

# The L.B.& S.C.R. Modellers Digest

Issue 7

Summer 2018

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A journal of the Brighton Circle, for those modelling the "Brighton" in all scales and gauges.



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# Editorial

A traditional concern in the model railway world is that modellers are moving away from scratch-and kitbuilding to rely increasingly on ready to run models, straight out of the box. It has always seemed to me that pre-grouping modellers have to branch out from proprietary products pretty quickly, since the main manufacturers have not often strayed into pre-grouping territory. This has begun to change with the recent E4 radial tank in 4mm scale and the Terrier in 7mm, but the coming months may pose a very serious challenge to the wallet! Both types of Atlantic, a new Terrier and an E tank are all scheduled for 4mm scale and in Brighton liveries. Needless to say, there is still a shortage of carriages!

The traditional approach to scratch and kitbuilding is also changing rapidly. There are alternatives to solder and singed fingers, as the release of a range of kits for Stroudley 4 wheelers in laser cut card demonstrates. 3D printing is also opening up a whole new world and the idea of printed bodies for Mr Craven's engines, in all their glory, seems less far fetched. The new products section at the end of the magazine, illustrates the range of opportunities. Computer design technology and printing has also enabled the production of Marsh livery transfers in economically viable quantities.

Finally, for something different, we have a completely virtual model, where the whole thing is on computer. For my money, the range of options that are available to pre-grouping Brighton modellers have never been so good.

Eric Gates

Modelling Steward, The Brighton Circle

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# The Royal Train

Colin Wilson

Roger is quite good at finding something he likes, at a bargain price. When we meet there are the usual pleasantries, sometimes followed by the dreaded words, 'Do you fancy a challenge?' This usually means someone's told him it's unmakeable. On this occasion he had a set of 4mm scale etches for the LBSCR Royal train, as produced by Smokey Loco Models. I don't know if the kit was complete. There was no floor or underframe, but all the body and bogie parts were present. The roof parts consisted of 4 vacuum-formed clerestories - not too useful for a 5 coach rake. Some of the finer etching was not quite right; this applied to the detail such as the grab handles and the louvres in the clerestory sides. Whether or not this is usual for this make I do not know. I am well aware that very few members will be making these kits, but domed clerestory roofs were used on a number of other coaches and there are some general points about forming clerestory roofs and coach detailing.

## **Basic Construction.**

My usual method of making coaches is the so-called Comet method, where the body and roof are a unit, with the underframe screwed to it. This makes it so much easier to get a decent fit between the roof and the sides, while allowing access to the interior or glazing should it be needed at some time in the future. There were going to be some issues to solve during construction, but they were left till the appropriate time, leaving me time to think about them. The main challenges would be the truss rods, clerestory sides and the domed roof ends. The rest was basic etched kit construction.



## Side Strengthening and Detailing.

The etched panelling meant the sides were fairly thin, as is common with etched kits. After the tumblehome was formed, the top lip was folded at a right angle, stiffening the top edge. Strips of brass (there were suitable scrap strips on the etch) were soldered along the inside a little below the window line to stiffen the sides. All the side detail was then soldered in place. Etched grab handles tend to be rather soft, and some had not etched properly anyway. New ones were made from 0.3mm brass wire wrapped round a former, then cut and bent. Door hinges were made using Roxey Models T-shaped door handles. Anything which would later foul the glazing was filed flush at this point. To help fix the glazing, tabs were soldered to the lip at the top, and further tabs from brass shim were soldered above the side stiffener to hold the glazing at a later stage. These latter were made from 5 thou shim; even 10 thou brass was too stiff to bend over to hold the glazing.



One of the brake carriages.

## **Basic Body Construction.**

After this the sides and ends could be soldered together, with a strip of thicker metal at the bottom of each end, raised by the thickness of the floor material. Many articles suggest soldering nuts to this strip, but I do have the fear (realised on two occasions) that the nuts will become detached and make removal difficult. Hence I prefer to use a thicker strip, and tap the threads into the strip. At this stage the structure is quite flimsy. The best way to deal with it was to solder a couple of temporary strips (wire was suitable) across the tops to prevent the sides from bowing, and then to get the floor pans made.

