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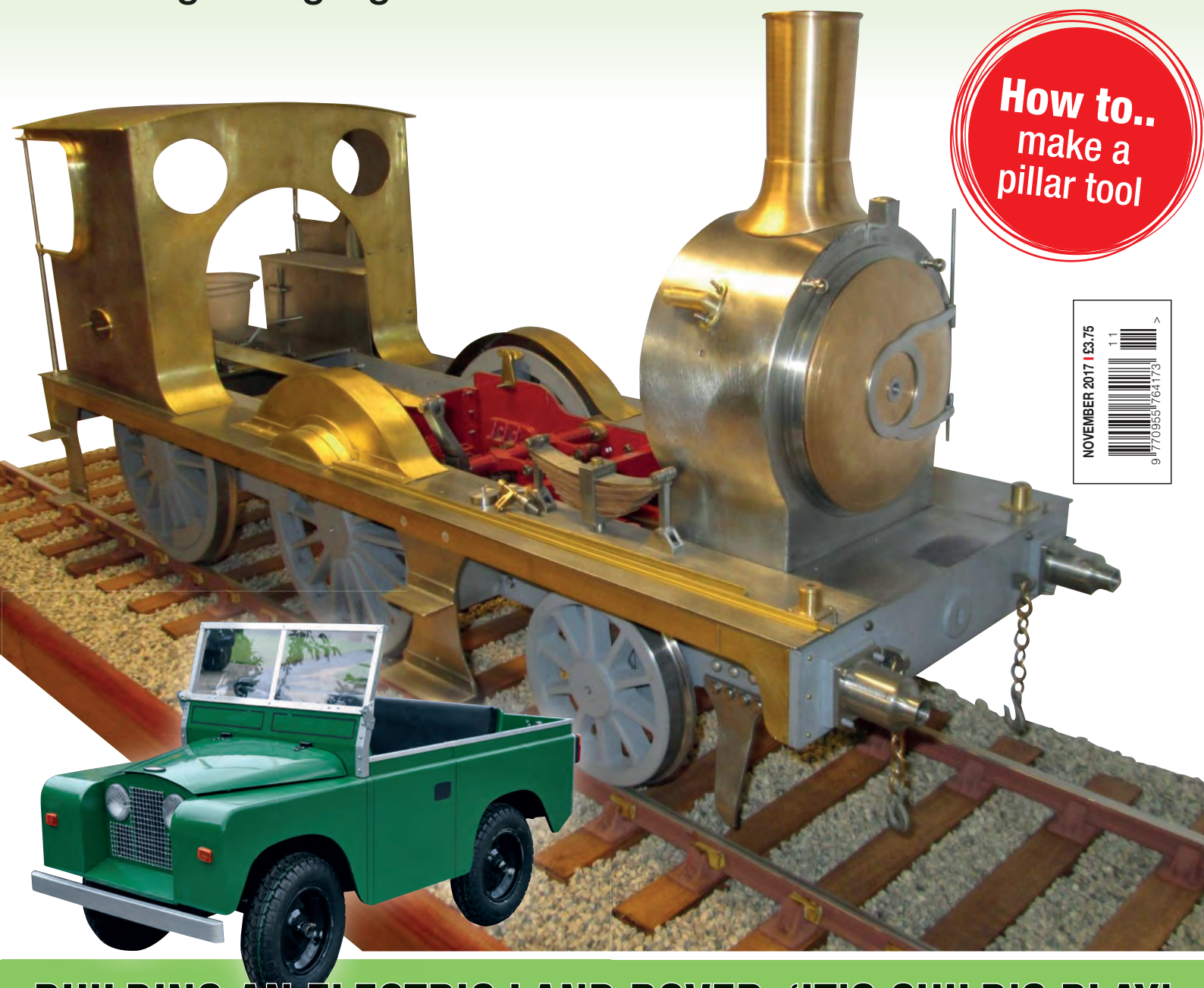
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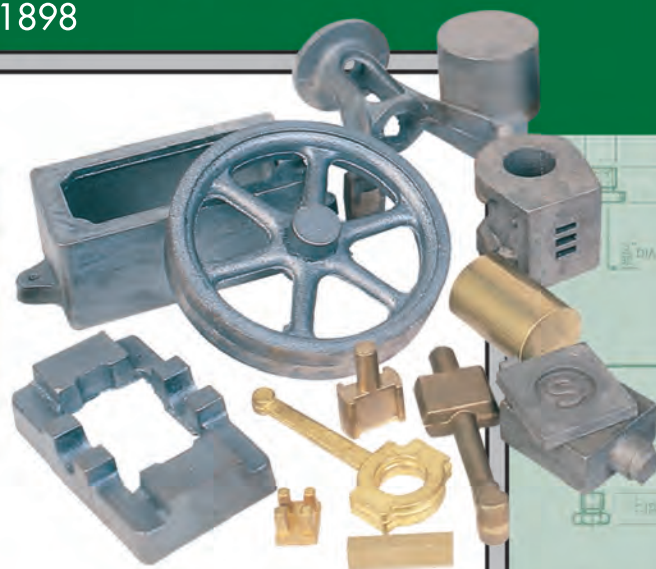


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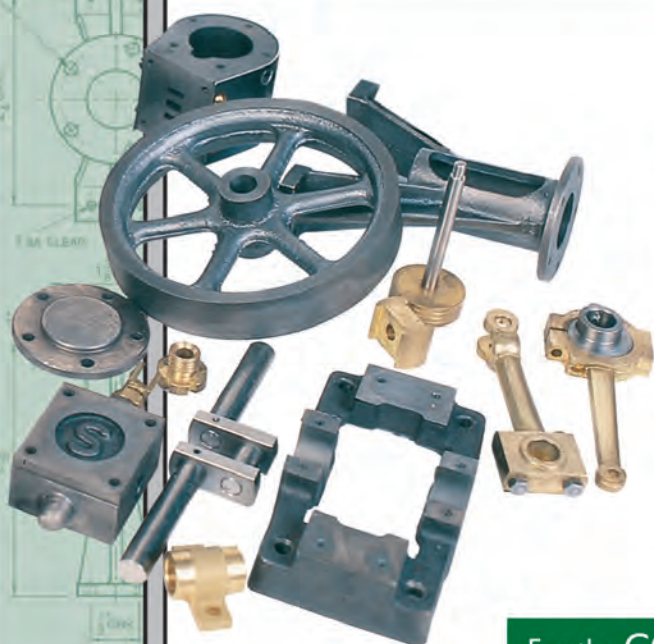
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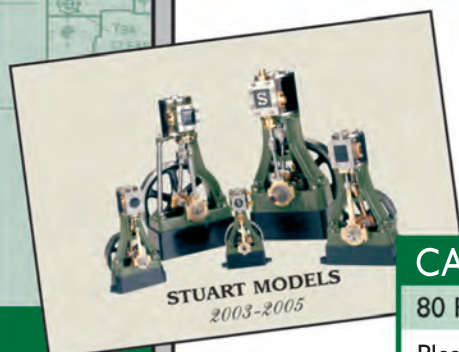
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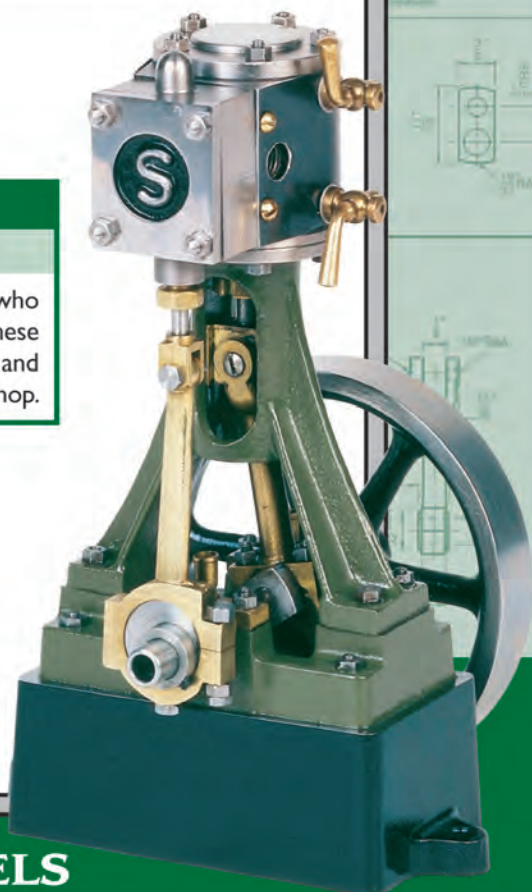


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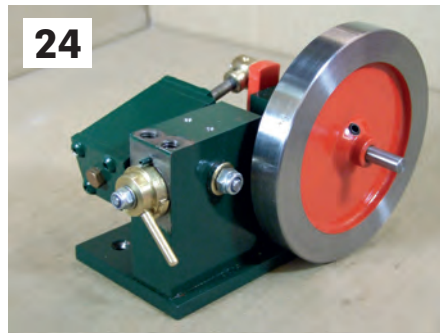
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FRONT COVER

Gary Owen's Midland and South Western Junction Railway 2-4-0 under construction. See page 7 for the finished locomotive.

EDITORIAL



VERY SOCIAL MEDIA

Material to grace the pages comes from a variety of sources, but I think Gary Owen's 5 inch gauge Midland and South Western Junction Railway 2-4-0 represents a first for EiM.

I first spotted this model on our Internet forum – a sub-section of RMweb.co.uk – and approached him to tell us about it. A little cajoling later, like many people he's happier in the workshop rather than at a keyboard, and we all get to enjoy his efforts. It's great to see someone building a model that you can't even find a plan for. In the end he armed himself with several sheets of cardboard and lots of prototype research and the results speak for themselves.

Another of our articles, building a Land Rover, came from Facebook. Yes, that terrible (according to the popular press) social media site. A photo posted by a friend saw me chase down this particular model. Meeting the builders, it turns out that this is a project that happily fits my desire to include some content for the less skilled or equipped modeller. While a child-sized vehicle looks impressive, it turns out to be well within the capabilities of anyone with some DIY experience and the ability to read and comprehend an instruction manual.

Model engineering clubs and shows are the best places to meet other modellers but the numbers spending time chatting on-line are growing steadily. Being able to chat with like-minded people at any time of day or night, unconstrained by geography, is very much part of the future.

Despite this, you can't beat seeing and smelling a collection of engines in a show and there are articles in the queue gathered from here too. I've enjoyed a many chats culminating in handshakes that have left me cleaning a mix of coal and steam oil from my palms before heading to the tea tent!

Phil Parker
Editor

The December issue will be on sale on November 16th

Editor: Phil Parker
Email: phil.parker@warnersgroup.co.uk

Publisher: Steve Cole
Email: steve@warnersgroup.co.uk

Advertising manager: Bev Machin
Tel: 01778 392055 Email: bevm@warnersgroup.co.uk

Sales executive: Allison Mould Tel: 01778 395002
Email: allison.mould@warnersgroup.co.uk

Advertising design: Amie Carter
Email: amiec@warnersgroup.co.uk

Ad production: Pat Price
Tel: 01778 391115 Email: patp@warnersgroup.co.uk

Marketing manager: Carly Dudge
Tel: 01778 391440 Email: carlyd@warnersgroup.co.uk

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2018 LONDON MODEL ENGINEERING EXHIBITION

The South's Largest Model Engineering & Modelling Exhibition returns in January from the 19th – 21st. This exhibition is regarded as one of the leading model shows in the UK and attracts over 14,000 visitors annually.

Come along and see the full spectrum of modelling from traditional model engineering, steam locomotives and traction engines through to the more modern gadget and boys' toys including trucks, boats, aeroplanes, helicopters and robots.

Visitors can travel between the show's different zones, trying the activities and watching fascinating and technical demonstrations. Over 50 clubs and societies will be present displaying their members work and competing to win the prestigious Society Shield. In total, nearly 2,000 models will be on display.

Organisers expect to welcome the return of the British Model Flying Association, Tamiya Trucking Group, Brickish, The UK Tank Club, The Imagineering Foundation and the Polly Owners Group who provide passenger rides behind the 5" gauge steam locomotives within the Great Hall.

All of the leading suppliers will also be present showcasing new products and special promotions and giving hobbyists an excellent opportunity to see and compare products under one roof. You will be able to purchase virtually anything you need for your next model or project or to get you started in a hobby.

If you are an active model engineer this is a key event in the calendar to meet other hobbyists and see the leading suppliers. This is a great day out for all the family, one the children will love with all the working models. If you are interested in modelling yourself or want to rekindle your childhood memories, you will find something amongst the many diverse types of modelling on display to admire. If you are not already a modeller hopefully the exhibition will fire your imagination to build something yourself and enjoy one of these satisfying hobbies.

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If you would like to order by phone please call SEE Tickets 0871 3861118. Calls cost 13p a minute plus network extras.

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A 5 inch gauge Midland and South Western Junction Railway 2-4-0

Some projects take longer than others. **Gary** finished this loco 30 years after it was started

BY **GARY OWEN**

First of all, let me start with some history of the full size locomotive. She is one of three 2-4-0 tender engines built by Dubs and Co. in 1894 and numbered 10, 11 and 12. These were very well liked by the MSWJR and later on similar looking 4-4-0 locomotives were ordered as these were better suited for the stiff gradients and heavier trains on the line.

As for my engine, well, that started about 30 odd years ago. A really good friend of mine Graham White models in 7 1/4 inch gauge and he told me he was going to build a MSWJR engine with the same wheelbase as Martin Evans 5 inch gauge Metro. He asked if I knew anyone who had some Metro drawings. As it happened I had just bought a new set as this was going to be my next build but I had changed my mind and built an Allchin traction engine instead. So, Graham had the drawings from me and started the build.

He cut out the loco frames using the metro wheel base as a starting point supplement by looking at pictures of the GWR rebuild of number 12 which is 1336. There are a lot of photos of this locomotive available in print and on-line. The wheels cast were and some motion parts made.

BELOW: With no drawing to guide me, the cab was mocked up in cardboard before any metal was cut. If something looks right, then as far as I am concerned, it is right.



All this then was put aside, as Graham started building two 7¼ inch gauge standard 5s. Fast forward 30 years and I'm now heavily interested in the MSWJR as this line is local to me and I wanted to make something from it.

Along came Graham and he said, "I have some bits for a MSWJR loco under my bench thanks to the drawings I had from you years ago", so I bought it there and then without thinking about what lay ahead.

Work started with a full strip-down, cleaning off the rust as I went. All the metal received a coat of primer as I put it back together. Next, I finished off the missing motion parts, except for the reversing rod. I knew this would run under the firebox cladding and join the lever that was on the cab wheel splasher which would be built later. With the motion lifting lever clamped, everything was tested on compressed air.

Now I know I should have drawn everything out first, but I wanted to get on with it. Instead I studied photos of the full size engine, made notes and sketches and formed pictures in my mind of how it should be.

Fearing that I may have trouble with the boiler inspector building a non standard boiler, the job was contracted out to Southern boilers. They had already produced one for my Manor with a scale backhead and made a nice job of it, so I explained what I wanted, sketching out where I wanted all the fittings, dome and safety valve positions. Two years later I had a boiler.

