

# **SOUTHERN FEDERATION**

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# **of**

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# **MODEL ENGINEERING SOCIETIES**

Formed from the Federation established in 1970 by Model Engineers for Model Engineers  
A Company Limited by Guarantee in England and Wales No. 9002737  
[www.sfmesc.co.uk](http://www.sfmesc.co.uk)

**We are in a different Model Engineering World now.  
Home projects thriving, clubs surviving,  
the hobby reviving ...**



**... come inside and see what's going on ...**

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## EDITORIAL

**W**e've entered a new world of isolating, guarding, shielding, and just being aware of the dangerous world we live in. What has happened to our hobby? The most obvious aspects are that societies are not running railways and are not generating revenue. Pilots are not flying their aeroplanes and mariners are not gathered around the pool. But it seems workshop activity at home is thriving and modellers are exchanging ideas, usually concluding with the entreaty to 'stay safe'.

Anyone who has heard our Vice-Chairman speak will have heard how, when *Model Engineer* was first published, the 'experts' told Percival Marshall his new magazine would last only a matter of months. That was in 1898 and it is still here. No doubt *ME* has had its high points and crises in the last 120 years or so, as has our hobby. In future people may well

look back at the virus problem as history: *"Do you remember those face masks we had to wear?"*

Talking of history, 'vulnerable' model engineers are being safe and avoiding exposure to opportunities to catch the virus. Were it to attack the SF Committee, you - our membership would be called upon to take over many roles as at least six of us would be fatalities. Your editor is in his 80th year! Not the best time to fill dead man's shoes; 'tis better to join the loop and see how we try to support the hobby. I'm not revealing a state secret to report one of the members' criticisms of SF is the presence of old fogeys, so why not call us to explore possibilities?

*David Goyder, Newsletter Editor*

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## VICE CHAIRMAN'S CHAT

**I**t is with great sadness that I have to report the death of Barry Glover OAM. Awarded the Medal of the Order of Australia in the 2018 Queen's Birthday Honours List, he was a life member and one time President of the Australian Association of Live Steamers. We offer sincere condolences to his family and sympathies to all the many friends he leaves behind. Barry will be greatly missed.

We are well aware that many model engineers, myself included, are classed as vulnerable in the context of the current CV-19 virus. Hopefully, most of us have escaped relatively unscathed but sadly there will be some who have been greatly affected. While avoiding infection ourselves we may have lost much loved family members or good friends. We offer our sincere condolences to those coping with bereavement.

Building a model ship, aircraft, car, traction engine or locomotive usually involves many hours of solitary work but, for many, building is only part of the enjoyment. The pleasure gained from the company of like minded colleagues while we operate our models may be even greater. Club meetings and other social aspects of our hobby have been prevented as a result of 'lockdown'. Maintenance of club facilities and management of club affairs have also been made very difficult. Elsewhere on these pages are reports of how some clubs have been coping. We hope you will find them interesting and perhaps helpful while the situation continues.

Electronic communication seems to have caught on very quickly. Aware those involved require the necessary equipment and software, we know of many clubs that have introduced 'virtual meetings'. These allow participants to communicate to discuss current projects and seek advice to solve a challenge that may have halted construction. We're familiar with the fact that asking six engineers how to resolve a problem is likely to generate more than six solutions, each based on the experience of those offering the advice – an obvious basis for interesting meetings!

Electronic communication by telephone, video link or email is great but is no replacement for the real thing. We are all so looking forward to the time when we can gather together again to put the world to rights on a face to face basis in the clubhouse over a mug of tea or coffee, or in the pub over a pint! It will also be wonderful to visit family and friends from whom we've been separated for far too long.

I'd like to finish these comments with heartfelt thanks to everyone who has enabled us to carry on as best we can including medical staff, supermarket staff, local shops, delivery drivers, family, good friends and caring neighbours. As for us model engineers, we're grateful to those who have been maintaining our facilities, managing our clubs, publishing our magazines and newsletters and supplying the needs of those of us fortunate enough to enjoy the best hobby there is.

*Mike Chrisp, Vice Chairman*

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**For your own benefit, please keep your email addresses up to date!**

## Some thoughts on club operations in the Covid 19 environment

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The main peak of the C19 epidemic is passing and the government is seeking to relax the lockdown rules that have seen virtually all clubs stop their operations and maintenance completely. This leads to questions concerning how clubs might respond to such a relaxation.

Unfortunately, it is not appropriate that SFMES sets out to interpret government rules and provide advice concerning behaviour at this time, especially since these rules will change as time wears on and the impacts of previous actions are analysed. There are many factors that will affect each club's situation including age / risk profile, location, outdoor and indoor activity, local needs (including any regional or activity bias towards lockdown activity), level of necessity, etc.

It may be that a club's specific situation leads to a decision to begin work on, for example, essential maintenance.

Without the following constituting advice, here are a few suggestions that clubs might consider at this time:

- Get advice from any landlords or local authorities (eg for clubs located in a public park).

- Record the reasons for any relevant action that you take.
- Carry out risk assessments for any proposed activity that take into account all recommended steps (such as distancing, PPE, cleanliness, etc) and make sure any mitigating actions are communicated to all members.
- Advise members of their responsibilities to themselves and each other, especially for those in at-risk groups.
- Record all attendance.

It is important that you regularly listen to and act according to the regular government announcements since this is a fluid situation and factors will change.