The floor pan was a straightforward matter of cutting some brass to the correct size and bending the long edges to form vertical stiffening lips which would also prevent the sides from being pressed inwards. A couple of cross pieces were added to help with locating the solebars.

Solebars and bufferbeams could then be cut and soldered in place, along with supports for the bogies. These supports were tapped 10BA (the size is not critical; other modellers may prefer 8BA for added ruggedness) for the shouldered screws used later. Holes for securing the body to the chassis could then be drilled while access from the top (for marking purposes) was still possible.

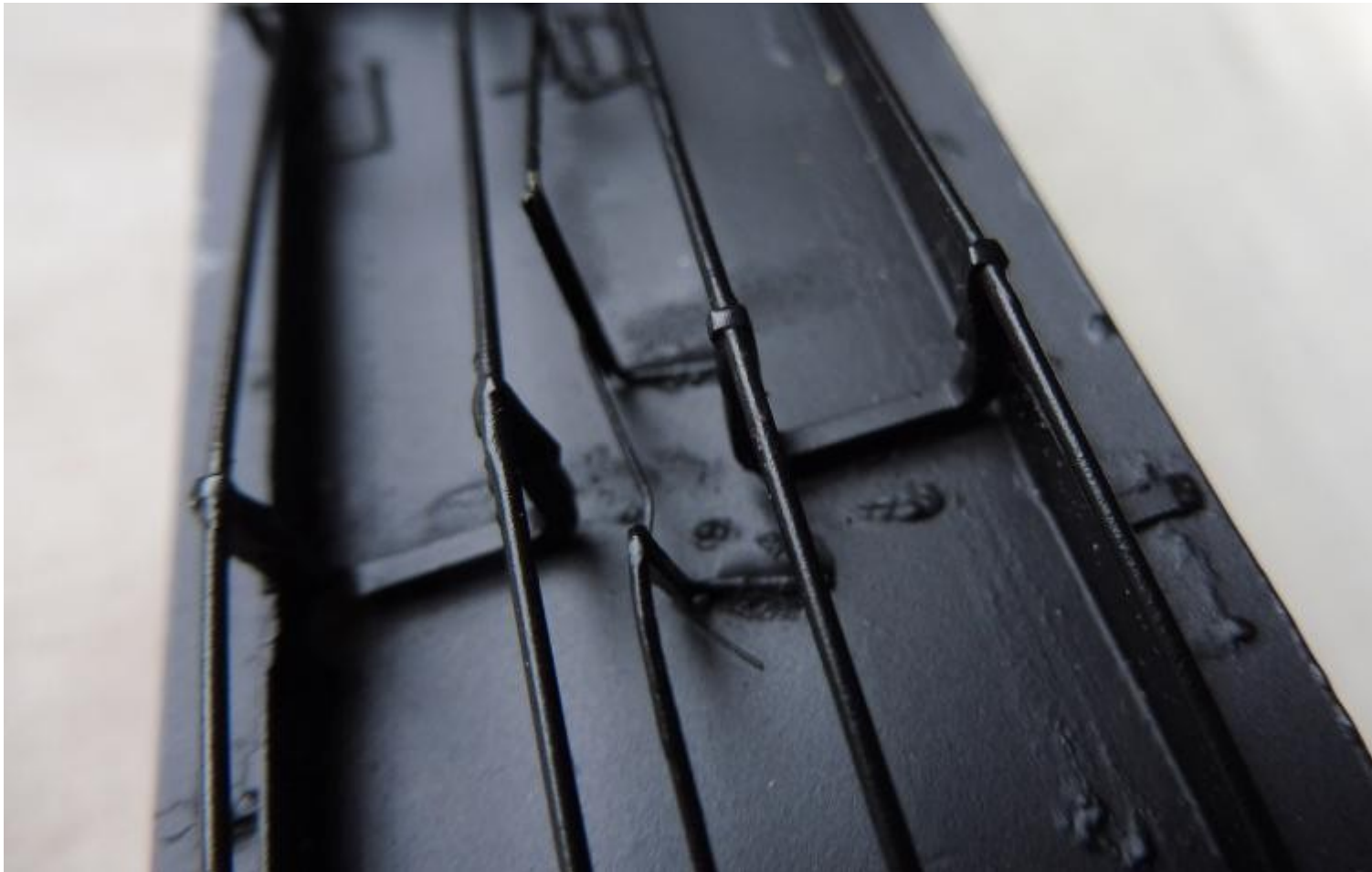
## **The Underframe Trussing.**

There are four truss rods per coach, with queen posts. The centre queen posts are the trickiest as first thoughts were that they would be soldered end-on to the floor – a rather weak joint. It would be possible to fit cross beams to provide more of a fixing surface, but it wasn't going to be that easy getting them vertical in both planes while soldering. Knowing my luck, they would also shift while soldering the truss rods to the top! My solution was to make each pair as a U shape, from 1.5mm square brass rod. This meant there was so much more to hold while filing the taper and while soldering. Vertical alignment only had to be checked in one plane as the bending sorted it in the other. I know it doesn't look as pretty as proper chassis construction, but then we don't look

under the coaches when on the layout, do we?

From (painful) experience I've found that soldering truss rods to the tops of queen posts doesn't work; the joint simply doesn't have enough strength but only fails after all the painting is completed. The remedy was to cut some narrow strips from shim (paper thick is enough); wrap this over the truss rod and solder to the sides of the queen post as well as the truss rods. Being thin, it will hardly show but will make a great difference to the strength.

Much of the underfloor detail could then be added, although I was unable to find much specific



information. Apparently only the brake van (and maybe only one of those) had a dynamo, but I assume that the other carriages had battery boxes. To date these have not been fitted as I haven't sourced suitable ones, but they can be glued in place at any time. Equally, more rugged detail could be added at this stage, with delicate items fitted later.