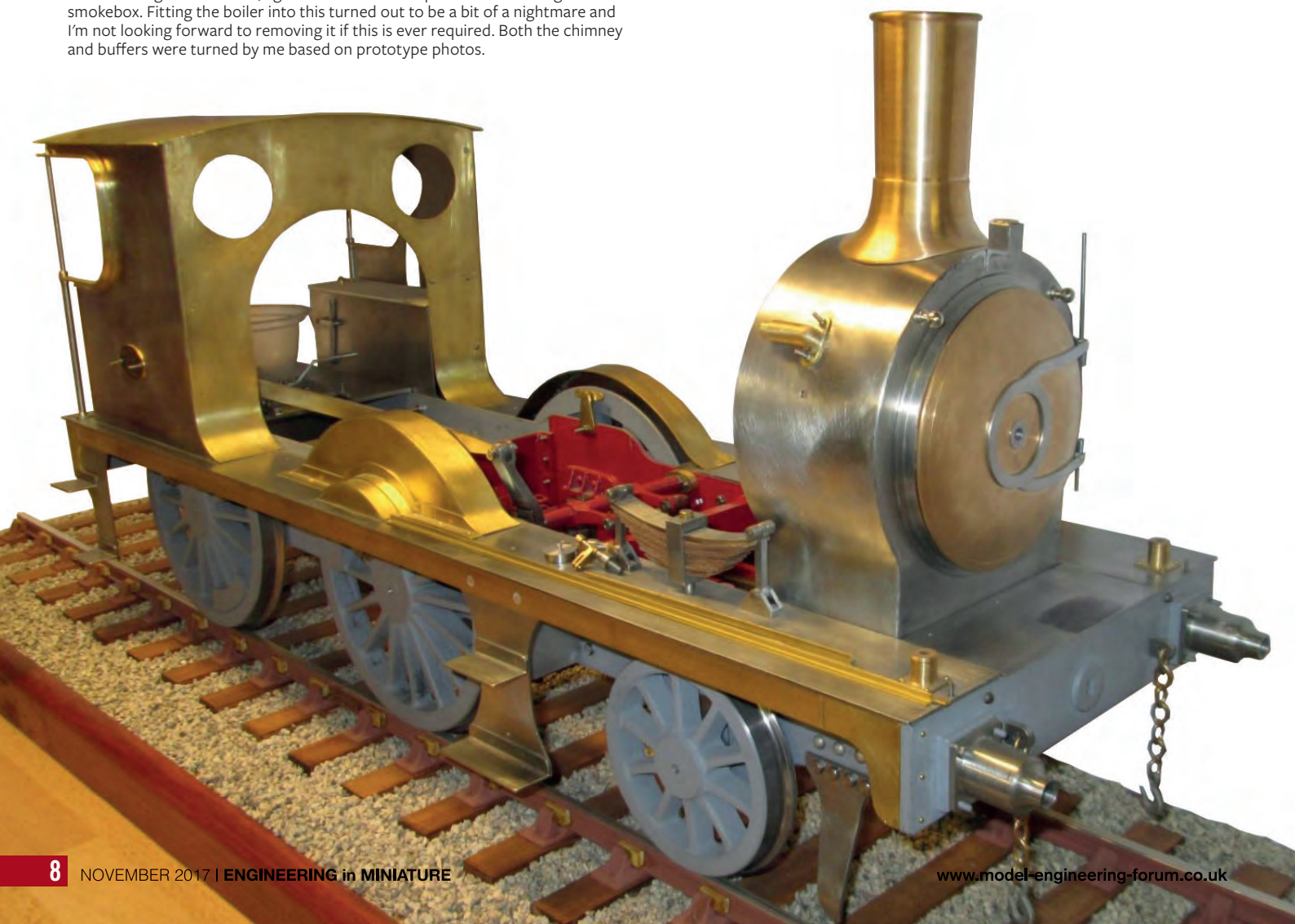
In the meantime I got stuck in to the platework. Everything was designed by studying prototype loco photos from the MSWJR books by Mike Barnsley. I must have studied them for hours and know every rivet!

RIGHT:

The tender is based on photos and makes use of the laser-cut tank. I've since found that the top should slope down but once covered with coal, no-one notices.

BELOW:

While waiting for the boiler, I got started on all the platework including the smokebox. Fitting the boiler into this turned out to be a bit of a nightmare and I'm not looking forward to removing it if this is ever required. Both the chimney and buffers were turned by me based on prototype photos.



Running boards were quite easy, just flat plate. Splashers were first made from card, and if they looked right then that was good enough for me as no drawing was known to exist. A GA drawing did turn up later, courtesy of Mike, but this did not have any dimensions, it was still most useful despite this.

The cab was cut out from card and taped to the loco side. Again if it looked right, I was happy. A lot of parts could not be made until the boiler arrived, and many components that were made early on had to be made again or altered.

Chimney and dome castings were also Metro. These were made once the boiler was delivered and the heights were adjusted until they matched the photos I had. The stove pipe chimney was made by enlarging a photo of the full size chimney and just copying it freehand. It turned out quite nice, and the casting had just enough material on it.

Cladding of the boiler was fairly easy but the reversing lever runs behind the firebox cladding, so a wooden insulation piece with a slot in it had to be made for the lever to run in. Assembling this was a bit of nightmare!

The tender was started when the boiler had been ordered. Again this was made in card, as no drawing was available. Frames were cut to shape just by looking at the photos of the full size loco. The book had some known dimensions such as boiler diameter, wheel diameter, some heights and wheel base, so this was not as difficult as it sounds. Mind you, I did end up with quite a few spare bits, like a couple of cabs, spectacle plate, and tender frames.

Whilst building the tender I looked at others from the period. GNR and LSWR tenders are the most similar looking in size and detail. Whilst looking at models at the Midland ME Exhibition I spotted a 5 inch gauge Glen. This looked just right in size and I knew I could modify it, so I ordered a tender tank from the Glen of Model Engineers Laser, but without the slots for the slot and tab construction. I thought I could change and shorten it quite easily this way, but it turned out the modifications were so extensive that it would have been easier to make it from brass sheet. Lesson learned.

When the tender was almost finished, I found out that the tenders were also built for some locos on the Glasgow and South Western Railway and I managed to get a drawing for these. Somehow, my tender is almost spot on, all except for the tender top. Mine is similar to the GNR ones with a flat top and curved down at the front, but the dubs tender top plate just slopes down. It's not noticeable when full of coal so I'm quite happy with it.

The tender has a hand pump and two injectors which are hidden under the cab footplate as the full size loco would have had a combined pair on the backhead. Most fittings on the are made by myself. All the ones I have bought in the past are made of brass, and in my opinion, not made well with poor sealing and bad threads etc. My advice to others is if you can make an engine, make your own fittings. It is easier than you think.



ABOVE:

Due to the origins of the chassis, valve gear based on the Metro has been used, the main difference being the reversing lever which attaches to the splashers.

Also under the footplate is a whistle and a big lump of steel to help adhesion. I also have some lumps of steel in the cab wheel splashers which were sandboxes on the prototype.

Painting and lining is down to me. The lining isn't perfect but this is a working model, not one for the showcase so I'm happy. I had the lettering transfers made by a model car company. These came out very nice, and quite cheap too.

So, all in all it came out looking like the full size locomotive. Yes if I did it again I would do it differently, but achieved my aim and the loco runs very well.

I would like to Thank Mike Barnsey, and my mate Graham White who helped me along the way. ■

WEB LINKS

Cheltenham Society of Model Engineers
www.cheltsme.org.uk

Model Engineers Laser
www.modelengineerslaser.co.uk

Southern Boiler Works
www.ptmachining.co.uk

Steaming well at the Cheltenham Society of Model Engineers track.



Bristol Model Engineering and Model Making Exhibition 2017

BY JOHN ARROWSMITH

Another year has passed and this fine club event was again held in the Thornbury Leisure Centre at Bristol. Each year the club strive to have a suitable "theme" for the exhibition and this year it was to be an LBSC event to remember the 50th anniversary of the passing of the model engineer who inspired so many to get involved with model engineering. It is also 50 years since steam traction finished on the national railway network so an excellent display of models commemorating this event and particularly the Southern Region was organised in Hall 3.

Among the other notable features was the series of talks arranged to provide information and hopefully inspiration to the visitors with topics ranging from 3D Printing and Soldering hints and tips. Outside, a good selection of models were in steam and providing entertainment along with i/c engine demonstrations and boating pool all to the accompaniment of the 52 key Street Organ located in the car park.

Another interesting little cameo was the meeting again of the original locomotives from the boiler challenge in 1924. Then the two prominent model builders of the time LBSC and Henry Greenly competed against each other to see which boiler design produced the best results when steamed. The 2½" gauge 4-4-0 Ayesha built by LBSC was coal fired while the 2-8-2 designed by Greenly for Bassett Lowe was spirit fired. The result was a resounding success for LBSC which in turn led to a life-long animosity between the two men. The locomotives were on display at the exhibition and showed how model engineering has progressed over the last 93 years, when compared to the superb examples on show elsewhere in the exhibition.

With over 50 club and Society displays there was a great variety of models and equipment on show and the theme of LBSC was included on a number of model engineering club stands.

The biggest display was by the host club **Bristol SMEE** who managed to find a good selection of models attributed to this builder including the model acknowledged as probably the last one he ever built. When you consider that LBSC designed and probably built 21 2½" gauge, 19 - 3½" and 6 - 5" gauge locomotives it would be difficult to display one of every model made, but they had a good attempt at it.

I mentioned that the club also paid tribute to the ending of steam power on the Southern Region 50 years ago. The remarkable display of Southern steam models organised by Rob Speare was an excellent presentation with I think a representative of most classes designed and built by Bullied and others on show.

Other exhibits recorded the versatility of the Society with traction engines, planes and stationary engines adding to their display.



ABOVE:
From 1924 these two veterans once competed in the boiler challenge.



ABOVE:
A tribute to the end of Steam on the Southern region of BR.

BELOW:
Part of the large Bristol SMEE display.



**ABOVE:**

Judged the "Best in Show" stand was this display by the Avon & Bristol Woodturners.

The exhibition always presents a "Best In Show" trophy for the best presented and interesting stand. Promoted by CuP Alloys this year it was awarded to the **Avon & Bristol Woodturners**.

As well as a wide range of exhibits produced by members they also had a working section where visitors could see a modern wood turning lathe in operation.

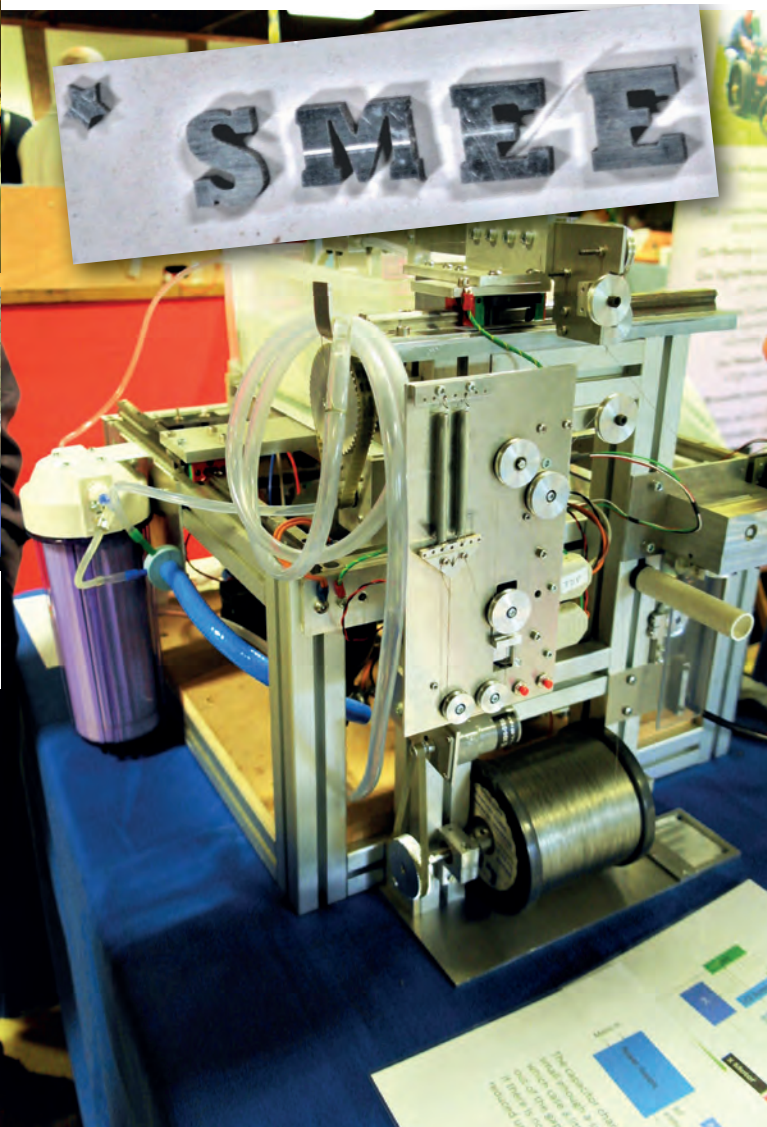
On the SMEE display the Wire Eroding Machine designed and built by members of the Digital Group within SMEE attracted a great deal of attention because of its versatility of use capabilities. My photo of the machine and some of its work hopefully illustrates this point.

BELOW:

Full of interest was this Wire Eroding machine built by SMEE members.

OVERLAY:

An example of the capabilities of the Wire Eroding machine.

**RIGHT:**

Demonstration of wood turning from the Avon & Bristol Woodturners.

The Gas Turbine Builders Association represents one of the very high precision groups who build and operate these fine models. My photo shows a typical Blade assembly with its housing and the clearance between blades and housing is just 0.001" and when you consider that these machines operate around the 100000 rpm mark it has to be accurately machined.

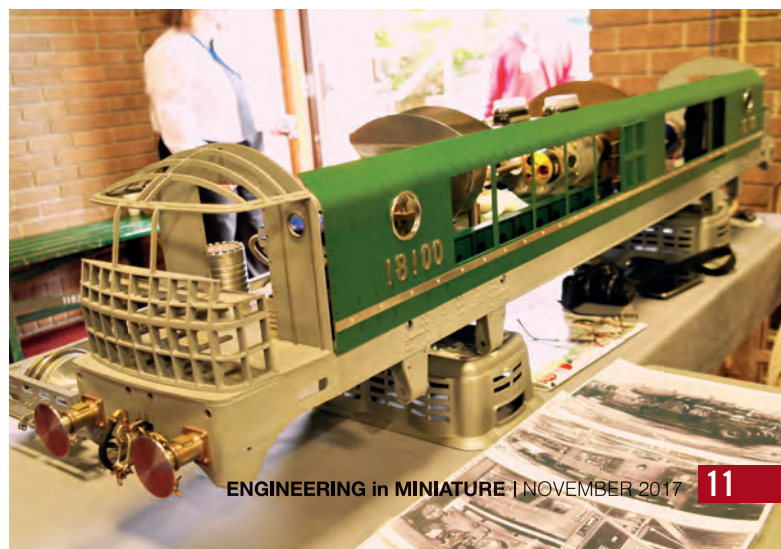
**ABOVE:**

Precision machining for these model turbine blades and housing.

It was also good to see the progress being made by Jerry Burchell with his Class 18000 Gas Turbine loco, the first side panel has been fitted and painted and looks good.

BELOW:

Jerry Burchell's fine 18000 class Gas Turbine locomotive.



**ABOVE:**

An eclectic mix of motive power from the 2½" gauge Association.

Among the many locomotives on the **National 2½" Gauge Association** display were a number of LBSC designed models including the famous Ayesha which illustrated again the tremendous influence he has had on the model engineering world.

This exhibition has a good nautical element to its displays and the **Surface Warship Association** provided a fine selection of high quality warships of many types.

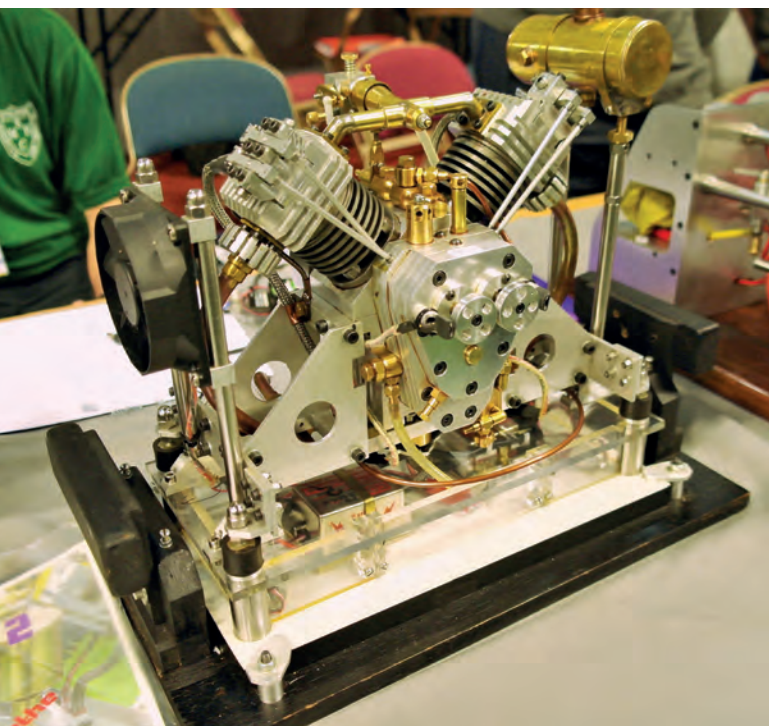
In complete contrast to the large warships the display of Tug Boats on the **Yate and Sodbury MBC** stand was both colourful and varied with lots of interesting models on show.

The **Cardiff Marine Modellers** exhibited a couple of colourful and well made River Barges which had plenty of fine detail and workmanship on show.

Quality workmanship and well presented models is the hallmark of the **IC Engine Building Group**. This year included a new model by Tom Pasco in the shape of a 50 cc 5 cylinder Radial Engine and the freelance Brender II Vertical Twin engine built by Brian Rees was a complicated piece of work which had been built with minimum workshop facilities.

BELOW:

Brian Rees's freelance Vertical Twin I/C engine on the I/C Builders stand.

**ABOVE:**

Warships to the fore from the Surface Warship Association.

**ABOVE:**

A display of Tug Boats by the Yate and Sodbury MBC.

BELOW:

A couple of excellent River Barges from the Cardiff Marine Modellers.





LEFT:
This 6" Foden
Steam lorry
was part of
the Stroud
SME display.