Remember that the main aim of the lockdown (and any relaxation) is to protect the NHS from being swamped, balanced by the need to get the economy moving again. As lockdown eases, the risk, especially to vulnerable groups, may change and not necessarily for the better.

*Dr Paul Naylor, Membership Secretary*

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## Southern Federation of Model Engineering Societies - Future Strategy

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It is now more than two months since the AGM and over a year since we started working on a future strategy for the SFMES. We are pleased to say that there was a good response to the request for further comment on the AGM strategy topics and this has enabled us to prepare a summary document of the findings for discussion by the committee as a first step.

The findings were interesting and introduced a number of new thoughts as well as reinforcing some older ones! When the committee has had a chance to digest and discuss the findings (not itself an easy task in these trying times), they will be considering the next steps - notably how we propose to achieve any changes!

A revitalised strategy with new opportunities for the future, whatever the detail, will require support and proactive help to bring it about. A number of people expressed interest at the AGM in helping with this development and, when appropriate, we will be engaging with them and hopefully others that would like to get involved.

On this note, if you have an interest in taking a constructive part in developing the SFMES over the next few years, please let us know. Until we have agreed the plans we will not be in a position to predict the type of skills required and the opportunities for people to be involved, but potentially the more the merrier!

So, if you have any opinions concerning the above topics, please do not hesitate to let us know. Jot your ideas down and send them to Paul Naylor ([paul.naylor@sfmes.co.uk](mailto:paul.naylor@sfmes.co.uk)) or Ivan Hurst ([ivan.hurst@sfmes.co.uk](mailto:ivan.hurst@sfmes.co.uk)) or indeed to any committee member (please see our website for contact details).

Your thoughts will contribute to the decisions taken by the committee, and we will feed the results back to you all in due course.

*Dr Paul Naylor, Workshop Leader  
and Ivan Hurst, Vice President*

## Southern Federation MES Rally at Reading - Cancelled

The 2020 Federation Rally was due to be hosted by Reading Society of Model Engineers. Having reviewed the situation in light of the current CV-19 pandemic and, given the uncertainty re Government policy on public gatherings and social distancing, and for the safety of attendees and staff, Reading SME has reluctantly decided it is unable to host the event this year. The Federation completely understands this decision and regrettably the 2020 Rally has had to be cancelled.

As the Competition for the Australian Association of Live Steamers Trophy is part of the Federation Rally it too is cancelled for 2020.

However, Reading SME has offered to host the Federation Rally and AALS Trophy Competition in 2021 with the tentative date of 25th September. This offer has been provisionally accepted by the Federation.

### A word about the front cover

#### Hero's Aeolipile by J Swan of Hereford MES

*After 77 days of lockdown, we may wish to challenge the sanity of model engineers before, during or after but take stock, it appears this lunacy has been going on for more than 2000 years - take heart fellow engineers.*

An **Aeolipile** (or **aeolipyle**, or **aeolipile**), also known as a **Hero's engine**, is a simple, bladeless **radial steam turbine** which spins when the central water container is heated. Torque is produced by steam jets exiting the turbine, much like a tip jet or rocket engine. In the 1st century AD, Hero of Alexandria described the device in Roman Egypt, and many sources give him the credit for its invention.

The aeolipile which Hero described is considered to be the first recorded steam engine or reaction steam turbine. The name – derived from the Greek word Αἰολος and Latin word *pila* – translates to “the ball of Aeolus”, Aeolus being the Greek god of the air and wind.

Predating Hero's writings, a device called an aeolipile was described in the 1st century BC by Vitruvius in his treatise *De architectura*; however, it is unclear if it is the same device or a predecessor, as he does not mention rotating parts.

Both Hero and Vitruvius draw on the much earlier work by Ctesibius (285–222 BCE), Ctesibius or Ktesibios or Tesibius was an inventor and mathematician in Alexandria, Ptolemaic Egypt. He wrote the first treatises on the science of compressed air and its uses in pumps.

It is not known whether the aeolipile was put to any practical use in ancient times, and if it was seen as a pragmatic device, a whimsical novelty, an object of reverence, or some other



*J Swan's masterpiece is on display at Hereford MES for your enjoyment.*

thing. A source described it as a mere curiosity for the ancient Greeks, or a ‘party trick’. Hero's drawing shows a standalone device, and was presumably intended as a ‘temple wonder’, like many of the other devices described in *Pneumatica*.

Vitruvius, on the other hand, mentions use of the aeolipile for demonstrating the physical properties of the weather. He describes the aeolipile as, “*a scientific invention [to] discover a divine truth lurking in the laws of the heavens.*”

After describing the device's construction he concludes: “*Thus from this slight and very short experiment we may understand and judge the mighty and wonderful laws of the heavens and the nature of winds.*”

In 1543, Blasco de Garay, a scientist and a captain in the Spanish navy, allegedly demonstrated before the Holy Roman Emperor, Charles V and a committee of high officials an invention he claimed could propel large ships in the absence of wind using an apparatus consisted of copper boiler and moving wheels on either side of the ship. This account was preserved by the royal Spanish archives at Simancas. It is proposed that de Garay used Hero's aeolipile and combined it with the technology used in Roman boats and late medieval galleys. Here, de Garay's invention introduced an innovation where the aeolipile had practical usage, which was to generate motion to the paddlewheels, demonstrating the feasibility of steam-driven boats, a claim denied by Spanish authorities.



