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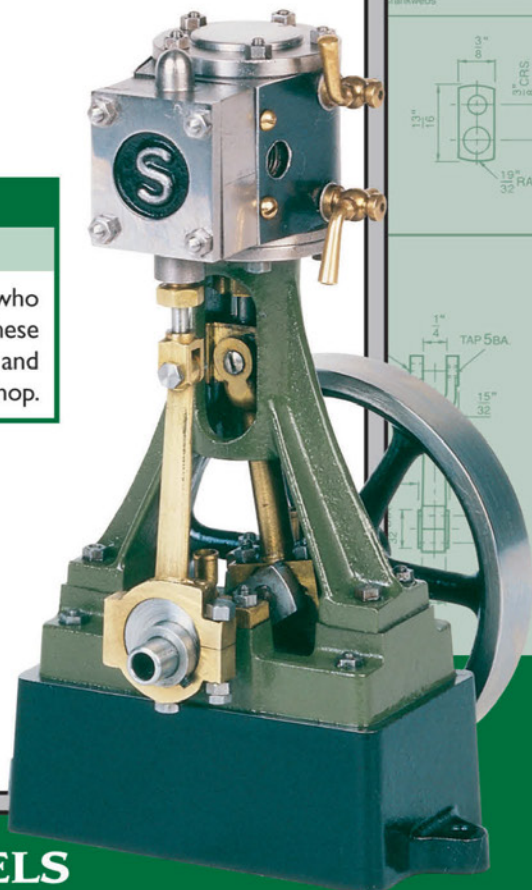
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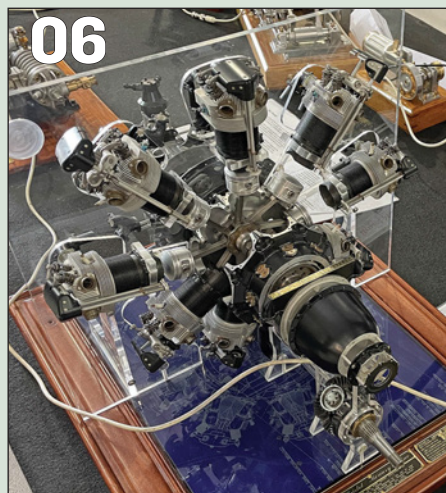
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Any one could be a winner – the display of competition locomotives presented at the Midlands show was of the highest quality – and this is one that didn't win!

Photo: Andrew Charman

EDITORIAL

A welcome return – in this observer's judgement...

Welcome to the December issue of **EIM** – and as I write these words I'm thinking back to a very enjoyable day doing something we haven't done in three years – going to a show!

We always give the Midlands show plenty of coverage – well we do sponsor the event – but this year the first of John Arrowsmith's two reports is a little larger than usual. The first show since 2019 highlighted what model engineers have been up to in the intervening period – every visitor I spoke to commented that the quality of the models produced was particularly high, partly of course because we were effectively getting three years' worth of engineering excellence. In one of the loco classes, for example, we reckoned there were engines that in other years could each have won the class, but this time had to be ranked into first, second and third.

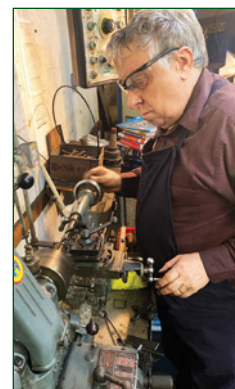
I saw the challenges of this process close up, as for the first time I joined the judging panel – it was an eye-opening and highly enjoyable process, but also not at all easy. Our discussions before deciding the winners were long and involved!

There was only a slight disappointment for me, and a surprise in that there were no entries in the class for locos up to Gauge 1. Many readers know my background is in 16mm and I know there is some excellent and highly skilled model engineering going on in that scale, as there is in the other smaller scales. Perhaps those working in the smaller scales did not realise that their efforts would be highly appreciated by visitors, and could win an award? Hopefully they will seize the opportunity at next year's event (12th-15th October, get your diaries out).

Yes the show was slightly smaller than in the past but after the Covid uncertainties that was to be expected. Comments I heard during the event and read afterwards on social media were hugely positive, everyone seemed to have a great time – it's good to have the show back.

This is quite a loco-centric issue of **EIM**, which is fine, but as again you will read in our Midlands show report, model engineering is a much broader church. We'd like to see some more clocks, model boats, stationary engines and workshop equipment and techniques in our pages, so why not spend a little of the festive break (Season's greetings by the way) penning something for your fellow readers (and earning cash to help with next year's potentially show award winning project...)?

Andrew Charman – Editor



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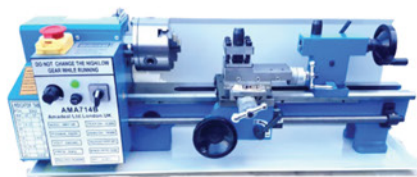
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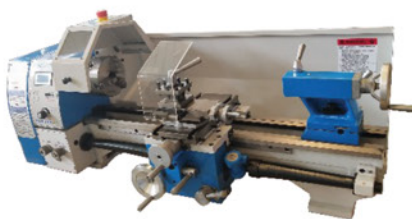


AMA714B Mini lathe
Brushless Motor

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Spindle bore: 20mm
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Range of spindle speeds: 100-2250mm
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Price: £694



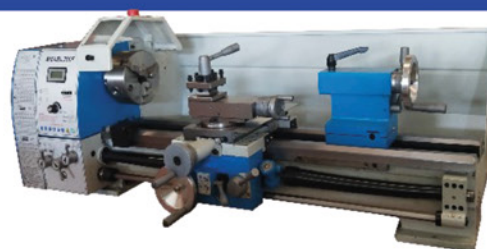
AMABL250Fx750

SPECIFICATION:

Distance between centers: 750mm
Taper of spindle bore: MT4
Spindle bore: 26mm
Number of spindle speeds: Variable
Range of spindle speeds: 50~2500rpm
Weight: 140Kg

Price: £1,904

W 2 Axis DRO - Price: £2,280



AMABL290VF Bench Lathe (11x27) - power cross feed - BRUSHLESS MOTOR

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Motor: 1.5kw
Weight: 230Kg

Price: £2,395

W 2 Axis DRO - Price: £2,787



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T-slot size: 12mm
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W AXIS POWERFEED - Price: £1,659

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Max. face milling capacity: 76mm
Motor: Input- 1.5KW
Packing size: 1050x740x1150mm
Net weight: 240kg

Price: £2,560.00



AMAVM32LV

SPECIFICATION:

Model No: AMAVM32LV (MT3) / (R8)
Max. face milling capacity: 76mm
Table size: 840x210mm
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Price: £1,962.00

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Summary Specification



Approx length 33"

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- Etched brass body with rivet detail
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- Choice of emblems
- Painted and ready-to-run
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- 5" gauge
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- Slide valves
- Stephenson valve gear
- Drain cocks
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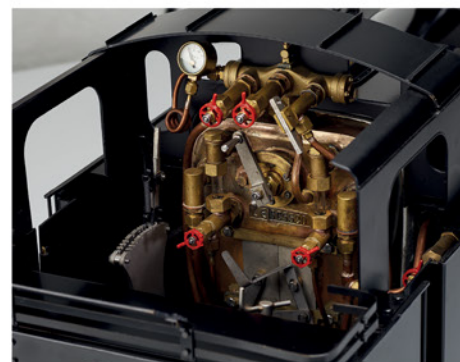
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2022 Midlands Model Engineering Exhibition

It was worth the wait... Roving reporter John brings us part one of his report from the first major show since the Covid pandemic, and one which attracted many top quality models.

BY JOHN ARROWSMITH



At long last the Midlands Model Engineering Exhibition opened its doors to large numbers of visitors for the first time in three years. All the usual features were present at the EIM-sponsored show, held at the Warwickshire Event Centre between 13th-16th October but on a slightly smaller scale, as the organisers were not sure what the reaction of both exhibitors and visitors would be following the pandemic, along with the sad loss in May of Chris Deith, the founder of the show. But to everyone's delight the event went ahead and a fine selection of excellent model engineering was presented and apparently greatly appreciated by the many visitors.

As usual in this initial report I will focus on the show's Competition classes and follow that next month with the clubs and display stands. As in previous exhibitions there were 16 classes plus a brand new Chris Deith Memorial Trophy to be awarded for the best model in the show in the opinion of the judges. Two classes could not muster any entries but the rest included a good representation of their class.

Class 1: Locomotives up to and including Gauge 1

There were no entries in this class which was surprising considering the amount of interest there is in these scales – perhaps something for EIM readers working in the smaller scales to consider for future shows?

Cl 2: Locomotives 2½ and 3½-inch gauges

Two awards were made in this class, both for 3½-inch gauge 'Tich' locos – one was a large boilered version (Photo 01) built by Richard Folwell and the other a standard LBSC-design engine built by Dave Lee, both nicely made and finished. Richard's loco received a Highly Commended certificate while Dave's was Commended.

Cl 3: Locomotives 5-inch, 7¼-inch gauge and above

This really was the class for competition with eight excellent

ABOVE: Back in action and a lot to see at the EIM-sponsored Midlands show.

Photo: Andrew Charman

PHOTO 1: This large-boilered 'Tich' by Richard Folwell earned a highly commended certificate.

PHOTO 2: First Prize in Class 3 went to Paul Norrington's 5-inch gauge Schools class "Epsom". Not sure who the scruffy chap in the background is...





Manning Wardle 2-6-2T 'Yeo', built by John Fysh, really captured the imposing looks of the original (Photo 06) and earned John a Commended certificate. A similar award went to an

unusual prototype located on a different display stand, a 5-inch gauge model of a Crewe Tractor as used in France during the Great War and built by Gerald Newbrook (Photo 07).



models to be considered. I do not know how the judges made their decision but I'm glad I didn't have to do it. All the entries were excellent models with fine workmanship and finishes and a great attention to fine details and the prototypes.

Winner of the First Prize and the Reeves Challenge Cup was Paul Norrington for his 5-inch gauge Southern Railway Schools Class 4-4-0 'Epsom' (Photo 02). This was an outstanding example of model-making skill and a superb locomotive.

Paul must, however, have been challenged very closely by Alan Crossfield with his impeccable 5-inch gauge GWR 4-2-2 Achilles Class locomotive 'Royal Sovereign' (Photo 03) – this was placed second in class.

Third went to the 5-inch gauge LMS Princess Royal Pacific class 4-6-2 built by David Nesbitt, which again showed some wonderful workmanship and finish (Photo 04).

Not just the large locomotives caught the eye – the delightful little LMS 2F 0-6-0 built to works drawings by Mike Pavie was awarded a Highly Commended certificate (Photo 05).

Also in this display, a fine model of a Lynton & Barnstaple Railway

PHOTO 3:

Alan Crossfield's 5-inch Achilles 4-2-2 came close to victory in class 3. Photo: Andrew Charman

PHOTO 4:

Third for David Nesbitt's 5-inch Princess Royal.

PHOTO 5:

Mike Pavie's LMS 2F was Highly Commended.

PHOTO 6:

John Fysh's L&B 2-6-2 loco 'Yeo'.

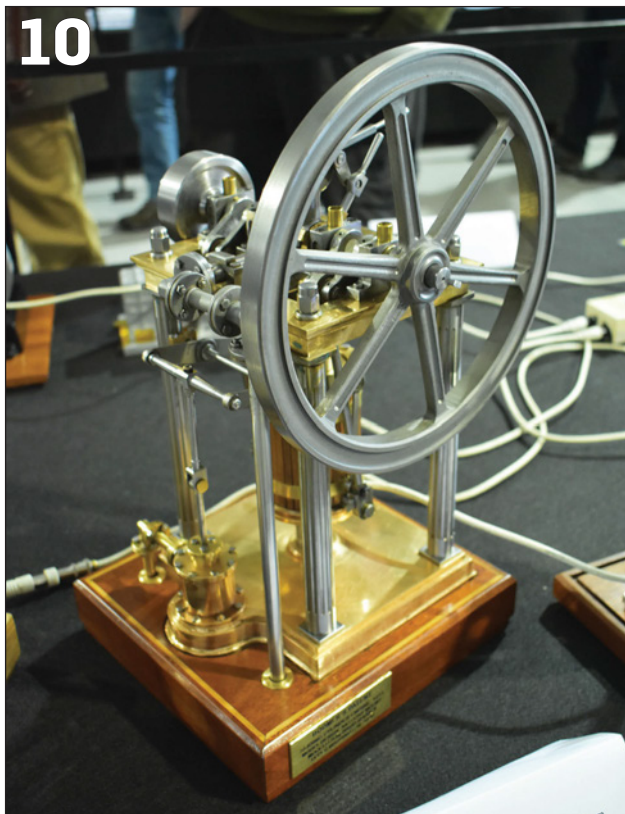
PHOTO 7: A

5-inch Crewe Tractor by Gerald Newbrook.

PHOTO 8: An

LMS/BR 20T brake van built by Adrian Morris.





Cl 4: Rolling Stock etc, any gauge

First Prize and the Burton Rose Bowl Cup in this class went to Adrian Morris for his 5-inch gauge version of an LMS/BR 20T brake van to Diagram 1919 (Photo 08). Dave Lee gained the second prize with his well-made 3½-inch gauge LMS three-plank 8T wagon to lot 636, and also the third prize for another brake van.

Cl 5: Stationary Engines

A good entry in this class saw seven awards made from the 16 models entered. There was some excellent work on show and some very complex designs in a very competitive section.

Two first prizes and the Phoenix Precision Paints Trophy went to John Fysh for his double entry of a large vertical engine and boiler (Photo 09).



In second was David Rhodes with an excellent example of Bodner's sliding-cylinder steam engine (Photo 10). And third prize in this class went to Brian Holland for a colourful example of James Booth's Rectilinear Engine in 1/12th scale (Photo 11).

A Very Highly Commended went to John Wing for a very nice Stuart No. 4 engine with reversing gear. Highly Commended was John Fysh for a well-made Clarkson horizontal steam engine and he was also Commended for his Stuart S50 engine.

Cl 6: Steam Road Vehicles

Just one competitive entry appeared in this class, but what an entry it was. Davinder Singh Matharau presented his scratch-built example of a 2-inch scale Fowler Showman's Engine – a superb piece of work that fully deserved the First Prize and the Staffordshire Joinery Cup (Photo 12).



Cl 7: Machine tools and workshop equipment

The four entries in this class were all located on the Birmingham Society of Model Engineers stand and were all awarded Highly Commended certificates. Stephen Harrison gained three of these for his Hemmingway sensitive knurling tool, a Reeves sensitive drilling machine and a Hemingway graduating tool, Keith Bloor received his certificate for a Simple Dividing Head.

Cl 8: Internal Combustion Engines

Three winners were awarded in this class which showed exemplary skill and workmanship. Mike Tull took first prize and the Engineering in Miniature Trophy with his superb ¼-scale working model of a Bristol Mercury Mk 8 9 cylinder supercharged radial engine (Photo 13).

"I do not know how the judges made their decision but I'm glad I didn't have to do it..."

PHOTO 9:

This vertical stationary engine was built by John Fysh.

PHOTO 10:

Bodmer's sliding cylinder engine, the work of David Rhodes.

PHOTO 11:

James Booth's rectilinear engine was built by Brian Booth.

PHOTO 12:

This fine 2-inch scale Fowler Showman's engine built by Davinder Singh Matharau attracted a lot of praise.

PHOTO 13:

Class winner, and of the first Chris Deith Memorial Trophy for the best in the show – Mike Tull's working model of a 9-cylinder Bristol Mercury radial engine. Photo: Andrew Charman

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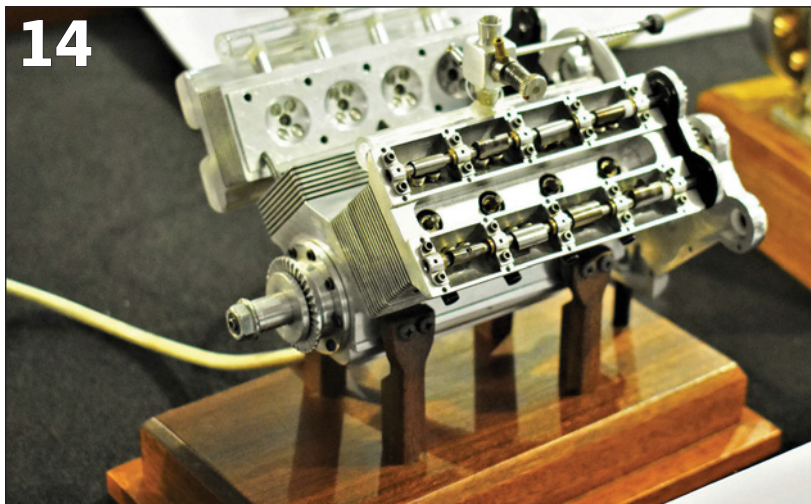
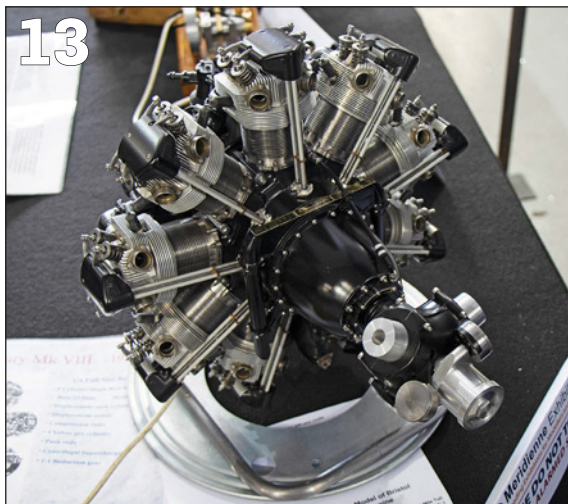


PHOTO 14:
Brian Harrison
built this
miniature V8
engine with
overhead cams.

PHOTO 15:
Mike Tull's
second radial,
an exploded
version of his
winning model.

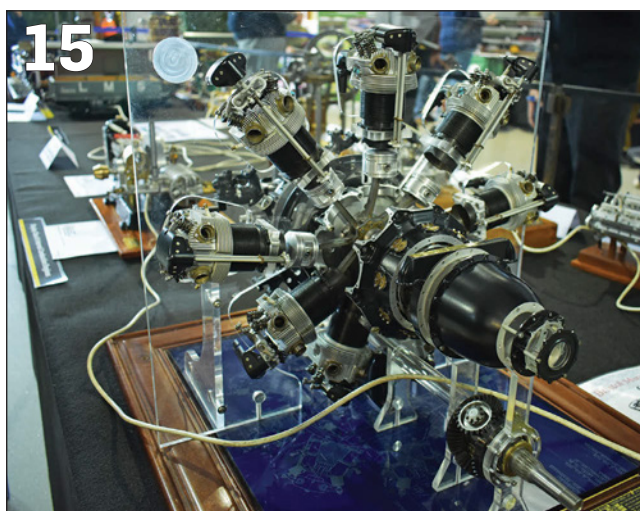


PHOTO 16:
An example
of the Strutt
elliptical clock
built by
Andrew Read.



PHOTO 17:
Towering above
the displays,
Andrew Dunn's
weight-driven
tower clock.

PHOTO 18:
The large model
of HMS York
built by John
Elliott and which
won Class 10.

The second prize went to Brian Harrison for his scratch-built miniature V8 engine with overhead cams. This was another outstanding model of a complex engine in a small scale (**Photo 14**).

Mike Tull also took third prize, for his 1/4-scale model on an exploded display stand showing the internal details of his first prize winner (**Photo 15**). In essence this showed that Mike had made two radial engines, what a task that must have been.

Cl 9: Horological, scientific and automata

First prize in this class and winner of the Clockmaker Trophy went to Andrew Read for his version of a Strutt elliptical clock (**Photo 16**). This timepiece showed intricate detail and the main drive wheel with its internal and external gears must have been

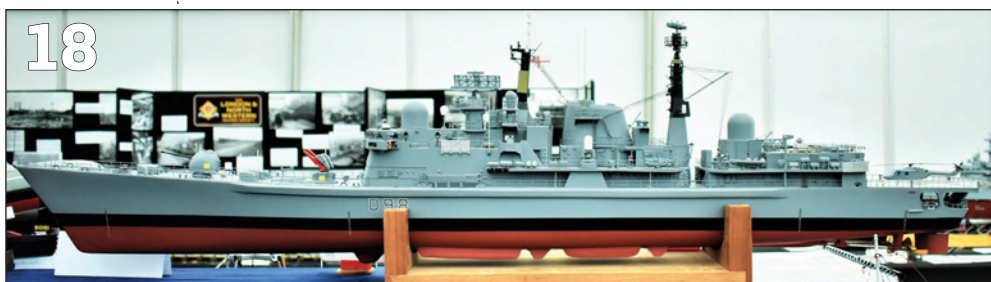
quite a difficult part to machine.

Second prize was awarded to Andrew G Dunn for a small weight-driven tower clock movement with large driven dial (**Photo 17**). Viewing from ground level it looked to be a well-made example.

Cl 10: Marine models, scale (over 50% scratch)

Four models competed in this class with John Elliot winning the first prize and the Marine Challenge Cup for his Type 42 destroyer 'HMS York' (**Photo 18**). Built in 1/96th scale the model has full radio control including the 4½-inch gun and turret. It took 1600 hours to build over four years.