The queen posts and truss rods. Note the shim strips strengthening the joints.

## **The Roofs - General.**

Readers may be wondering why the body still had no roof, just some temporary side supports. The simple answer is that I couldn't work out how to do them. The instructions mentioned that vacuum-formed clerestories could be used, but that it was probably easier to make them from brass – with no suggestions as to how to make them.

I do have some rolling bars which are long enough for the clerestory part, but not for the sides. And those domed clerestory ends were another matter entirely. Let's just say that a few pints were downed over a drawing pad in the local hostelry. Any method I came up with didn't work in my situation. The vacuum-formed items were discounted. Apart from there being 4 roofs for 5 coaches, there would be issues with sticking plastic to metal. And there simply wouldn't be the crisp edges to match the brass bodies. Plastic is also prone to break at corners after it becomes brittle. Carving from solid would have blocked the end lights. Annealing the brass and 'persuading' it into shape over a former was just as bad. As mentioned above, the etching for the louvres along the clerestory was not particularly good, leaving some if the louvres unfixed at one end. Back to 'the office' for another couple of pints.

## **Side Roofs.**

So it was one issue at a time. As already mentioned, my rolling bars were long enough for the clerestory roofs, but not the roof sides. It meant forming a bend along a strip only about 7mm wide. Finally I found an old piece of hardwood and worked at it with a round file to make a round-bottom rut. Placing the strip on the rut meant I could rub the handle of a file along it, and the curve was easily formed, albeit with a very good banana shape along its length. This was corrected by holding the file handle against the roof strip at the end of the former while pulling the strip over the edge and downwards to straighten it. Careful – the edges of brass strip have no respect for fingers. The outer edges of the roof side pieces were soldered to the tops of the sides ensuring

plenty of solder, the iron being placed on top of the roof as the joint was not accessible from inside.