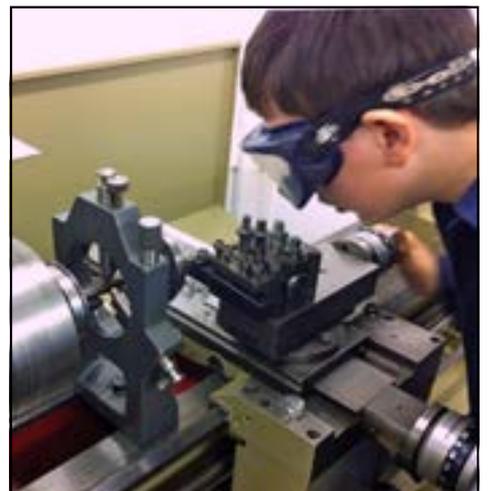
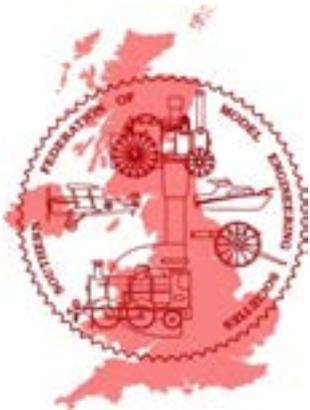
# SOUTHERN FEDERATION TROPHY AND POLLY MODEL ENGINEERING LTD. PRIZE

Any active young member of any Club or Society affiliated to the Southern Federation of Model Engineering Societies is eligible provided he or she is no more than 24 years of age at nomination, is an active member of his or her Club or Society and has demonstrated skills in the use of equipment typically associated with the hobby of model engineering.

Please visit

[www.sfmes.co.uk](http://www.sfmes.co.uk)

for details and a nomination form



## How are member societies coping with Covid –19?

*All our member societies were asked this question. The responses give an insight into the bonhomie, tolerance, management competence and occasional tragedies in bringing our societies through the Covid-19 period. We have*

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### North Norfolk Model Engineering Club

I hope you are all well and the following may help you understand how North Norfolk Model Engineers are coping with the lockdown.

In some ways our situation is complex. We have agreed with the Mid Norfolk Railway (Wymondham to Dereham line) to build a track on land they have at County School Station. Although narrow and on a rising gradient, we can put our layout in situ. We began moving everything with five lorry loads from our old site at Holt to the new at CS. Clearance to help get the lorries on site cost us more but an excellent digger driver / operator helped. Brambles were cleared and the ground prepared for track by about February 2020. Rain delayed the arrival of the two containers we decided to purchase. We got one on site by the end of February and the other arrived on Friday 20 March, just before lockdown. We moved most of the remaining club goods from Holt on the Sunday. We have a couple more car loads to shift and then the North Norfolk Railway is to take on the 30 x 12ft. shed we've left them which they aim to move to a new location to help with the Works Dept.

So our move is halted. The station master at CS is keeping an eye on our palletted goods and sheds while we distance ourselves. So far the move has cost us several thousand, luckily largely covered by a recent bequest. Much of our fleet and valuable equipment is in store with a member.

I have created a simple monthly newsletter for members and good weather has meant a few members who are good with information technology have kept me supplied with pictures.

We are a general club interested in ships, wagon details and locomotives. Our meetings at High Kelling have stopped and we understand replacement meeting dates will be available next year to compensate for those missed. We hope to go ahead with a speaker booked for our November meeting. Some of our summer meetings are outdoors at Sheringham pond with a barbecue at CS, so there may be a little less disruption than might otherwise be the case.

Our small group of members are mainly in their 60s and 70s with a few beyond and a number under 40. The move quickly cost us a good half dozen but we hope more might join when we feel fully on site and can advertise our track once we're up and running. I'm keen to get back to work on site and make a good finish on what we have begun. I hope that

perhaps, as more of our members feel safe they will eventually come out and help once again.

*Gordon Ford, Chairman NNMEC*

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### Wimborne and District Model Engineers

We closed our site to all from 20 March 2020. As we don't normally open until Easter Sunday, the club was already closed to the public, but a regular weekly maintenance program was well under way by members before we closed. Our society is on the private grounds of Cobham Sports and Social Club which closed its doors at the same time and locked its main gates so access by car was stopped and we all went into lockdown.

During this time the club discovered Zoom and the world of online meetings. We held a couple of committee meetings to discuss the current situation and possible future operation of the club and agreed we would have no public on site this year unless there was a dramatic change. This will make it easier for us as effective social distancing on a miniature railway would definitely be impossible to fulfil. As with all railways, big or small, we were not built for social distancing and alterations can be costly.

With train rides free to all ages, we run on donations from our kind visitors. Although aware that no public attendance in the foreseeable future means no income, our treasurer was confident we could survive for a year without this usual income and, if desperate, we believe our members would help out. With any club there are always expenses for repairs and the like, so it was reassuring to know that we could get through this year and look forward to next year.

Our Chairman arranged weekly online Zoom meetings for all members to attend if they wished, which meant they could stay connected and still feel involved. Those with no access to Zoom are informed of the latest news in a monthly newsletter distributed to all members.

Fortunately, the site we occupy also has a golf course so when government guidelines began to be relaxed we were able to regain access to enable us to carry out maintenance and repairs. The committee prepared strict guidelines to ensure strict adherence to social distancing and cleanliness by everyone that visits.



All members understand that the secretary must be advised of any attendance to the site beforehand. This allows the committee to log the numbers on site, regulate the day to day activities and trace contacts if necessary. We hope that by following the guidelines, keeping up with regular online meetings and newsletters we can ensure our 70 adult and 12 junior members continue to feel connected to the club whether on site or not.