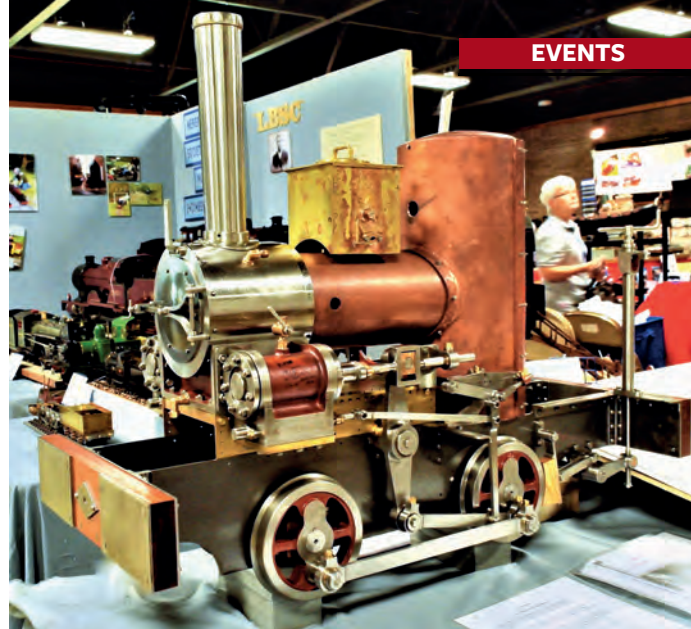
Among the many model engineering clubs I thought the 6" scale Foden Steam Lorry on the **Stroud SME** stand was well made and caught the attention of many visitors.

The **Hereford SME** display included a nice collection of LBSC models but the attraction here was the 0-4-0 7¼" gauge Swiss Tram Locomotive under construction by Walter Ogden. This engine has Charles Brown valve gear which in itself is a very rare detail in this gauge. As always the workmanship by Walter is first class. The original was built by R & W Hawthorne at their Newcastle on Tyne works in 1880.

A comprehensive collection of wagons and locomotives on the **GL5** stand offered a glimpse into the detail work and rolling stock of this Association. The impressive BR Class 2 locomotive provided a focal point for the display.



A 7¼" Gauge BR Class 2
2-6-0 loco was on the
GL5 stand.



ABOVE:
The Swiss Tram Loco under construction by Walter Ogden.

On the **Salisbury SME** I noted a couple of well made stationary engines with the unusual Newcomen Engine being a fine model alongside the Hypocycloidal Engine and Boiler plant.

A professional display by the **Westland & Yeovil District MES** showed off the work of members and was illustrated with some good photos of operations at their club. The Southern theme was continued on the **Northern Association** display with an excellent example of a 7¼" gauge King Arthur class loco resplendent in BR livery.

This exhibition always has a large number of Private entries which provide a good variety of models for visitors to enjoy. The little Merryweather Horse drawn steam Fire engine built by Mike Casey showed some fine work and detail.



Westland & Yeovil
District's presentation.

Mike Casey's splendid
Merryweather Steam
Fire Engine.



LEFT:
An unusual Newcomen Engine from Salisbury.

BELOW:
This Hypocycloidal Engine and boiler was on the Salisbury display.





ABOVE:
The main base unit for a Lima & Marion Excavator.

Geoff Lewis displayed the main base unit of the mechanical shovel to the design of the Lima & Marion company. This was a robust piece of work with some good fabrications and machining on show.

The outside operations are a good attraction because visitors can see both steam and i/c engines performing as well as boats on the small boating pond. Bob Danton's 4" scale Foster traction engine driven by his grandson was busy giving rides and both the Gas Turbine builders and the I/C group provided demonstrations of what their models can do along with some traditional stationary Lister and Petter engines being put through their paces.

A number of operational smaller gauge layouts provided a nice contrast to the larger exhibits. The Severn Mendip 16mm Group had a fine scenic layout with a variety of motive power and rolling stock in continuous operation. The little Alco Mountaineer locomotive was coping well with its train.

BELOW:
A superbly constructed footbridge on the Gauge 1 layout.



ABOVE:
This 4" scale Foster was proving rides on the outside display area.

A fine scale Gauge 1 end to end layout caught the attention in Hall 3 with some excellent buildings and rolling stock.

Also in Hall 3 was the Flying Zone where model aircraft and even radio control hot air balloons could be seen showing off their flying capabilities accompanied by some fine static models like the B25 Mitchell Bomber.

The radio controlled display of trucks and diggers provided by the **South West Truckers** also had plenty of activity to attract attention.

As with all reports of exhibitions of this nature many details and descriptions have to be left out but that does not detract from the splendid presentations that were attending but which I haven't mentioned. Your efforts were very much appreciated by both the organisers and the visiting public, so on behalf of all of them I would offer my sincere thanks to all concerned and to the **Bristol SMEE** particularly for their hospitality and help. ■

BELOW:
A well made B25 Mitchell bomber.



CLUB NEWSROUND



BY JOHN ARROWSMITH

The darker nights are with us so hopefully workshops are in full production and lots of lovely models will be emerging next year!

November is also a quiet month in terms of model engineering activities with the end of the running season and the annual exhibitions. However, this month sees the large 16th Faszination Modelbau model engineering and modelling exhibition taking place at Friedrichshafen over the weekend of the 3/5 November. The organisers are advertising it as the World's largest model engineering exhibition. It is in Southern Germany and close to the Swiss border and according to their publicity material, contains around 5km of steam operations including the boating lake. We in the UK are now looking forward to the **Model Engineering and Modelling Exhibition** being organised for **Alexandra Palace** over the weekend of the 19th-21st January. This is the major exhibition in the South of England and will again showcase all that is best in the modelling world as well as bringing together over 50 leading suppliers and a wide selection of modelling activities. I have come across a new way of fund raising (well it is a new way to me), and that is to sign up to a web site called easyfundraising.org.uk and if you use this page to buy anything on line from the large range of suppliers available then your club could benefit from a small donation made to you. One club I have found using it has already raised nearly £350 from

just 30 people using the site. If your club needs funds, this may help you add to your fund raising project or day to day running expenses. I cannot guarantee it of course but it may be worth a look to see if it can help. Finally, I have to report a sad loss with the passing of Alan Bibby in July. Alan was a long time member of the Leyland Society and the 7¼" Gauge Society where I met him on many occasions at rallies and exhibitions. He will be greatly missed, our condolences to his family and friends.

The monthly bulletin from the **Bradford MES** is full of interesting details about various club activities. For example the refurbishment of their raised track was due to begin at the beginning of October and members had planned well for this major club project by having most of the necessary materials on site before they started. The clubs running season has been well supported and their Rae Gala was a very successful day with entertainment by the Hall Royd Brass Band. I think steam and brass bands go very well together. Members also made a visit to the Shipley Glen Tramway in June which combined with some good weather was enjoyed by all who took part, apparently the sweet shop at the top station did a roaring trade. The club will be holding their Annual Exhibition and Social on the 25th November at Saltaire Methodist Church from 13.00pm – 17.00pm.

Members at the **City of Oxford SME** have enjoyed increased passenger numbers during their running season in Cutteslow Park including lots of new passengers who did not know the railway existed and that is after 28 years of operations there. Combine this with all the improvements to the site they have made as well and you can see that they have been very busy. The new turntable and steaming bays have impressed visitors and will give them additional operating options. On top of this they have also been carrying out work to improve the curves and levelling on the raised track as well as the usual maintenance. The public entrance has also seen some serious re-laying work which has already reduced the maintenance load by removing the need to keep sweeping the dust and loose gravel from the path. It also provides a good first impression for visitors, which is very important in getting them to return again in the future. The new track extension out into the park is progressing well and they hope to have completed even more by the time of the next running season in 2018.

Back in August I enjoyed some time with members at the **North Wales MES** track on the West Shore. This new track is an impressive piece of work which has taken about 2 years to complete. Chairman Dennis Postlethwaite explained all the hoops they had to jump through to get

The impressive new turntable and steaming bays almost complete at the City of Oxford MES.



The station area at the North Wales club at Llandudno.



This fine 5" gauge Hughes "Crab" was ready to go at the Mold running day.



the permissions needed to build the track which is now very popular and is in an amazing setting right on the sea shore. They have good support from the local authority and they are now planning how they can include a cover for their station area as well as building a new club house. I hope this positive attitude is rewarded with the additional facilities which would make this a really great site to visit. If you are in this area you will be sure of a very warm welcome. Whilst in North Wales I also paid a visit to the **Mold MES** at Celyn Wood where members were preparing for their Sunday running day. It is an attractive site with an interesting track layout. The members there are very welcoming and the kettle was soon on the boil so if you are in the area pop in and see them, they will be pleased to see you.

Another club who had a busy start to their running season was the **Plymouth Miniature Steam** group based at Goodwin Park in Plymouth where passenger numbers are about 10% up on last year. Their monthly meetings have been well attended as well and this month they have a talk about the Plymouth, Devonport and South Western Junction Railway. This is one of the few clubs in the UK who still enjoy the facilities at a local school. The weekly workshop evenings at Torbridge School are going quite well but a few more members joining in would fully use all the facilities available to them. They are currently in talks with the local authority about their lease renewal which they hope will be successful. Their new traction circuit in the wood is working well but can get blocked by cars if the car park fills up. The track re-laying project is also going well and to further improve their environment they will be planting bee friendly wild flowers and bluebells. It should look very attractive when complete.

At the **Richmond Hill Live Steamers MES** in Canada they have just installed a new 40ft container to replace the old metal tool shed. This container will be a great asset for the club as it will provide them with a safe, dry and large storage facility as well as some additional workshop space. Following this installation a general clean up both outside and inside the clubhouse has made a great improvement to the overall appearance of the site. The clubs running season has seen good passenger numbers attending with some spirited running by the drivers. There has been a couple of new locomotives attending as well, which augers well for the future. Ron Mason brought his CPR "Jubilee" in for testing and the CNR Northern almost finished by Kevin Laidlaw put in an appearance to add to the event. Some members attended the 50th anniversary event at the Montreal Live Steamers where a new Bascule Bridge was unveiled in memory of the late Jim Scott who is a very much missed member of that club.

The training courses at the **Society of Model & Experimental Engineers (SMEE)** have been going well with another ten students completing Part 1 of the Polly course and another thirteen completing the Grinding course. New students have been enrolled for the Milling course and it has also been proposed that a new tool grinding course be arranged for 2018 so that should generate even more interest. These courses are an excellent idea as they create the basic developments that is so sadly lacking elsewhere in society. Alan Berman has proposed that some improvements to Marshall House be considered now that the local authority redevelopment plans have been changed to long term aspirations which gives the society the confidence to proceed. A visit to the West Dean college demonstrated the excellent conservation work carried out by the students including an 1843 John Littlewood Naylor Beam Engine and Pump together with a Vertical Steam Engine built by J. Hallett by 1902.

The 82nd Annual Exhibition at the **Sutton MES** was held earlier in the year when the Sir Malcolm Campbell Challenge Trophy for the Craftsman of the Year was awarded posthumously to the late Mike Dean. Mike was a stalwart member of the club being secretary for 17 years and will be sorely missed by all his colleagues and friends. His son Simon accepted the trophy on his behalf and said the family were honoured with the award. The exhibition itself had a wide range of models and equipment on show demonstrating clearly the extensive range of skills within the club. Mitch Barnes from **SMEE** was the judge and he remarked that he found being a member of a club invaluable because of the number of people who are always willing to share advice and experience with others. 2017 is also a special year for the Club President Derek Tidbury who has been a member for 60 years who now considers that he can say what he likes, criticize as much as he likes and as is customary, be totally ignored. One of the joys of being an older person! ■

Simon Dean receives the Sir Malcolm Campbell Trophy at the Sutton MES Exhibition.





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A LAND ROVER FOR THE GRANDCHILDREN



Building a working Land Rover for a child to drive looks impressive, but the editor discovers that it's easier to do than you might think.

Ask anyone to name an iconic British motor vehicle and most will say "Land Rover". Since 1948, the Solihull factory has turned out millions of the boxy go-anywhere vehicles, but it turns out that they aren't the only manufacturers. In garages and sheds across the world, people are building their own versions, just a little bit smaller. Despite the size, they have quite a following and even an owners club.

I met two builders, Richard Hocking and John Nolan at their workshop, a suburban double garage. Proudly parked up behind the doors is the vehicle they constructed, a series 2 Land Rover, destined to be the first driving experience for each of the Hocking grandchildren.

The project started in 2009 with the purchase of a Toylander kit, or at least the basic parts and some paper templates for the body. Like so many such kits, it sat around until early 2017 when the two friends were looking for a project. Working one day a week, a few months later the Land Rover was ready for the road.

At first glance, this looks like a fairly complex build. We are talking about a small car able to travel at up to 4mph carrying a couple of children or a single adult. Powered by a 12v motor, the front axle pivots and enjoys proper Ackermann steering. OK, it won't compete with the real thing off-road, but can handle rutted ground and you'll often see them trundling around the field at both full-size and miniature steam rallies.

In truth though, this is a project within the grasp of anyone capable of basic DIY. In most respects, the two builders are somewhat over-qualified for the job but nonetheless, they enjoyed the work and are justifiably proud of the result.

Construction starts with the body. A monocoque built from 12mm thick exterior plywood, the main tools used were a jigsaw, spokeshave and smoothing plane. Full size paper templates were stuck on to the wood with border adhesive but as John admits, this isn't recommended as the glue can cause distortion. This is such a problem that Toylander now only provide plans requiring the builders to mark things out for themselves.

In truth, this isn't a huge issue – many parts are made in pairs and as long as they are identical, the body can be assembled. John simply pinned the sides together for finishing to ensure accuracy. For anyone who finds this too difficult or time consuming, Toylander sell a pre-cut pack of CNC-cut moisture resistant MDF and even an assembled version. Modifying the body design wouldn't be difficult either, the plan is for a short wheelbase model but a little fiddling would produce a LWB variant offering more passenger space.

Putting the parts together was simple enough for John and Richard. Screwed and glued, some 19mm square lengths of well-seasoned (it had been hanging around in the roof of the garage for years waiting to come in useful) scrap wood add extra rigidity where they can't be seen. Curved parts such as the wing fronts and bonnet are made from aluminium bent over formers. The boxy design of the prototype is a great help in this respect!

Running gear is bought in ready to bolt and screw onto the body. At the front, four bolts hold the tilting axle unit which incorporates the steering. At the rear, a pair of hangers hold the wheels. Drive is from a 12v electric motor hidden under the seat connected to a single wheel by a chain. No provision is made for

**ABOVE:**

The body is a monocoque made from 12mm thick plywood. Paper templates aren't supplied any more due to distortion issues, the builder needs to mark the wood out themselves.

stretching, but the unit can be moved slightly if required to take up the slack. No differential is required as the wheels rotate freely on the axles, the chain drive being to a cog fitted to the back of a wheel. A second motor can be added to drive the other wheel and combined with a 24v electrical system will raise the top speed to 6mph.

A footbrake in the cab pulls a bar that bears on the inside of the rear wheels, a friction surface ensuring there is plenty of grip to hold the vehicle as required.

Inside the cabin, the driver finds a steering wheel (left or right hand drive versions are available), accelerator, footbrake, reversing switch and controls for the lights. For authenticity and security, a key switch controls the power. For the nervous grandparent, a remote speed control can be fitted on a length of cable if required.

As befits a utilitarian vehicle, the upholstery is pretty basic. Foam squares are covered with vinyl by Richards wife. They won't mind getting wet through either rain or car washing.

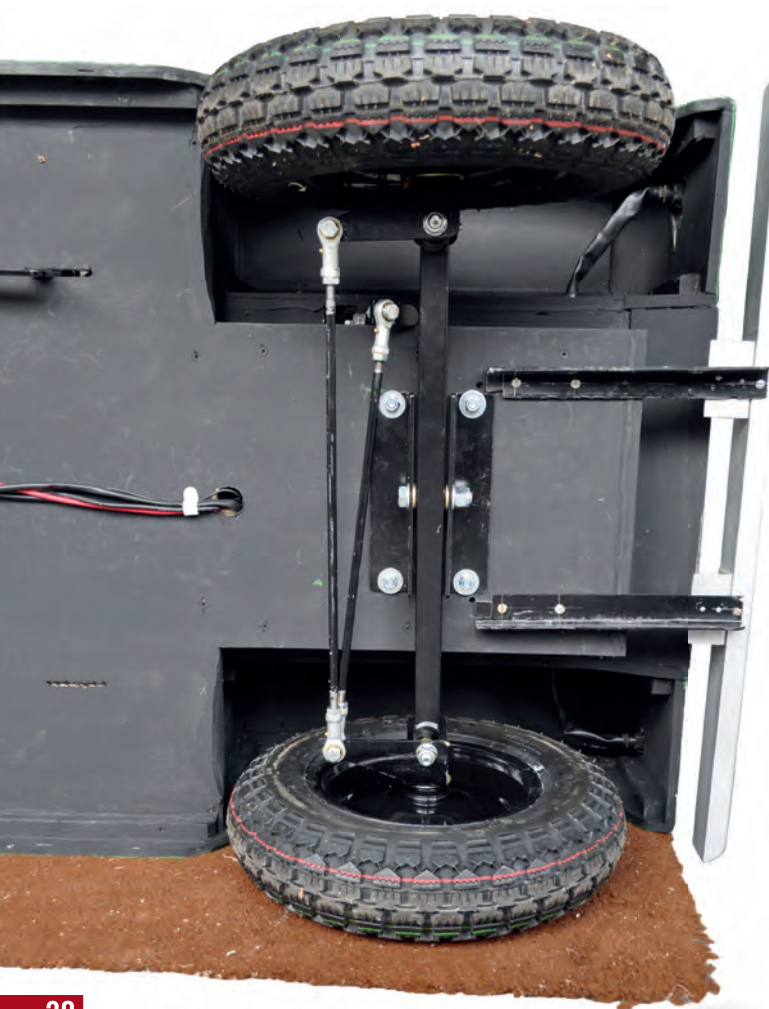
**ABOVE:**

Ready made steering wheels can be supplied but when you enjoy working with wood, why not make your own?