In second place was a steam yacht gondola (**Photo 19**), an attractive looking boat and the work of John Hollis. A third prize was given to the 1/12th scale model of a sailing ketch





'Ashmead' (Photo 20) – the work of Anthony Judd this was a very detailed large model. Steve Briancourt earned a Commended certificate for his Meccano-built model of the battleship 'USS Missouri' (Photo 21). This really was a large example and earned deserved recognition for the builder.

Unfortunately there were no entries in class 11, for Marine Models – Kit (standard or modified).

Cl 12: Horse-drawn vehicles

Winner of this class and the Lenham Pottery Trophy was Stuart Ball for a fine example of a 16-pounder rifled muzzle-loading cannon and limber in 1/8th scale (Photo 22). It was nicely proportioned and finished.

In second place was Dr Patrick Hendra for a gypsy caravan which

included lots of interesting details (Photo 23). A Commended certificate was also awarded to Eric Keggans for his 1/6th scale farm tip cart.

Cl 12: Scale aircraft

A Very Highly Commended certificate was awarded to Terence Orton for his interesting model of a Blackburn Iris III three-engined biplane flying boat (Photo 24).

Cl 14: Young Engineers Award (under 20 years)

In recent years this class has seen a good increase in entries and again this year it did not disappoint, with some excellent examples of what young people can do these days when given good support and direction.

Taking first prize and the Stuart Models Shield was 16-year old Zahra

Webb with a scratch-built 3D printer. (Photo 25). Zahra has exhibited in previous shows and it is good to see how she has progressed from more simple models to this quite complex machine – I wonder what she will produce for next year.

In second place was Matthew Kenington with the 7¼-inch gauge self-designed driving tender (Photo 26) which is currently being serialised in EIM (see page 16). This quite large model showed excellent workmanship and fully deserved its award.

The third prize went to James Knight for a very innovative self-designed combination lock (Photo 27) – there was some quite difficult machining needed on this entry.

Luke Mason gained a couple of Highly Commended certificates for his Stuart Progress oscillating engine and his machinist's hammer, both of which showed some excellent machine work and finishes. Finally 13-year old Oliver Powell was Commended for his little oscillating engine assembly.

This was a good class – hopefully next year there will be another wide range of models and small workshop equipment made by young engineers from all over the UK.



PHOTO 19:

The Steam yacht gondola built by John Hollis in 1:18th scale.

PHOTO 20:

Another large model was this 1/12 scale Sailing Ketch by Anthony Judd.

PHOTO 21:

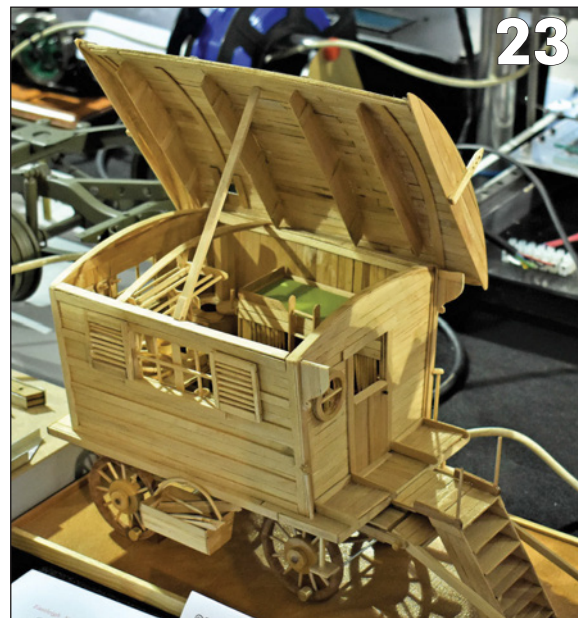
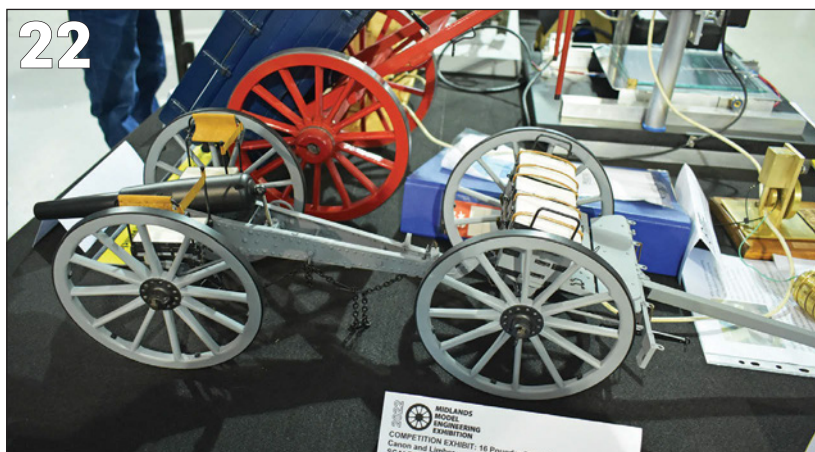
Built in Meccano, Steve Briancourt's USS Missouri.

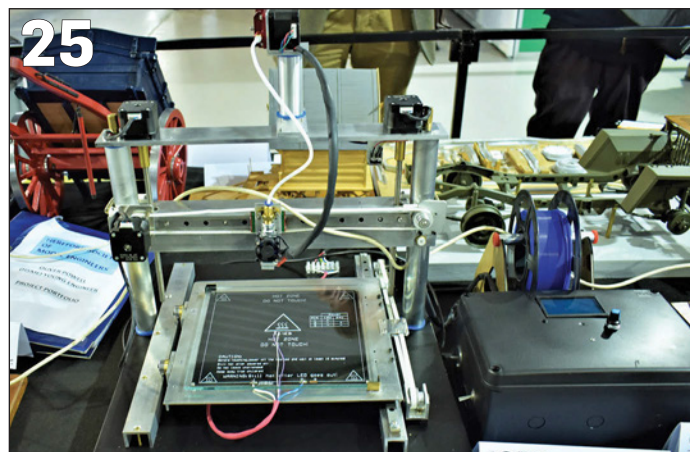
PHOTO 22:

The 16-pounder rifled muzzle-loading cannon and limber by Stuart Ball.

PHOTO 23:

A fine Gypsy caravan by Dr Patrick Hendra.





Cl 15: Miscellaneous

As the title suggests there was a real eclectic mix of superb models in this class this year which really added to the overall standards of the exhibition. First prize went to John Luscott for his example of a 1/3.5 scale model of a BSA DBD34 Gold Star motorcycle (Photo 28). This was an outstanding example of the model maker's art.

In second place was the 1/8th scale model of a 1913 Mercer 35J Raceabout built by Brian Swann (Photo 29) – this was another superb model and was beautifully finished. Taking third place was a model of a foghorn on the deck of an early lightship and its accompanying Carronade (Photo 30). Another well-made small model, it included a working foghorn.

Two Very Highly Commended certificates were awarded to George King for his wooden examples of farm machinery (Photo 31-32). The detail shown was excellent and with fine finishes to all the different woods used made for a superlative pair of models.

Eric Keggans earned a Highly Commended certificate for his 1/6th scale scratch-built Ford GPW chassis and component pressings, making for another unusual presentation and a

PHOTO 24:

Terence Orton's Blackburn 'Iris III' three-engine biplane flying boat.

PHOTO 25:

Zahra Webb, aged 16, built this 3D Printer from scratch.

PHOTO 26:

The 7¼-inch driving tender built by 17-year old Matthew Kenington.

PHOTO 27:

The combination lock designed and built by James Knight.

PHOTO 28:

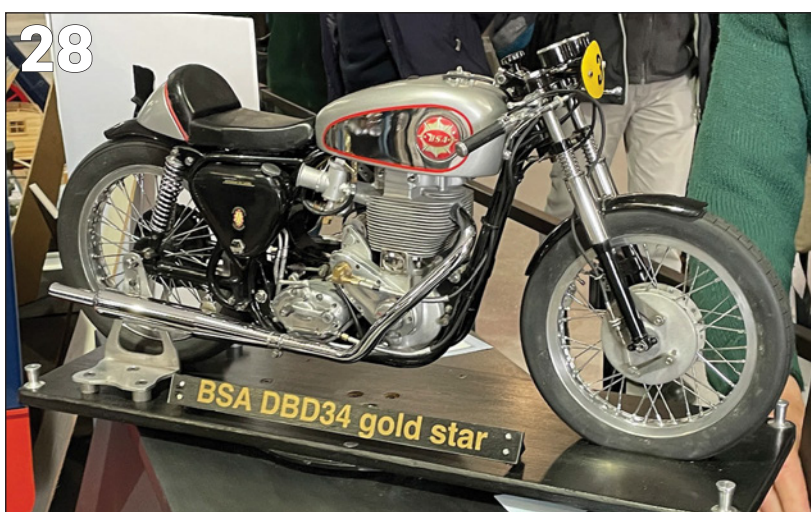
Much admired, the 1:3.5 scale model of a BSA DBD34 Goldstar motorcycle by John Luscott.

PHOTO 29:

The little Mercer 35J runabout was the work of Brian Swann.

PHOTO 30:

This neat little model of a working foghorn on the deck of a lightship was built by John Clarke.



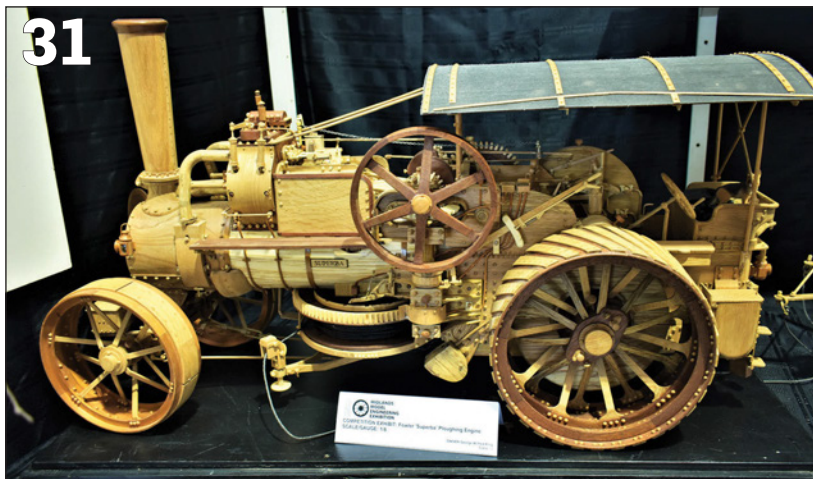


PHOTO 31: A Fowler 'Superba' ploughing engine built entirely in wood by George King...



PHOTO 32: ...as was this 1/8th scale Fowler anti-balance plough.

PHOTO 33: The self-designed and built hot-air engine by 19-year old Daniel Bell.

further Highly Commended certificate went to Brian Swann for his example of a 1912 Rolls Royce Silver Ghost.

Cl 15: hot-air engines

Just the one award here to Daniel Bell who received a Highly Commended

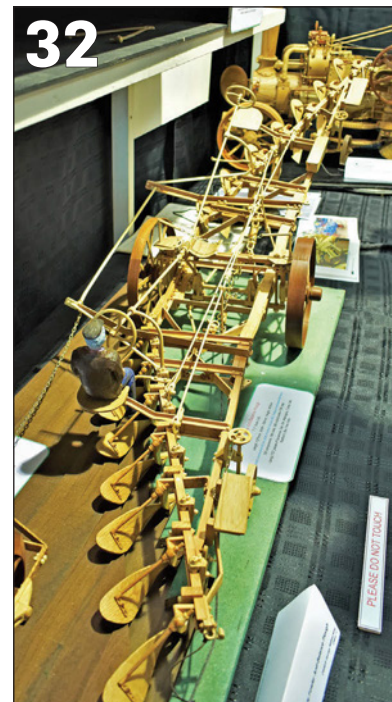
certificate for his self-designed and made hot-air engine (Photo 33).

To conclude the presentations the Len Crane Steam Trophy for the best working engine went to 10-year old Will Haynes with his dad's 4-inch scale Burrell 'Bertie' (Photo 34) while



PHOTO 34: 10-year old Will Haynes won the Len Crane Trophy with his 4-inch Burrell 'Bertie'.

PHOTO 35: The winner of the best traction engine management was Anthony Battings with his 4-inch scale Fowler.



the Fosseway Steamers presented the award for Best Engine Management over the exhibition period to Anthony Battings with his 4-inch scale Foster agricultural engine (Photo 35).

The award for the best Society display judged by all the other clubs and societies went to the Melton Mowbray & District ME (Photo 36) – Kingsbury Water Park was runner-up and the Hereford ME in third.

The final award of the day was the presentation of the new Chris Deith Memorial Trophy for the model judged to be the Best in Show and by unanimous verdict by all 13 judges it went to Mike Tull for his superb Bristol Mercury Engine.

In closing this report I would like to thank all the entrants for a magnificent selection of models which really gave the judges a headache and to all the judges who gave up their time and made the effort to study every model presented before making any decision – it was a great way to close a great exhibition. **EIM**

Restoring a Gauge 1 Midland Compound

Anthony's workshop restoration of an electrically-powered Gauge 1 locomotive focuses this month on producing a level of cab interior detail to impress viewers.

BY ANTHONY WHITE Part 8 of a short series

The cab interior of my Midland Compound turned out to be a much bigger restoration job than I had bargained for. The backhead I had realised would need making as I wasn't happy with the whitmetal casting fitted to the model but everything else in the cab had to be removed as all the components were of incorrect size and proportion.

This was particularly true of the square wheel splashers in the cab. These had been built to accommodate the original 40mm back-to-back wheel measurement plus some generous clearance because the wheels were originally required to be insulated and this had considerably reduced the footplate space for the driver and fireman – they had also been taken too far to the rear.

This is one of the drawbacks of modelling in 10mm scale as opposed to 1/32, as in 10mm the track gauge is too narrow for the scale and you lose another couple of mm. However, by reducing clearances (they don't much matter here anyway unless the splasher wall is tight against the rear of a driving wheel) I managed to get within a millimetre of the prototype dimensions within the cab so things looked much better.

I thought I ought to do a running test once the cab splashers were tacked in position and although they were fine I discovered that part of the

underside of the bodywork and firebox was touching the driving wheels, another consequence of the narrowness of the gauge in 10mm, where said wheels are a little more inboard on the chassis. Fortunately, it was just surplus metal, hidden from view, that could easily be burred away to achieve clearance.

Rather than make up new cab splashers I cut and filed the originals back to size, although I had not as yet decided whether to make all the cab details attach to the floor or to attach the splashers to the inner cab sides and make the floor just as one piece with the backhead. As things progressed and I tack-soldered parts in I realised that making the splashers a permanent feature of the cab with a removable floor attached to the backhead that would end up bolted or screwed to the cab front would be the best solution and work progressed on that design plan.

Cab layout

I made a floor and a backhead to fit as shown in **Photo 59** from 0.6mm nickel silver. For the backhead I had first to print out to 10mm scale a drawing of the layout taken from one of the books on the prototype I was using as a guide for my project – this would act as a template and I glued it to the nickel silver. But before cutting the outline I used an optical punch to mark every item and its centre for

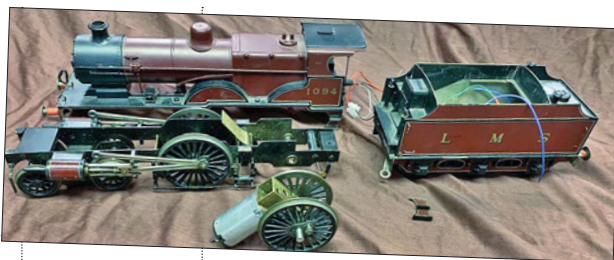


PHOTO 59:

Template for backhead and the metal cut for the cab floor.

PHOTO 60:

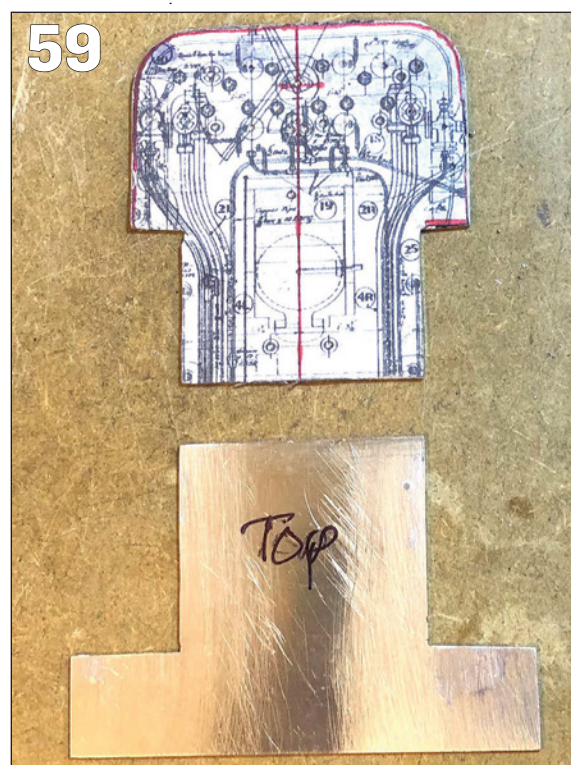
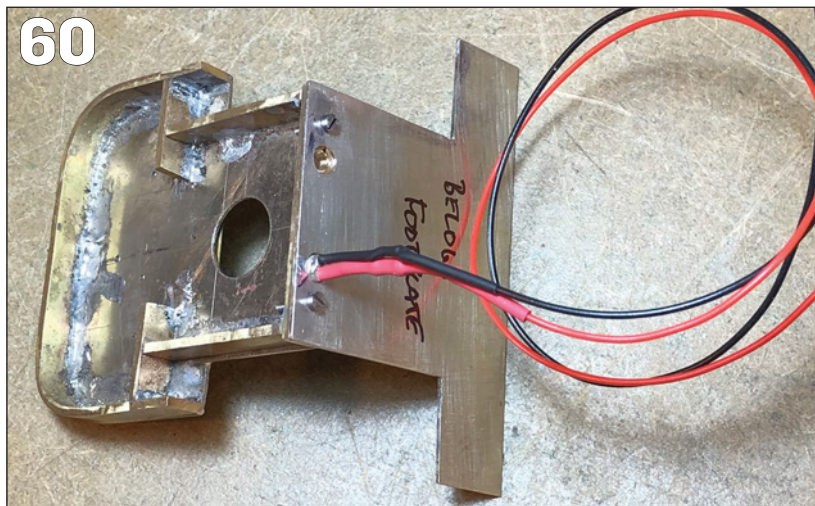
The backhead and cab floor screwed together and position of LEDs to represent fire determined.

Photos by the author

future drilling and fixing.

You can see with this the problem of 10mm scale again, the backhead should come down fully either side but has to be as shown because the rear driving wheels are closer inwards and within the outline of the firebox. Fortunately the splasher boxes in the cab disguise this error.

The next task was to build up the thickness of the backhead by soldering a brass strip around the rear as partly shown in **Photo 60** where the floor and backhead are shown screwed together rather than soldered. This is important because although at the moment the combined unit can be slid into position in the cab, when various items such as the reverser are fitted



61

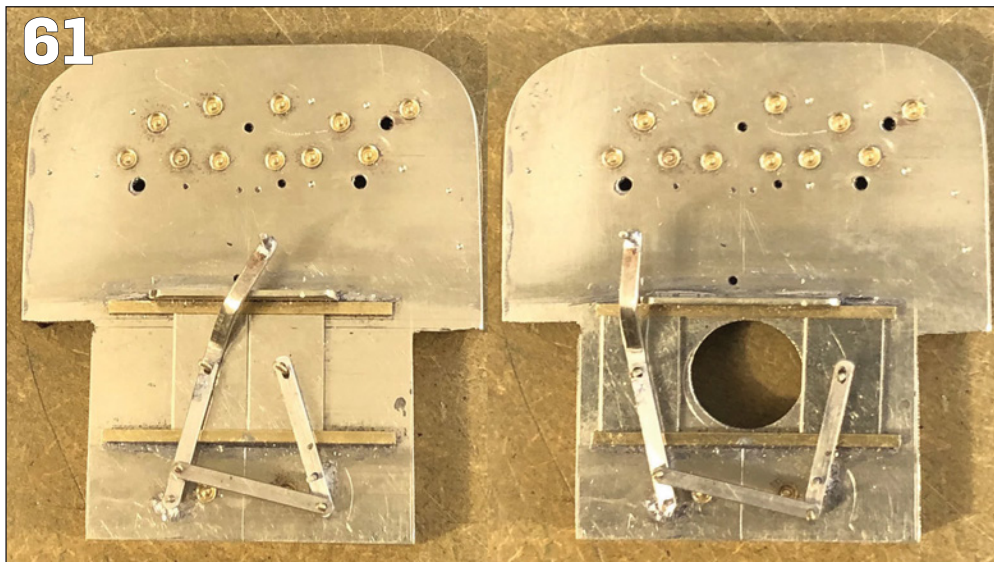


PHOTO 61: Construction of backhead developing, working firebox doors now fixed in place.