### **Clerestory Sides.**

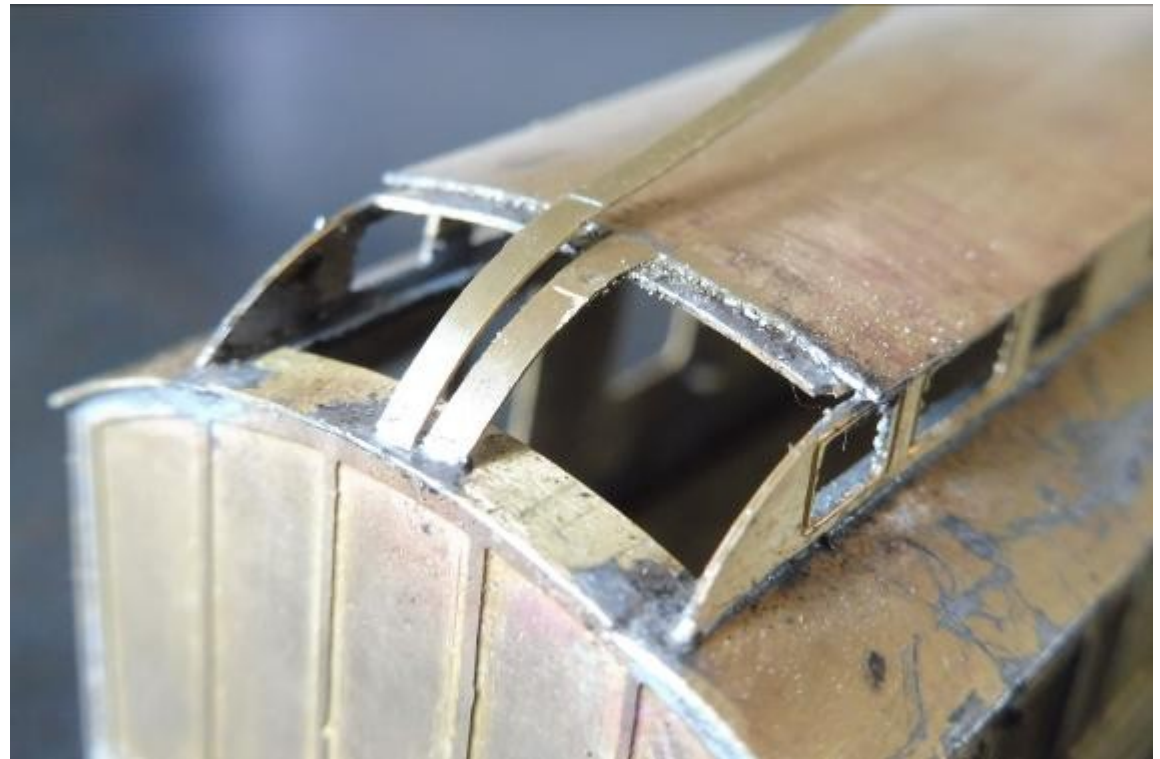
With hindsight it may have been better to solder the clerestory sides to brass strips, ensuring that there was enough solder to hold any unsupported louvres. That would have meant no light from the clerestory. The method I chose was to cut all the louvre sections away. This is best done before removing them from the etch. Anyway, the clerestory sides were then soldered to the roof sides, with a few spacers to help keep them vertical. Scribed clear plastic, with paint in the scribe lines, was stuck behind after painting was complete.

### **Clerestory Roofs.**

These were rolled as one tube. The problem with rolling bars is getting the first part of the roll curved. Rolling a single tube for all the roofs meant they could be cut after rolling and would all be curved properly. They could be soldered from inside the body.