The paint finish looks very nice and I wondered if it was sprayed, apparently not. The only tools purchased were a couple of new brushes. Much of the detail is painted on with aluminium coloured panels and neatly applied lines that represent the doors. These are fake as opening versions would compromise the body rigidity, but then the drivers don't seem to mind leaping in and out over the side.

An early version of the kit, wiring had to be carried out the hard way with the aid of the comprehensive manual. Modern buyers have the option of purchasing a ready to use loom and all the lights, but here the builders sourced their own items. While they were at it, the iconic front grille is made up from lengths of welding rod soldered together, and it looks exactly the same as the real thing.

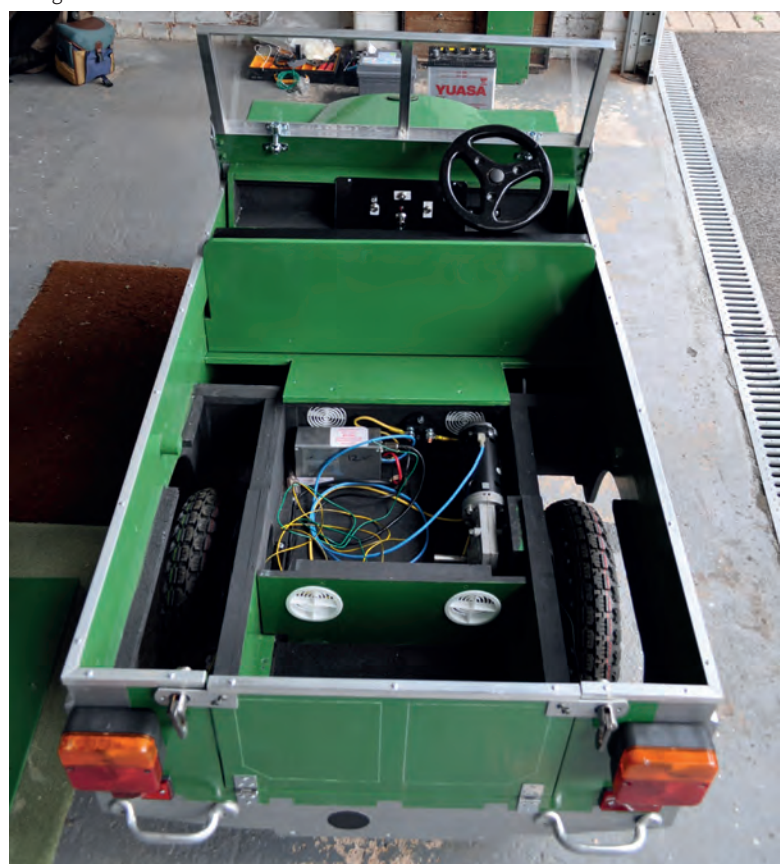
Power comes from a pair of car batteries under the bonnet. At the moment, one provides drive and the other works the lights which should allow an hours driving. Connecting them in parallel would give a longer running time.

**LEFT:**

Bolted under the engine compartment, the front axle incorporates steering and thanks to a central pivot, a way of keeping all four wheels on the ground. There's no suspension however so the occupants will enjoy a bumpy ride, but it's all part of the fun.

BELOW:

Hidden away in the load area under a removable panel is all the important wiring and the drive motor. Batteries live under the bonnet.



**ABOVE:**

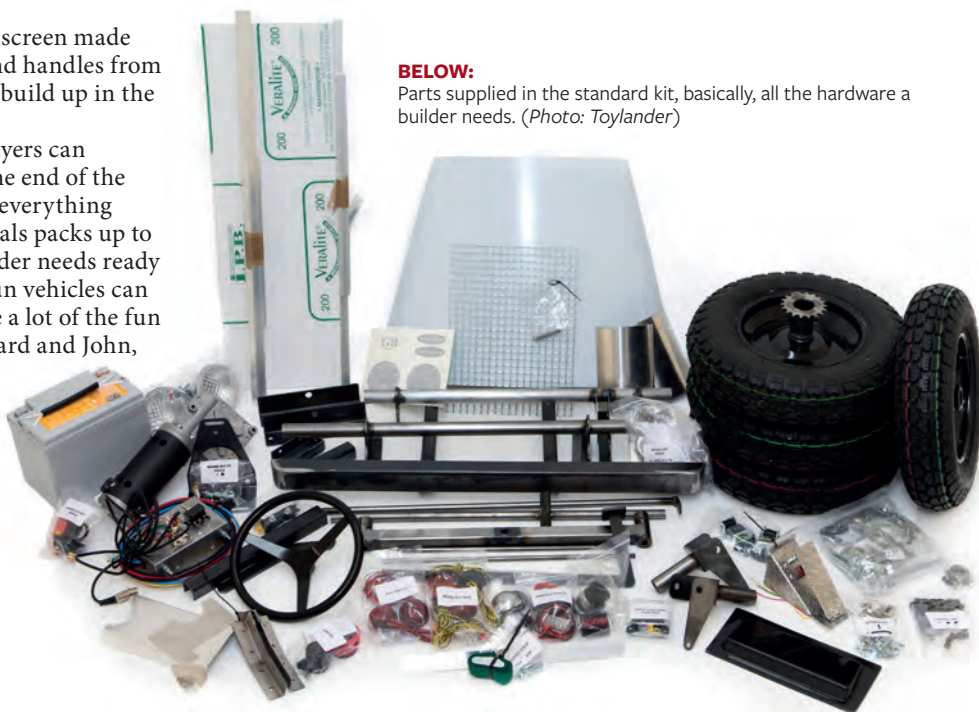
The speed control operates through a linear potentiometer for a realistic throttle response for the driver. Combined with a reversing switch, this provides a youngster with a pretty complete driving experience.

Fishing touches included the folding windscreen made from aluminium angle and various catches and handles from DIY stores or that stock all engineers seem to build up in the garage.

This is a really impressive little vehicle. Buyers can chose the level of difficulty they require. At one end of the scale you can buy just the plans and fabricate everything yourself. Beyond this there are various materials packs up to a comprehensive kit with everything the builder needs ready to screw and bolt together. Finally, ready to run vehicles can be supplied, although that would seem to take a lot of the fun out of this sort of project, and talking to Richard and John, building this has given them an awful lot of pleasure. Neither is sure how much time the build took but the manufacturer suggests 60 hours plus painting would be a reasonable estimate. Now the pair are searching for the next project, it will be interesting to see what they do next. ■

**ABOVE:**

The wheels supplied are road quality pneumatic tyres on 3.50 x 8 inch dia. steel rims running on roller bearings. Total tyre diameter is approx. 15" (380mm) for Standard tyres. The drive wheel is supplied with an extended hub, extra bearing and drive sprocket welded on. Wheel rims have smooth rolled return edge to comply with toy safety and use the flat of the rim for the braking surface.

**BELOW:**

Parts supplied in the standard kit, basically, all the hardware a builder needs. (Photo: Toylander)

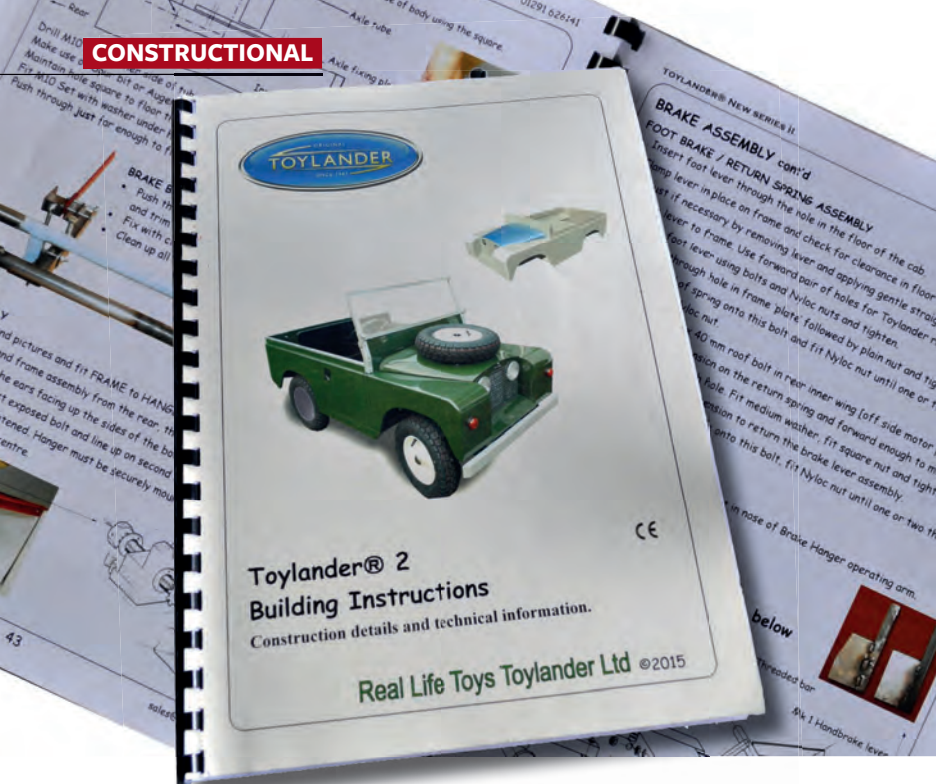
BELOW:

Lights were sourced by the builders here and the grille scratchbuilt from welding rod. The aluminium windscreen folds down, just like the real thing. The front bumper is wood, but this kit now comes with a metal version.

**BELOW:**

On display at Carfest South, the full range of kits from the range. All share the same basic construction methods.





ABOVE

An essential part of the kit is a comprehensive manual fully illustrated and written in an easy to follow manner.

VEHICLE SPECIFICATIONS

Wheelbase: 965mm (38")

Turning circle: 5400mm (212³/₄"²)

Length: 1625 mm (64")

Width : 740 mm (29")

Height: 750mm (29¹/₂"²)

WEB LINKS

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www.toylanderownersclub.com

THE BUILDERS

Appropriately for this project, Richard has spent most of his life as a garage mechanic before moving to the Land Rover assembly plant. He then went to be part of the Vehicle Operations team in charge of press cars and preparing new models for the dealer network.

John also worked for Land Rover in several areas culminating in the experimental bodies division where he was responsible, among other things, for building the full size clay styling test models used to prove the look of a car ahead of the decision to authorise it for production. A pattern maker by trade, he also enjoyed a spell of national service with the RAF working on both Hastings and Vickers Valletta airframes.



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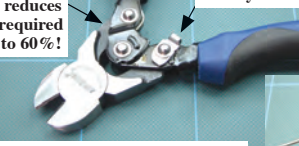
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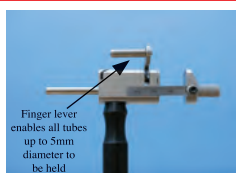
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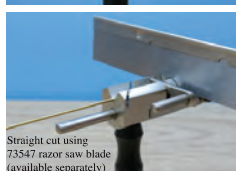
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The EIM Steam Plant – The Engine

Martin Gearing assembles and tests the engine

BY MARTIN GEARING – PART 10 – CONTINUED FROM PAGE 23 AUGUST 2017

ASSEMBLY

Note – Do not deburr any of the port drillings.

Carefully go through the collection of parts that you have manufactured, and doublecheck that all sharp edges have been removed, including where the cylinder bores meet the end faces of the cylinder block, and that the surface finish is acceptable for the application of your chosen finish. See photograph E71.

I would suggest that the engine is assembled and seen to work before painting, which may be done by separating the five major groups, these being: 1) The base with main bearing and port block assembled 2) The cylinder block, cylinder end cover, rod end cover, gland cover containing the rod and piston assembly screwed into the big end 3) Crankshaft 4) Flywheel 5) Reversing Valve & operating lever.

First confirm that, when the cylinder block pivot bolt is passed through the reamed hole in the port block, the port surfaces meet without any gaps. A check may be done after smearing the cylinder port face with light oil before pushing it against the port block and then semi-rotating back and forth a few times before dismantling and checking for even markings.

Should any gap be evident the most likely cause will be that the pivot bolt in the cylinder block is not perfectly square to the port face. In this case, study the gap to determine which direction the pivot bolt needs to be 'directed', which may be done by holding in a drill chuck and easing the full length of the stud in the chosen direction. Be warned that should this be necessary, the amount of adjustment required is very small.

Loosely assemble onto the base the main bearing and port block using M5 countersunk set screws trimmed to length if required. Do not tighten fully at this stage. Insert the crankshaft through the reamed hole in the bearing block after applying a little light oil to the shaft and the bore. Fit the flywheel to the protruding crankshaft, putting a strip of writing paper or 0.1mm feeler gauge between the inside boss of the flywheel and the bearing

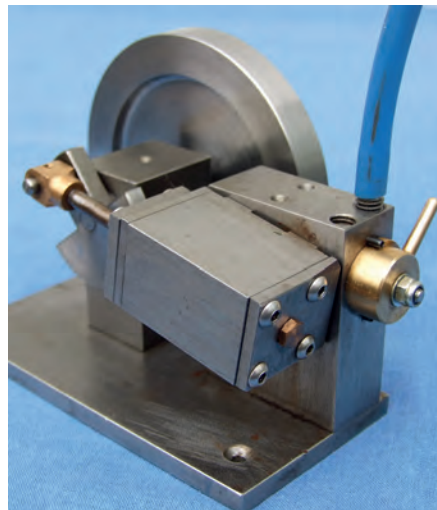


ABOVE:
PHOTOGRAPH E71

Parts supplied in the standard kit, basically, all the hardware a builder needs. (Photo: Toylander)

BELOW:
PHOTOGRAPH E72

Assembled engine ready for trial run on compressed air.



block, before locating the grub screw onto the flat filed in the crankshaft. Nip up the grub screw and remove the strip of writing paper/feeler gauge before fully tightening the grub screw. Check to see that there is perceptible end float and that the crankshaft rotates freely in the bearing block. If not, dismantle, identify/locate and rectify the cause.

Pass the piston rod through the cylinder rod end cover, BS007 'O'-ring and connecting rod gland cover in that order. Put a drop of retainer into the M4 thread of the big end before screwing onto the piston rod, removing any excess liquid with a paper towel. Fit to the piston a BS013 'O'-ring taking care not to damage it.

Apply a smear of light oil to the piston rod, cylinder bore, piston and 'O'-ring, and carefully insert the piston into the bore. Because the cylinder is symmetrical about the pivot pin, either end is acceptable. Secure the gland cover and cylinder end cover with four M3 x 10mm long bolts. Apply a thin coat of sealer to the cylinder joint face. I use a Silicone

High Temperature 'Instant Gasket' that gives excellent results. Check that the piston moves freely through the gland and cylinder. Should there be any stiffness, it is worth rotating the gland and end covers by one quarter of a turn, half a turn and three quarters of a turn and as a last resort changing to the other end of the cylinder and repeating, giving eight possible positions for success. If after trying all eight assembly positions free movement is still unobtainable look very carefully to make sure that the four bolt holes drilled in the covers are not binding against the bolts and, if this is found to be the case, ease the bolt hole with a needle file.

Apply a trace of thin oil to the crankpin, big end bore, cylinder pivot stud and pivot hole in the port block. Carefully locate the cylinder block pivot stud into the reamed hole in the port block and the big end (with oil hole uppermost) onto the crankpin and push home gently the cylinder block, closing the gap between the port faces. Fit the pivot bolt thrust washer followed by the M4 Nylock nut and

tighten until the port faces are just free to move without any trace of stiffness. Rotate the crankshaft and check that the engine components assembled so far are able to move freely. Holding the base vertically with the port block at the top in a vice with jaw protectors, tighten the main bearing and port block securing screws, gradually checking that the crankshaft still rotates freely at each tightening. Should things tighten up slacken the screws on the offending part and re-tighten until all the parts are free running.

Put a drop of retainer in the M3 threaded hole in the end face of the port block and on the short threaded end of the reversing valve stud before screwing the stud home into the port block – use a pair of nuts locked together, preventing any damage to the stud. Wipe away any liquid visible.

Cut two pieces of Ø1/16" stainless 303 rod 8mm long. File the ends square and remove any sharp edges. Put a drop of retainer in each of the two Ø1.5 stop holes in the end face of the port block and

insert one pin in each. Remove any liquid retainer from the port block end face using a paper towel.

Finally fit the reverse valve body, with the lever facing away from the cylinder, onto the reverse valve stud followed by an M3 Nylock nut and tighten, so that the reverse valve is held against the end face of the port block but able to be moved between the stops with light pressure on the lever.