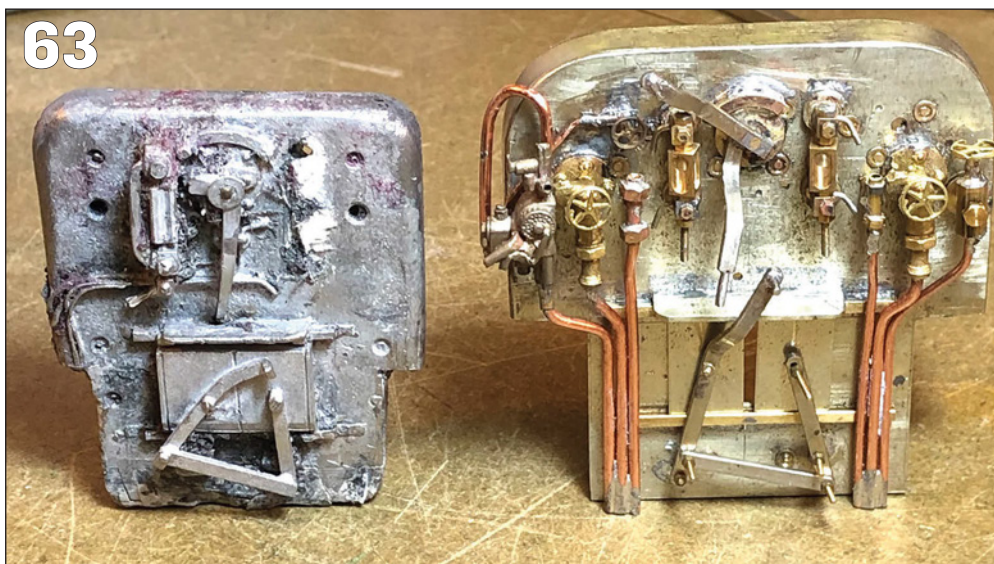
PHOTO 62: Backhead fittings beginning to accumulate and to be fitted.

PHOTO 63: Comparison of the original whitmetal backhead and the new detailed version.

62



63



they will need to go in separately and be screwed together from underneath once in position. Hence the next task was to drill through the backhead for suitable fixing points then transferring these hole positions onto the cab front.

Note that before starting on any detail fittings which might get damaged or in the way you should mark and cut the main circular firebox hole (**Photo 61**). I have marked which is the underside of the footplate as it's very easy to find that the symmetry of the shaped floor may be slightly different from side to side after you have finished filing it to be a lovely slide-in fit.

Lighting up

Now is also a good time to mark and drill the holes for the two 3mm flickering LEDs to represent the fire. I buy mine from Small Scale Lights (www.smallscalelights.co.uk) with built-in resistors in the leads to suit whatever voltage you are using, in my case it'll be 12 x 1.2-volt AA NiCad batteries so 14.4 volts.

It's as well to experiment with how far up to place the LEDs now and see what sort of fire effect there is as it will be more difficult to change things once the backhead is fully detailed. My own experiments suggested that the LEDs would give a better effect if raised. I made a 6mm diameter brass rod, 7mm long and drilled 4mm to take the whole LED, but left the top 0.5mm only 3mm in diameter, so that the LED stopped short of going through when pushed up from below. Once I was happy that everything was okay for fitting the LEDs when necessary it was time to move onto the detail on the face of the backhead.

I started with the sliding firebox doors, cutting two 0.7mm nickel-silver rectangles 8mm x 19mm and using them as a spacer I soldered in the upper and lower channels of some 1mm U-section brass channel. But I soon realised that it might be a good idea to have the 21 x 5 mm shelf in place before getting too far with the door mechanism as the main handle has to clear that shelf. All this can be seen in Photo 61.

After that I fitted all the sunken fittings using some old 7mm scale washout plugs. They are not quite to size but no one is going to be able to see them close-up unless they remove the backhead for closer examination.

The first piece of the operating mechanism is the main handle made from 2 x 0.5mm nickel-silver. All the pivoting joints are 16BA bolts and nuts, unfortunately I discovered rather too late that the two points that require the 16BA to fix into the



base of the backhead have the LED 'tubes' behind them. This was a nuisance rather than a disaster as I would have liked to have put the bolts in and soldered them in position from behind. The end result, before all the nuts were added to the various bolts is shown in the photo.

Backhead Fittings

The first hurdle was the pair of water gauges – I hoped I could find these as a casting to save time but nothing was available so it was down to scratch building. The start point was a length of 2mm square brass turned down at one end to 1.6mm to fit a suitable hole in the backplate.

Onto this I soldered a 4mm diameter brass disc half a mm thick and I needed four of these. The square end needs a 0.7mm hole centre-drilled in it in which to solder a 16BA hexagonal bolt head and into the square end you need to put a 1mm hole to take a 14BA bolt. Onto this everything will later be assembled, with nuts as spacers above and below the actual gauge and nearer the backhead a 0.7mm hole to take a length of nickel-silver wire that will later be bent to form the handle.

For the gauge glasses I used a 4mm length of 3mm square brass, centre drilled for the aforementioned 14BA bolt with each face countersunk a little with a 2mm mill to represent the glass. **Photo 62** shows some of the parts and assembled in position – the actual gauge is only 4mm in height and the gauges are made up from 15 parts so far with more to be added at the lower end before finally soldering on the pipework. Sadly, the crew and cab roof will hide most of my work...

I will not go through each individual item built, just suffice to say that with some milling, turning and fabricating with especially some 14BA brass nuts and a few 16BA hexagonal bolts, plus a lot of drilling, soldering pieces together and using

drawings in the Locomotive Profile book to cut, size and bend pipes and levers to appropriate angles, you'll end up with a reasonable representation of a backhead, and given that photographs show many variations you can never be proved wrong with your choices. **Photo 63** shows the completed new backhead compared to the original whitmetal casting and what the cab is starting to look like. The new one, which is now of correct size to match the firebox although not correct in absolute finest detail, has a representation of all the main features with working fire doors and a movable regulator. **Photo 64** shows how the backhead and floor can be removed for easier painting.

The reverser

This was fabricated from a piece of brass soldered onto a suitable plate top and bottom using measurements from the Wild Swan book on the loco class. I was not sure whether once the reverser was soldered in position that I would still be able to get the backhead in and out so I screwed it in position with a 10BA bolt from underneath that is accessible from under the cab. Although a test run seemed to work, I thought that later would not be a good time to realise I had made an error. **Photo 65** shows it in position, many of the soldered joints were just tacked at this stage in case any part needs removal for further work or modification. But all would be completed and tidied in one final job before painting.

Cab Gauges

I was expecting to attach a couple of gauges to the backhead by pipework but I found looking at photos that on these engines they seem to be fitted high up on the cab front. On closer inspection they seemed to be attached to a plate so while things were out of the cab I cut a suitable-



PHOTO 64:

Cab interior shown in position and removed to allow painting.

PHOTO 65:

The reverser, completely fabricated from stock metal.

PHOTO 66:

Cab backhead completed and after painting completed – note the detail in the dials.

sized scrap of nickel silver and turned a couple of brass rims from a 1/4-inch brass rod drilled 5.5mm and soldered them to the plate.

I had originally intended to solder or even glue them on the cab front but realised that it might be easier if the assembly was soldered to the firebox top. Then when the backhead was painted I could insert the suitably sized photographs of the two gauges into the brass circles to represent the gauge dials. The finished result after painting can be seen in **Photo 66**. **EIM**

■ Next month Anthony concludes his project with the final restoration and testing of the finished model. Parts 1 to 7 of this series were published in the April to October 2022 editions of **EIM**. For details of how to order printed or digital back issues see page 21.



Building a ride-on tender from scratch

Peter and Matthew continue their 7¼-inch ride-on tender build, designed in 3D CAD and intended as a ‘beginners’ project to teach or practice a broad range of skills.

BY PETER AND MATTHEW KENINGTON Part two of 11

The coupling of our ride-on tender is designed to press-fit together, forming a rigid and strong structure which does not rely upon the integrity of any welds, in order to retain its strength when pulling (or being pulled). It is made from 6mm thick mild steel and consists of four parts: a rear plate (Figure 12), a front plate (Figure 13) and a pair of top/bottom plates (Figure 14).

In the prototype, these plates were laser-cut and required no modification before being pressed together – they formed a good, solid, press fit; we used a woodworking vice for this purpose.

The first step is to press the top and bottom plates onto the front plate (Photo 10). This can be undertaken one plate at a time or both plates can be added simultaneously, as shown. Care is needed to ensure that the top/bottom plates remain parallel to one another, after pressing together, although any tendency for them to ‘toe’ together is easy to rectify with a few taps from a hammer. Once added, the partially-complete coupling should look like Photo 11. Finally, the rear plate can be added and pressed into place (Photo 12), with the resulting coupling then looking like Photo 13.

Whilst the coupling has a good

“Even the most incompetent of welders can build a strong and safe coupling using this strategy...”

PHOTO 10:

First step in making the coupling is to press the top and bottom plates onto the front plate.

PHOTO 11:

...which should result in a part looking something like this.

Photos by the authors

degree of structural security simply from the integrity of its press fit, it is still necessary to ensure that the top and bottom plates cannot come loose during operation. This can be achieved by adding a few tack-welds along the lines indicated in Figure 15. To be clear, the only function of these welds is to prevent any vertical movement in the top and bottom plates and the welds have essentially no bearing on the horizontal (pulling) strength of the coupler – one of the beauties of this design. Thus, even the most incompetent of welders can build a strong and safe coupling, using this strategy.

We are not sure we would quite count either of us as ‘incompetent’ but we’re certainly not experienced, certified, welders and I wouldn’t want to rely upon our welding skills if the consequences of failure result in a runaway loco! (save that a safety-chain is provisioned for in the design and should be used at all times anyway).

Note that TIG welding is probably the best choice for the above tack-welds – it is relatively easy to achieve the small, neat, tacks required and little or no filing will be needed afterwards. There is also no need to use filler-wire for this weld; simply melting together a portion of the ‘tab’ and rear plate will be sufficient.

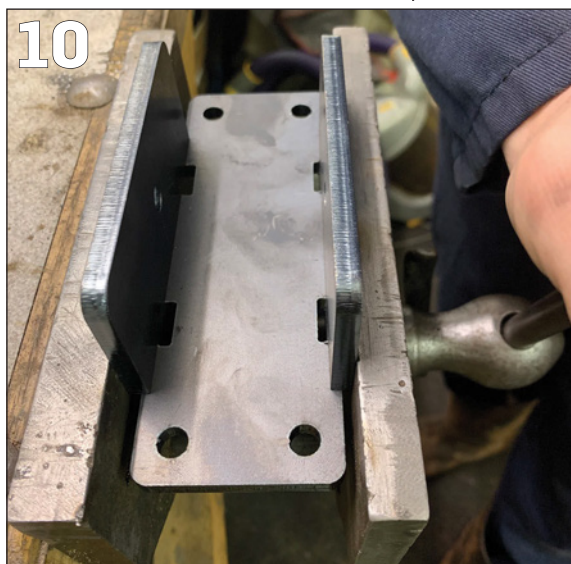
As an aside, for those who have long shied away from TIG welding, due to the requirement for shielding gas (pure argon, typically) and the expense of renting a cylinder for only occasional use, there is a supplier who

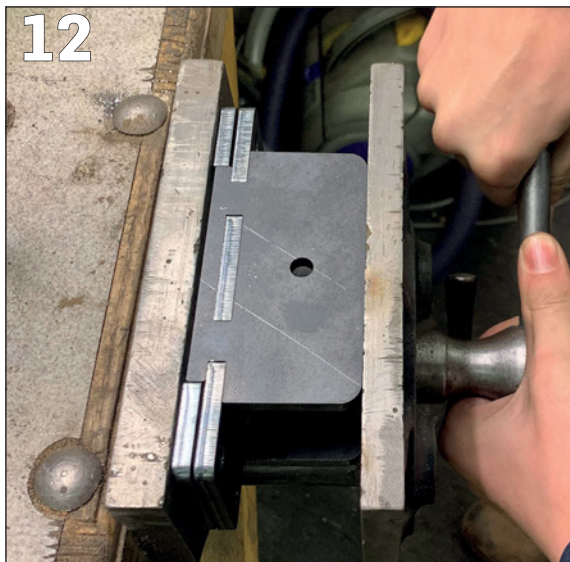
will ‘sell’ you a cylinder (including gas) which you therefore don’t need to rent. You can then get this cylinder ‘refilled’ (actually, the cylinder is swapped for a full one), paying only the refill charge. The name of the company is ‘Hobbyweld’ (<http://hobbyweld.co.uk>) and it has a range of stockists throughout the country. Note that I have no connection to this company, other than using its products.

There are also welding sets available which have the capability to do MIG, TIG and stick welding (we have one of these), so there is no need to acquire a small collection of welding sets in order to be able to undertake all forms of arc welding (including TIG). Like any skill, it takes a bit of practice, but not too much – Matthew learnt TIG welding, at age 13, so it can’t be that hard...

Corner Angles

The corner pieces are made from 5mm x 25mm steel angle and four are required. Whilst it would have been





possible to fabricate these using laser-cut tab-and-slot construction methods, the integral strength of the resultant part would be based upon the quality of the weld holding the two parts together – as discussed above we're not yet sufficiently confident of our welding skills to trust our valuable loco to them and so didn't go down this particular route.

The five holes on the front of each corner piece are shown, in **Figure 16**, as being clearance holes. We chose to thread these and so drilled them to the appropriate size for this purpose. This could be considered to be 'over-the-top', since each bolt which goes through these holes will be retained by a nut on the inside (and there are 10 of them in total at each end of the tender). It is worth bearing in mind, however, that the threads on these bolts are the only bits of metal preventing the loco (say) from pulling the buffer beam plate off the front of the tender – and the threads are not very thick. Threading the corner pieces roughly doubles the amount of 'retaining metal' at this point in the design, for no additional cost or weight, likely making the time spent cutting the threads worthwhile.

A more beneficial (and less 'over-the-top') reason for doing this is that it very precisely constrains the

PHOTO 12:

Then press on the rear plate (Matthew doing his equivalent of a daily workout here).

PHOTO 13:

The completed coupling, before welding (not that this view will look any different after).

PHOTO 14:

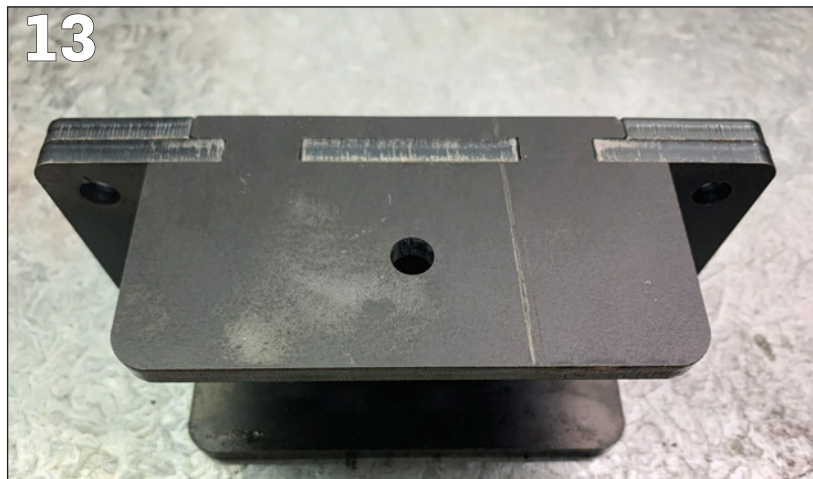
Tack-welds on the rear of the coupling.

PHOTO 15:

Centre-drilling corner angle-pieces – note use of a workpiece locator/stop to aid in making four of these.

PHOTO 16:

Horn stay after undercoating with etch-primer.



frame sides to the vertical – there is no slack as there would be if a standard twist-drill based clearance hole was used. The movement is small, but could impact the smooth operation of the axleboxes and horns, notably after welding the frames. We will discuss this in more detail later – suffice to say for now that the heating of rolled steel plate, whilst welding, can cause it to bend appreciably and in turn, result in the aforementioned problems with operation of the axleboxes and horns.

The same thread-shearing issue is also true of the coupling, of course, and it has fewer retaining bolts. It does, however, have the 'backup' of the safety-chain, whereas there is no 'backup' for the buffer beams.

The two side holes in the corner pieces can also be threaded, if desired, although since the bolts will be in shear when the tender is being pulled by the loco, there is a much greater

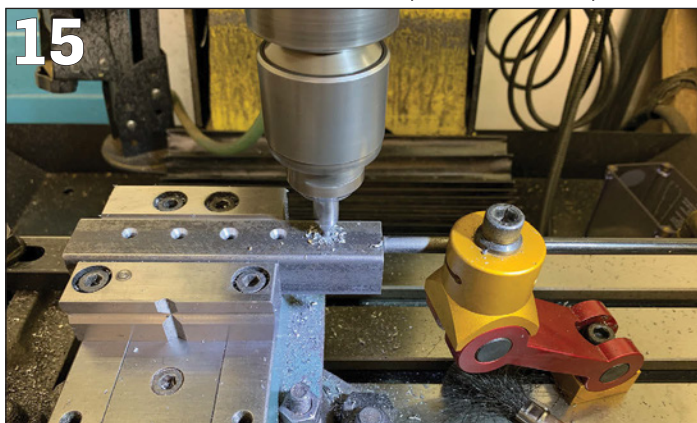
cross-sectional area of metal to bear the strain and little danger of partially-stripped threads being a major safety issue.

The only fabrication required for these parts is to cut them to length and then drill the holes (**Photo 15**). Note the use of a machine stop (the colourful yellow/red item on the right of the photo) to aid in reproducing these parts. If you haven't come across one of these before (we hadn't until we were part-way through our machining 'career'), they are well worth seeking out. They are fairly inexpensive and save a lot of setup time, particularly when working with a digital read-out (DRO) or CNC machine.

Horn stays

The horn stays (**Photo 16**) are fabricated from 6mm mild steel and were laser-cut in our case. The holes

Continued on page 20



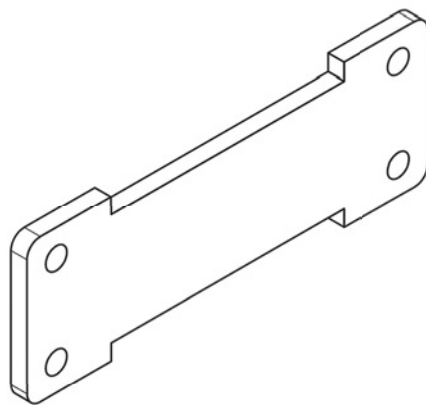


FIGURE 12
Coupling rear plate

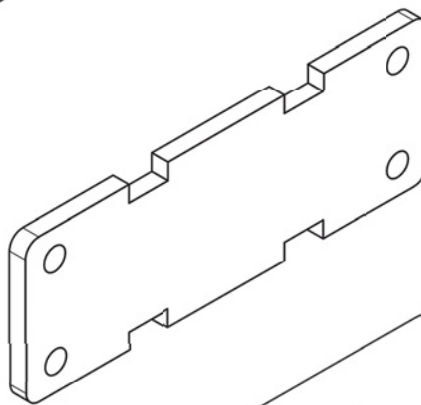
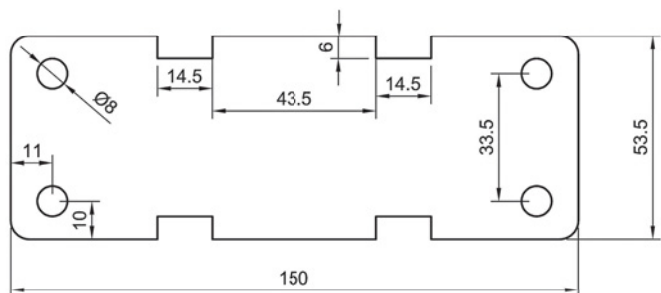


FIGURE 13
Coupling front plate

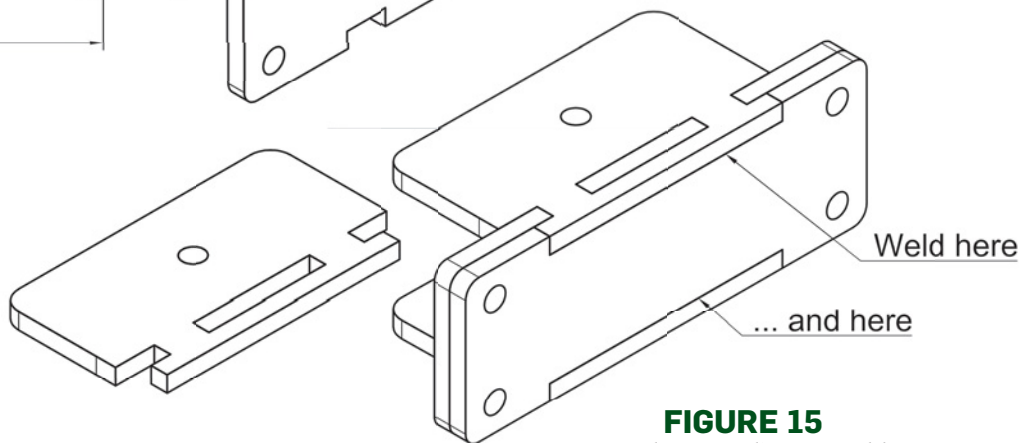
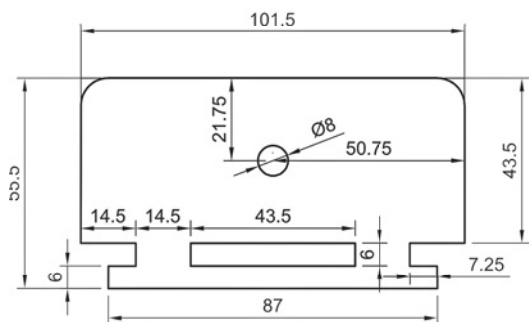