I wish all clubs the very best during this difficult time.

*Andy, Secretary Wimborne DSME*

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### Ipswich Model Engineering Society

Chairman Mark Dearman sent a couple of extracts from the May issue of their Newsletter which show how some of their members are using the enforced confinement to good purpose.

#### **Tom Rose is building *Little Samson*.**

Lockdown has been good for me! Luckily I had bought the castings and a lot of the materials to build a 3in. *Little Samson* traction engine. I started with the front end, machined the front axle and made the leaf springs, for which I showed the heat treatment in our last newsletter. Next came the smokebox. The tube supplied was slightly oversized and needed 1/4in. packing at the front. Not up to rolling 1/4in. steel I rolled two 1/8 x 1/2in. strips which were drilled and temporarily bolted in position. The front was TIG welded by a good neighbour, the smokebox faced off in the lathe and 24 steel rivets fitted for show.

The smokebox door was a casting which took a lot of machining to profile. The dart, locking bar and locking lever were fairly standard work but, unlike locomotives, this engine uses a wheel to clamp the door shut. A length of stainless steel rod was bent around a round bar and the joint was silver soldered. A step was turned on a bit of scrap bar to suit the inside diameter of the ring which was then clamped under the rotary table to drill four equidistant holes for the spokes. Same for the hub, then the assembly was silver soldered together.

I made cardboard templates for the boiler platerwork which were placed on 3mm copper sheet and arranged for minimum wastage. I cut them out using a hacksaw blade in my little 35 year old jigsaw which got a bit hot!

A former for the outer firebox wrapper was made by gluing nine offcuts of flooring chipboard on 12mm threaded bar, turning the assembly between centres and painting it with primer to stabilise it before the final cut. A steel disc was

turned to make the former for the smokebox tubeplate and a hardwood former was made for the backhead.

The chimney base casting is quite a lump! I found a bit of log in the woodshed, turned it to a tight fit to hold the casting to machine the outer parallel section which was then held in a 4-jaw chuck on the rotary table to mill the smokebox outer radius.

I have now applied primer and undercoat to the front axle, springs and perch bracket and primer and first coat of smokebox black to the smokebox and door.

#### **Graham Shorrocks is working on his GNR Stirling Single:**

I have made some more progress with the tender with the spring hangers and the coupling hooks. The spring hangers were a bit of a bugger and took me ages, but I don't think they look too bad. At least they won't once they're painted!

I still need to make the axlebox covers but I'm not sure how to go about them as they have the GWR lettering embossed on to the surface.

I will probably return to work on the locomotive now as I would like to get both the tender and the locomotive to the same state with everything completed except the brass work.

I can also report that our Secretary, **Terry Woodward**, is making good progress with his 5in. gauge North British Railway 'Glen' class 4-4-0 locomotive and says that he's six months ahead of his building schedule due to the lockdown.

I hope you find these of interest. Best wishes

*Mark Dearman, Chairman, Ipswich MES*

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**Westland and Yeovil District Model Engineering Society** have a splendid lockdown website edition. Great fun it's at <https://www.wydmes.org.uk/lock-down>

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### **Burnley and Pendle Miniature Railway Society**

We've been quite lucky at Thompson Park. We were allowed to visit with no more than 2 or 3 members for maintenance and security on Sundays and Wednesdays and managed to paint the railings on the station. The shed roofs have had a coat of bitumen and we've repainted the exterior of the clubroom. The next two projects include painting the turntable and ramps and then attempting to paint our 100ft. bridge. If the lockdown continues after we have finished



painting the bridge it looks like all the coaching stock could get a fresh coat of paint, jobs we could never do if we are running.

Since the above was written we have shut down completely.

***Mike Bailey, Secretary, Burnley & Pendle MRS***

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### Eastleigh Young Engineers

Several readers will be aware of the Young Engineers. Currently eight of them aged between 10 and 17 years are based in Crawley near Winchester. Their work is shown at the Midlands MEX in Warwick and the London MEX at Alexandra Palace. Using a fully equipped machine shop, members are taught how to use the machines and then make sophisticated models - but not now because of the dreaded virus!

I normally teach the Young Engineers on a one-to-one basis and they come to my workshop once or twice a week for 90 minute sessions, obviously now outlawed by government edict. A replacement was needed, hence the EYE Stay-at-Home project.

Given about 500 wooden coffee stirrers, cutters, superglue, sandpaper and safety glasses, the EYEs were challenged with making something on the kitchen table. Six members decided to take on the challenge and then an e-EYE joined followed by brothers and sisters. It snowballed and we now have 11 active enthusiasts who all live in the area between Eastleigh, Crawley, Arlesford and Winchester.

I started them off then helped them on a regular basis using Facebook Messenger and now give about 12 sessions of 40 minutes each week. I have a tablet computer set up on a music stand looking down onto my kitchen worktop so I can see and hear everything the Young Engineers do and they can see and hear me.

Some of these lads and lasses are of primary school age. One, Mimi, is only 9 and her sister is 11. To help them, I make what they are making so I can demonstrate in real time. Demonstrating as I would in my workshop just isn't possible which is why I make exactly what they are creating. However, from my point of view, teaching online is very demanding. It's slow, the sound is dreadful and it's amazingly difficult to demonstrate remotely, particularly the more delicate steps. But I'm getting better at it!

How's it going as far as the YEs are concerned? Brilliantly! Zoe from Crawley, an old hand, quickly created an Easter Tableau which featured in the local parish church magazine

while Zahra is making a ship which might be transmogrified into Noah's Ark!