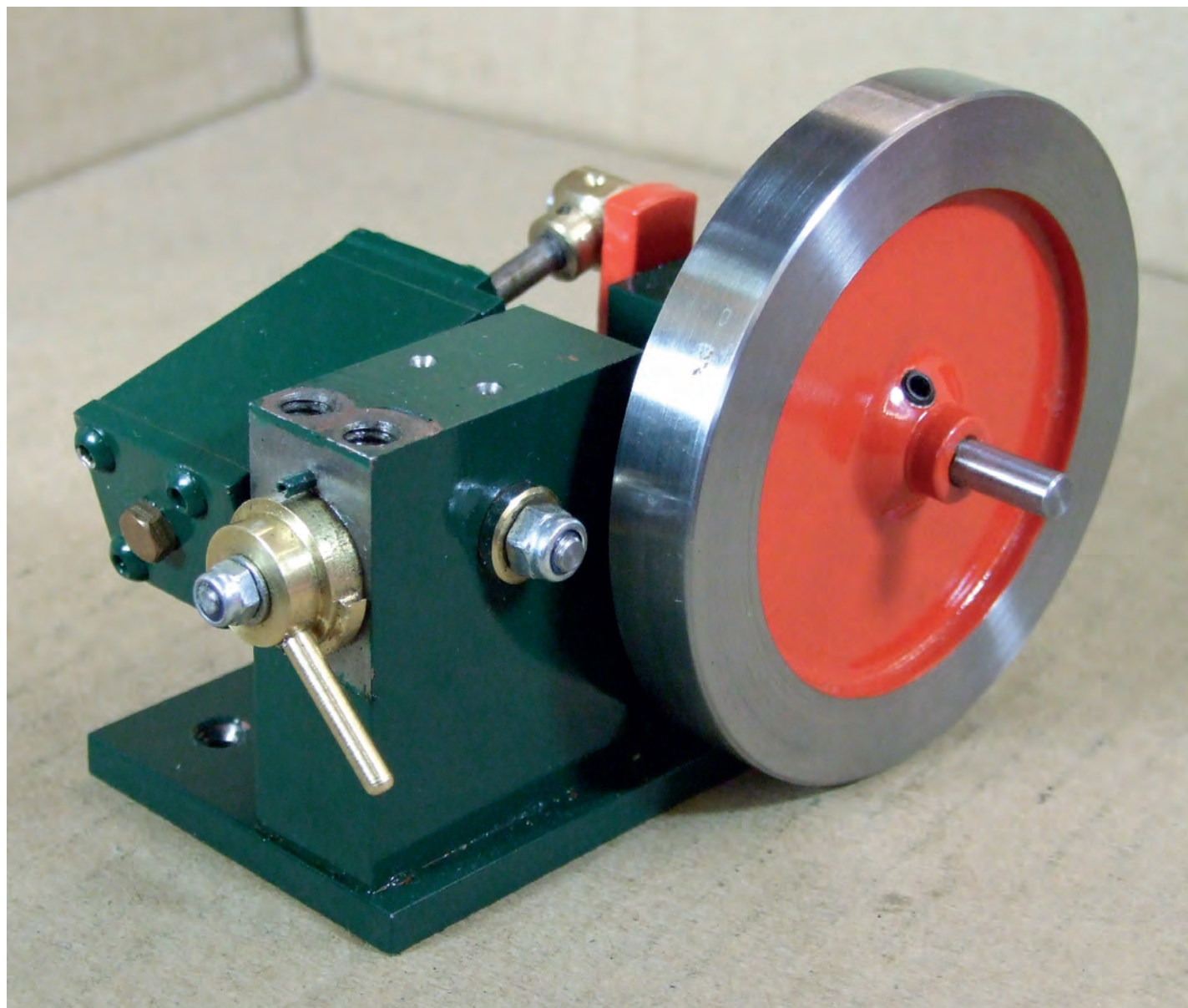
If a pipe adapter threaded M6 is made up, the engine's operation may be confirmed both forwards and backwards if a controlled supply of compressed air is available. See photograph E72.

Having confirmed that the engine is operational it may be dismantled into the five major groups mentioned earlier, all traces of oil removed before painting the colour of your choosing. See photograph E73.

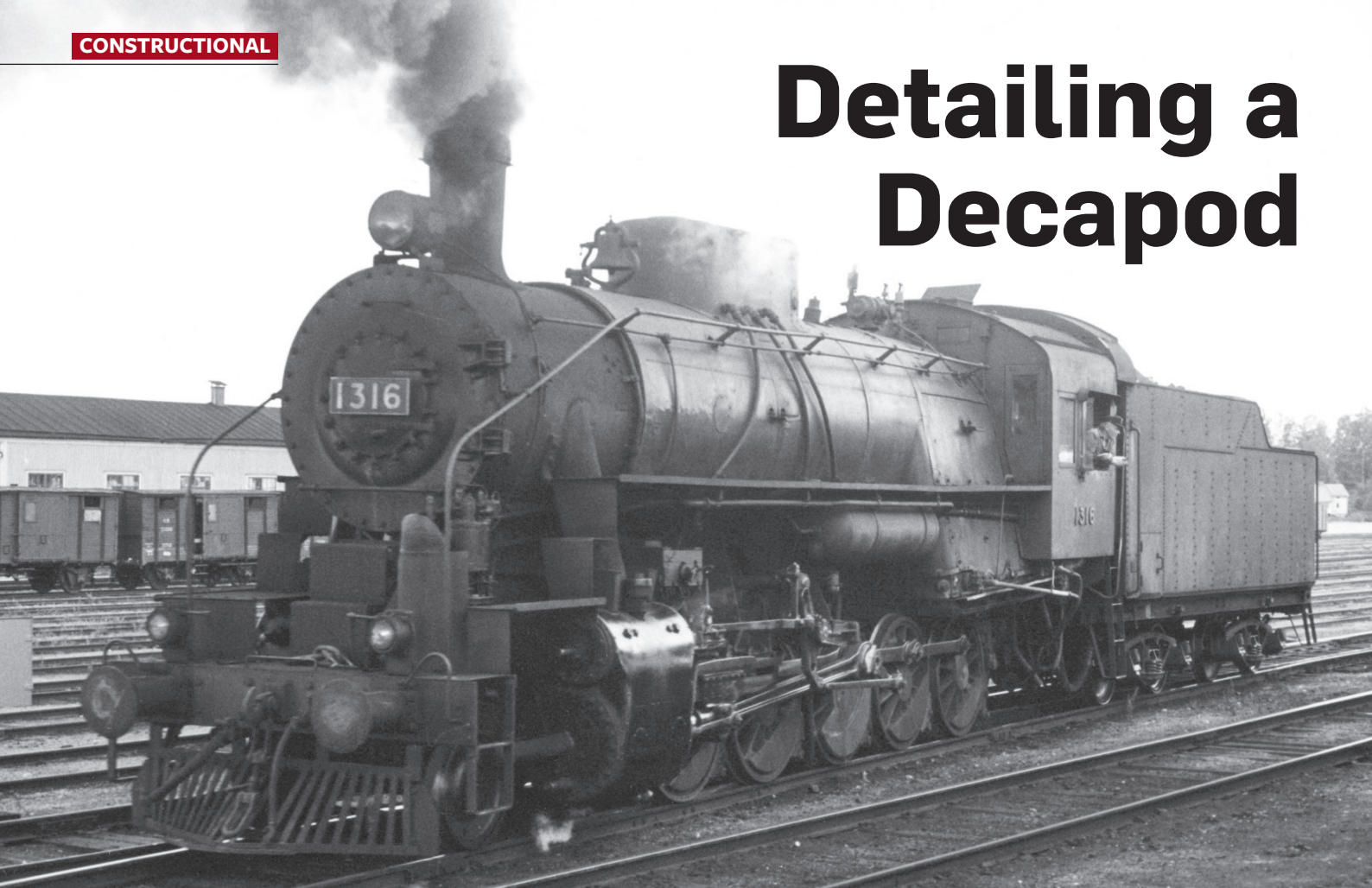
Next time we will start work on the displacement lubricator.

« TO BE CONTINUED »

BELOW: PHOTOGRAPH E72 – What you should end up with – the completed engine, painted in whatever is your favourite colour scheme.



Detailing a Decapod



Jan-Eric takes a look at Juhani Saloranta's masterpiece, a Baldwin "Russian Decapod" of WWII vintage

BY **JAN-ERIC NYSTRÖM**

Juhani Saloranta (1944–2012), retired early from his work as a graphic artist in an advertising agency due to rheumatoid arthritis, wanted a challenging project in order to retain agility in his arthritic hands. The making of a miniature, 1:8 scale, 7- $\frac{1}{4}$ " gauge 2-10-0 engine, with all details and accessories (except for the pressure gauges) built entirely from scratch, is certainly challenging enough – this humongous project included designing and building all valves, injectors, pumps, a turbo-generator, a tender stoker engine, and much more.

In **Photo 1**, Saloranta is running the engine on his dual-gauge home track, built to handle both his 150mm gauge engines as well as the 7- $\frac{1}{4}$ " Decapod. The detailing is already apparent in this photo, but many of the accessories are hidden between the frames and under the running boards, and in the cab.

Looking at **Photo 2**, we see the main crosshead and its guides, as well as the guide for the piston valve. All these parts are very close replicas

ABOVE

Twenty "Russian Decapod" engines by U.S. manufacturers Baldwin and ALCO were delivered to Finland in 1946–1947, and numbered 1300–1319 by the Finnish State Railways. This picture shows # 1316, ALCO build no. 75211, in steam. All except # 1319 were scrapped in the 1960s. (Photo: Courtesy of the Finnish Railway Museum / M. Lumio collection.)

RIGHT

PHOTOGRAPH 1: Juhani Saloranta running the Decapod on his dual-gauge home track.



of the “real thing”, but of course to a scale of 1.5" to the foot. Note the linkage from the combination lever to the lubricator, situated above the valve crosshead. The miniature model has two of these box-shaped lubricators, one on each side, just as the prototype.

A close-up of the left-hand lubricator is seen in **Photo 3**. The rocking motion from the combination lever is transferred to six separate plungers, each functioning as an independent oil pump. Thin copper tubes transport the oil to the final destinations, i.e. the axle boxes, both on the front truck and the main frame.

The frame of the loco is laser-cut from 16 mm steel plate, thus it is very sturdy. In **Photo 4**, taken during the construction of the engine, the frame can be glimpsed under the leaf springs. A compressed-air tank is situated above the frame, under the boiler, and two dummy tanks are also visible in the image, as well as the exhaust nozzle and the petticoat pipe in the smokebox.

Inside the cab we find a breathtaking array of controls, **Photo 5**. In the very middle of the backhead are two water gauges, with their valves. Starting clockwise from lower left, we see a brass handle (with its analogue on the other side of the cab floor) which regulates the water for the left side injector, and to the right of that, a small T-handle for the water pump bypass valve.

PHOTOGRAPH 2:

The right-hand crosshead and valve gear. Note the linkage to the lubricator.

PHOTOGRAPH 3:

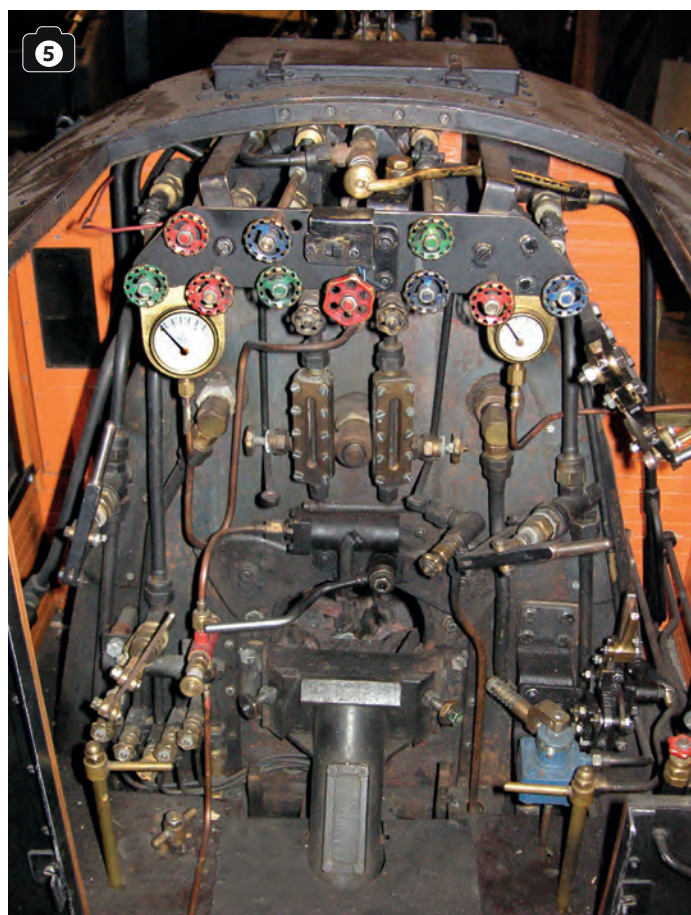
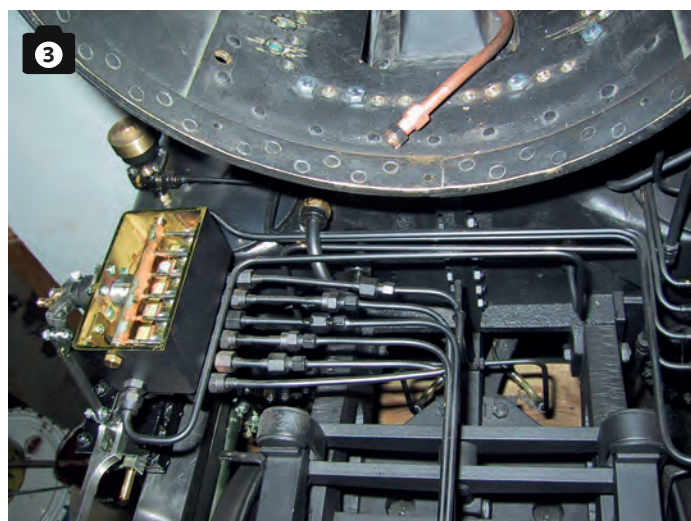
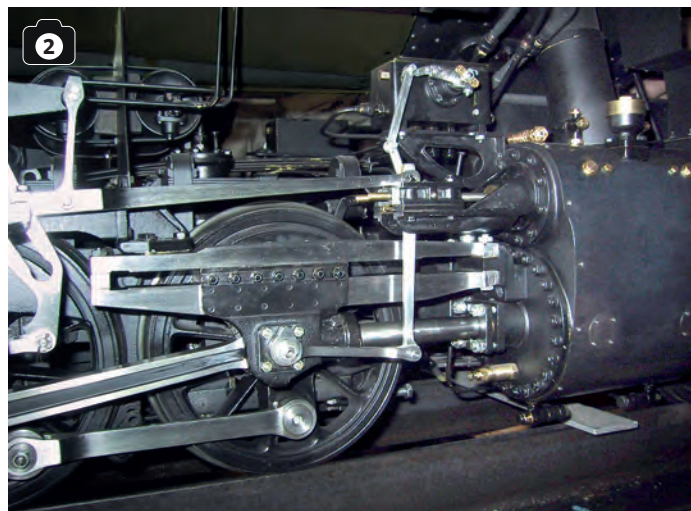
Oil pumped by the six independent plungers in the lubricator is distributed through piping to the axle boxes.

PHOTOGRAPH 4:

A cylinder for compressed air resides above the frame, under the boiler.

PHOTOGRAPH 5:

A multitude of valves and gauges on the Decapod's backhead.



Above this is a set of five valves for the stoker's steam nozzles, fed by the valve with a long, narrow handle. Thanks to these valves, coal can be fed to different parts of the grate by regulating the steam jets. To the right of the stoker is a small red valve, supplying compressed air for the "butterfly" firedoors, and higher up, at the extreme left, a lever for the steam valve of the left side injector, which is hidden under the cab floor.

Above the miniature steam pressure gauge (made by the UK company Reeves) is the boiler's manifold, having a multitude of valves, left to right: a steam valve for the stoker engine (situated in the tender), a valve for the steam-operated air compressor, then the main valve for the left-hand injector. The blue wheel controls the blower, the green below it is the shutoff for the stoker's jets, while the larger red wheel is the manifold's main shutoff valve. Following that, a green valve for the generator, below it the control for the steam-operated drain cocks. The next, red valve is for the right-hand injector, while the final valve on the manifold is a multi-purpose shut-off valve, controlling steam to the power reverser, the heating of the lubricators, and an external steam outlet.

The throttle handle is to the right of the second Reeves' gauge (which shows the pressure in the air tank), and below that is the lever for the right-hand injector. The blue, square valve controls the drain cocks. The power reverser handle can be seen above and to the right of it, and finally, on the cab floor, is the water valve for the right-hand injector, and to the right of that, a small, red air valve for the power reverser.

These last valves can also be seen in the close-up of the driver's controls, **Photo 6**, which shows the square, red brake valve as well. Looking at all the equipment in the cab, and on the entire loco, and considering that only the pressure gauges are bought – everything else is built from scratch – you realize what a gargantuan project this has been!