### **Domed Clerestory Ends.**

Now for another go at those pesky domed ends. My final solution was to solder strips under the ends of the clerestory roof to form ledges for the domed ends. Brass about 1.5 – 2mm wide was then needed; scrap etch is handy here. If the strips need to be cut from sheet, it's no problem as they don't have to



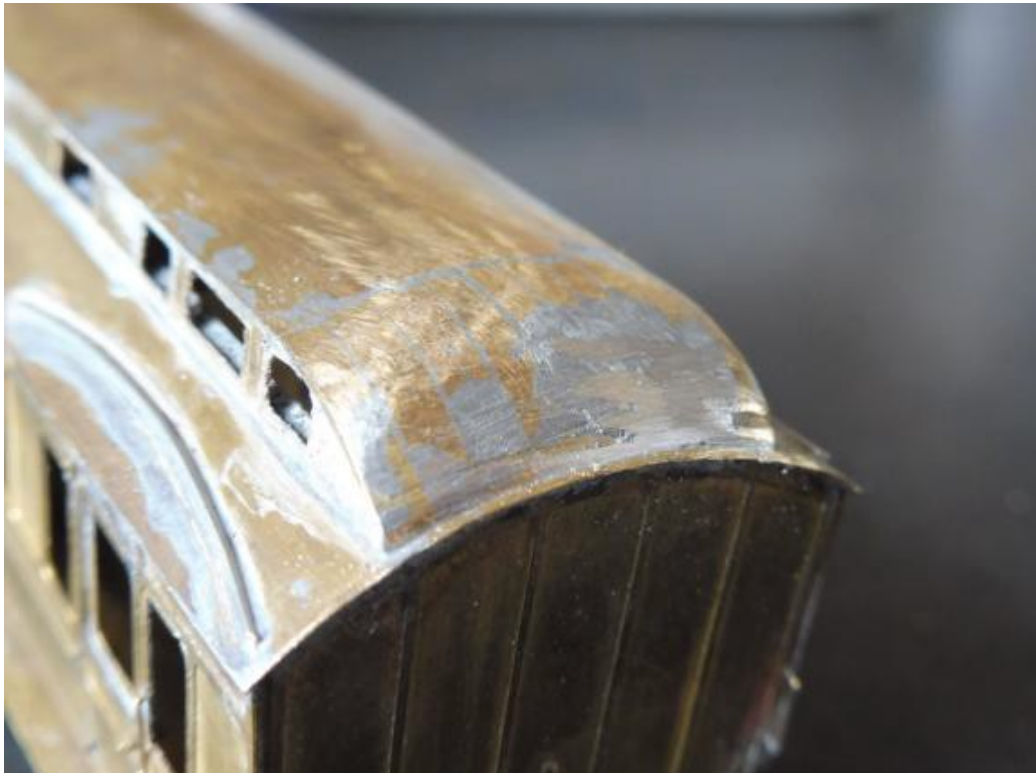
The first stage in forming the clerestory ends. Note the support strip under the roof.



be dead straight. These strips need to be annealed (softened). Hold one end in a pair of pliers or similar, and use a small blowlamp to heat the end till it's red. Move the blowlamp along the strip so the red-hot part moves along the strip, leaving the part already heated to cool down. There's no need to quench the strip; let it cool on its own. It's also likely it will curl, but can easily be cleaned and straightened. Shape the end of the strip to the approximate curve required, then solder one end to the coach roof. It is now possible to mark off and trim the strip to length and solder the other end to the ledge under the clerestory. The best system is probably to fit the two centre strips, then the outside strips. This will allow the outside strips to be filed to fit the clerestory sides while soldered in place, without the risk of leaving them too narrow. The remaining strips can then be soldered in place in the same way. It may be necessary to shape the last two strips, but that's a matter of simple filing. Wire could be used if the final gaps are narrow. When this is done, flood the domed ends with solder, lowmelt solder, or use your favourite filler. File the domed ends to shape, and the job is done. Taking a photo during this operation is also a good way of checking if the ends are neat enough.



Most strips attached, ready for the last two, before filling.



The roof ends filled and filed. Some minor work still to be done.

### **Interior Detail.**

This is more of a representation, cobbled up from odd bits of brass and plastic. Fortunately the instructions included the colours for each coach. There aren't any passengers; I don't know of any sources for figures of Royalty and there would be quite a few aides and other staff to boot.