All the younger ones began by making a small simple stick boat to learn how to handle the materials and then moved on to a crane, two doll's houses, both *Swallow* and *Amazon* of Arthur Ransome fame and a quite complex boat which will take ages to complete and a Jeep and a model of the Eiffel Tower. None of the projects is complete as I write but they will be by the time schools re-open. I will make sure you get to see what the Eastleigh Young Engineers have been up to at the big shows next winter

In response to the question everyone asks, the current team is made up of seven young ladies and four lads. Don't let anyone tell you engineering is just for men!

***Patrick Hendra, Eastleigh Young Engineers***

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### Kinver & West Midlands Society of Model Engineers Ltd.

What can one possibly say? Since lockdown started we have been unable to hold any birthday parties or conduct any public running and therefore our finances for this year will be greatly depleted.

Even when we are allowed back on site, there could well be rules concerning social distancing, numbers of people, etc. which could impact on how much maintenance we are allowed to do, let alone run trains.

Of course all that is pure speculation as no-one knows what Mr. Johnson intends. We can only hope!

Stay safe or stay alert.

***Mike Harrison, Secretary,  
Kinver & West Midlands SME.***

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### Esk Valley MES

We're in limbo as our workshop and track are within local parks which are open to walkers but the car parks are shut. The workshop is accessed by a couple of members who live nearby and can walk there and we have someone to keep an eye on track, but that is the extent of our activity.



### Stroud SME

There isn't much to say except nothing is going on or planned at present. With almost all our members in the over 70 category I rather expect it will take some time for people to want to meet socially but you never know, they may be so bored that just a trip out to see a friendly (but distant) face may drive them out of the house.

*Bill Phillips, Stroud SMES*

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### Bedford Model Engineering Society

Our experience of the lockdown got off to a pretty grim start when our bank account was scammed the week before lockdown came into force. We lost a sizeable sum of money that left us financially embarrassed as, on the back of expecting public running to start, we had invested in a number of improvements at the club that the sum taken would have covered. We spoke to the suppliers concerned; all were sympathetic and were prepared to wait while we decided what to do. Fortunately we were eligible for a Small Business Grant which has solved the immediate problem and has given us breathing space to organise how we cover our ongoing costs until we start running again.

We check the site on a regular basis, watching the grass get longer and the weeds invading the flower beds. With the slight relaxation recently announced we hope to be able to put very small working parties together, following social distancing rules, to start getting it back into shape. Fortunately we have a contractor to mow the large grass areas which is a help.

As far as I am aware we have not had any members succumb to this awful disease and those I communicate with are very keen to get going, but because of the difficulties in maintaining social distancing I think we will be one of the last

activities given the green light to proceed, whenever that might be.

*Martin Cusden, Chairman, Bedford MES*

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### Guildford MES

Our decision to abandon all public running for this year included our annual Gala Weekend. If the lockdown restrictions are relaxed to an extent where we can run the trains for the public in a safe and appropriate manner for both the GMES members involved in operating the railways and the public coming on site, we'll get the trains out. Social media is an excellent method of telling the public about events due to take place in the near future.

We have a rigorous financial review in place to minimise expenditure in a year without income.

Our site which is fenced off from the public has remained available to members who wish take their exercise on site doing essential maintenance on both the grounds and rolling stock while complying with social distancing, etc, etc, so the grass is cut, the weeds are dealt with and the wheels still go round and round.

Bits and Pieces, Garden Railways, and Council of Management meetings are being held via Zoom video conferencing which works very well and is much appreciated by those taking part.

Our website provider includes a group e-mail facility in the package. About 90% of the members have an e-mail address and about 70% of those have joined that e-mail group which provides good communications. Members are also phoning each other up.

*Bryan Finch, Secretary GMES*

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### How a Stimulus Package Really Works

It is a slow day in the small Iowa town of Pumphandle and the streets are deserted. Times are tough, everybody is in debt, and everybody is living on credit. A tourist visiting the area drives through town, stops at the motel and lays a \$100 bill on the desk saying he wants to inspect the rooms upstairs to pick one for the night. As soon as he walks upstairs, the motel owner grabs the bill and runs next door to pay his debt to the butcher.

The butcher takes the \$100 and runs down the street to retire his debt to the pig farmer. The pig farmer takes the \$100 and heads off to pay his bill to his supplier, the Co-Op.

The guy at the Co-op takes the \$100 and runs to pay his debt to the local prostitute, who has also been facing hard times and has had to offer her 'services' on credit. The hooker rushes to the hotel and pays off her room bill with the hotel owner. The hotel proprietor then places the \$100 back on the counter so the tourist won't suspect anything. At that moment he comes downstairs, states the rooms are not satisfactory, picks up the \$100 bill and leaves.

No one produced anything. No one earned anything. However, the whole town is now out of debt and looks to the future with a lot more optimism ... and that's how a Stimulus package works.

## Difficult to hold? Then stick it - J.Winn of COSME shows us how

Recently, I set about making some housings to hold ball races for a steam engine. Ideally I would have used round aluminium stock bar but the only material to hand was rectangular section plate.

The first requirement was to have a round billet 70mm diameter by 17mm thick. Marking a 70mm diameter circle on the plate gave me a line to work to for cutting on the bandsaw. First a 75mm square was cut then the corners of the square were removed.

The lathe faceplate was fitted and cleaned using acetone to remove any oil or grease. A piece of 8mm MDF was cut to make a disc 150mm diameter (photo 1).