FIGURE 14
Coupling top-bottom plate

FIGURE 15
Complete coupling assembly

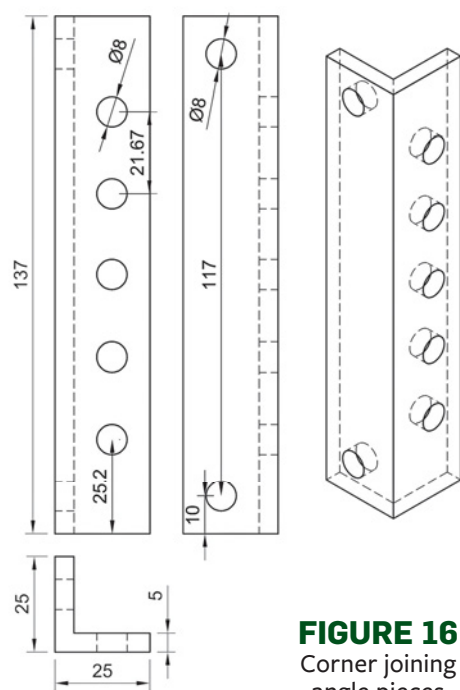


FIGURE 16
Corner joining
angle pieces

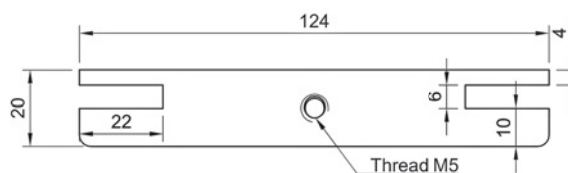
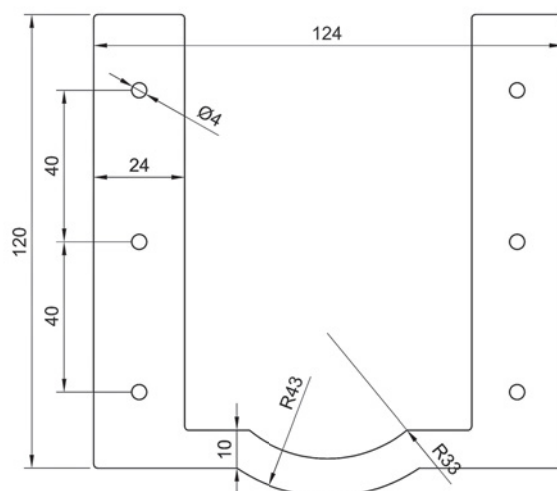


FIGURE 18
Spring retention plate
4 off, all identical

All drawings half full-size unless stated.
All dimensions in mm

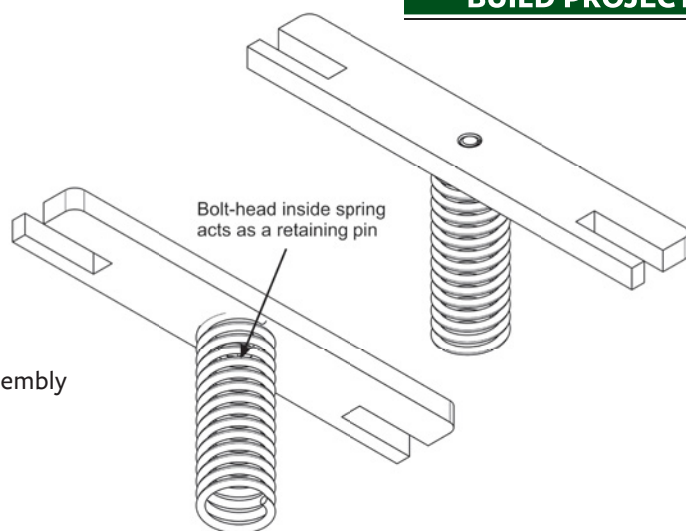


FIGURE 19
Spring and top-plate assembly
(Not to scale)

FIGURE 20
Frame stretcher

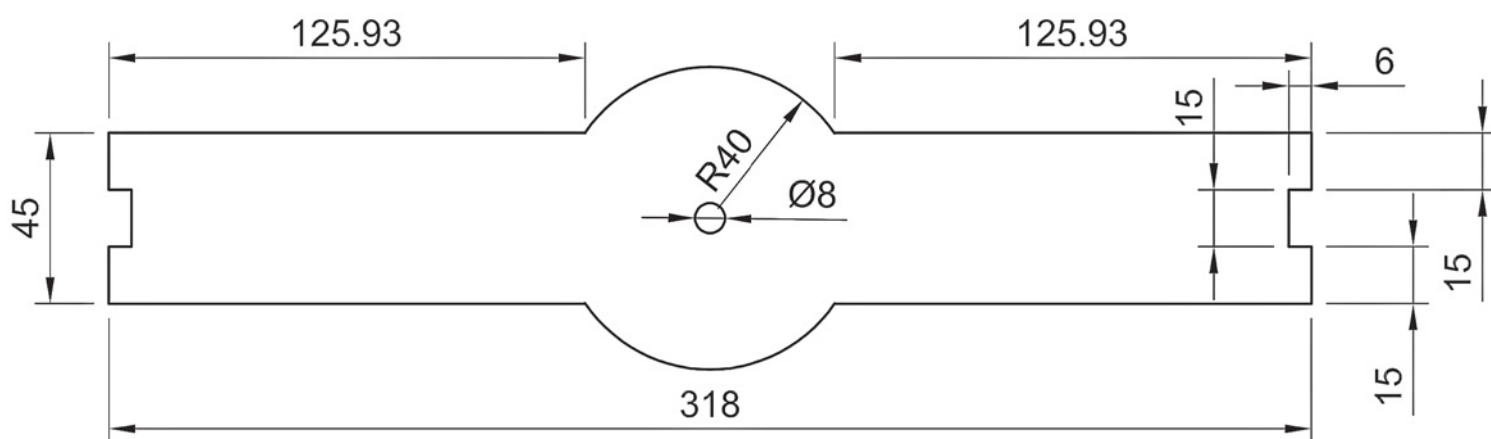


FIGURE 21
Axle, 2 off

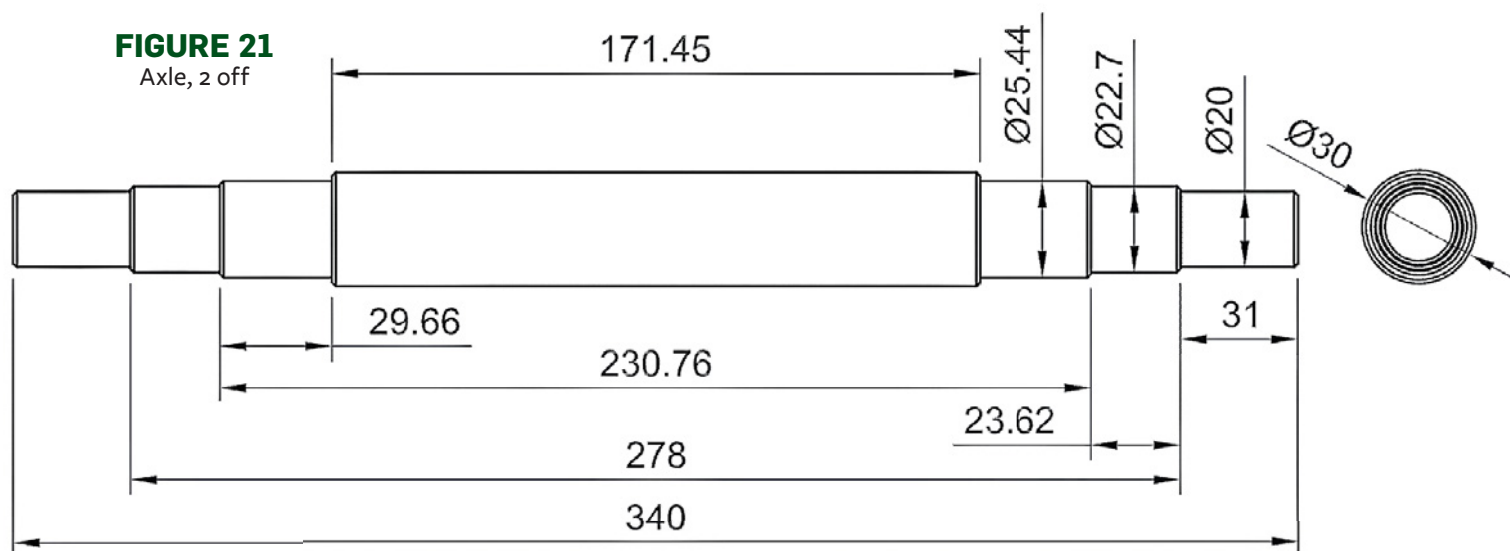
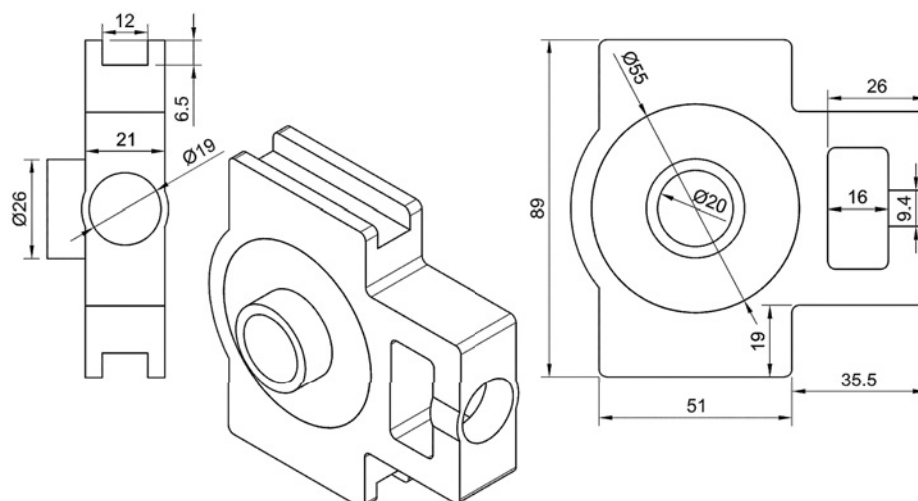


FIGURE 22
Commercial take-up bearing
(UCT204 ST20 20MM)



Continued from page 16
may need cleaning out with a 4mm drill and the inner faces may also need tidying up with a file, depending upon the quality of the laser cut, but other than that, these require little work. **Figure 17** shows the requisite shape and associated dimensions.

Spring-retention plates

The spring-retention plates (**Figure 18**) are again laser-cut from 6mm mild steel. Ultimately, they will slot into the horns (or, rather, the reverse – the horns will slot into these plates), with the springs and gravity on the (pretty heavy!) riding truck holding them in place. The M5-threaded hole is to take a short Allen-headed bolt, which acts as a locating 'pin' for the spring (**Figure 19** and **Photo 17**).

These plates illustrate one minor issue with laser-cut parts: the radius produced by the laser. When the laser cuts the horns in the frames, the internal corners are not perfectly sharp, having a slight rounding in much the same way as if they had been produced by a small milling-cutter. As a result the spring retention-plates will not sit fully 'home' unless remedial works are undertaken.

The simplest way of solving the problem is to round the parts of the spring-retention plates which will come into contact with these internal radii – such rounding is illustrated in **Photo 18**. This rounding will not be visible once the plate is installed, so it doesn't have to be perfect – filing using the thin edge of a normal engineers' file is more than adequate.

Once this has been done, the plate should sit firmly against the top of the horns (**Photo 19**). With the Allen bolt installed, the spring should be a simple push-fit onto the bolt-head (**Photo 20**).

Spring specifications

The spring needs to have an inside diameter of 8mm to fit over the head of the Allen bolt/locating pin. With the type of spring chosen (see Photo



PHOTO 17:

Tapping the M5 spring-locator bolt hole, using a little cutting compound.

PHOTO 18:

Rounding the internal corners of the laser-cut part to match slightly-rounded internal corners of the horns.

PHOTO 19:

Spring top-plate in situ, complete with spring-locator bolt.

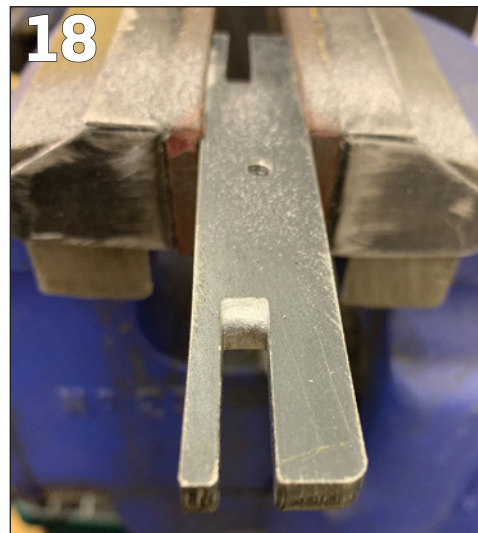
PHOTO 20:

The spring is a push-fit over the head of the Allen bolt.

20), a standard off-the-shelf part available from a wide range of suppliers on Ebay and elsewhere, this dictates an outside diameter of 16mm. The required length is 50mm. If a 'heavy load' type is chosen, then the spring will compress sufficiently to ride over any unevenness on a track or points whilst still being far from becoming 'solid' (in other words fully compressed), with a typical adult (say 70-90kg) sitting on the seat AND a tank full of water.

It's important not to forget about the weight of the water in the tank when calculating the spring's parameters! There is a famous case of a public swimming pool which was designed to sit, on columns, above its car park, thereby making efficient use of the available land. Unfortunately, the designers forgot to take into account the weight of the water once the pool was full. The pool was built (but fortunately not filled) before the mistake was realised and it had to be demolished. In the event that we had miscalculated our spring properties, at least the mistake would have been easy and cheap to rectify.

Note that the colour finish of the spring varies between spring manufacturers – green does not always correspond to 'heavy load'.



Frame stretcher

The frame stretcher (**Figure 20**) is a laser-cut part, made from 6mm mild steel. It also doubles as a pivot location for part of the braking mechanism, as will be described later in this series. The 8mm diameter centre hole takes a bolt for this purpose.

The only work needed on this plate is to round the corners to fit the internal radii of the tabs on the frames to which this part attaches (as just discussed for the spring-retention plates) and to check/drill the centre-hole, which may not quite be a clearance for an 8mm bolt, when cut by the laser-cutter.

Axles and Bearings

The axles are made from 30mm diameter mild-steel rod and the dimensions are provided in **Figure 21**.

We used commercial take-up bearings as the main bearings and axleboxes combined. This is a common practice in commercial designs of this type and so we figured it should work well, although we had no experience of such bearings until this project. Our previous (5-inch gauge) riding truck project had used standard roller-bearings and axleboxes made the 'hard' way, from a solid lump of cast-iron. It was good



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practice when we did it, but 'wasted' an awful lot of time! The same was true of the axleboxes we made for our GWR Manor locomotive's tender (still under construction), but as these were made from castings, we didn't have much choice.

In order to include the take-up bearings in our CAD design, we needed to draw them accurately – see **Figure 22**. The spring discussed above locates nicely in the hole at the top of the bearing (right-hand facing side in the 3D view in Figure 22). Between the Allen bolt which locates the top of the spring, forming a part of the spring-retention plate discussed above, and this hole, the spring is well-constrained without the need for any further mechanical fixings.

The axle needs to be a neat fit into the take-up bearing (**Photo 22**) but should not require mechanical assistance (which has the danger of damaging the bearing). The bearing has two grub-screws to retain the shaft, to ensure that it is the bearing itself which rotates in use, and not the shaft which rotates in the bearing.

Note that we could have designed the axles such that the change in diameter from the wheel's internal

bore to that of the bearing abutted the bearing (making the 25.4mm section longer and dispensing with the intermediate 22.7mm section) – this would have the advantage that there is no danger of the axles 'wandering' within the frames, popping out of one bearing whilst simultaneously receding from the other (with only the two grub screws in their respective bearings to prevent this).

We thought long and hard about this option, but in the end chose not to do it, as we were inexperienced in either the press-fitting or shrink-fitting of wheels. We were afraid that we would get a wheel partially along what would, in that design, be a much longer portion of the axle with a diameter equal to a 'press-fit' for the bore of the wheel, with it then getting stuck at that point (not making it all the way to abut the 30mm diameter of the original shaft). We decided to err on the side of caution until we had more experience in this area.

It later dawned on us that the shoulder needn't be at the internal diameter of the wheel bore, but could use an intermediate diameter (22.7mm is suggested in Figure 21, but this is not critical). This does not incur a

PHOTO 21:

Machining an axle using a live-centre – the axle is thick/strong enough not to require a steady for this process.

PHOTO 22:

Our young apprentice checking the fit in the take-up bearing – this needs to be a neat, but not mechanically-assisted, push-fit.

PHOTO 23:

A view of one axle, its wheels, spring-retention plate, spring and horns/horn stay in situ (getting a bit ahead of things here...)

significant amount of additional machining (indeed, it requires less machining than the axles we actually made, as we turned the whole of the end section down to the bore of the take-up bearings) and so is definitely a better solution. This realisation came too late for us to include in our axles, but is included in the drawing (Figure 21). Hindsight is a wonderful thing...

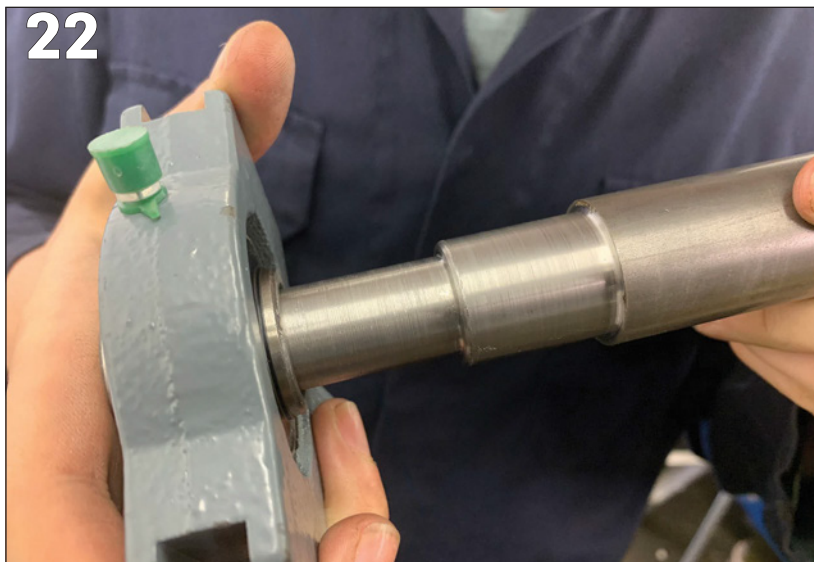
The axle drawing shows an unusually precise dimension for the section upon which the wheels will sit: 25.44mm. This is not a mistake or an artifact of the CAD system; the additional 0.04mm is required to ensure that the wheels are a press (or shrink) fit onto the axles, without additional retention means being employed (no Loctite, grub-screws, keys/keyways or such). It is therefore important to get this right.

In terms of tolerances on this measurement, anything within a range of 0.02 to 0.065mm should suffice (for mild-steel wheels on a mild-steel axle). We opted for something close to the middle of this range as we wanted to experiment with shrink-fitting and didn't want to make our life too hard when it came to expanding a large, solid, lump of steel, in the form of the wheel. Our findings in this area will be discussed below. Since these are not driven wheels, it is not too critical, but we wanted to do a good job and use the process as a learning exercise. **EIM**

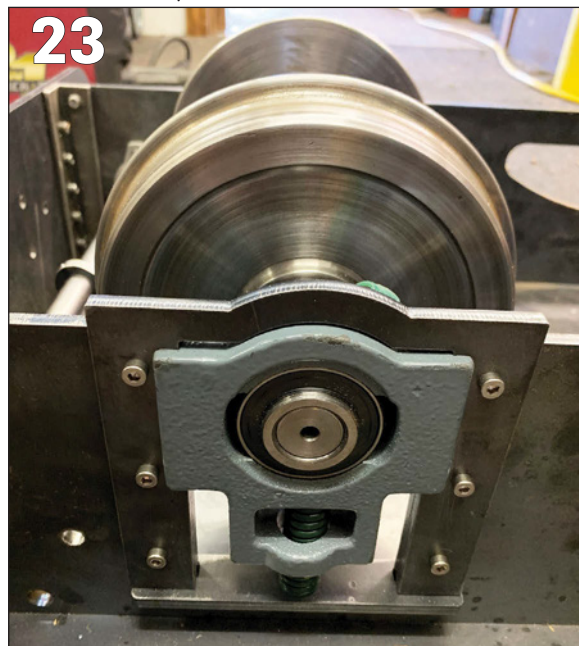
■ Next month Peter and Matthew focus on the wheels and brakes of the tender.

Part 1 of this series appeared in last month's November 2022 edition of **EIM**. A digital back issue can be downloaded or a printed copy ordered from www.world-of-railways.co.uk/store/back-issues/engineering-in-miniature or by calling 01778 392484.

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23



Conway – a first steam locomotive build

Rich begins a short series designed to help other novice locomotive builders by relating the challenges faced and lessons learnt constructing his first engine.