STEAM-POWERED ACCESSORIES

Saloranta's model includes a functioning, miniature stoker! **Photo 7** shows the "auger" which transports the coal from the tender to the distributing table below the firebox doors, where the stoker's steam jets take over, spreading the coal over the grate.

Other working miniature equipment include the air compressor, seen in **Photo 8**. It is modelled after a two-stage pump manufactured by "Knorr-Bremse" in Germany, and it provides air for the locomotive brakes and the power reverser, as well as for the butterfly firedoors.

Photo 9 shows the two safety valves, and the mechanism inside the steam dome, here removed. The perforated tube provides steam to the aforementioned manifold. The throttle valve is an ordinary plumbing ball-valve, actuated via a lever going to the throttle handle in the cab.

PHOTOGRAPH 6:

The engineer's controls are concentrated in the right-hand side of the cab. The cab interiors of all Finnish steam engines were painted a rather bright yellow ochre.



PHOTOGRAPH 7:

Crushed coal emerging from the stoker.

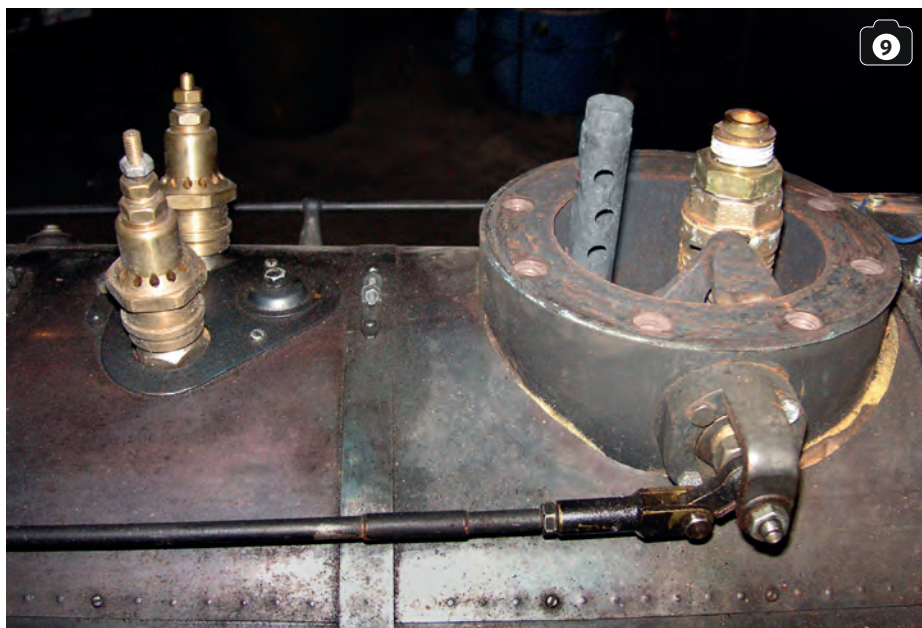
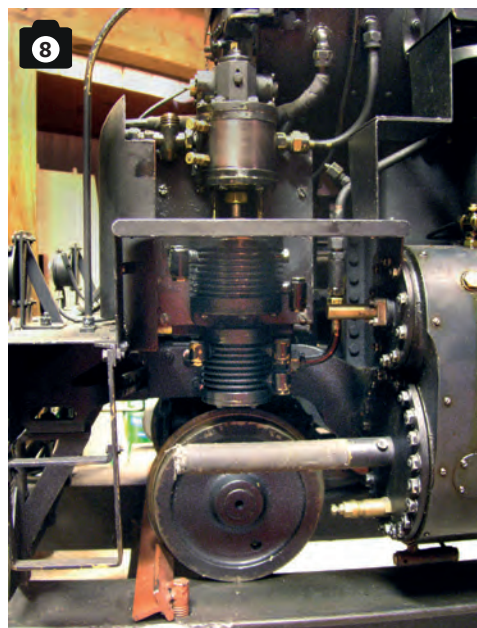


PHOTOGRAPH 8:

The air compressor in front of the left-hand cylinder.

PHOTOGRAPH 9:

Two safety valves and the inner workings of the steam dome.



The Decapod also has a functioning turbine generator, **Photo 10**. Saloranta constructed the turbine part himself, but the electric generator is a common bicycle dynamo, inside a properly shaped enclosure. As you can clearly see, Saloranta is a stickler when it comes to authentic details!

Behind the generator are two dummy whistles. They do emit steam when the whistle valve is pushed, but no sound – very small “peanut” whistles cannot produce anything but a shrill, unpleasant, very high-pitched and piercing sound. In this loco, the actual sound emanates from a large whistle hidden under the running board.

The generator is seen in steam in **Photo 11**. It provides electricity for the main headlight, while all other lights are powered by batteries hidden inside the sand dome. These lights include working lights under the running boards, **Photo 12**. If all these flashlight bulbs were exchanged to white LEDs, which consume only a fraction of the power of incandescent bulbs, the generator could well provide electricity for all the lights of the engine. Some electronic regulation would then be necessary, since the voltage from the dynamo varies considerably, depending on its speed – LEDs burn out quickly if they receive overvoltage. In fact, even the current headlight bulb will burn out if the generator is running at high speed when the light is switched on. So, to avoid the generator rushing into overdrive, the generator must be started with the light switch already in the “on” position!

The engine’s power reverser is shown in **Photo 13**. It is a close copy of the original, and functions in the same way. The original Decapods, **Photo 14**, were the heaviest engines in regular service in Finland, and the only ones that had power reversers – our next largest engines, heavy 2-8-2s and 4-6-2s, only had screw reversers.

All in all, you can see what an amazing work of art Saloranta’s miniature engine is – he spent some 14,000 hours during more than 15 years building it. Much of this time was spent making the numerous patterns and core boxes for all the castings, which, except for the iron ones, Saloranta also cast himself!

We’ll be returning to Juhani Saloranta’s engines in a future issue. ■

PHOTOGRAPH 10:

A working turbo-generator and two dummy whistles.

PHOTOGRAPH 11:

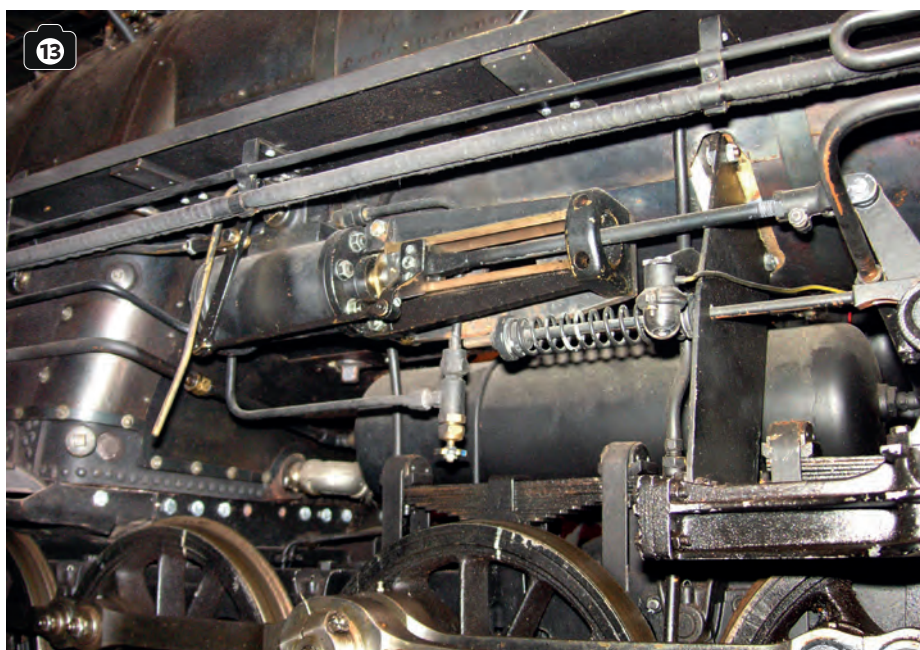
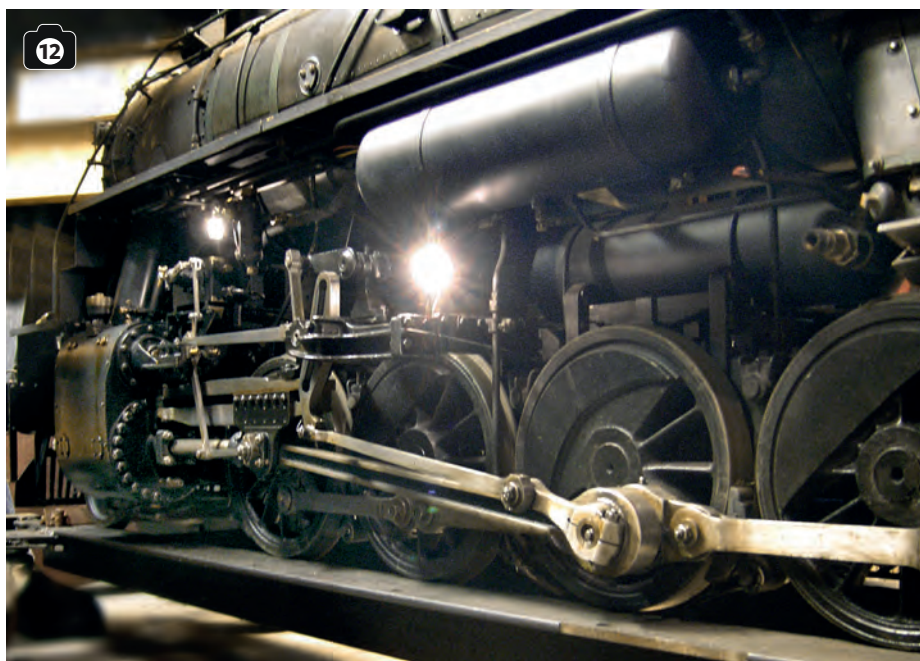
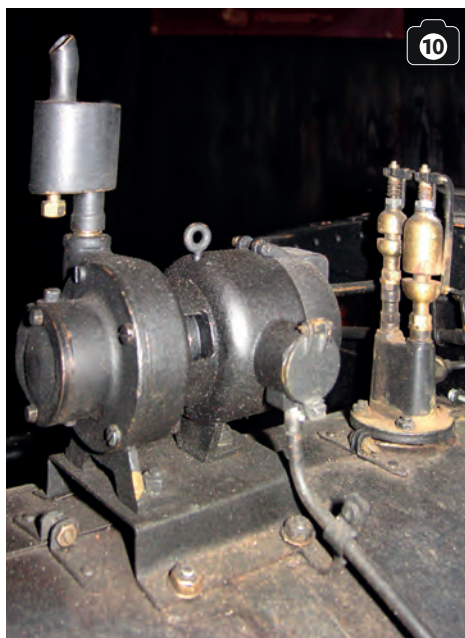
Electricity is generated by steam!

PHOTOGRAPH 12:

Working lights under the running board. Note the boiler blow-down outlet at top right. It can also be used to fill the boiler by attaching a water hose to the quick-release connector.

PHOTOGRAPH 13:

The power reverser works just like the one on the full-size prototype engine.



Building a Panther Tank

Chris faces the task of producing nearly 220 track links

BY CHRIS MEYER – CONTINUED FROM PAGE 12 OCTOBER 2017

I decided that before I got too far on the hull, I must see about making the track links. The FSV, required either 86 or 87 each side, this was because the Panther had two types of idler wheel fitted during its production run, the later version having a larger diameter than the earlier one, which lengthened the track by one link. I made the later idler but now feel that I would like to fit the smaller version, which judging by the number I have seen on various photos of the FSV in action, appears to be more common.

A method was required to turn out at least 200 links, that not only looked correct but were free from casting defects. If I could not achieve this, then it seemed there would be no point in carrying on.

I made a steel mould that parts in three directions to enable the link to be

ejected. The lower half of the mould has three sections, to enable the recesses which formed the guide horns, to be machined. The sections are screwed to a base plate with four sides, two of which have pivoting fingers with short levers to lift the upper half containing the casting, clear of the bottom part. The top half carries three blocks sliding on two bars, the centre block is locked to the bars and the other two are screwed to the two top plates which have the runner machined into them. The cam clamp is fitted on one plate, the pin on the other, two linked push rods open them up. A rod is screwed to one side of the mould, with a wooden handle, as the mould had to be heated up before casting was attempted, I hoped to avoid burning myself.

The procedure was, after casting, the top half was raised, (using two bits of fibre tubing fitted over the levers), a small mallet was used to open the cam clamp whilst holding the top in one hand and then giving the end of the push rods a “wallop” to open the mould, the casting dropping clear.

I decided to use zinc alloy, as this material seemed ideal, it flows well at around 380°C. although it does tend to be rather brittle, so the thin sections might prove to be a problem, I would only find this out after casting one.

As most of the readers will know, tank tracks generally have a raised bar stretching across the link, this bar is often called the grouser. Also there are pockets or recesses in the face of the link, not only to add to the grip but to lose a lot of the weight.



When a tank is moving at its top speed, in the case of the Panther, around 25-32 mph, the top run of the track can start to wave up and down until it bangs on the underside of the sponson, which of course was undesirable, so the less the track weighs the better.

Returning to the mould, it proved to be a bit tricky making the small segments which formed the recesses, as I could only use one screw through the centre to secure them and I was worried about the molten metal getting under the joints.

The thing was, I had to complete the mould to prove the feasibility of the task.

I had hoped I would be able fill the mould using gravity only, hoping that with a head of metal above the feed aperture in the mould, normally called the gate, I would succeed in obtaining a casting with sharp detail. Early results were disappointing as the links were not picking up all the detail, although the general shape and dimensions were promising. At 1/12th. scale the track width was 2.25 ins. I was convinced that the mould was capable of turning out reasonable castings, it just needed a means of pressure injecting the metal. I needed to learn more about die-casting.

DIE CASTING INJECTION UNIT

Reading a couple of little books on die casting from Machinery's yellow back series, really helped. In one of the books there were illustrations of some early hand operated pressure injection machines. One of these looked to be a fairly easy job to copy. Basically it consisted of a horizontal cylinder and piston, which was fitted inside a rectangular cast iron open top box, in which the metal was melted, one end of which had a vertical hole feeding a horizontal nozzle, this was higher than the level of the molten metal so it did not require any sort of shut off valve. There was a port in the top side of the cylinder which was uncovered when the piston was withdrawn by the operating lever, allowing the metal to fill the cylinder.

Below the pot was an integral gas ring. The whole thing was surrounded by a steel heat shield.

On my device, I bolted a platform to the shield to support the mould in line with the outlet nozzle. I also fitted a cam clamp to the shield, this acted on two pins protruding from each side of the mould, keeping it closed and pulled up against the outlet.

I made up my own gas burner, using brass tube in the form of a rectangle with corner joints silver soldered and with

outlet holes drilled along the top of the tubes. There was a gas feed at one end.

Once I had tried out the injection device, I started on the mass production of castings.

All this work, which was carried on over quite a long period resulted in an output of 220 links which all seemed to be to the "required specifications", apart from a few that I scrapped. The worry, mentioned earlier, concerning the joints in the mould, caused no problems. I was really pleased with the whole outcome.

The next thing required was to drill the track pin holes accurately at 1/2 in. centres. I constructed a fixture which had ten hardened blocks each with one 2.00 mm hole and two fixing holes. The blocks were screwed to a plate at the correct pitch and spaced apart to fit between the lugs on the links. It was then a matter of carrying out a lot of drilling.

After drilling, I used a reamer, one of two I had purchased that were .001in. Oversize, to ream through two connected links. I could then feed six at a time onto two lengths of silver steel and use a blaster with fine sand to get rid of any flash and give a grainy finish to the links.

At that time I wondered how to achieve a rusty appearance on non-ferrous metal, but this is a problem for the future.

Track pins are made from silver steel. To form the head, I made two cast steel clamp blocks, drilled and reamed 2.00mm on the centre line with .002 in. shim spacer between the blocks, removed after reaming, to allow the blocks to pinch the pins without distorting them. I hardened the blocks and could then clamp the pins really tightly in a vice. After making a suitable punch, I did a lot of hammering to form the shallow mushroom head which is a feature on the tracks of the FSV.

I then turned all the retaining collars, which rely on being a tight fit to stay put on the pin, leaving one collar off, to allow the easy removal of the track. This odd pin is kept in place by a pusher plate, a steel strip formed to a very shallow V. This is soldered vertically to the chassis on each side toward the rear. The FSV has the same arrangement, the plate being welded of course. ■

PHOTOGRAPH 1:

Left: The bottom half of the mould. Right: Top half in closed position.

PHOTOGRAPH 2:

Top half of the mould opened and a track link with runner still attached.

PHOTOGRAPH 3:

Top half closed with cam clamp, showing the injection opening.