Double sided carpet tape was fixed to one side of the MDF disc and, after removing the protective covering on the tape, the disc was stuck to the faceplate.

The aluminium billet was also cleaned with acetone and one surface was covered with the carpet tape. Using the centre pop mark as a guide the billet was then stuck to the MDF on the faceplate as centrally as possible (photo 2).

A revolving centre was fitted into the tailstock which was then located in the centre of the workpiece. The tailstock was locked in place, the revolving centre pushed up against the work as hard as possible and locked in place (photo 3).

Using a very sharp tool and taking light cuts the outside diameter of the billet was turned to size. Once to size the workpiece was then prised off the faceplate using a screwdriver.

This method of holding work can also be used for thin sheet provided suitable discs are used as backing support. I used it to cut is 0.2mm material.

I know many model engineers shy away from woodwork but double sided tape can also be used to hold thin sections of



wood to enable small amounts to be removed from the thickness. The wood to be machined is stuck to a 20mm thick block to enable the thin section to be sanded. If you need to cut two lengths of wood to exactly the same length (as in box making) stick them together with tape and prise them apart after cutting them both to length.

Sometimes it is necessary to remove small amounts of metal from a cylindrical part which cannot be held in a chuck or collet. To overcome the problem of holding the work I turn a mandrel to a diameter which is 0.05mm smaller than the internal diameter of the work (normally a bearing)

Having made sure the mandrel and work are both clean, a tiny amount of superglue is used to stick the bearing onto the mandrel. Again sharp tools must be used while machining and only small cuts can be taken (photo 4).

Once the work is to size the part can be removed from the mandrel by using a piece of tubing slightly larger than the mandrel and giving it a sharp tap with a hammer.

Many kinds of glue are available but the one which works the best for me is Power Bond (usual disclaimer)

Drilling holes in very thin material such as brass shims can often be a challenge.

By sticking the material to a flat piece of timber and clamping a steel plate over the area to be drilled it is possible to drill a hole without distorting the shim.

Photo 5 shows a 10mm hole drilled in 0.3mm shimstock.

The possibilities for holding work by sticking or gluing are endless and once you have tried the technique a few times

I'm sure you will find it a most useful method and one which you will resort to time and time again.

## Not just another cat shot

*This is one for the flyers although difficult to model! Since we are in extraordinary times we thought this might be a diversion for those modellers interested in the air. Your editor should add that this came from a fellow classmate from his naval training many years ago where we were destined to become aircraft carrier pilots in the Royal Canadian Navy.*

**H**e begins: “Talk about having a bad night. First he loses an engine on the cat shot, the other engine is slightly damaged. He’s told to eject as he’s passing down through 200 awl. Then he successfully executes a wave off! Eventually he lands into the barricade. All this at night to top things off.”



he gets a move on and they lower my launch bar and start the launch cycle.

All systems are go on the run-up and after waiting the requisite 5 seconds or so to make sure my flight controls are good to go (there’s a lot to be said for good old cables and pulleys), I turn on my lights. As is my habit, I shift my eyes to the

Oyster and I are buddies!

Here’s his side of the story:

Oyster is an A-6 turned F/A-18 guy and a Carrier Air Group (CAG) Paddles. I cruised with him in ‘95 on Independence, and watched him literally save another pilot’s life when he immediately caught the pilot’s almost fatal power reduction and immediately waved him off, at once screaming, like in a horror movie: “WAAAAAVE-OOOOFF, WAVEOFF, WAVEOFF, WAVEOFF” into the radio. The guy responded with immediate blower, climbed from completely below the deck, and missed the ramp by an estimated eight feet. I told him years ago, after reading his write-up of his Hornet adventure, that Karma was his co-pilot, that night.

### F-18 Night Carrier Emergency

Hey, I felt the need to share with you all the exciting night I had on the 23rd. It has nothing to do with me wanting to talk about me. It has everything to do with sharing what will no doubt become a better story as the years go by.

So, there I was ... Manned up a hot seat for the 2030 launch about 500 miles north of Hawaii (insert visions of many Mai-Tais here). Spotted just forward of the navigation pole and eventually taxied off toward the island where I do a 180 and get spotted to be the first one off cat I (insert foreboding music here). There’s another Hornet from our sister squadron parked ass over the track about a quarter of the way down the cat. Eventually

catwalk and watch the deck edge dude, and as he starts his routine of looking left then right, I put my head back. As the cat fires, I stage the blowers and am along for the ride.

Just prior to the end of the stroke there’s a huge flash and a simultaneous boom and my world is in turmoil. My little pink body is doing 145 knots or so and is 100 feet above the Black Pacific. And there it stays - except for the airspeed, which decreases to 140 knots. The throttles aren’t going any farther forward despite my Schwarzenegerian efforts to make them do so.

From out of the ether I hear a voice say one word: “*Jettison.*” Roger that! A nanosecond later, my two drops and single MER - about 4500 pounds in all - are Black Pacific bound. The airplane leapt up a bit, but not enough.

I’m now about a mile in front of the boat at 160 feet and fluctuating from 135 to 140 knots. The next command out of the ether is another one-worder: “*Eject!*”

I’m still flying so I respond, “*Not yet, I’ve still got it.*”

Finally, at 4 miles, I take a peek at my engine instruments and notice my left engine doesn’t match the right (funny how quick glimpses at instruments get burned into your brain). The left rpm is at 48% even though I’m still doing the Ah-Nold thing. I bring it back to mil. About now I get another “*Eject!*” call.