BY RICH WIGHTMAN Part one of a short series

Readers of any of my previous scribbles will have noticed that I often refer to my locomotive build 'Conway' pictured on this page. I can now happily say that after five years she runs around our club track and has given me many hours of enjoyment (a video of Conway in action can be seen at <https://bit.ly/3Fv25zy>).

She hasn't in fact taken five years to build, there have been many periods of inactivity. I must admit I am easily distracted and tend to go off in all kinds of directions as takes my fancy. This is a hobby for me so there are no deadlines to meet.

So what made me want to build a steam locomotive? Well I have been into model engineering with my good mate Julian for many years and we both have a good few stationary engines and a few boilers under our belts. One of my creations, the beam engine (Photo 1) was recently described in the pages of EIM, in the August 2022 issue. What we fancied though was something we could ride on, or behind, so the idea of a traction engine came to the fore.

A road vehicle seemed to be a good choice as it doesn't need tracks to run on. After some research I came across the PYRTE which stands for 'Pull You Round Traction Engine' – a book is available on Amazon. This looked like the sort of thing we were after and within our build capabilities so a copy of the plans was obtained.

Road to rail

The rules concerning running a steam-powered vehicle in public are quite complex and the subject of boiler testing came up so one Sunday Julian and I set off to our local railway club where we met a very likeable bunch of enthusiasts. As soon as we saw the locomotives steaming around the track we were hooked and both of us said; "I gotta get me one of them". We joined the club there and then and spent many Sundays bombarding the members with questions.

Five years on I now have my first loco running around the track – Conway, a 3½-inch gauge 0-4-0 tank



"As soon as we saw the locomotives steaming around the track we were hooked..."

ABOVE: 'Conway', Rich's first locomotive build and the source of many hours of enjoyment on his local club track.

PHOTO 1: Previous work – Rich's beam engine, cleverly constructed almost entirely from scrap automotive components.

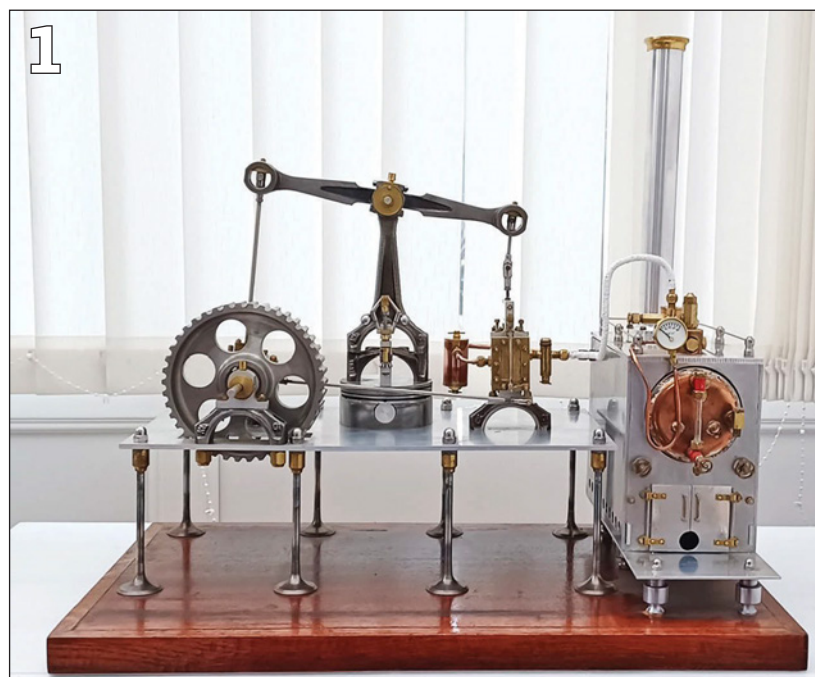
Photos by the author

engine, designed by Martin Evans. It is absolutely brilliant, I love every minute of it, so much so that I have made a start on steam loco number two, which is a 5-inch gauge 0-4-0 'Chub' from Kennions (Photo 2).

As I mentioned, it wasn't five years of hard labour to build my first loco. I was still working full-time at the start of the project and I often had lengthy

periods of workshop inactivity, coupled with family duties, holidays and the like. I also succumbed twice to the dreaded virus that laid me out for a while.

I decided to write this article to hopefully encourage others to have a go, to help with decisions that need to be made when undertaking projects such as this and to give advice based



on my limited experience. What follows is by no means a set-in-stone guide, it's simply the way, rightly or wrongly, I went about it.

This will not be a how-to-build-a-loco series – my particular loco build was serialised in the *Model Engineer* magazine in 1980 by the designer Martin Evans. I will instead offer more of a “here's the bits you didn't know but need to know about”.

So where to start? The first thing I would advise is to join your local model engineering club, after all you will need a track to run your loco on (unless, that is, you are building a model purely for display) and the club members will be very helpful and a gold-mine of information.

Our club has a library of magazines going back years that are available to the members and which provide another source of invaluable information. There are also some plans available.

Secondly, join a forum or two where you will have access to a wealth of information and years of experience and expertise from around the world. The forum I am on, Model Engine Maker, (www.modelenginemaker.com) is where you will find a detailed build of Conway more or less from the first saw cut. This forum has members from the UK, USA, Canada, New Zealand, Australia and Europe to name just a few places and it has proven invaluable over the years. A couple of other forums I also visit are www.homemodelenginemachinist.com and the Model Engineering Clearing House (<https://modeleng.proboards.com>).

Vital questions

So you have been bitten by the loco bug – now you have to choose which loco to build. A few questions need to be answered, such as;

- 1) What facilities are available at your local club?
- 2) What are the capacities of your own tooling and machines?
- 3) What size of loco would you like?
- 4) How much will it cost to build?
- 5) How will you transport it?
- 6) How long will it take to build?

Please be assured I am not trying to put you off building a loco, on the contrary I am trying to encourage you. There were many things that I didn't take into consideration, or didn't know about at the time I started to build mine that had I known beforehand would have made my life a lot easier and shortened the build time as a result. It is my experience that I wish to pass on which may be a help to any future builder.

To start with question 1, what facilities does your club have? I am lucky with the club I am a member of,

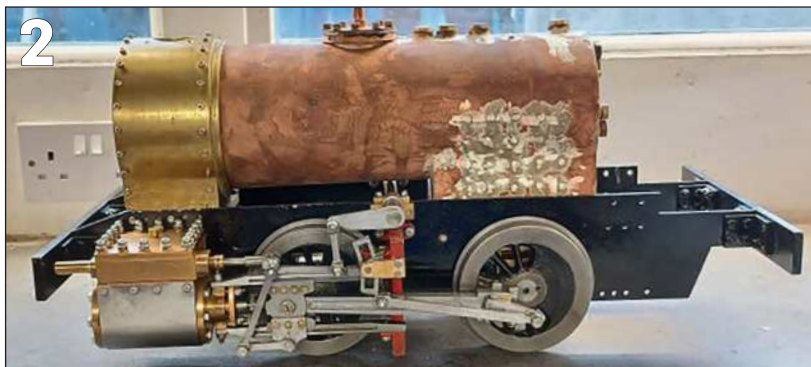
“The facilities of your local club will to some extent dictate what gauges are open to you...”

PHOTO 2:

‘Chub’, Rich's second loco sees a move up to 5-inch gauge and was an eBay purchase as a part-built project.

FIGURE 1:

Rich's local club in Leicester offers a variety of tracks to run a newly-built locomotive on.



Leicester SME (www.lsmeabbeypark.com) – the facilities (Figure 1) include a ground-level track for 5-inch and 7¼-inch gauges which is 2600 feet in length and a 660ft long raised track for 2½, 3½ and 5-inch gauges. We also have a garden railway with two gauge 1 circuits and two O-gauge circuits, so plenty to choose from.

Another club I have visited has only ground-level 5 and 7¼-inch gauge tracks and another club a raised track of 3½ and 5-inch. Clearly it would have been pointless for example building a 2½-inch gauge loco if I was a member at either of those two clubs.

So the facilities of your local club will to some extent dictate what gauges are open to you. Our club also has a workshop with a lathe, milling machine, guillotine, sheet metal benders, grindstones and such like available for use by the members. The workshop facilities at a club can also be an important consideration if you lack any facilities at home, which leads us to question 2, the capacities of your tooling and machines.

It's no good starting to build a 7¼-inch gauge loco only to find that the wheels are too big for your mini lathe – unless of course you are sure you can turn them on a club machine with suitable capability.

Most 3½-inch gauge locos can be built on a Myford-size lathe with a 3½-inch swing. The milling operations can also be carried out on the lathe but a dedicated milling machine is a better option.

Some 5-inch gauge locos can also be built on a 3½-inch lathe but check first. The trade suppliers of parts and

castings are typically very helpful so it's worth asking a few questions and again the forums and your club are there for advice.

Question 3, think about the size of the loco you would like to have. If you just fancy a steam loco and don't want to ride behind it Gauge 1 might be a good option and you may be able to build a small track around your own garden to run it on.

Weighty matters

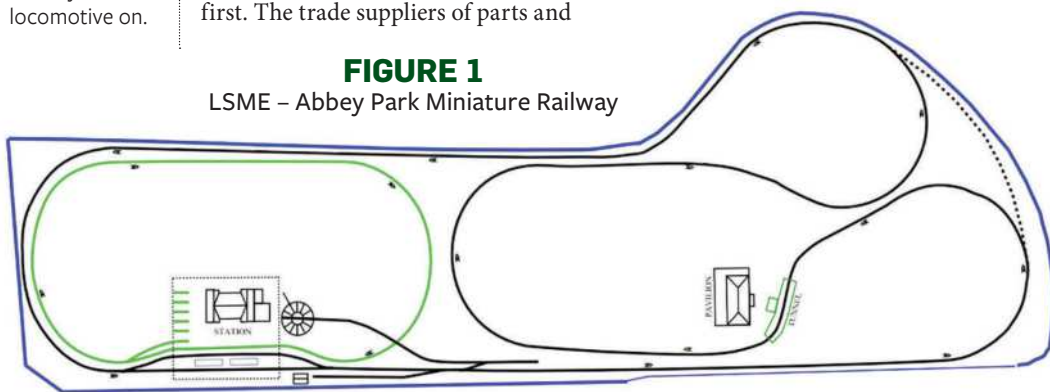
A 2½-inch gauge loco, if your club has that gauge, will happily pull you round the track but will not realistically cope with more than one adult. A good 3½-inch gauge engine will pull four adults. As an example two of the popular small 3½-inch gauge locos, ‘Tich’ and ‘Juliet’ are each around 17 inches in length and weight-wise manageable by one person.

My loco, Conway is one of the larger 3½-inch gauge tank engines. It is 26 inches long and weighs approximately 70lbs (32kg for the metric-minded) and as a result is a two-man/woman lift.

The aforementioned locos are all 0-4-0 shunter/quarry type engines which do not have tenders. A mainline-style loco with its tender will of course be considerably longer and heavier.

So to question 4, how much will it cost to build? That is a good question. Have a look at some of the suppliers of locos and check out how much a set of castings will cost! Add onto that the frames and a boiler plus all the

FIGURE 1
LSME – Abbey Park Miniature Railway





ancillaries and such like and it quickly mounts up.

However your project needn't be anywhere near as expensive, if you are prepared to do a lot of the work yourself. A lot of the parts needn't be bought-in castings but can be fabricated instead. Wheels can be turned from steel blanks, cylinders can be machined from solid lumps and the boiler, arguably the most expensive bit, can be fabricated at home. At this point you need to go back to question 2 and work out how

"There will be part-built projects for sale that can be an absolute bargain – they can also be a complete waste of money..."

much of the build you can do yourself.

Question 5, how will you transport it? This is an important but oft neglected consideration. A small loco like Tich or Juliet mentioned above can be lifted into the back of a car by one person and could be stored in the corner of the garage. At other extreme a 7¼-inch loco will require a trailer or van and half the garage floor to store it.

For my loco I have built a scissor lift for transporting it from the workshop to the car (Photo 3). I also have a purpose-built length of track and a slot-in bridge piece that fits into the back of the car (Photo 4). It will accommodate two locos comfortably, my Conway and my mate's Simplex (Photo 5). With the scissor lift and track I can manage the loco on my own, while said loco and scissor lift take up a small corner of my garage.

Question 6, how long will it take to build? Another good question. It all depends on how many hours per week you can allocate to your project. At the time of writing this article I had been on mine for around five years but I was in full-time employment for the first two years followed by a year of part-time work before retirement. The Covid virus, which I succumbed to twice, also shortened my workshop time. As already mentioned there were periods of inactivity for weeks on end, waiting for materials, holidays, domestic duties, grandchildren, child minding duties to name but a few. If you could have 40 hours per week solid I would guess you could do it in five or six months. But we need to remember that this is a hobby so there

are no deadlines to be met.

Why did I pick Conway? (Photo 6). Well quite by chance I came across a website that had the original magazine article written by the designer to download. This was before I realised our club had all the relevant magazines anyway. We were going on holiday shortly afterwards so I installed the download on my tablet and took it with me – two weeks to read and inwardly digest. Happy with what I had read the choice was made.

Most but not all loco builds have been serialised at some time or had a book published on them so it is well worth getting hold of a copy. My club has a library of back issues going back to, well the age of steam I think, so check at your club to see if they have a similar resource. Some clubs also hold sets of plans donated by the members.

Once you have made your choice you should read the book/articles on the loco thoroughly until you are happy in your own mind. It's a good idea too to go online and search for anything related to your choice of loco to see what if any problems other builders have come across. There will also be tips and tricks and modifications to help in the build. A very useful page on the model engineering clearing house forum (<https://bit.ly/3U6wlliz>) is dedicated to listing known errors on plans – there are rather more than you might think!

Buyer beware

A tip I can pass on concerns our dear friend eBay, the online auction/sale site. There will always be part-built projects for sale that can be an absolute bargain and save months of work and help one's funds stretch a bit further. They can also be a complete waste of money and are nearly always sold as seen, no returns permitted.

Two examples I can give you are a Tich I bought on a whim, which consisted of frames and cylinders and a few bits. I think I only paid about £60.00 for it. The problem was it just didn't look right.

At our club I found the relevant magazine article and made some notes of the frame sizes. Checking the plans against the frames they were an inch short and the wheelbase was shorter as well. Perhaps the builder was doing his own design or maybe he just made a mistake, I'll never know. However this meant the loco could not be built as per the plans so was nothing more than scrap metal. One day I may get around to having a go at it.

Another part-built loco I bought was my Chub, also an eBay find. It came with frames already built and a box full of castings including the cylinders, cylinder covers, valve chests and covers, wheels, axle boxes, axle



pump and such like, mostly unmachined. The frames had been made to a good standard and had the horns machined and fitted. The cast bronze stretcher was also fitted.

On closer inspection though some of the holes in the frames were in the wrong position. This was easily remedied by stripping the frames, clamping together and re drilling. However when it came to the wheels which have been partly machined a problem arose. They should have been bored out to $\frac{5}{8}$ -inch. The axles (not supplied with the loco) are $\frac{3}{4}$ -inch which must be turned down to $\frac{5}{8}$ -inch (0.625) each end to leave a shoulder which the wheels push up to.

Unfortunately the wheels have been bored out oversize to 0.7-inch, very accurately I must add. The axle boxes have been bored very nicely to $\frac{3}{4}$ -inch (0.75) the correct size. I can only assume the previous owner made a mistake, perhaps misread the plans but in any case the wheels instead of being a nice sliding fit on the axle were way too loose.

I got around the problem by machining the axles to suit the already machined wheels. There was just enough shoulder for the wheels to butt up against. After the wheels had been quartered and secured with Loctite I drilled and tapped across each wheel/ axle and fitted grub screws for extra security (Photo 7).

One can spend many hours trying to work around a mistake and eventually give up and start again. But in the case of this eBay find I am well in pocket with the parts I have. Locos offered for sale that have all the parts machined and assembled into their frames are a bit of a gamble. If they have been done correctly you could be onto a winner, if done incorrectly...

You will often see boilers for sale but you should ask the boiler inspector at your club before bidding for one. He might not be willing to test a boiler of unknown origin.

In my limited experience the boiler inspector will usually want to inspect the boiler at various stages of its construction and to look inside it before the backhead is fitted. Buyer beware I think is the advice here.

Material gains

I would like to talk about materials now. These can form a huge chunk of the cost of building a loco. Metals are by their nature heavy so can be expensive to buy online because of the cost of postage. You will need to become a scrounger, a forager, and a keen skip dipper.

Any bits you can find will save a fortune. Old printers have very useful and accurately ground shafts. Sheet steel can be cut from old washing



"You will need to become a scrounger, a forager, and a keen skip dipper – any bits you can find will save a fortune..."

PHOTO 3:

This scissor lift is a great aid to loco transfer.

PHOTO 4:

Purpose-built track made to fit in the car.

PHOTO 5:

There is just enough space to accommodate a pair of locos.

PHOTO 6:

Conway was selected for a first build after being discovered on a trawl of the internet.

PHOTO 7:

Risks of an eBay purchase – Chub's wheels have needed a lot of work.

machines and such. Skips are often a useful source of bits of angle iron. Have a look around your area for engineering factories which always have scrap bins. Approach the manager and tell him what you are doing. They will sometimes let you have a bucket full of bar ends for a contribution to the tea fund.

Car boot sales often yield useful bits and pieces while a really good source of materials are steam rallies – here you can find many traders selling all types of metals for a fraction of the retail price. Try to get to at least one of the model engineering exhibitions where you will find materials and a host of like-minded people more than willing to help.

Friends and family often have useful bits lurking at the back of their garage or shed that are free for collection. Above all collect as much as you can – it's not only the loco that needs the materials. Jigs and adapters will need to be made for the lathe and mill for example and not forgetting

the aforementioned lift and track.

Copper, brass and bronze are probably the most expensive materials but a word of caution. That bit of copper tube you found may not be acceptable to make your boiler from. Boiler tubes have to be a specific grade of metal, C106. You might have to prove conformity in order to get a boiler certificate.

Also, consider using different materials for your components to the ones specified in the plans, so long as the replacement material is equally suitable for use.

It is easier to source materials nowadays thanks to the internet. I have used as much stainless steel as possible – the 303 grade of free-cutting stainless steel is reasonably priced and easily available. Using stainless steel helps to keep our old enemy rust at bay. **EIM**

■ Next month Rich delves into the challenges of working from plans, and the age-old imperial v metric argument.



A Sledge Hammer to Crack a Nut?

David discovers machine-tool capabilities in his workshop he never knew he had while solving a marine modelling problem for his son...

BY DAVID CONEY

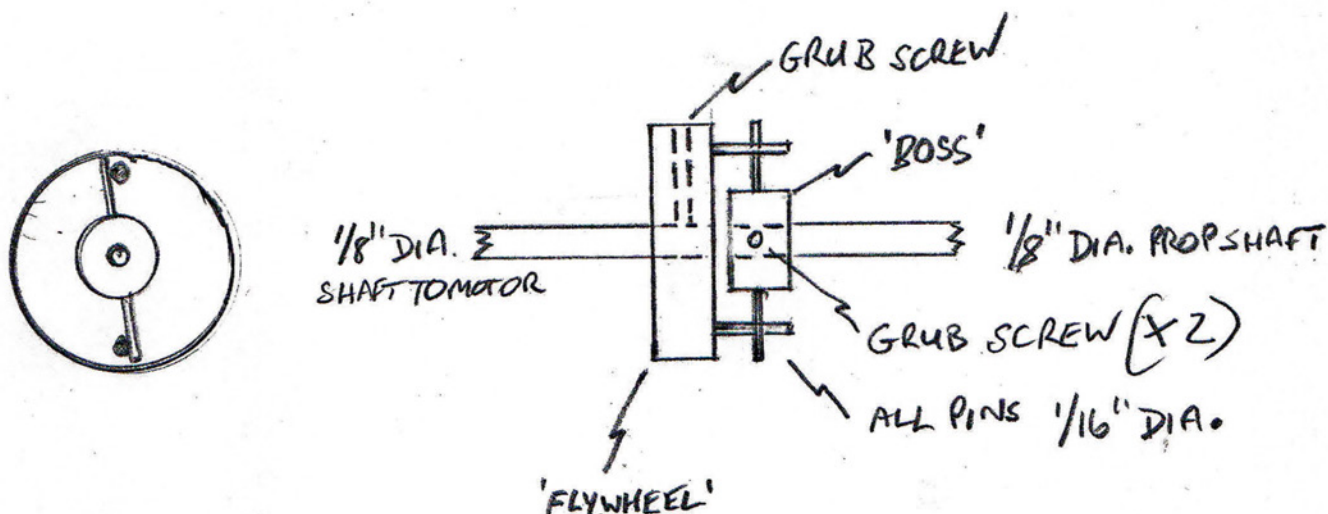


FIGURE 1

I needed to make a universal joint/coupling for one of my son's model boats. The coupling in question connects the drive from the electric motor to the propshaft. This article shows that when it comes to using the equipment you have, rather than buying more, then 'where there's a will there's a way' – the job

"I'm not into buying more model engineering equipment, I prefer to use what I have..."

can usually be accomplished. At my age I'm not into buying more model engineering equipment, I prefer to use what I have if at all possible.

The coupling is shown in the 'back of an envelope' diagram reproduced above. It consists of two main parts, a 'flywheel' on the motor shaft that has two pins in one face,

parallel to the motor shaft, and a 'boss' on the propshaft.