PHOTOGRAPH 4:

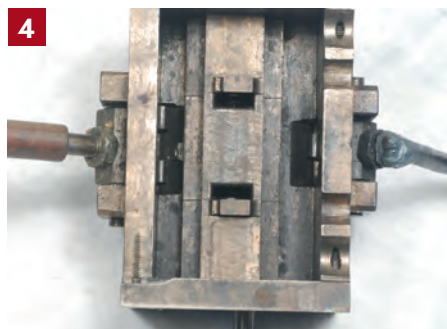
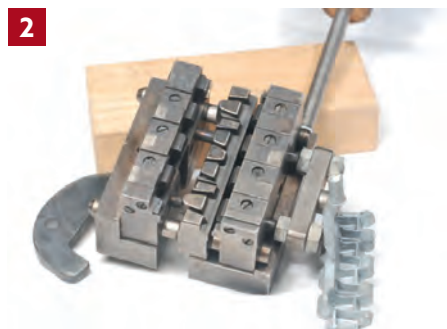
Bottom half showing recesses that form the track guide horns and levers to lift the top half containing the casting.

PHOTOGRAPH 5:

Top half, the bottom half of the enclosure holds it closed against the injection pressure

PHOTOGRAPH 6:

A track link straight from mould.



Boatside Farm Steam Rally 2017



A sunny day at a steam festival, **John** finds much to enjoy

BY **JOHN ARROWSMITH**

The annual Boatside Farm Steam Rally is held at Hay on Wye in Herefordshire and has a superb location in the shadows of the Black Mountains and the Wye Valley. It is promoted by the Three Cocks Vintage Society and as you would expect it contained everything country shows should include: Full size traction engines, models, vintage cars, lorries, motor cycles, military vehicles and all the country craft activities associated with rural areas, in other words something for everyone.

A lovely Summer's day ensured the success of the rally and with the large crowds it provided a good days entertainment.

ABOVE

The MAN tries to obliterate the scenery with its lighting up procedure.

PHOTOGRAPH 1

Entering the parade ring this lady driver is well in control.

PHOTOGRAPH 2

This Stuart Turner Pumping set is demonstrating its capabilities very well.

I should mention the Man Steam Tractor that was attending. This little 5 ton machine is very rare, being one of only two that have survived. Originally built in 1918 by the MAN Patent Steam Tractor Company in Leeds it was in excellent condition and working very well, it has a unique quadrant steering system unlike anything else on larger machines.

A Jaguar Enthusiast Club collection was another well supported presentation with a wide range of vehicles on show from a 1951 MK2 to a modern XE of 2015 vintage, the collection also included no fewer than 13 "E" types which were well examined by the visiting public.

I hope my pictures give you a flavour of the event, the likes of which need full support to ensure they continue. ■





PHOTOGRAPH 3
A full complement of crew members ensures this large Fowler Ploughing Engines safely accesses the Parade Ring.

PHOTOGRAPH 4
John Tonen had a selection of his beautifully made Horse drawn carts on show and this is a typical Tip Cart in 1"-1ft scale.

PHOTOGRAPH 5
A well made Scammell Tractor unit in 4" scale.

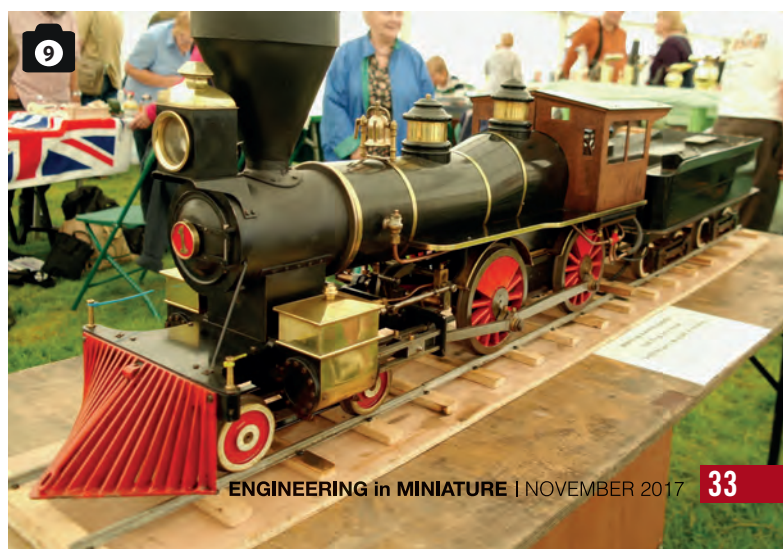
PHOTOGRAPH 6
A varied selection of engines in the Grand Parade.



PHOTOGRAPH 7
The 1918 MAN 5ton steam tractor.

PHOTOGRAPH 8
A 3" Aveling & Porter Traction engine with owner Ian Sparrowhawk and son are part of the Grand Parade.

PHOTOGRAPH 9
An American 4-4-0 in 7¼" gauge captures the image of these well known locomotives.



A Pillar Tool mounting base for the lathe

BY ADRIAN S. GARNER

The Pillar Tool designed by George H. Thomas greatly aids tapping, drilling and punching characters on work supported on its table. It can also be used, however, as a lathe accessory by arranging for it to be supported from the lathe bed or cross slide. A design to support the tool using an alloy casting is shown in "Workshop Techniques" published by TEE and the casting is available from Hemingway Kits.

I had not got around to making this support but a few years ago, however, I thought I would make the rear parting tool post, also designed by George H. Thomas, and to that end purchased the casting and materials from Hemingway Kits (no connection, just a very satisfied customer). This was part completed when for other reasons I decided to upgrade my Myford lathe and to also purchase the Myford interchangeable rear tool post. The GHT tool post never got completed and lay in a corner of the workshop. In one of those rare moments of thought in the middle of a night it dawned on me that the casting would make a perfect base for mounting the Pillar Tool to the cross slide.

As my casting had been part completed for its original purpose I blocked the now unnecessary small hole I had made in the top surface with a rounded silver steel pin and inserted a collar to bring the central bore to the needed $\frac{3}{4}$ " diameter. Starting with a fresh casting this work would not be required and construction would be as follows:

1. With an old file remove any rough bumps from the casting before machining any final surfaces.
2. Machine the underside of the casting flat. By far the easiest way would be to hold it in a vice on a shaping machine. This machine is now considered old fashioned and probably in few workshops. There are plenty of other options, the surface can be milled flat in the vertical mill or lathe, or fly cut with the casting bolted to the cross slide or faced whilst held in a four jaw chuck etc.

BELOW

The Pillar Tool mounted on the lathe cross slide to punch numerals on a collar.

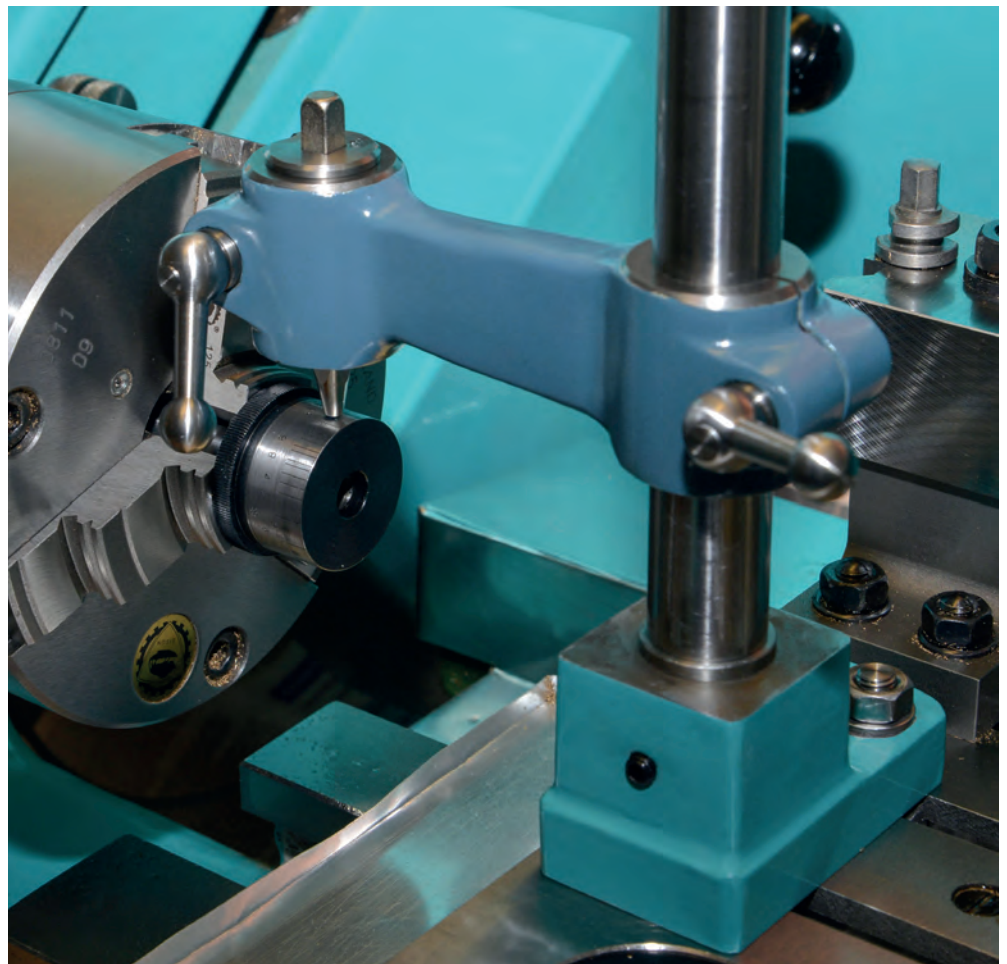
Note: The collar was being used a test piece, hence the jumble of graduations and numerals.

3. In the mill or in a four jaw chuck on the lathe face the top surface which needs to be brought flat and parallel with the under surface. The dimensional height between these surfaces is not critical.
4. Centre drill, drill and bore the $\frac{3}{4}$ " central hole for the Pillar Tool column.
5. Machine the upper surface flat for the securing bolts and drill a generous clearance holes to fit the bolts. I used $\frac{5}{16}$ " BSF bolts at 1" centres as in the original rear parting tool design but metric equivalents would be just as good.
6. Drill and tap the cross hole for the grub screw to secure the Pillar Tool column. I used $\frac{1}{4}$ " BSF but a 6mm metric thread would be just as good.

7. Make the T strip/bolts. I purchased some T strip from Myford a few years ago. This was drilled for the two securing bolts which were Loctited in place. T strip is still available from Myford or could easily be milled to shape.

I like to finish tools so that they look appropriate for their use. To this end follow the instructions given by Prof. Chaddock to finish the Quorn iron castings. Notably:

- Wash the casting in hot water and washing up detergent. Dry with kitchen towel.
- Apply car body filler (the type with a liquid resin into which a small amount of hardener has to be added) to the unmachined surfaces.



- When hard, use a file to make the shape rounded. Do not worry too much about scratches from the file.
- Apply two coats of cellulose based grey primer, again from your local the car parts shop.
- Lightly sand with wet and dry 600 grit used wet – dip in a saucer of warm water and washing up liquid. Wash.
- Fill the small dimples etc. with car body putty.
- Sand, wash and repeat the painting with cellulose grey primer. Repeat until satisfied that the surface is smooth.
- Wash, dry and apply two coats of paint. I used lathe retouching paint so that it matched the lathe.

To avoid marking the cylindrical surface of the Pillar Tool column I milled a ¼" wide flat near the end of the column. Its position was determined by slightly tightening the grub screw onto the column to make the needed mark. An alternative would be to drop a small copper pad into the grub screw hole and, with a ¾" bar in the hole, use a flat ended punch and small hammer to cause the pad to swell and become fixed in the hole. My preference in this case was the milled flat as it provides a more certain lock.

The Pillar Tool setup is excellent for numbering graduated collars as the lathe head stock indexing can be used to ensure the numerals are regularly spaced. The set up should only be used, however for punching small numbers and letters due to the impact force on the chuck and lathe mandrel. To that end use your "standard" chuck rather than a precision or small diameter chuck for holding such work. Also ensure the stock is gripped by the full length of the chuck jaws and that there is minimal overhang. ■



ABOVE

The mounting base and its parts ready for assembly.

A USEFUL DODGE WHEN PUNCHING NUMBERS AND LETTERS

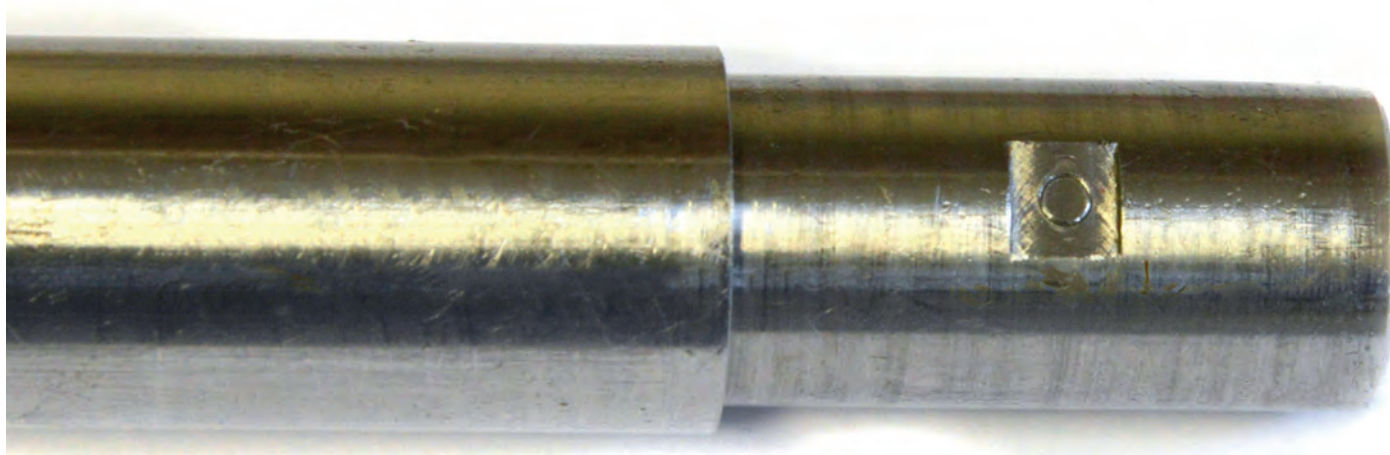
I guess most of us either have or will punch a number or letter the wrong way up. This is easily prevented. Before inserting the punch, put a dab of Engineers Blue (not Layout Blue) on a piece of kitchen towel and then dab the end of each punch on this before inserting into the holder. Lower the punch by hand onto the work and it will print its image. If happy, Punch! This avoids the stress of peering with an eye glass at the punch end or relying on all the sides of your punches being consistently marked. They never are.

BELOW

The flat milled on the end of the Pillar Tool column avoids marks on the cylindrical surface.

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Wally – The 4 inch Burrell



You've just retired and need a hobby, **Tom Wallace** decided that a small traction engine would be just the thing

BY **ALAN BARNES**

Although Tom Wallace has come to the world of miniature steam engineering only quite recently he is certainly just as enthusiastic as those who have been building and rallying scale traction engines for most of their lives.

As Tom explained, when I met him at a rally in Northumberland "I had spent more years than I care to remember running my garage and vehicle recovery business in Macmerry in East Lothian. A few years ago my brother and I decided to sell the business and almost overnight I found that I had a good deal of time on my hands. I really was not used to "spare" time having been involved with my busy garage practically seven days a week. My wife Sheila said I needed a hobby if only to get out from under her feet but something like stamp collecting had no real appeal"

BELOW

Tom felt the engine needed a bit more detail and added the wooden chocks and bucket.



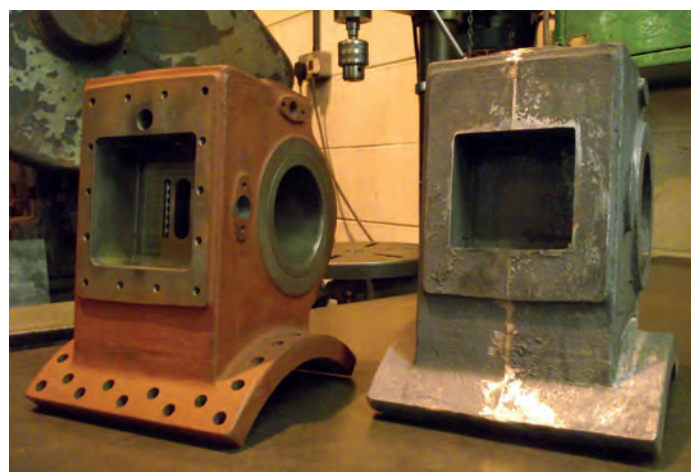
"Over the years I had been a regular visitor to the Driffield Show and I suppose because of my background in engineering I had always been interested in the workings of the steam engines. For the first time I began to consider the possibility of having my own traction engine although a full sized engine was really out of the question. It would have been very nice but for me a large engine would have been impractical"

"I was drawn to the scale engines at the rally and there were really some superbly detailed models of various types to be seen. Some of these had been built from scratch by experience model engineers while others had been built from some of the kits which were available."