### **Running Gear.**

The bogies went together quite well. The only issue was getting the brakes fixed solidly enough as there was only a small amount of metal to fix to. After they were in place, some epoxy was



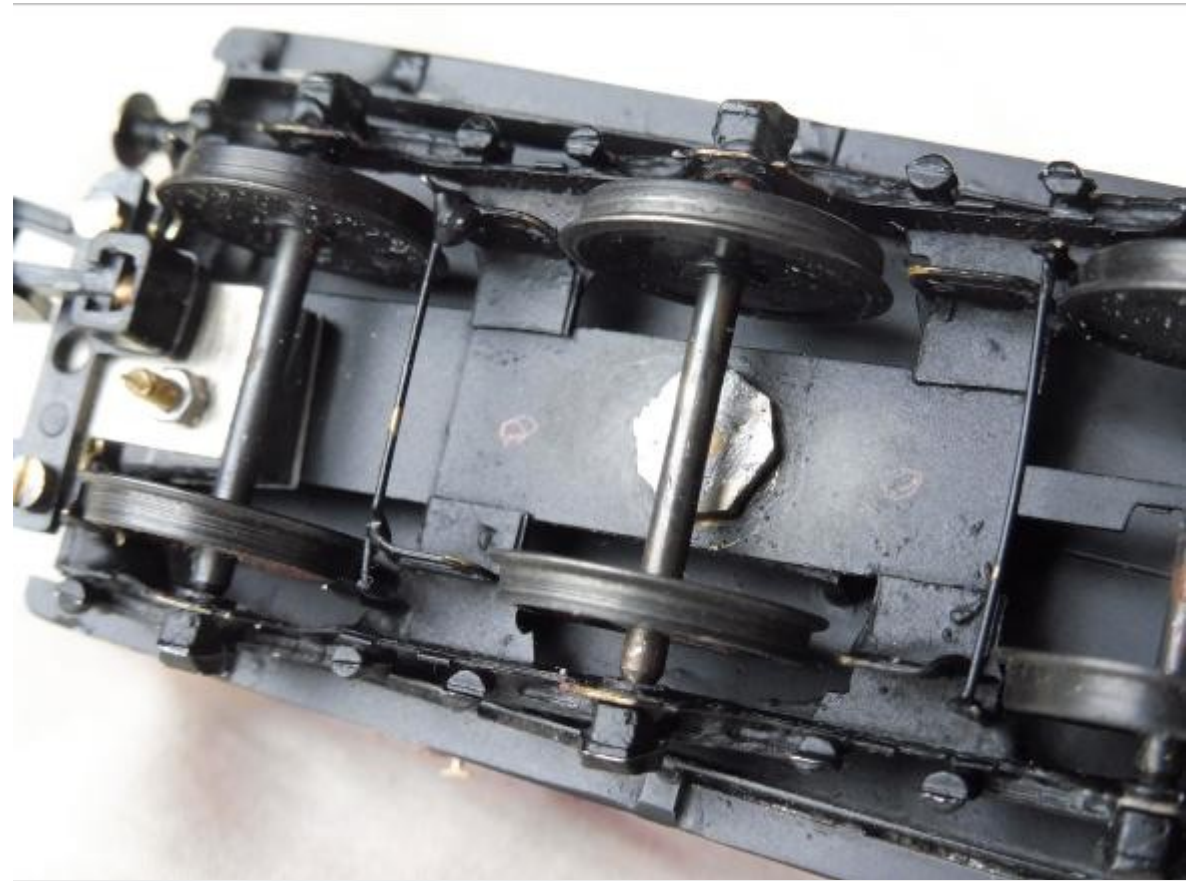
The finished domed ends, and the clerestory windows from scribed plastic sheet. The camera cruelly shows that painting isn't my top skill, but it looks a lot better on the layout .

coaxed into the corners of the bogies to strengthen the joints. The 6 wheel bogies for the Royal coach had two issues. The pivots are above the centre axles, so normally can only be removed by taking out the centre wheels. The pivot screw was made by soldering a length of studding (OK, a screw with the head removed) into a tapped plate to make a large head, which could have flats filed on it. Thus the screw and bogie could be removed together. Now this set was meant for use on a 00 gauge layout. The supplied centre axle support was designed for EM, hence too wide for 00. Fortunately having a fixed centre axle did not cause any problems with trackholding.