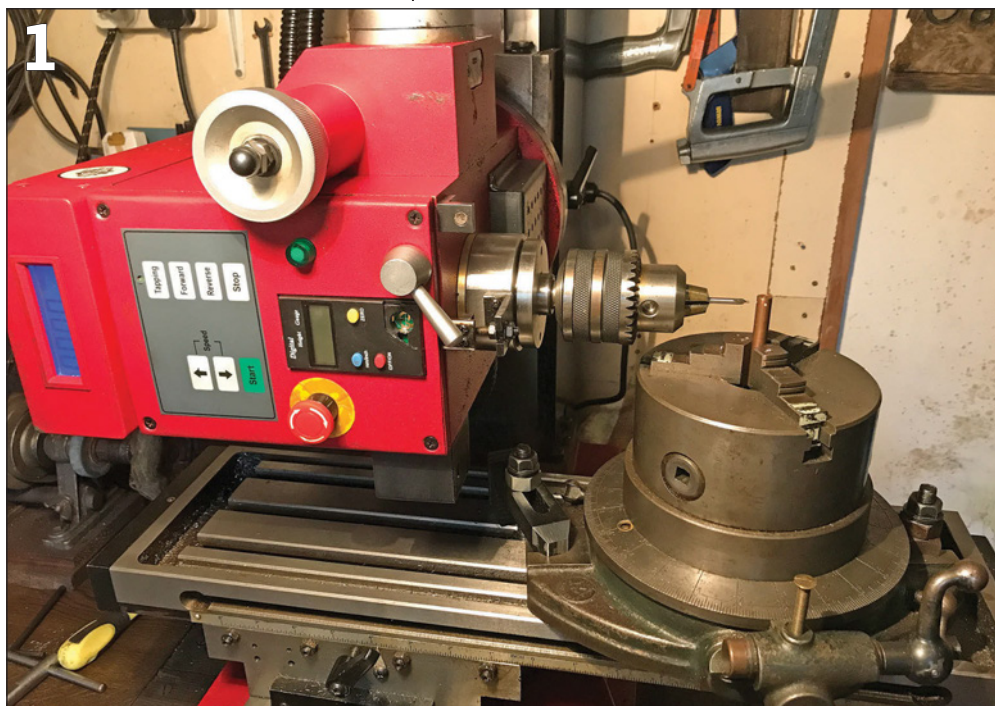
This boss has two pins in it, at right angles to the shaft. To my critical eye, it looks best if the pins are at right angles to the grub screws holding the boss to the shaft.

Common coupling

This type of coupling is quite common in model boats, its advantage over some kind of universal joint is that there is no frictional loss. Also the two shafts do not have to be exactly in line with each other. A cheaper form of coupling employed in some model boats is simply a piece of plastic tubing to join the two shafts.

The critical point in the construction of the boss is to accurately align the grub screw and pin holes. This would be easy to do on the milling machine if one had a small rotary table. However I only possess a fairly large (5-inch) rotary chuck bought for about £15 at one of my model engineering club's disposal sales, and no angle plate large enough to be able to mount it on its side on the milling table.

However, much to my amazement I found I could rotate the head of my vertical milling machine, a Sieg Super X3, through 90 degrees (there are



indents at zero and 90 degrees), to effectively become a horizontal milling/drilling machine and to carry out the requisite drilling operations.

The operations required are four holes spaced at 90-degree intervals, two for the pins and two for the grub screws. **Photo 1** shows the setup that is required.

Incidentally the best way to set up the drill to accurately drill into the centre of the round bar, is to employ a technique that most model engineers probably use to set up the correct tool height in relation to the lathe chuck. Simply position a steel rule in between the drill tip and the round bar, and endeavour to get the steel rule to be at right angles to the drill, as in **Photo 2**.

The finished coupling, mounted in place in my son's model boat is shown in **Photo 3**.

So although I could have drilled the requisite holes in the boss, by eye, with a bit of lateral thinking as to how to utilise the equipment I had, it was possible to complete the job in a proper engineering way. I should have read the instruction book that came with the mill a long time ago – it was a revelation to find I could rotate the milling head through 90 degrees.

Family heirloom

A few words on the model boat itself, well in fact it's now definitely a ship. It all started with my son Ben coming home from boarding school for the summer holidays back in the 1980s and saying "I want to build a model boat".

So we started with only a pack of various sizes of balsa wood and no plan. A very simple electrically powered model was constructed, roughly to look like a World War 2 destroyer. I kept the model for many years, and only fairly recently gave it back to my son.

He has since (during lockdowns) turned it into a very good representation of a Second World War 'Flower' class corvette, of the type that would have protected Atlantic convoys from submarine attack. Also added have been radio-control and a device that emits smoke up the funnel. The model is shown in **Photo 4**. **EIM**

■ *The Editor replies:* Thanks David for the interesting little piece. We see very little marine modelling in the pages of EIM and it would be nice to attract a little more (especially as the editor's 27-year old son has suddenly in very recent weeks gained a passion for boat modelling, a subject your editor knows very little about!). So if you think you could contribute something, please get in touch.



FIGURE 1:

David's essential 'back of an envelope' sketch, made before starting work on his solution.

PHOTO 1:

Setup for drilling the four holes that are required.

PHOTO 2:

Using the well-known steel rule technique to ensure accurate drilling in the bar.

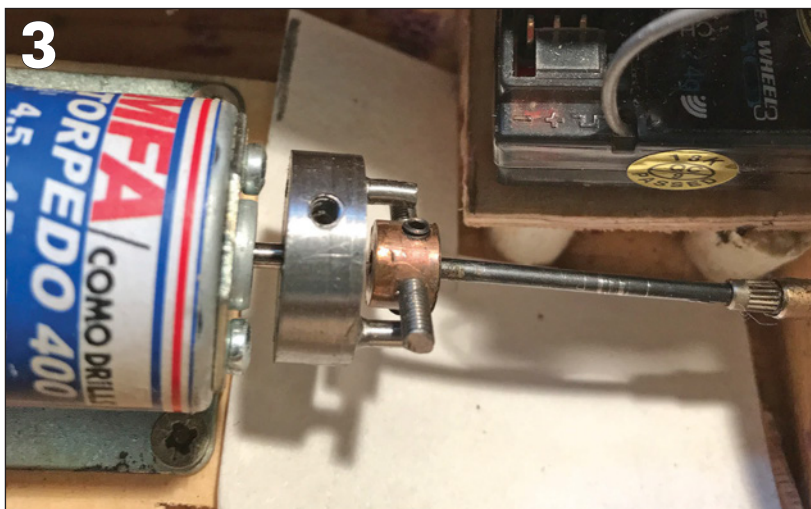
PHOTO 3:

Finished coupling mounted in the model ship.

PHOTO 4:

Extra detail, recently added by David's son Ben, has produced a good representation of a corvette.

Photos by the author, photo 4 by Ben Crowley



Simplex success?

Happy Harry this month as our Fairbourne Miniature Railway engineer sees an important loco project to a successful conclusion He's even had time for some 7¼-inch engineering!

BY HARRY BILLMORE

As the title might suggest, this month's report documenting the latest engineering goings-on at the Fairbourne Miniature Railway has a much brighter tone than previously, this is entirely down to the completion of the re-gauging and trials of our new Simplex locomotive.

My last article describing the re-gauging of the locomotive from its original 2ft to our 12¼-inch gauge finished off with the wheelsets together but requiring final profiling – this has been completed now.

I have described the process I use, employing a hydraulic copier, before in some detail (EIM May 2021) so won't repeat it now, however there were a couple of interesting points that cropped up. The first was the clearance over the bed – I had measured very carefully and was reasonably confident but it was still a relief when the first wheelset was sat turning freely in the lathe with a shade over ½-inch clearance over the bed.

At the limit

A major challenge to overcome was the size of the wheels, which meant I couldn't mount the tool in its usual place in a tool holder on the side of the copier head as it would not clear the outside edge of the flange. Instead I had to mount the tool in the front tool position and have it hung out a long way so the carriage did not foul the wheel at the flange.

I had a right-handed tool kicking around but it was far too short, so I re-purposed a mangled tool with no tip or anvil into an extension with a



large weld prep and an almost 100 per cent penetration weld.

This allowed me to machine the outer profile of the wheels, however when I came to do the back profiles it was then too long. So I cut it down to the longest I could sensibly get away with (as I suspect I will need this tool again for profiling the wheels of our other resident diesel 'Gwrlil') and finished the wheels off before refitting them under the Simplex.

With the chains adjusted I could then attempt to test the loco around the yard, but unfortunately it refused to start. I chased this down to a fuel supply problem so stripped the fuel filter to have a look.

PHOTO 1: First wheelset in the lathe for final profile turning.

PHOTO 2: Clearance over the bed, these the largest wheels Harry can turn and it was a struggle.

All photos by the author

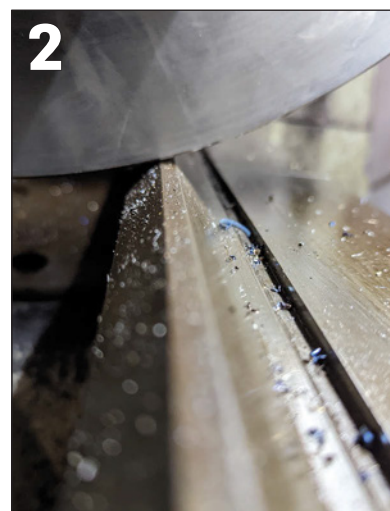


PHOTO 3:

Welded-up extended turning tool to machine the full width of the wheel.

PHOTO 4:

Profile emerging on wheel, with much chatter – Harry drove lathe hard to get job done as fast as possible and only aimed for a reasonable finish on the last pass.

PHOTO 5:

Machining back profile, note the shortened tool extension.

PHOTO 6:

The fuel filter housing, crusty and gloopy.

PHOTO 7:

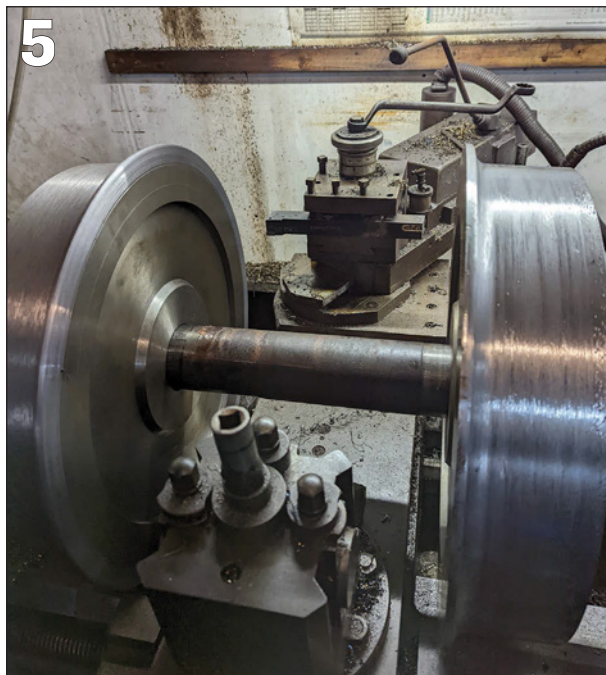
Fuel filter cage with more of the filth it had caught.

PHOTO 8:

Returning after a successful first trip to the Point – a stop after the steep climb out of the station to check the coolant tank and various other bits.

PHOTO 9:

A picture that shows the new gauge off nicely.



The filter was full of disgusting gunk, silt and various other foulness – a white slime was particularly difficult to get out. The filter elements are designed to be cleaned and re-used but these are probably a little too far gone so I will order some replacements – I am using the current ones for now. With the fuel filter cleaned the engine started on two turns of the starting

handle and I could finally test the Simplex around the yard!

The tests showed the loco to perform flawlessly with the correct profile for us, dealing with the tight-to-gauge and the slightly wide sections of our trackwork equally well.

Rain but still play

Just as I was setting back to get some carriages out of the carriage shed, the heavens opened and I got somewhat drenched. The rain then got worse as I left on the first line test with three carriages, until I was soaked to the skin within half a mile! Thankfully the sun then came out but I had already decided to put a cab on the loco as soon as possible before it goes into traffic with the track gang over the winter.

With several stops to check on water temperature and oil pressure a full four-mile return trip was made and I could finally say the loco was completely regauged and fine to travel the line!

I then started digging around in

our steel pile for material to make a cab from – some angle iron and a partially cut-up sheet of 3mm steel sheet provided the materials I needed and with a bit of creative cutting I pieced together the cab you can see in the pictures.

There are a couple of particular points to note, one being the bulge in the back of the cab to prevent knuckles being skinned when using the hand brake. This was bent up using the vice as a kind of break as we do not have any bending rolls in the Fairbourne workshop.

The other feature is that the sheet material is welded edge to edge with the angle framework. This is to prevent rust jacking from occurring as this will inevitably happen in the salt air of the coast!

That is pretty much all the news I have at this point from the railway, it has been thankfully quiet on the engineering failures front, despite being pleasingly busy with passengers.

This quiet period has meant that I have been able to finish work roughly

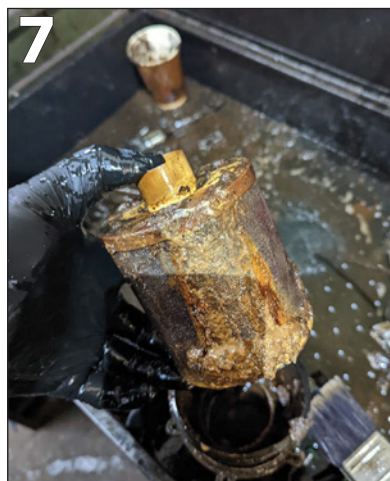




PHOTO 10: The new cab starting to take shape.

PHOTO 11: Nearly finished – note the bulge to prevent bruised knuckles when using the brake.

PHOTO 12: The cab gets its first coat of primer.

PHOTO 13: Harry's Holmside on its new trolley made out of bits of scrap and offcuts. It has now been freed off using a gentle tap with a brass rod on each crosshead and a bit of light oil down the blastpipe.

PHOTO 14: The smokebox arrangement with a lempor exhaust. Harry needs to fit the exhaust from an ejector into this space.

when supposed to each day and have a bit of time to my own projects, so my 7¼-inch Holmside 0-6-0T has had a bit of attention. I made a rolling frame for it out of some offcuts from the Simplex cab work combined with a set of castors bought on the internet.

Oiling the way

I then proceeded to free the long unused loco off by soaking the cylinders and valve chests with light oil for a week or so, then gently tapping the crossheads with a brass rod and a hammer to free off the bores. A test in steam will show whether the engine will need stripping down and new rings putting in, but hopefully not!

I have also been planning where to fit an ejector that a friend of mine is currently making for me, this will feed into the combining chamber of the Lempor exhaust that my dad and I fitted a number of years ago – hopefully there will be more on this to report over the winter. **EIM**



A GNR Stirling Single in 5-inch Gauge

This month Australian engineer Bruce concludes his locomotive build project by tackling the challenge of paintwork and the elaborate lining of the Stirling Single.

BY **BRUCE BOLDNER** Part Six of a six-part series

When I built my previous, first locomotive, my Midland Spinner, I took the frames and fittings completely apart for painting. I didn't want to lose the valve timing on the Stirling, therefore I left the frames, cylinders and valve chests bolted together and masked everything off (**Photo 59**).

In **Photo 60** you can see one of the driving wheel valances masked off for painting. All was sprayed black and then the paper and tape over the brass beading was removed (**Photo 61**). I didn't realise at this stage that the tops of the wheel valances should be painted green, not black! I repainted them later!

Photo 62 shows my first attempt at lining using 1mm wide masking tape sold by plastic kit manufacturer Tamiya. I discarded the double tape idea, eventually deciding to use a single strip of tape spaced out from the edge of the cut-out. Then I drew a white line within this with a white Posca pen.

Drawing the line

The black and white lines were also drawn with Posca pens, using an ordinary ruler as a guide (**Photo 63**). Posca pens draw with water acrylic paint, which dries quickly. It needs to be protected against wear by a clear coat, however. It also dries to a very matt finish, which is another reason to apply gloss clear over it. The finest tip size available in these lining pens is 0.7mm.



PHOTO 59: Frames, cylinders and valve chests kept together for painting.

PHOTO 60: Driving wheel valance masked off for painting.

PHOTO 61: First step is to apply black spray paint.

PHOTO 62: First attempt at lining, using plastic kit masking tape.

PHOTO 63: Posca pens proved an effective solution for lining

Photos by the author



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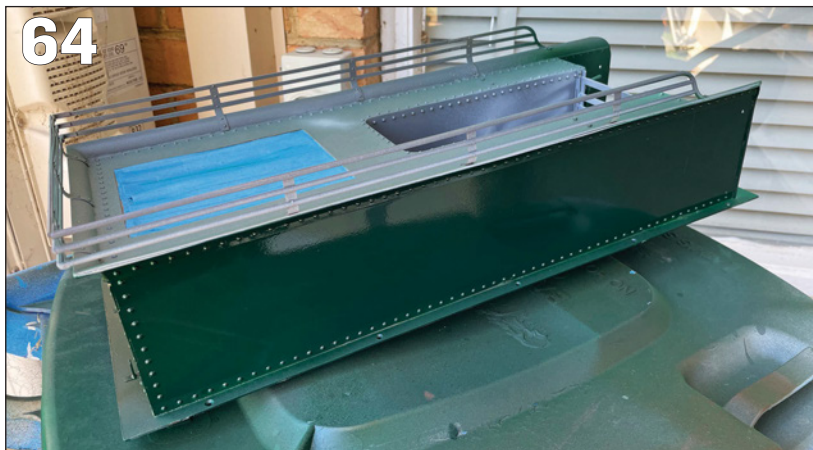
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After applying an etch primer, the tender sides were sprayed with dark green automotive enamel from a spray can (**Photo 64**). A vinyl template, made from drawings by Mike Boddy, was applied and then light green paint was sprayed all over (**Photo 65**). The first template was then removed to reveal a central light green panel (**Photo 66**).

A second template was applied, which covered both the dark and light green, but which left a strip at the intersection of the two colours, which was sprayed black (**Photo 67**).

The second template was removed and a third and final template applied. This covered all the painted areas entirely, but had fine cut-outs in it which, when peeled away, left exposed those areas to be painted as white lines either side of the black (**Photo 68**).

PHOTO 64: Dark green enamel first stage in painting the tender.

PHOTO 65: Vinyl template applied before light green coat added.

PHOTO 66: Removing the template reveals the panel.

Sticky situation

Obviously, the most difficult aspect of this painting was the accurate placement of each successive template. For the side panels, the templates could be applied in their entirety. However, lacking in foresight, I had unthinkingly riveted the lamp irons to the rear of the tender before painting. The rear templates had therefore to be cut into various sections to fit around them. This resulted in discontinuity in some lines, which I had to tidy up later with a Posca pen.

Fortunately Mike had asked the template printer to use a less tenacious adhesive after experience with his earlier templates made for my Midland Spinner. This made it a little easier to repeatedly lift and reposition the templates as was inevitably required.

I found that the Posca red faded to a weak pinkish colour when applied over the dark brown of the frames. Therefore all red lining was done with Dulux oil enamel gloss Signal Red painted between 1mm-width Tamiya masking tape (**Photos 69-70**). The vermilion on the inner frames was also hand-brushed Dulux Signal Red.

After applying etch primer, auto enamel paint, Posca lines and decals on some test squares of brass sheet, I experimented with various automotive clear coats to protect both

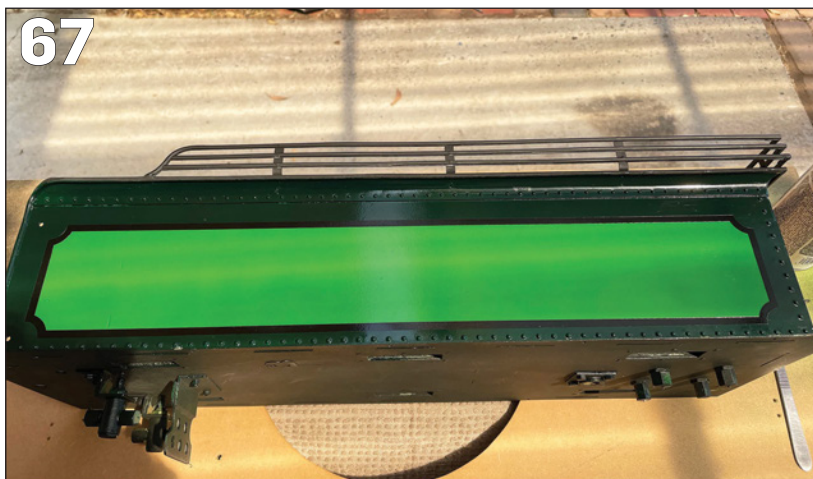
the decals and the Posca lining. I was shocked to find that all three brands caused the auto enamel base coat to wrinkle when I applied the fourth wet coat of clear (the first three being light dust coats sprayed approximately five minutes apart.) This was not withstanding that I had baked the auto enamel painted test pieces for an hour at approximately 200 degrees F.

Fine art solution

I shuddered at the thought of all my painting and lining shrivelling to nought, especially the tender painting. I therefore chose to spray all the green, lined areas (not the frames with the red painted lining) with Kamar Varnish. This comes in an aerosol can from the USA and is available at fine art stores here in Australia, as its purpose is to protect fine art paintings, be they in water, acrylic or oils. It is acid free and guaranteed not to yellow.