“*Nope, still flying.*”



Deputy CAG was watching and the further I got from the boat, the lower I looked. About 5 miles, I asked tower to please get the helo headed my way as I truly thought I was going to be shelling out. At this point I thought it would probably be a good idea to start dumping some gas. As my hand reached down for the dump switch I actually remembered that we have a NATOPS prohibition regarding dumping while in burner. After a second or two I decided, "Hell with that" and turned them on. I was later told I had a 60 foot roman candle going.

At 7 miles I eventually started a (very slight) climb. A little breathing room. CATCC chimes in with a downwind heading and I'm like: "Ooh. Good idea," and throw down my hook. Eventually I get headed downwind at 900 feet and ask for a rep. While waiting I shut down the left engine. In short order I hear 'Fuzz's' voice.

I tell him the following: "OK Fuzz, my gear's up, my left motor's off and I'm only able to stay level with min blower. Every time I pull it to mil I start about a hundred feet per minute down."

I continue trucking downwind trying to stay level and keep dumping. I think I must have been in blower for about fifteen minutes. At ten miles or so I'm down to 5000 pounds of gas and start a turn back toward the ship. Don't intend to land, but don't want to get too far away, either. Of course, as soon I as I start in an angle of bank, I start dropping like a stone so I end up doing a 5 mile circle around the ship. Meanwhile, Fuzz is reading me the single engine rate-of-climb numbers from the PCL based on temperature, etc. It doesn't take us long to figure out that things aren't adding up. So why the hell do I need blower to stay level!?

By this time I'm talking to Fuzz, (CATCC), Deputy CAG (turning on the flight deck) and CAG who's on the bridge with the Captain. We decide that the thing to do is climb to three thousand feet and dirty up. I get headed downwind, go full burner on my remaining motor and eventually make it to 2000 feet before leveling out below a scattered layer of puffies. There's a half a moon above which was really, really cool. Start a turn back toward the ship, and when I get pointed in the right direction, I throw the gear down and pull the throttle out of AB.

Remember that flash/boom! that started this little tale? Repeat it here.

Holy \*\*\*\*! I jam it back into AB and after three or four huge compressor stalls and accompanying deceleration, the right motor comes back.

This next part is great. You know those stories about guys who dead-stick crippled airplanes away from orphanages and puppy stores and stuff and get all this great media attention? Well, at this point I'm looking at the picket ship at my 11 o'clock at about two miles and I say on departure freq to no one in particular, "You need to have the picket ship hang a left right now. I think I'm gonna be outta here in a second." I said it very calmly but with meaning. The LSO's said that the picket immediately started pitching out of the fight. Ha! I scored major points with the heavies afterwards for this. Anyway, it's funny how your mind works in these situations.

OK, so I'm dirty and I get it back level and pass a couple miles up the starboard side of the ship. I'm still in minimum blower and my fuel state is now about 2500 pounds. Hmmm. I hadn't really thought about running out of gas. I muster up the nads to pull it out of blower again and sure enough ... flash, BOOM! Damn!

I leave it in military and it seems to settle out. Eventually, I discover that even the tiniest throttle movements cause the flash/boom thing to happen so I'm trying to be as smooth as I can. I'm downwind a couple miles when CAG comes up and says "Oyster, we're going to rig the barricade."

Remember, CAG's up on the bridge watching me fly around doing blower donuts in the sky and he's thinking I'm gonna run outta JP-5 too. By now I've told everyone who's listening that there a better than average chance that I'm going to be ejecting - the helo bubbas, god bless 'em, have been following me around this entire time.

I continue downwind and again, sounding more calm than I probably was, call paddles. "Paddles, you up?"

"Go ahead" replies 'Max,' one of our CAG LSO's.

"Max, I probably know most of it but you wanna shoot me the barricade brief?" (Insert long pause here). After the fact, Max told me they went from expecting me to eject to me asking for the barricade brief in about a minute and he was hyper-ventilating. He was awesome on the radio though, just the kind of voice you'd want to hear in this situation. He gives me the brief and at nine miles I say, "If I turn now, will it be up when I get there? I don't want to have to go around again."

"It's going up now Oyster, go ahead and turn."

"Turning in, say final bearing."



"Zero-six-three" replies the voice in CATCC. (Another number I remember - go figure).

OK, we're on a four degree glide slope and I'm at 800 feet or so. I intercept glide slope at about a mile and three quarters and pull the power.

Flash/boom! Add power out of fear. Going high. Pull power. Flash/boom! Add power out of fear. Going higher. (Flashback to LSO school ... All right class, today's lecture will be on the single engine barricade approach. Remember, the one place you really, REALLY don't want to be is high. Are there any questions?) The PLAT video is most excellent as each series of flash/booms shows up nicely along with the appropriate reflections on the water. 'Flats,' our other CAG paddles is backing up and as I start to set up a higher than desired sink rate he hits the 'Eat At Joe's' lights. Very timely too. [note: wave-off lights - a guts-ball decision]

I stroke AB and cross the flight deck with my right hand on the stick and my left thinking about the little yellow and black handle between my legs. No worries. I cleared that sucker by at least ten feet. By the way my state at the ball call was I.I. As I slowly climb out I say, again to no one in particular, "I can do this."

