out. The engine looked like finishing up at 108 lb with c-o-g located 5/16" ahead of the driving axle which would have given me an even loading between coupled axles and bogie: say 36 lb each. An adhesive weight of 72lb looked a bit light so I hammered 10 lb of lead sheet into the dragbox at the back and worked another 6 lb into the rear splasher boxes over the trailing axle. Then I weighed the engine minus the platemwork and cab (yet to be made): 117lb, c-o-g lying 1/2" behind the driving axle, all told, about 7lb less than my estimate with extra ballast but it looked promising.



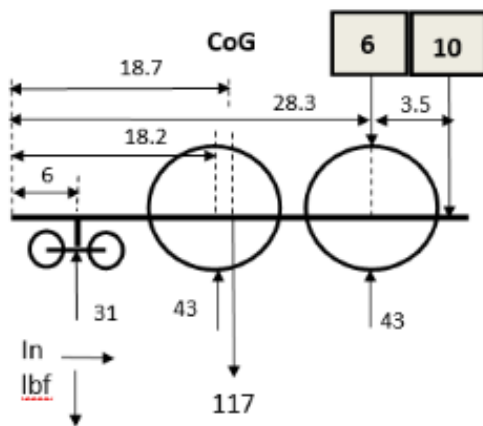
How was the weighing done? If you witnessed the faffing around at IMLEC a few years ago with bits of movable rail and bathroom scales that produced figures showing enormous differences between axles of equalised bogies, you will be surprised at how easily and accurately it can be done by other means. First, I determined the total weight of the engine and the location of its c-o-g, very simply by putting a wooden block under each beam in turn and holding up the other beam while standing on scales. Obviously, the weight at each end is what is shown on the scales minus my weight, and the total weight is found by adding both ends together. The position of the c-o-g along the frames is logically nearer to the heavy end and in inverse proportion to the weights, e.g. if the front were, say, 60 lb and back 40 lb the c-o-g would lie at 4/10 of the distance from the front

to the back. Then I measured the individual axle loads merely by using a rule, three bits from the scrap box, and BMS stock; precise dimensions are not important. In the photo the engine is standing on a board with rails made from thin angle so that the tyres overhang the rail, then a strip of something like $\frac{3}{16}$ " x $\frac{1}{2}$ " is slipped under a tyre and supported on a fulcrum. A metal block of known weight (say about 1½ lb), previously weighed in the kitchen at an opportune moment (your judgement), is then used to counterbalance the other end of the strip so that it just begins to lift the wheel. The load on the wheel is of course merely the counterbalance weight multiplied by the relative lengths of the strip each side of the fulcrum. After getting the loads for all the wheels they can be added up and checked against the total weight: don't expect a perfect match but I found it easy to get within 5% and then each axle load was adjusted by the overall error to get a consistent result.

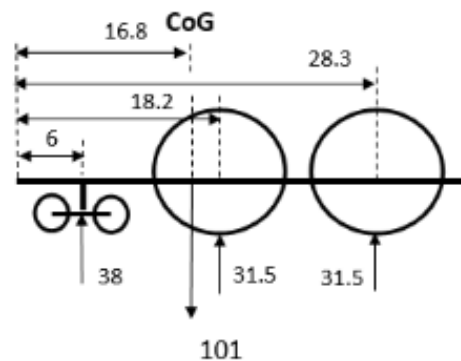
The first diagram (over page) shows the loading after putting in ballast, the c-o-g is $\frac{1}{2}$ " behind the driving axle. Coupled wheel axle loads were equalised at 43lb, leaving 31 lb on the bogie, by having the rate of the two bogie springs about $\frac{3}{4}$ that of the four springs of the coupled wheels (about 70 and 90 lbf/in) and applying a bit of pre-tensioning to the trailing springs to set the frames horizontal.

The 31 lb load on a well-made bogie with strong side control is adequate to lead the engine into quite tight curves. The other diagram shows what would happen without the ballast, the c-o-g is 1.4" in front of the driving axle and coupled wheel load is only 31lb: note that the effect of increasing the total weight by using ballast is to decrease the weight taken by the bogie. The comparative figures can be seen from the table below, I have included the empty prototype locomotive for the sake of interest (units for this are feet and tons), it's very slightly nose heavy but Derby's problem was keeping the axle loads within the 18 ton limit of the line so they definitely couldn't use ballast. Our Chief Engineers are much more obliging so the limit is finding where to hide the lead.

5" G Model: with



5" G Model: Est. no ballast



	Bogie	Dr Axle	Trail axle	TOTAL	C-o-G ref Dr Axle
Midland Railway Compound	19	18.2	17.8	55	0.9 ahead
5" Gauge model no ballast	40	30	30	101	1.4 ahead
5" G model with 16lb ballast	31	43	43	117	0.5 behind

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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

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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.

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David Mayall Tel:+ 44 1252 684 688 [Email: david.mayall@fmes.org.uk](mailto:email:david.mayall@fmes.org.uk)
(David Mayall can be contacted until 1st March 2025, future ordering contacts will be in the next Newsletter)

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