I found I could apply coat after coat of the Kamar with no wrinkling problems, resulting in a high gloss and smooth although faintly patterned finish. I baked the cab after spraying and neither paint, Posca lining or decals were adversely affected. It appears therefore that the Kamar Varnish can resist water, oil and heat for at least a limited time.

Kerosene will eat straight into it, however, so I have resolved to



remember never to spray the wheels and undercarriage with kerosene, followed by a blast of compressed air, as I do with the Spinner after a run. A lot of us in Australia, myself included, wipe our locomotives down after a run with Inox, an excellent product which does not attack painted surfaces. Unfortunately it is not available in the UK to my knowledge.

When I originally wrote these words, I had not driven the Stirling extensively, so I could not comment authoritatively on the longevity of the Kamar Varnish durability. Logic would indicate that it is not intended to have the protective durability of an automotive clear coat, therefore I do not recommend it to others. If you can spray an automotive clear coat over your model without wrinkling, that would be preferable.

After driving the Stirling for a while, however, I removed all the Kamar varnish from the boiler (all too easily done with a rag soaked in kerosene) because the varnish on the cladding became sticky with the boiler heat, which meant that the deposits of ash and such like after a run could not be wiped off without becoming embedded in the varnish.

While I stated earlier that the varnished cab had been baked without apparent ill-effect, there was obviously no floating ash in the oven and the varnish would have solidified again after cooling before I lifted it out. The varnish has remained okay on the cab, tender, sandboxes, wheel valances and such like.

Highly sprung

Some final notes: It has always disappointed me that few if any builders ever disclose suspension spring details in their construction articles. The attitude often seems to imply, "work it out for yourself."

So here follows the springs that I have found most suitable to haul myself and my son Jeremy around our reasonably hilly club track behind my Stirling. All these springs were sourced from Kennions in the UK.

Bogie slide block: No. 10. $\frac{5}{16}$ -inch OD x 22swg x $\frac{7}{8}$ -inch long. 2 off.

Bogie wheel suspension: No. 5. $\frac{1}{4}$ -inch OD/ $\frac{1}{8}$ -inch ID x 1-inch long 20 swg. 4 off.

Driving axle: No. 6. $\frac{1}{4}$ -inch OD x $\frac{1}{4}$ -inch long 20swg. 4 off.

WITHIN

No. 14. $\frac{3}{8}$ -inch OD x $1\frac{1}{4}$ -inch long 18swg. 4 off.

Trailing axle: No. 6. $\frac{1}{4}$ -inch OD/ $\frac{1}{8}$ -inch ID x $1\frac{1}{4}$ -inch long 20swg. 2 off.

I didn't record what springs I used for the tender. However I think they were No. 5s.

Note that you will have to apply some pre-load to the driving axle

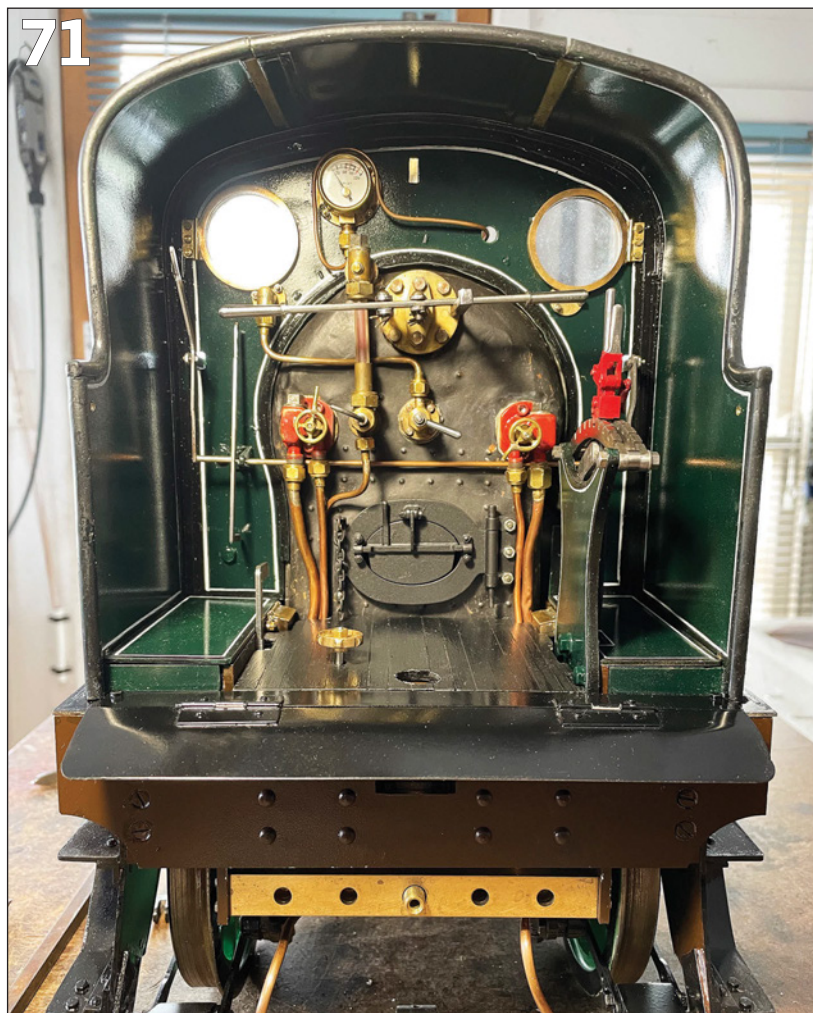
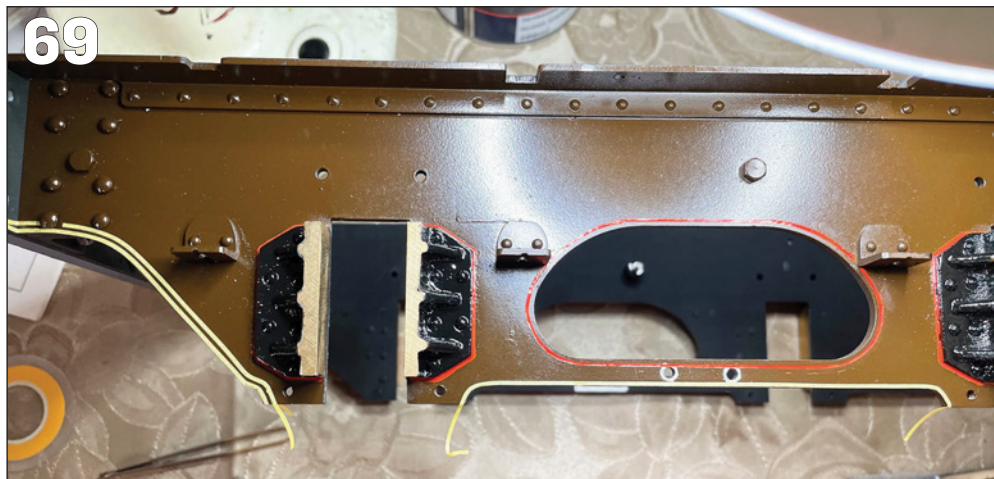


PHOTO 67: Second template applied to continue build-up of colour.

PHOTO 68: White fine lines provided final touch producing effective finish.

PHOTO 69/70: Dulux signal red painted on after Posca pen version faded.

PHOTO 71: Cab layout on the finished locomotive.



"I at least do not expect a single driver to haul more than myself and one passenger around our track..."

springs, by turning the locknuts on the spring locating spindles higher. Keep turning them higher until you have sufficient traction, keeping in mind that I at least do not expect a single driver to haul more than myself and one passenger around our track.

To close, some final pictures: **Photo 71** shows the finished cab. The centre valve delivers steam to the blower via the left handrail. The levers to the far left are dummies, representing the sandbox and drain cock levers on the full-size loco.

Photos 72-74 show the final day in the workshop and in **Photo 75** the loco is loaded into the car and off to the track. Note the auxiliary water tank in the riding truck. It's not that the tender doesn't hold sufficient water but because the auxiliary tank has an electric pump that can put water directly into the boiler if the injectors decide not to work.

In **Photo 76** the loco is resting at the Steam Locomotive Society of Victoria's elevated track, and in **Photo 77** I should be having a run. But I don't want to get it dirty! And finally in **Photo 78** the image that inspired it all, my daughter at the National Railway Museum in 2016. **EIM**

■ Readers who would like to see Bruce's Single in action can do so at the following link; <https://bit.ly/3zuDO8S>

PHOTO 72-74: Almost there – the Stirling Single spends its final build day in Bruce's workshop.

PHOTO 75: Packed into the car and ready for a trip to the track. The auxiliary water tank in the riding truck is a fail-safe with an electric pump should the injectors decide not to work.

PHOTO 76: The Stirling Single at rest on the elevated track of the Steam Locomotive Society of Victoria.

PHOTO 77: Ready to go for a run, but with Bruce a little worried about getting it dirty!

PHOTO 78: Where it all began – Bruce's daughter with the prototype at the National Railway Museum.





Changes for the better

■ Since finishing my build series I have had an opportunity to run the Single a few times and have been able to make a couple of enhancements. In photo 46, reproduced in the October issue, the reversing stand is shown positioned as per the Reeves plans, that is to say mounted forward from the rear of the mainframe. In this position, the reversing lever hits the spectacle plate before it achieves full forward position. I therefore repositioned the stand right at the rear vertical edge of the right-hand mainframe.

In any case this is where the stand is positioned on the full-size locomotive. Full movement of the lever is consequently achieved. Why the Reeves plans placed the stand in this forward position is a mystery to me. In **Photo 79**, showing the cab layout, the stand is mounted in the revised position.

Cold light of day

Since track-testing the Stirling, I have modified the water-delivery system from tender to locomotive. I found that as a consequence of the clacks from both injectors and electric pump injecting cold water straight through the backhead onto the rear of the firebox, the latter quickly dropped in temperature, followed by a loss of steam pressure.

In my previous locomotive, the Midland Spinner, pipes from these clacks extended inside the boiler forward to the rear of the

smokebox tubeplate, where the water was diffused via a fan pattern. As the cold water was delivered well forward of the firebox, the latter didn't suffer such a dramatic cooling effect and loss of steam.

I had intended to install the same system on the Stirling, but injudicious placement of the radial stays that support the firebox crown blocked their path.

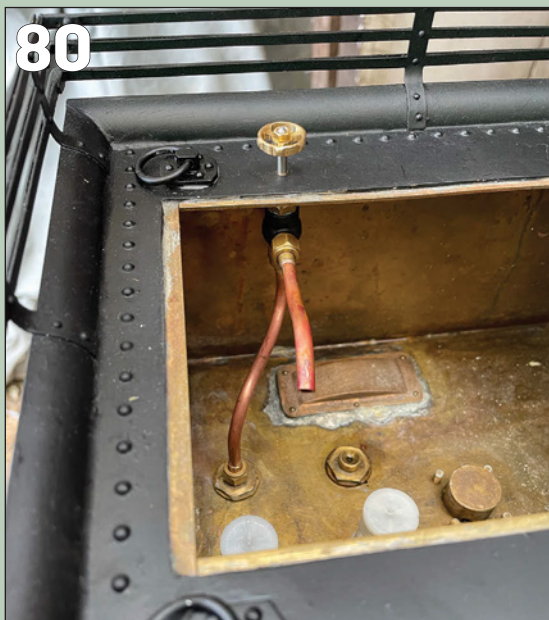
All was not lost, however. The axle pump on the Stirling delivers water via a clack on the side of the boiler well forward, behind the left-side front sandbox. I decided that wherever possible water on the run would be delivered by the axle pump.

One further modification was required, which involved replacing the cab floor-mounted bypass valve with one positioned at the top rear of the tender, where it could be easily accessed whilst driving. **Photo 80** illustrates this.

■ Parts 1-5 of this series appeared in the July to November 2022 editions of **EIM** – digital back issues can be downloaded or printed copies ordered from www.world-of-railways.co.uk/store/back-issues/engineering-in-miniature or by calling 01778 392484.

PHOTO 79: Another view of the Single's cab, showing the re-sited reversing stand at the right.

PHOTO 80: Benefit of running sessions resulted in the bypass valve being relocated from the cab floor to the rear top of the tender.



Well worth the wait

Stuart describes how he successfully steamed a first loco build project that has been underway for well over 50 years – and even the loco's debut proved challenging...

BY STUART ROTHWELL



■ The background, by editor **Andrew Charman**. Back in the October and November 2021 editions of **EIM** we told the somewhat remarkable tale of Stuart's 3½-inch gauge Princess Royal – a project that started in the 1960s. Having helped his father, a noted model engineer in his workshop for some years Stuart broached the subject of making his own engine and was given the blueprints to the Princess! "Looking back now I can see that this project was far too ambitious for an outright beginner," Stuart wrote in his build description,

to which we would reply, no kidding...

He got as far as building the frames before perhaps not surprisingly other things intervened – a full-time job, marriage... and the frames languished in a loft for more than 30 years.

On his father's death in 1988 Stuart inherited workshop equipment capable of serious engineering and built a model steam tug. In 1998 he retrieved the frames and thought about restarting the build, but concerned over the complexity he paused again and practised his techniques by building a Martin Evans 'Rob Roy'.

The Princess project finally recommenced in 2006, four decades after the first suggestion from Rothwell senior. The loco was effectively completed by 2015 but then various things including another house move put things on hold again for three years, which of course was just in time for the Covid pandemic to intervene and cause yet further delays....

That the loco has now successfully steamed around a track clearly shows that if one is sufficiently dedicated, even the most complex project can reach a successful conclusion!

Recently I finally plucked up enough courage to run the Princess Royal, the build of which was featured in **EIM** in 2021. Both of its boiler certificates had expired so before we could think of running tests had to be done and first came the hydraulic.

It passed but not without some degree of difficulty – the boiler was fine but after ten years in a centrally heated environment and undergoing two house moves some of the fittings and the gauge glasses leaked.

The worst of these was the snifting valve I had fitted inside the smokebox, but with a bit of work and a couple of test runs at home it was time to head for the track and the loco's steam test.

Good start

The model has a huge firebox but with the help of our club's boiler tester it raised steam well and passed its test. Southport has two raised level tracks – one of them, the original is much shorter than the other so that was the one to try it out on. It ran well, each beat can be

heard nice and even and it started up very smoothly.

After two circuits, however, I found some of the controls becoming awkward to operate under driving conditions, the most difficult being the bypass valve.

I was also not happy with the water levels being shown on the gauges so I stopped the run – after all

I had achieved the first objective, it had run.

I am not an experienced locomotive driver and so I decided to take the loco back home, inspect it and steam it up on my test bed to get some experience of it under steam.

This turned out to be the right decision because in steam on my test bed I found that it would not turn

ABOVE:

An impressive model – the completed Princess Royal.

RIGHT:

Off we go – watched closely, Stuart makes the first run he's patiently waited more than 50 years for.

FACING PAGE, TOP:

The short run proved just enough to prove the loco worked before problems arose, thankfully once back in the workshop.

Photos by/via the author





through top dead centre on the left side. It is a very complex loco that does not render itself to easy maintenance and in order to find the problem I had to remove the cab, boiler and running boards – effectively going right back to the basic chassis.

Pinning it down

The problem turned out to be the small pin that attaches the combination lever to the valve crosshead – it had dislodged and was being trapped by the crosshead guides. I am very glad that I stopped the run when I did, if the fault had

“To find the problem I had to remove the cab, boiler and running boards – effectively going right back to the basic chassis...”

happened at speed some considerable damage to the valve operating mechanism could have occurred.

I have since made a new pin with a tighter fit into the combination lever and the loco has been re-assembled with the exception of the injector. We could not get the fitted injector to work I have ordered a new one which will need piping in.

I'm not sure when the next run of my Princess will take place, I will probably leave it until next spring and continue to work on my current project, a Gauge One Stanier 8F. **EIM**

■ Stuart described the long drawn-out build of his Princess Royal in the October and November 2021 editions of **EIM**. Digital editions of these issues can be downloaded or printed copies ordered from www.world-of-railways.co.uk/store/back-issues/engineering-in-miniature or by calling 01778 392484.

GENERAL NEWS

LNER O4 ends Haigh's 29-year steam drought

Over the weekend of 29th/30th October the 15-inch gauge Haigh Hall Miniature Railway in Wigan operated a steam locomotive for the first time in 29 years (reports **Donald Brooks**).

In the early days of the mile-long circuit 1954-built Guest 2-4-2 'Katie', best known for its association with the Fairbourne Railway, was the resident steam locomotive at Haigh until it left for Cleethorpes before finally ending up on the Kirklees Light Railway, where it runs today with its sister loco 'Sian'.

The new steam locomotive at Haigh has moved from Cleethorpes and is LNER O4 2-8-0 No.6284, completed in 2009. Over the weekend it was scheduled to work half-hourly shuttles between Haigh Hall and Walled Garden stations, with the steam loco working on the steep gradients outbound and the train returning behind the line's recent home-built internal-combustion locomotive as there are no run-round loops.

Despite some torrential downpours, the trains proved very popular though the steam locomotive failed during the Sunday afternoon running. It is planned to be running again in Wigan, but only on advertised dates which can be found on the railway's Facebook page.

The Haigh Hall line first opened in July 1986 as a one-mile circuit through the woodland park and has had a somewhat chequered career since. It reopened under a new operator in 2013 with the shuttle trains over three quarters of a mile.

The full circuit is being restored and more volunteer assistance is welcome – details are also on the Facebook page (www.facebook.com/HaighHallMiniatureRailway)



ABOVE: No. 6284 rounds the last curve on the approach to Walled Garden station.

BELOW: The loco climbs through the autumnal woods shortly after the level crossing by Haigh Hall locomotive shed. Photos: Donald Brooks, taken on 30th October



Seasons end and work starts

Tracks closed for winter but plenty of projects going on amongst the club members...

COMPILED BY ANDREW CHARMAN

Kicking off another very full round-up of the activities around our clubs and miniature lines in recent weeks, it's clear from perusing the latest highly varied selection of newsletters received at EIM Towers that many clubs enjoyed highly successful ends to their first 'normal' public-running seasons for a while. This is good to read, putting them on a good footing as they go into the winter months of undertaking essential maintenance and developing their sites.

We start this month with the ever-busy **Rugby ME**, and as indicated above the latest packed newsletter, extending to 20 pages, starts by telling members that in one month the club has staged an enjoyable members' running day plus its final normal day of public running and a highly successful additional event held over the school half term.

This event on Wednesday 26th October was run as a single session between 1 and 3pm and with 200 tickets on offer to visitors, 194 of them were pre-sold. Perhaps more importantly, members reported that many of the visitors appeared to be new to the club, which is definitely a good thing.

There is always development going on at Rugby's site and the latest major addition is the rapidly emerging new 'facilities building' – the blockwork of the main structure now having reached above window level.

Busy Rugby members too and much to this 'Shortaxe' freak's delight there seems to be a narrow gauge theme – while regular **EIM** contributor and Model Engineers Laser owner Edward Parrott has been playing with full-size 2ft 3in gauge locos in the Tallyllyn Railway workshop, other locos featuring in the latest newsletter include an Alco 'Mountaineer' 2-6-2T, a superb 7¼-inch gauge version of the Statfold Barn Railway's Hudswell Clarke 0-6-0 'Fiji' and the Ffestiniog Railway's diesel 'Criccieth Castle.'

In more miniature

This correspondent is also pleased to see that new Rugby member Dan has chosen a 16mm scale subject for his first locomotive build, a gas-fired 0-6-2T and is currently making good progress with the frames and horns built – yes, proper horns, real model engineering goes on in the smallest



ABOVE: We mentioned last month the superb Adams Radial tank built by **York ME** member Martyn Blackburn, but the picture arrived too late to use – which seems a very good reason to print it in this month's issue...
Photo: Roger Backhouse/York ME

RIGHT: Of course the big event of the past month was the return of the Midlands Model Engineering Exhibition. John Arrowsmith will cover the club and display stands next month but editor Andrew Charman particularly liked this display by the **City of Oxford SME**, which neatly demonstrated the size difference between 3½, 5 and 7¼-inch gauges!

scales as I keep on wittering on about...

The newsletter of the **Worthing & District SME** always combines lots of interest with plenty of funnies, several of which we can't repeat on these pages sadly... We do like the opening words from editor Dereck Langridge who writes "as the year draws to a close, the first of normal activities following the Covid pandemic, the club has again become a busy, happy and thriving place to socialise, work and enjoy our hobby." Amen to that, we feel the importance of the social aspect of being in a model engineering club is not often appreciated enough...

The newsletter also highlights the

advantages that can come of being part of a club that promotes itself and fosters a good reputation. It seems earlier in the season the Worthing club was visited by a gentleman who offered some tools he'd collected over his career as a toolmaker, to sell for club funds. Over the next few weeks he delivered the tools which were described as "amazing" in both quantity and quality. Some have been retained for the club's own workshop but those sold have already raised more than £1300 for club funds – certainly a generous donation...

Perusing club magazines it's always

Continued on page 40



Stylish climax to Dublin's 40th anniversary season



In touch recently with EIM has been Ian Lake of the Dublin SMEE, to update us on latest goings-on in Ireland. Ian tells us that the Society traditionally has an open day in September which usually marks the end of public running for the season but also gives visitors a chance to view the clubhouse and workshops, areas not normally open to public access for safety reasons.