Max and Flats heard this and told me later it made them feel much better about my state of mind. I'm in blower still and CAG says, "Turn downwind." Again, good idea. After I get turned around he says, "Oyster, this is gonna be your last look, so turn in again as soon as you're comfortable." I lose about 200 feet in the turn and like a total dumb \*\*\*\* I look out as I get on centerline and that night thing about feeling high gets me and I descend further to 400 feet. I got kinda pissed at myself then as I realized I would now be intercepting the four degree glide slope in the middle.

No \*\*\*\* fellas, flash/boom every several seconds all the way down. Last look at my gas was 600-and-some pounds at a mile and a half. "Where am I on the glideslope Max?" I ask and hear a calm, "Roger Ball."

I know I'm low because the ILS is waaay up there and I call 'Clara.' Can't remember what the response was but by now the ball's shooting up from the depths. I start flying it and before I get a chance to spot the deck. I hear "Cut, cut, cut!" I'm really glad I was a paddles for so long because my mind said to me, "Do what he says, Oyster," and I pulled it back to idle. The reason I mention this is that I felt like I was a LONG FRIGGEN WAYS OUT THERE - if you know what I mean (my hook hit 11 paces

from the ramp, as I discovered during FOD walkdown today).

The rest is pretty tame. I hit the deck, skipped the one, the two, and snagged the three and rolled into the barricade about a foot right of centerline. Once stopped my vocal chords involuntarily yelled "Victory!" on button 2 (the 14 guys who were listening in marshal said it was pretty cool. After the fact I wish I had done the Austin Powers' "Yeah Baby!" thing.) The lights came up and off to my right there must have been a ga-zillion cranials. Paddles said that with my shutdown you could hear a huge cheer across the flight deck. I open the canopy and start putting my \*\*\*\* in my helmet bag and the first guy I see is our Flight Deck Chief, huge guy named Chief Richards and he gives me the coolest look and then two thumbs up. I will remember it forever. Especially since I'm the Maintenance Officer. I climb down and people are gathering around patting me on the back when one of the boat's crusty yellow-shirt chiefs interrupts and says, "Gentlemen, great job but fourteen of your good buddies are still up there and we need to get them aboard." Again, priceless.

So there you have it fellas. Here I sit with my little pink body in a ready room chair on the same tub I did my first cruise in 10 years and 7 months ago. And I thought it was exciting back then!

P.S. You're probably wondering what made my motors \*\*\*\* themselves and I almost forgot to tell you. Remember the scene with the foreboding music?

When they taxied that last Hornet - the one that was over the cat track - they forgot to remove a section or two of the cat seal. The (flight mishap) board's not finished yet, but it's a done deal. As the shuttle came back it removed the cat 'seal' which went down both motors during the stroke. During the wave off, one of the LSO's saw 'about thirty feet' of black rubber hanging off the left side of the airplane. The whole left side, including inside the intake is basically black where the rubber was beating on it in the breeze. The right motor, the one that kept running, has 340 major hits to all stages. The compressor section is trashed and best of all, it had two pieces of the cat seal - one about 2 feet and the other about 4 feet long, sticking out of the first stage and into the intake. God Bless General Electric!

P.P.S. By the way, the data showed that I was fat - had 380 pounds of gas when I shut down. Again, remember this number as in ten years it will surely be claiming, FUMES MAN, FUMES I TELL YOU!

## HS2020 - Managing health and safety at passenger-carrying miniature railways

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**H**SG216 Passenger-carrying miniature railways - Guidance on safe practice has been the principal safety guidance for passenger-carrying miniature railways since the document's publication by the Health and Safety Executive (HSE) in 2002. It was withdrawn around 7 years ago and is no longer supported or available from HSE.

A replacement guidance document was needed. As a result of that thinking, a new group, the Passenger Carrying Miniature Railway Safety Group (PCMRSG), was established in 2017 with the objective of drafting a new guide for the safe operation of passenger carrying miniature railways. This was no easy task and the Group would like to thank those businesses, clubs, societies and individuals who responded to our request for comments on a draft guidance which was made available via the group's website.

More than 150 comments and suggestions were received and all were considered.

In addition to close contact with businesses, clubs, societies and individuals the Group has benefited from regular input and assistance from the HSE and thanks to them must be recorded.

The new safety guide, HS2020 – Managing health and safety at passenger-carrying miniature railways, which has been fully endorsed by HSE, is now complete and available at <https://www.pcmrsg.org/>

HS2020 will now be the safety guidance document that HSE refer to and therefore the operators of passenger-carrying miniature railways are advised that they should do likewise.

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## Boiler Inspectors' Seminars 2020

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**T**he Joint Southern Federation of Model Engineering Societies and Northern Association Boiler Inspectors Seminars have been disrupted by the social distancing required as a result of Coronavirus.

Although having left the Southern Federation committee as Honorary Secretary, Peter Squire, very much a leader in the seminars, has indicated he will continue his contribution of supporting Southern Federation and NAME. We are sure there is no doubt that Peter's most valuable contribution in

the field will be enthusiastically encouraged. Indeed it is hoped that we may be able to resume seminars later in the year. The next has been 'pencilled in' for 24th October at Nottingham SMEE and we are looking for a venue for a Seminar to be held next Spring.

You are advised to indicate your interest now to Peter Squire. Contact him at [peter@the-squires.co.uk](mailto:peter@the-squires.co.uk) or phone him on 01327-342167.

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*In case you missed it, 'Oyster' did land safely! Here an F/A-18C Hornet lands on the flight deck of the aircraft carrier [USS George H.W. Bush](#).*

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## The Marine Challenge: a team effort for a cruise liner anchor in!

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