### **Livery and Painting.**

The coaches should have mahogany sides, with red oxide ends, all panelling (including the ends) lined, with royal insignia on some doors and etched on the windows. According to the instructions the Southern Railway later painted them green and put at least some into regular service.

I know my limits. In the end we decided the best compromise would be to paint them a claret colour. At least that could imitate the mahogany, and lining could be added by someone else at a later date should they wish. Better that than inconsistent lining which would stick out a mile.



Shows the modified bogie pivot screw for the 6 wheel bogie, allowing it to be loosened using pliers.



At long last the set was finished, and does look rather nice behind an Atlantic (you've guessed - a previous challenge). Next time I see Roger with a kit in his hand.....



The Royal Saloon

# More about Midhurst, LB&SCR 1866

Michael de Jong Smith

Since the previous issue, despite the weather, various illnesses and hospital visits with very little opportunity for modelling, some progress has been achieved.

I must admit that the headshunt had me confused for a while, but I have now come to the conclusion that the bridge over the Bepton Road was built at a time when the weight of locomotives was much less so that when the loco weights increased, the bridge was declared to be inadequate to take their weight. Otherwise why would the headshunt be so long?

The goods yard has now had a crane installed, which incidentally took me the best part of a month to build. I did put a request for crane information on to the LBSCR Group and Ian MacCormac very kindly came up with a drawing of a crane which had Seaford written on it. My friend Ian reduced the drawing to scale size, printed it on to Plasticard, and very kindly cut out the two boom sides for me. With the help of Mekpak, pliers and shaking hands, I have managed to complete the crane to the drawing. It is now a fixture outside the goods shed.





Also cosmetic point levers have been added to the goods yard turnouts.

More fencing has been added alongside the Bepton Road boundary, The walkway from the LBSCR station to the LSWR station has been completed, together with the pedestrian bridge over the Bepton Road, and the view from the station yard towards Midhurst has been finished, along with a group of Scotch Pines. At the time the station was built, the road to Midhurst would have been a country lane with



trees either side, as all houses along the current road would have been built after the station. Gates have been added at the entrance to the station yard and the photo shows Miss Sugden driving her dog cart into the station forecourt in order to meet her Aunt Julia, who should be arriving on the next train from Petworth. There is also a new gate at the base of the ramp leading to the cattle dock, in order to contain any animals that might escape from the pens.



Also, as can be seen at the end of the layout, the LSWR station (or a photo of it) has been added. The LSWR station is taken from a black and white photograph, which my granddaughter Jessica took and completely coloured for me on her computer.

A small hut has been added to make the engine men more comfortable when not on duty, coal staithes have been added at the end of the back siding in the names of I.L. Stent and H. Farley, who were the local coal merchants, and Coal Merchants office buildings have been created and installed by Ian.





Gradient posts have been installed, together with a speed restriction indicator on the turnout connecting to the LSWR headshunt. The LSWR headshunt is in the process of being fenced off from the LBSCR lines and a gate has been installed across the connecting track.







On the station a sign has been erected pointing the way for passengers wishing to cross to the LSWR station, drains have been added at the base of the station roof downpipes, and cattle have been added to the cattle pens. The cattle are the correct size and colour to represent Sussex cattle, which were smaller than other breeds at that time.

The tunnel mouth has been finished using a

photograph of the actual tunnel, including the fencing across the top which has been perpetuated on West Lavington Hill. Black strips of tissue paper have been attached to the rear of the tunnel entrance to attempt to give an impression of darkness whilst allowing trains to run through in either direction by the train pushing the tissue strips aside, which fall back into place after the train passes (at least, that is the theory!).



Locomotive stock has been increased by 'Edward Blount', acquired from the estate of the late Roger Steele and other locos are in the pipeline.