"Members of the Society use the opportunity to display current projects and items that they have completed in the past," Ian adds. "It is also the only day of the year when adult members of the public are carried on our trains."

This year's open day was a great success with well over 1,000 members of the public visiting and most of them travelling on one or both the rail lines. "The ground-level line was particularly popular with more than 500 passengers travelling – this was the first occasion that the full ground line had carried passengers for several years, due to the necessity to replace all the original wooden rail sleepers which had started to rot."

The remedial work saw a total of

3,600 sleepers were replaced by new and more substantial items made from recycled plastic; "We expect a long life from these, while extensive historical damage to this line was also rectified during this project, notwithstanding the delays caused by Covid-19."

Recognising demand

Ian admits that the Society was somewhat taken aback by the level of visitor demand for train rides, particularly on the ground line. "The Society will review operations to explore how we can satisfy this demand next year," he said.

The success climaxed a special year for the Dublin club, marking the 40th anniversary of the start of public train rides in the Irish capital's Marlay Park. "Before that, the Society had just a short 70-metre line in Herbert Park. Since the start of operations in Marlay Park, almost 250,000 young passengers have been carried on the two railways."

To mark the occasion a special birthday cake was commissioned and cut by 2021 Dublin Council chairperson Cllr Lettie McCarty. Current council deputy chair Cllr



ABOVE LEFT: Dublin members were surprised by the demand for train rides at the open day.

ABOVE: Dublin members put on an excellent display of work for visitors.

BELOW LEFT: The club's B1 locomotive, in the process of being brought back into operation and seen before being inundated by visitors!

BELOW: The Dublin club has excellent facilities. Photos: Ian Lake, Dublin SMEE

Michael Clark also visited; "The support of our public representatives was much appreciated, and we hope they enjoyed the day."

Ian adds that model engineers in Ireland have just three societies to choose from, two in Northern Ireland and the Dublin group in the Republic. Every year one of the clubs hosts a get-together and this year, it was the turn of the Drumawhey Junction Railway and Model Engineering Society, located east of Belfast.

A group of DSMEE members journeyed to Drumawhey on 8th October and took two locos with them. "The weather was good, and an enjoyable day was had by all. DSMEE is committed to supporting this cross-border spirit of mutual support."

DSMEE members are now busy on a winter of maintenance and other projects before train operations resume in early May. The Society is also keen to attract new members – more details can be found on the website at www.dsmee.ie





THIS PAGE: On 22nd October EIM roving photographer *Phil Barnes* was invited to attend the final 'Friends Day' of 2022 at the Ingfield Light Railway, near Billingshurst in Sussex. While some passenger trains ran on the private 10¼-inch gauge line during the day, the focus was on freight workings, with some highly impressive and realistic rakes being assembled for visitors to enjoy.

What is today an impressive line was established in 1973 by Keith Stratton as the Manor Railway in the grounds of Ingfield Manor School, which is run by Scope for children with cerebral palsy. After Keith passed away in 1993 his widow Lynn and son Mark continued to run and develop the line to raise funds for the school, aided by a small band of helpers, before handing it over to the custodianship of Chris Knibbs in 2008, after which the line assumed its present title. It has continued to be developed with the latest extension opened recently.

Phil's pictures show (above) Schools class 4-4-o 'Tonbridge' approaching Ingfield Central station with a goods train on the branch line (Garden Line). The loco, a genuine three-cylinder machine has just come through the tunnel in the hedge behind the rear of the train. Below, the superbly built 7¼-inch gauge 0-4-0T+T 'Ray', owned by one of the Ingfield members, is seen sitting on a transporter wagon outside the storage containers near the crew room. The 'new' extension can be seen running behind the loco.

At the bottom the visiting V2 4-6-2 No. 4750 'Starlight', owned by Jon Littlechild, has just been coaled up at the main junction station/depot prior to working the Windcutter wagons down the 'new' extension towards Oakhill and beyond. This loco was begun in the 1960s by Lewis Scrimshaw in the unusual 10½-inch gauge and regauged in 1976. It has had much done to it since Jon acquired it in 2010, including lengthening the frames, significant boiler work and fabricating a tender which the loco was not supplied with.

The loco most often operates on Jon's portable track – while saying it was Mr Scrimshaw's idea of a LNER V2 class, John more realistically describes the loco as "a freelance model with rather a lot of LNER styling and features, ignoring the Great Western chimney top!"

The Ingfield Light Railway is a private line and not open to the public, but offers Associate membership to those interested in visiting on running days, while more volunteers to work on the line are always welcome. For details contact Allan Biles at treasurer@ingfieldlightrailway.co.uk



Continued from page 38

good to see the various projects underway. At Worthing for example member Clive Pattern is making "slow but steady" progress building a boiler for a Peppercorn A1 Pacific. But a request to all club journal newsletters – when you report such things, please slip the gauge or scale into the copy, even if you've mentioned it before. This saves a lot of going back through previous episodes!

The regular appearances of the father-and-son Keningtons in our pages are well known, and it seems their innovative nature extends to fellow members of the **Hereford SME**. The latest edition of the club magazine *Whistlestop* reports the continuing trials by member John Townsend on a pinhole-type grate for model locomotives, occasioned by continuing concerns over the quality and type of future fuel supplies (on which note, next month's issue will report on the latest trials of 'green coal' by the Rugby ME).

How many holes?

John has built an attractive pinhole grate (complete with some 121 holes each of 4mm diameter) with ashpan, complete with damper and drop flaps, all in stainless steel, and we look forward to reading his conclusions once he tries it in action.

Wherever one turns in club magazines there is more excellent model engineering in action. The latest newsletter from the **Bristol SME** includes a description of a double-acting steam water-feed pump designed and built by member Steve Smith and fitted to the tank of his 5-inch gauge Simplex loco. In the ed's opinion it looks rather like the brake pumps one sees on the tank or smokebox of many particularly narrow gauge locos (Mrs C oddly rather likes the noise that such pumps make while sitting in the station...).

Steve's design has proven highly successful and he's put the full description on his Instagram feed (<https://bit.ly/3zxRBVG>) while he's selling the design drawings too on eBay (<https://bit.ly/3TWt5ft>).

People tend to forget that not all model engineering is about steam railway locomotives – even in the rail part of our hobby many prefer a good internal combustion or battery loco for its ease of use and instant availability – in the coming months we will be bringing you a couple of excellent 'diesel' loco projects.

Typical of such is 'Franky', featured in the latest edition of *Trackershack*, the newsletter of the **Teeside Small Gauge Railway** and originally a 7¼-inch gauge 08 shunter owned by member Dan Gibbard for

all his life – apparently as a child he pushed it up and down a track in his garden pretending he was driving it!

Turning his attention to this engine after successfully completing a steam loco build, Dan decided to replace the engine, but the new engine was too big for the replacement shell, for which he had obtained steel laser-cut sections for. Then the project was put on hold due to a house move, and in the intervening period Dan saw a picture of the 2ft gauge Baguley-Drewry loco resident on the Vale of Rheidol Railway.

Suffice to say the model has since been completed as a representation of the Drewry and powered by a 6.5hp petrol engine, has proven a capable performer on public running days at the Teeside track. Apparently it will soon be going on visits to other lines, so look out for it...

Continuing this issue's unofficial theme of interesting projects, the latest *Leeds Lines* from the **Leeds SMEE** describes the experiences of member Alan Macdonald who many years ago was shown a box of scrap brass and bronze and told to take anything that might be useful. He went for a lump of bronze, measuring 2.4 x 1 x 1-inch with two ½-inch holes drilled side-by-side across the inch dimension. Alan thought it might make the basis for the cylinder block of a twin-cylinder stationary engine, if he could find some suitable plans.

Of course he never did, but each time he opened the drawer he'd stashed the bronze lump in it stared pleadingly at him. So eventually he bravely had a go at designing his own engine and after a long period of gestation duly produced what he described as "two snarling beasts!"

Alan reckons that the moral of this story is that one should stick to following plans – maybe, but from the picture in the Leeds newsletter it looks an interesting engine to us, and an interesting tale of the type we love to run in these pages, hint, hint!

Success at last

Now we will forever remember the pandemic as a time of great challenge, destruction and hardship but there was a silver lining – the time afforded to model engineers by the resultant lockdowns saw several excellent projects built. A good example features on the cover of the latest edition of the **Welling & District ME** newsletter, a superb model steam boat built by member Alan Picot and as the title of the description in the newsletter attests, "completed thanks to lockdown."

It seems the project started when Alan purchased a Puffin horizontal steam plant from the Stuart Models



THIS PAGE:

This set of photos from the **Centurion SME**'s first September Fair public running day since the Covid pandemic show just what an impressive organisation the club, located in Pretoria, South Africa, is. There were some serious locomotives in action at what was a highly successful event – a Garratt, Shay, large diesel and electric haulers... We want to know more Centurion members! Photos: Hans Paling, via Jon Shaw





THIS PAGE: Clubs have been holding their final public running days of the year in recent weeks (not withstanding festive Santa Special trains of course) and on 16th October it was the turn of the **Chichester & District SME**.

Road and rail rides were both on offer to visitors, the Society possessing an elevated 560ft long $3\frac{1}{2}$ /5-inch track and a 735ft long ground-level track for $7\frac{1}{4}$ and unusually $10\frac{1}{4}$ -inch gauge.

Among models on display was a neat looking almost complete Stroudley Terrier, much to the delight of the young fellow seen riding behind both the traction engine and LNER B1, the **EIM** editor's grandson Charley, who is a big fan of the 'Stepney' engine.

Editor's prerogative – if you can't get clubs to send in pictures of their activities, get your family to take some...
Photos by Sophie Charman



stand at the London Model Engineering Show, way back in 2013... He intended to mount it in a glassfibre hull he'd bought at a closing-down sale some years previously, but after a year on the project and various frustrations he grew fed up with it. But lockdown provided him with a perfect opportunity to revisit it and as a result he now has a practical steam launch.

Which, by the way gives me an opportunity to repeat something I've already stated elsewhere in this issue. We'd love to see some marine modelling features in our pages! Especially as the editor's younger son (aged a mere 27) has suddenly taken an interest in such things. While I love being 'on the water' (a few years ago my motoring journalism career weirdly provided me with the opportunity to compete in a race in Cardiff Bay onboard a competitor in the round-the-world Volvo Ocean Race, and it was one of the most exhilarating things I've ever done...) your editor knows virtually nothing about marine modelling...

Finally for this time a quick trip overseas, to the ever-busy **Northern Districts ME** in Perth, Australia. The latest edition of the club's newsletter *Steam Lines* features heavily the Dwellingup Steam Festival, described as a prime Spring event (don't you just love it reading about the arrival of spring 'down under' as the wind and rain rattle the office windows...) which the NDMES attended for a sixth time.

Road runners

The festival is held at the Hotham Valley Railway, which is a steam-hauled tourist line in the Peel region of Western Australia and runs over a 32-kilometre route to the Australian standard gauge (3ft 6in). The Perth club certainly attended in style, with an impressive roster of large-scale model road engines and a smaller-scale garden railway set up on a sequence of five tables.

According to member Steve Reeves the road engines included a couple of Fowlers, one a showman's engine and "giving our display the 'wow' factor as they normally do." It looks as if a great deal of fun was had by all.

And... we are out of space again. Keep those newsletters coming in, and particularly photos of events at your club – some are now remembering to send us such images and they are much appreciated. And don't forget that if you are writing up your latest build project, restoration or model engineering conundrum for your club newsletter, they wider audience of **EIM** readers might be equally interested in reading about it... For more details get in touch with me, my contact numbers are on page 3. **EIM**

DIARY

DECEMBER

- 1** Cardiff ME meeting, Old pictures of Cardiff by David Green, Heath Pk, Cardiff CF14 4AW
- 2** SMEE Digital Group online meeting, contact digital@sm-ee.co.uk, 2.30pm
- 3** Burnley & Pendle MRS Santa Sepcials, Thompson Pk Railway, Colne Rd, Burnley BB11 2AA, noon-2pm
- 3** Tiverton & Dist ME steam-up, Rackenford track, EX16 8EF
- 4** Guildford ME Open Day, Stoke Pk, Guildford GU1 1TU, 2-5pm
- 4** Southampton SME Santa Specials, Riverside Pk Railway, Bitterne, SO18 1PQ, 11am-3pm
- 4** York City ME members running, Dringhouses, The Pastures, York YO24 2JE
- 7** Bournemouth SME AGM, Littledown Railway, Bournemouth BX7 7DX
- 7** Bradford ME Films & Social meeting, Saltaire Methodist Church, 7.30pm
- 7** Leeds ME meeting, Quiz Night, Mid Yorkshire Golf Club, Darrington, 7pm
- 8** Worthing SME meeting, subject tba, Field Pce, Worthing, Sussex, BN13 1NP, 7.30pm
- 9** Hereford SME meeting, Parachute adventure over the Channel by Wally Walters, Broomy Hill, Hereford HR4 0LJ, 7 for 7.30pm
- 10** 10 Havering MRC public Santa Special trains, Lodge Farm Park, Romford. RM2 5AD
- 10** 1SMEE Christmas Social, Marshall House, London SE24 0HW, 2.30pm
- 10** York City ME meeting, evening talk, Dringhouses, The Pastures, York YO24 2JE, 7pm
- 11** Bradford ME Santa Special public running, Northcliff track, Shipley, 11am-3-15pm
- 11** City of Oxford SME public running, Cutteslowe Pk, Oxford OX2 8LH, 1-4pm
- 11** Guildford ME Small Model Steam Engine Group open meeting, Stoke Pk, Guildford GU1 1TU, 2-5pm
- 11** Southampton SME Santa Specials, Riverside Pk Railway, Bitterne, SO18 1PQ, 11am-3pm
- 11** Worthing SME Santa Run, Field Pce, Worthing, Sussex, BN13 1NP 11am-3pm
- 14** High Wycombe ME club meeting, Bits & Pieces Evening, Rossetti Hall, Holmer Green HP15 6SU, 7.30pm
- 17** Pietermaritzburg ME Annual Night Run, Pelham, Pietermaritzburg 3201, South Africa
- 18** City of Oxford SME public running, Cutteslowe Pk, Oxford OX2 8LH, 1-4pm
- 18** Tiverton & Dist ME Sunday steam-up, Rackenford track, EX16 8EF
- 21** Grimsby & Cleethorpes ME members meeting, Hartley Lodge, Waltham Windmill, DN37 0JZ, 7.30pm
- 21** Bristol ME meeting, via Zoom, Look back at the last year – for details contact secretary@bristolmodelengineers.co.uk
- 23** Hereford SME meeting, Down the Pan, Bazalgette by Bill Hall, Broomy Hill, Hereford HR4 0LJ, 7 for 7.30pm
- 26** High Wycombe ME Boxing Day Steam-up, Watchet Lane, Holmer Green HP15 6UF
- 26** Bradford ME Mince Pie Special public running, Northcliff track, Shipley, 11am-3-15pm
- 26** Grimsby & Cleethorpes ME Boxing Day public running, Waltham Windmill, DN37 0JZ, 12-4pm
- 27** Bradford ME Mince Pie Steam-up, Northcliff track, Shipley, 12.30pm-“until frostbite sets in”...
- 27** Havering MRC public running, Lodge Farm Park, Romford. RM2 5AD, 11am-3pm

Details for inclusion in this diary must be received at the editorial office (see page 3) at least EIGHT weeks prior to publication. Please ensure that full information is given, including the full address of every event being held. Whilst every possible care is taken in compiling this diary, we cannot accept responsibility for any errors or omissions in these listings.

JANUARY

- 1** Grimsby & Cleethorpes ME New Year's Day free public running, Waltham Windmill, DN37 0JZ, 11am-3pm
- 1** Southampton SME New Year's Day running Riverside Pk Railway, Bitterne, SO18 1PQ, 11am-3pm
- 1** Stockholes Farm Miniature Railway New Year's Day Steam-up, Belton, Doncaster DN9 1PH, 1-4pm
- 4** Bradford ME meeting, Bits & Pieces evening, Saltaire Methodist Church, 7.30pm
- 4** Bristol ME meeting, 'Railway level crossings', Begbrook Social Club, BS16 1HY, 7pm for 7.30pm – for details contact secretary@bristolmodelengineers.co.uk
- 4** Leeds ME meeting, Bits & Pieces Night, Mid Yorkshire Golf Club, Darrington, 7pm
- 7** Worthing SME New Year Steam-up, Field Pce, Worthing, Sussex, BN13 1NP 2-5pm
- 12** Worthing SME meeting, Tidal Mills of the Southeast by Alec Vincent, Field Pce, Worthing, Sussex, BN13 1NP, 7.30pm
- 13** Hereford SME meeting, Reactors inside ICI by Robert Davies, Broomy Hill, Hereford HR4 0LJ, 7 for 7.30pm
- 18** Bristol ME meeting, Small non-locomotive engines evening, Begbrook Social Club, BS16 1HY, 7pm for 7.30pm – contact secretary@bristolmodelengineers.co.uk
- 18** Leeds ME meeting, talk on Eggborough site demolition, Mid Yorkshire Golf Club, Darrington, 7pm
- 26** Worthing SME meeting, subject tba, Field Pce, Worthing, Sussex, BN13 1NP 7.30pm
- 27** Hereford SME meeting, Progress on the Vale of Berekely Railway by Ian Raven, Broomy Hill, Hereford HR4 0LJ, 7 for 7.30pm

PLEASE NOTE all outside events and public running subject to weather – please check with Society concerned before travelling to an event.

Coming next month in...

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- Making an electric horn for locos
- Unveiling the restored G1 Compound
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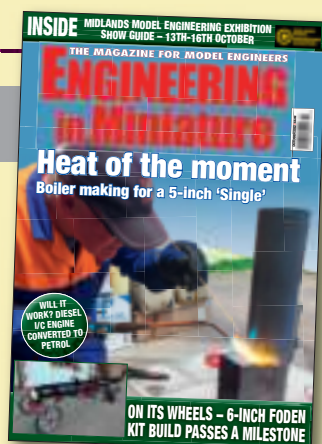


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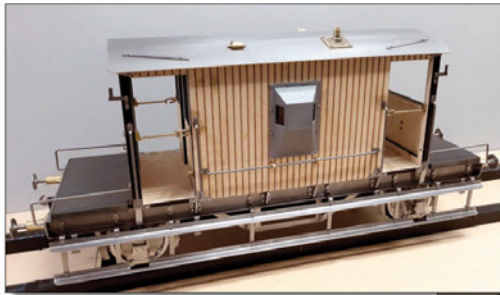
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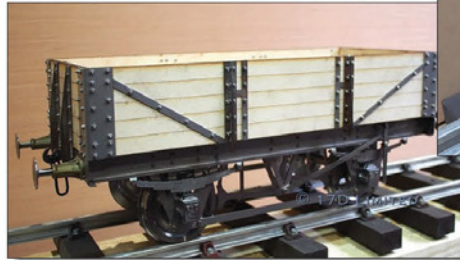
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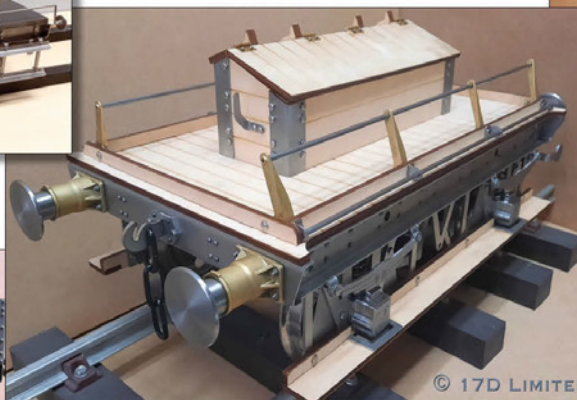
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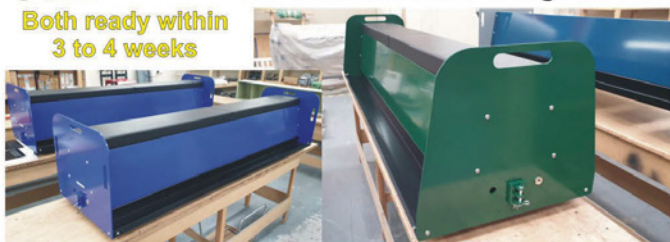


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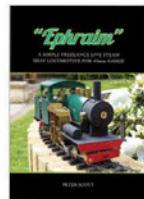
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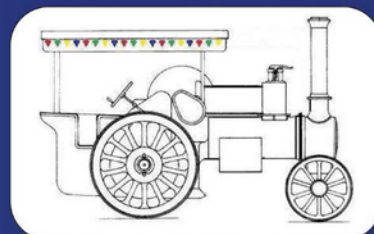
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5 inch gauge 14XX 0-4-2T

Built to Neville Evan's "Didcot" design. Mechanical pumps all work well, the injector quickly becomes fussy as water in the side tanks warms up. An engine that can be run as is, with scope for improvement over winter. ref 10728 £3,450



3 1/2 INCH GAUGE OS "BRITANNIA"

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5 INCH GAUGE LNER B1 4-6-0

A 5 inch gauge LNER B1 built to Martin Evans' "Springbok" design. The engine is in running order - although requires a variety of jobs attending to. Pistons and/or valves leak, axle pump is ineffective (although injector and hand pump both work), the cab roof is missing. The boiler has had hydraulic and steam test, with new certification issued. ref 10356 £5,750

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