"I spent some time considering what would be the best option for me. I had the choice of building my own engine from a kit or

BELOW

Cylinder castings being prepared by John Rex Model Engineers.



buying a secondhand model. Both options had drawbacks. I was happy that my engineering skills would mean that I could certainly build a model myself but from talking to people at the rally I realised that this would take something like three or perhaps four years from start to finish. Perhaps I was a little impatient but I wanted to be able to rally my engine as soon as possible. The problem with buying an existing engine was that I lacked any experience in what to look for and I could end up with an engine which would prove to be more trouble than it was worth”

“A third alternative, which I had not previously considered, was suggested during a conversation with John Rex at the Driffield Show. He told me that some people were now commissioning the building of an engine and John spent some time going through the whole process of selection, ordering and building. That gave me some food for thought and I mulled over the idea of commissioning a model. I would still have to wait a while but nowhere near the length of time which it would take me to build it myself. This was meant to be a hobby and I did not want to spend a couple of years in the workshop working all hours to get the build completed quickly. I eventually made up my mind and contacted John again and placed an order for his 4 inch scale Burrell Traction Engine and then all I had to do was “twiddle my thumbs” for a year and a half while the engine was being built”

“That “thumb twiddling” period included several visits to John’s workshop to see the progress being made on my engine and it was interesting to see the castings being machined and some of the other parts being fabricated. Slowly the Burrell began to take shape and the engine was completed in the spring of 2013 although it was not quite ready for me to get my hands on. The engine which was at this stage still unpainted was exhibited on the John Rex stand at the Harrogate Show in May and I thought it looked superb with its polished metalwork and gleaming brass. For a brief moment I was tempted to keep the Burrell in that condition but



ABOVE:
The small vice had been in Toms workshop for 30 years.

decided that it would be best for John to complete the build and it went back to his workshop for painting and “fettling”. Having been given a choice of “red” for the Burrell he chose the darker shade as it was almost the same colour that had been used on the lorries of the transport company where his father worked many years previously.

Tom took delivery of the completed Burrell in July 2013 and recalled that auspicious day “The Burrell was handed over at the rally at Bishop Wilton near Stamford Bridge in July where I had the great pleasure of steaming the engine for the very first time. I also received instructions from John on how to handle the Burrell and after what seemed to me to be a very brief “steam tutorial” he let me loose with my engine around the arena.



ABOVE:
Stewart McLaren completed the signwriting including the monogram on the rear guard

Amazingly I didn’t run over anyone or drive into anything and at the end of that afternoon I was feeling very pleased with myself. However my “baptism of fire and steam” was not quite over as John announced that there would be a road run to the nearby pub that evening and to get myself ready. I had only owned the engine for a few hours and now I was expected to drive it along the open road. Perhaps stamp collecting would have been a better choice for a new hobby!”

“While the grassy arena had been flat, the road to the pub was most definitely not and although the first few hundred yards posed little problem the final stretch to the pub was downhill. As the engine seemed to gather speed I realised that John’s instructions had not covered how to slow the thing down, or if they had I

Tom and Sheila take Wally for a spin around the arena at Brunton. The barrel for the water cart was made in Spain.





ABOVE:
Tom fitted the governor and machined a new pulley wheel.

had missed that vital piece of information. During the afternoon I had worked out what most of the controls were for and by a speedy process of elimination I was left with a lever which I slowly pulled and to my great relief the Burrell began to slow and I drove almost gracefully into the pub car park-piece of cake!!"

After that inaugural "baptism of fire" Tom slowly got to know his new engine learn its "little ways" and showing it at a number of events. To transport the engine he bought a 10ft tandem axle box trailer which not only held the engine but also had sufficient space to be fitted out as a mobile workshop. The problem of water supply, especially when out on road runs, was solved during one of Tom and Sheila's regular visits to Spain. Near to where they regularly stay was a small cooperage and Tom thought that perhaps one the smaller barrels could be adapted for use as a water bowser for the engine. They were only too pleased to help and in only three hours they had built Tom a 32 litre barrel which in due course he brought back home.

He built a two wheeled cart and had the frame powder coated the same colour as the engine and the wooden water barrel sat on wooden cradle attached to the top of the cart frame. The single drawbar makes coupling and uncoupling very straightforward and when water is required a pipe is attached to the tap on the barrel, very neat and extremely convenient.

Having enjoyed a successful first rally season Tom decided that he wanted to add a few of his own "embellishments" to the Burrell. He bought a governor from Steam World and once fitted adjustments were also made to the pulley so that it would line up properly with the belts. Tom encountered some problems with this and eventually machined up a new double wheel pulley which was a great improvement. He found that the original steering chains were difficult to keep clean and they were replaced with a new set made from stainless steel. A small brass cone was also added to the end of the flywheel shaft.



ABOVE:
Wally's new kettle for quick cuppas on cold showgrounds!

He found a small vice which had been in his workshop for close on thirty years and this was attached to one of the running boards. As Tom said "I just knew it would come in handy one day". Some time was spent trying to find a small bucket to hang underneath the small toolbox under the running board but all those he saw he thought were much too shiny and would look out of place. Unable to find anything that he liked he ended up buying a shiny one and painting it black. A small shovel was added to the engine's tools and Tom made up a set of wooden chocks which also hang under the running board. "I think that these little touches add a little something to the engine"

When Tom had taken delivery of the engine the painting and lining had already been completed but some additional signwriting was added later. As Tom

explained" I wanted to add the initials TSW -Tom and Sheila Wallace- as a decorative monogram to the gear guard and arranged for Stewart McLaren in Alloa to complete the lettering for me. I have known Stewart for many years as he also did the signwriting on the vehicles we used in the garage and he has completed an excellent piece of work."

The first full season with the Burrell was 2014 and Tom and Sheila took the engine to twelve events starting with a Spring show in Harrogate and ending with the Northumberland Vintage Tractor Club at Brunton in October and since then the engine has been regularly rallied each year. "We have really enjoyed ourselves, meeting other engine owners and picking up useful tips for the care and running of our own engine. Everyone is most helpful and they don't seem to mind taking the time to

Wally with its new canopy.





Tom tends the engine at Red Row Vintage Rally in August 2017.

explain things to a relative “newcomer” to the world of miniature steam. I have also joined the Lothian Miniature Steam Club a newly formed group which now has around a dozen members and we meet regularly to steam our engines and discuss “vital” matters and make plans for future rallies”

One question I just had to ask Tom was “Why the name- “Wally” is rather unusual for an engine” Tom smiled as he explained “The name is a small tribute to my late father in law. Sheila and I have been married for over forty years and when I met her dad for the first time he called me Wally and continued to do so for the rest of his life. So the new Burrell had to be Wally not really a traditional engine name but one which suits us”

Over the last few months Tom has been making some additions to the engine including the fitting of a canopy which he built himself. He also took great delight in showing me his new “kettle” a plumbed in water boiler made from a brass shell casing which is tucked away on one side of the engine. Once in steam and with the taps open the boiling water for the tea is ready in seconds.

My thanks to Tom and Sheila for taking the time to tell me about their introduction into the world of scale steam. ■

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YOUNG ENGINEERS

BY JOHN ARROWSMITH

Many clubs throughout the country are still trying very hard to get younger people involved with model engineering, but it is not easy for anyone. All the major federations are looking at ways to encourage youngsters to take part and it will be interesting to see how the Southern Feds initiative to hold a meeting of clubs to discuss the problem and to hopefully find a solution.

The West of England Steam Apprentice club held a weekend for their young members to enjoy which resulted in around 50 trainees learning how to drive a steam vehicle. I have said many times in these notes that the traction engine world seems to have much more success in recruiting and keeping younger people than the main stream model engineering clubs. Having been to a number of Steam Rallies this year both small and very big this point has been more than driven home for me.

At the Boatside Rally at Hay on Wye there were lots of youngsters involved in many aspects of the rally and at the Great Dorset Steam Fair it was amazing to see how many were taking part.

So what is it that creates this situation? My personal view is that the traction engine world is more family centred than the model engineer's club world, with mums and dads along with grandparents all being involved. Combine this with the fact that traction engines do not need a specific track to operate on provides you with a much more workable operating situation.

For example, if you have the money, you can buy a traction engine and just run it around your own garden if you have the space, or you can enter it and take it to a suitable rally and just present it on the ground as a private entry. I appreciate that you still need all the necessary paperwork to do this but it is not difficult to obtain as there is so much help and advice available.

RIGHT

Young members at the Stockholes Farm Railway get stuck into a spot of bricklaying.



RIGHT

At the GDSF this young lady was busy getting a 4" engine ready for the day.



BELOW

This young man was busy clearing out the ashpan of a 4" engine at the Boatside Rally.



“Learning the ropes” on a 6" Showmans engine.



Model engineering clubs seem to have driven themselves into a situation where they find it difficult to change.

How many wives or girlfriends actually go with their partners to a model engineering club's event on a regular basis and then stay there enjoying the atmosphere of the day? Many model engineers do not want them there anyway as they probably feel restricted in what they can do.

If you take young people they are not encouraged to be around the preparation areas as they “get in the way” but at traction engine events they can be much more involved and as far as I have seen are actively encouraged to do so. Youngsters are also involved in driving at quite young ages and not only do they have to consider all the details of the boiler operations but they have to steer as well, which is not easy.

The main thing is of course with all these activities is that they all have FUN, whilst making sure safety aspects are fully considered.

I am sure you can all see where I am going with this. It does seem imperative therefore if model engineering clubs want to recruit and keep younger people then they have to be more inclusive and welcoming to potential newcomers because the old way of doing things is not applicable any more.

If people are using their cheque books to become model engineers then so be it, that is what model engineering clubs have to accept but they will have to learn to use their workshops to teach the basics of maintenance rather than new build for these new hobbyists.

One club I have spoken to in the South of England held one of their regular operating days during the Summer, when everyone involved in the Open Day was 30 years of age or under, it all worked very well, so it can be done, it is a question of whether you want it to happen or not. I hope my photos illustrate what I have been saying. ■

BELOW:

These young engineers were thoroughly enjoying themselves in the main arena at GDSF.



BELOW:

All the way from Yorkshire to drive a 4" Ruston & Proctor engine at GDSF, doesn't he look happy.





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NOVEMBER DIARY

- | | | | |
|---|--|--|--|
| 3/5 16th Fascination Modelbau at Friedrichshafen 09.00am – 18.00pm each day. | 5 Bromsgrove MES. Bonfire Night Avoncroft Museum event from 18.00pm. | 5 Urmston MES. Public running in Abbotsfield Park 10.00am – 16.00pm M41 5DH. | 12 Basingstoke MES. Members Running day Viabes Craft Centre 10.00am – 17.00pm. |
| 4 Crowborough Miniature Railway Bonfire Special from 18.00pm TN6 2TN. | 5 Echills Wood Railway. Public running 11.00am – 15.30pm. every Sunday. | 5 Wirral MES. Public running in Royden Park 13.00pm – 16.00pm most Sundays. | 12 Sutton MES. Sunday track day from 12.00noon. |
| 4 Grimsby & Cleethorpes MES. Public running and fireworks at Waltham Mill 17.00pm – 20.30pm. | 5 Frimley Lodge Miniature Railway. Public running at Sturt Road 11.00am – 16.00pm. | 5 Wortley Top Forge MR. Public running from 13.00pm. | 14 Northampton SME. Evening talk and Proops Demonstration 19.30pm. |
| 4 Ickenham & DSME. Public running in Ickenham Village 12.00noon – Dusk. | 5 Fylde SME. Public running at Thornton Cleveleys 13.30pm – 16.00pm. | 7 Plymouth MS. Evening talk The Plymouth, Devonport and South Western Jct Railway. 19.30pm. | 15 Bristol SME. Electric Loco evening with Bob Lilley at Begbrook Social Club 19.30pm. |
| 4 Keighly & District MES. Bonfire Night Party at Marley from 18.00pm. | 5 Kinver MES. Public running 14.00pm – 16.00pm. | 8 Stroud MES. Evening talk Electrification of the GW Main Line Rodborough Community Centre 19.30pm. | 16 East Somerset SMEE. Club Night talk by Keith Spinks "Submarines". |
| 4 Nottingham SME. Bonfire Spectacular on the GCRM. | 5 North Wilts MES. Public running at Coate Water Park 11.00am – dusk. Every Sunday. | 9 Leyland SME. Club Night talk, How to Shape things by hand and Craftsmanship for Beginners. 20.00pm. | 19 North West Leicester MES. Public running at Hermitage Leisure Centre from 11.00am. LE67 5BZ. |
| 4 LBSC Locomotive Running Day at Otago MES Dunedin, New Zealand. | 5 Reading SME. Public running in Prospect Park from 13.30pm. | 10/12 International Boat Show at The Warwickshire Exhibition Centre 10.00am – 16.00pm daily. | 21 Romney Marsh MES. Evening talk The Bluebell Railway Atlantic Project David Jones 19.30pm. |
| 4 Tiverton MES. Saturday Steam Up at Worthy Moor from 11.00am. | 5 Sale MES. Public running at Walton Park from 12.00noon – 16.00pm. | 11 Ryedale SME. "Night Run" at Gilling from 18.00pm. | 25 Bradford MES. Annual Exhibition at Saltaire Methodist Church 13.00pm – 17.00pm. |
| 4/5 East Herts Miniature Railway. Public running at Van Hage Garden Centre from 11.00am every weekend. | 5 Stockport SME. Public running in South Park 11.00am – 14.00pm SK8 7NB. | 11 Sutton Coldfield MES. Bonfire Night Special by ticket only at Little Hay 18.00pm – 21.00pm. | 25 Chesterfield MES. Running Day at Hady from 11.00am. |
| 5 Bournemouth SME. Public running at Littledown Park 11.00am – 15.30pm. | 5 Southampton SME. Poppy Running Day at Riverside Park 13.00pm – 16.00pm. | 11 Westland & Yeovil DMES. Track running day at the Leisure Centre 11.00am – 16.30pm. | 25 Surrey Group G1 Soc at Dorking 10.00am – 17.00pm. |
| | 5 Tyneside SME. Ghost Train Special Exhibition Park 11.00am – 15.00pm. | | 25/26 Warley Railway Exhibition at NEC from 10.00am daily. |

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3 INCH SCALE BURRELL 6NHP ENGINE

A particularly good 3 inch scale Burrell to the popular Plastow design. Built to a high standard throughout, well painted and lined, the engine has lots of nice detail. Commercially built silver soldered copper boiler by Cheddar Boilers, 100psi working pressure. Two speed, three shaft transmission with differential. £10,500



3 1/2 INCH GAUGE "ANONIO PRADO" An

interesting model with fine provenance, the engine has spent recent years abroad on display. Silver soldered copper boiler, feed by injector, axle and steam pumps. Gunmetal cylinders with slide valves actuated by Walschaerts gear with pole reverser in the cab. £5,750



5 INCH GAUGE BRITANNIA

A kit-build engine, well put together and sorted out, it runs very freely. The engine has been well painted, the builder has added extra detailing such as lamps, works and tender plates, planked cab floor, vacuum hoses and feed valve indicator plates on the tender. Silver soldered copper boiler, Feed by twin injectors with auxiliary hand pump in the tender. Steamed a handful of times from new £8,950



4 1/2 INCH SCALE FODEN LORRY

A 4 1/2 inch scale Foden steam wagon, a local engine which has been rallied regularly. It's in good running order, goes very well. Welded steel boiler with expanded steel tubes, built 1999 John Rex Model Engineers, re-tubed 2016. 140psi working pressure. Cast iron cylinders with slide valves actuated by Stephenson's gear, three speed transmission with chain drive to rear axle. Differential, pneumatic tyres. £13,750



3 1/2 INCH GAUGE "JULIET" 0-4-0T

A beautifully made 3 1/2 inch gauge "Juliet", built by a highly prolific engineer. Silver soldered copper boiler, feed by axle pump with auxiliary hand pump. Gunmetal cylinders with slide valves actuated by Stephenson's gear, pole reverser in the cab. Mechanical lubricator. Complete with a purpose built storage crate. New and unsteamed £1,250



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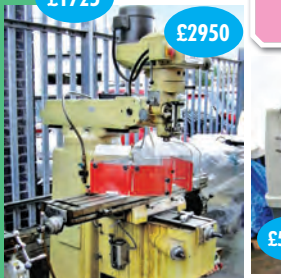
Myford Super 7B
+ Sino DRO & Tesla

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£1725



£2950



just arrived!

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£2450

very nice!

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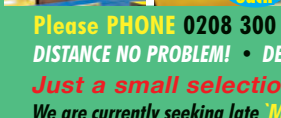
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Micrometers Various!

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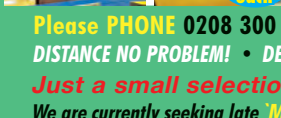
Steel EN3B (mild steel)

£7 each



Myford chuck & nose collets

£30 each



Angle plates + surface plates

£90



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£90



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£875

Clarkson Model 1 grinder

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Burnerd 12" D16 4 jaw chuck

£425

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Myford Connoisseur (hard bed) equipped!

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£450

Startrite 18-5-10 metal cutting

£950

WD-40

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Pacera hacksaw 240V

£140

DP / MOD gears

£20 each

J & S wheel balancer

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240 volts

12" x 12" x 24" Angle plates (pair)

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