Here we have the first of the figures to be added to the layout. These are Victorian passengers from Andrew Stadden which have been painted by my wife Nel. She doesn't think they are very good but I am pleased with them. The scenario suggests that the three ladies on the left are talking about the two ladies on the right, who are either going on holiday with their luggage, or are fleeing Midhurst because of the gossip about them.



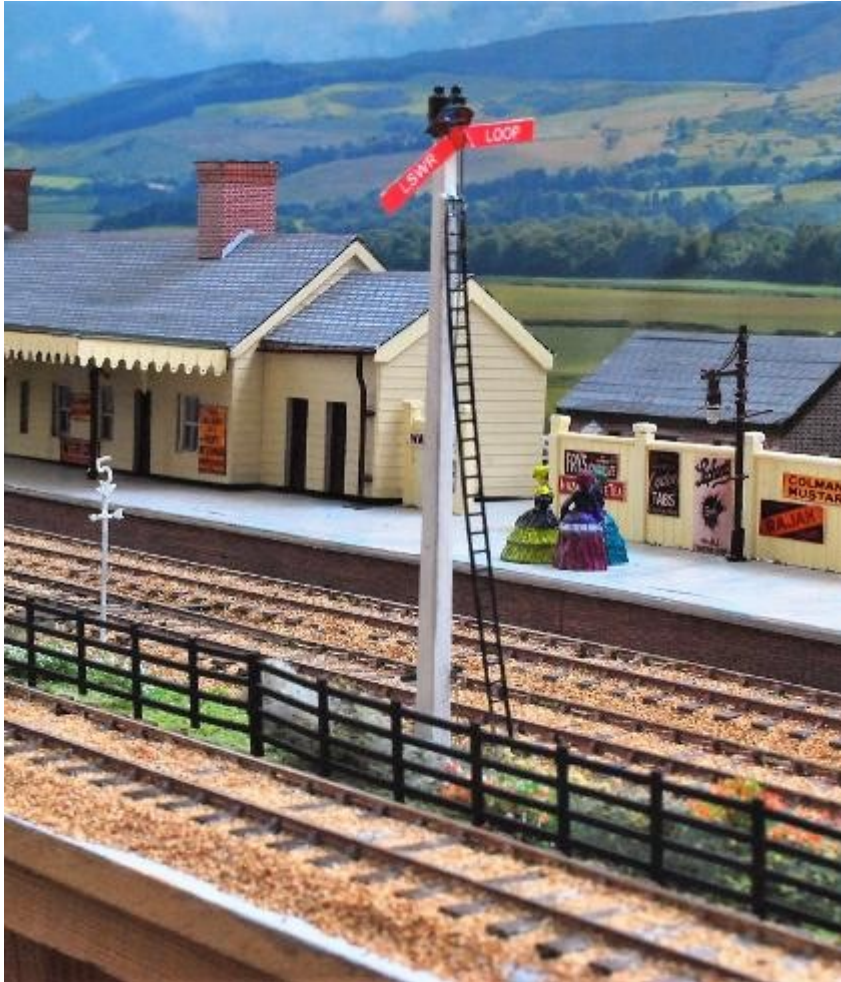


I have been looking at my rolling stock and it seems to me that I will have to stretch my imagination in order to be able to run some of the trains in my possession. I will perhaps have to think that the 1866 station was in use for a longer than reality, that the Bognor to Midhurst Railway was actually built, and that the West Sussex Railway had running rights to Midhurst. That would then allow me to run LBSCR stock up to the Billinton era, and also my few pieces of WSR stock. The idea of seeing 'Ringing Rock' with one coach and a wagon or the Ford Railcars seems quite appealing.





The following photos show progress on the signalling. The information that I have received from the Brighton Circle Signal Steward suggests that Midhurst LBSCR Station 1866 would have been very sparsely signalled and that



would probably have been used to control the train movements.

The signal and point indicators were built by Stephen Freeman and are servo operated. I am being helped with installing these Indicators and signals by Tim Pullan, who is a local member of MERG.



The point indicator shown above left, controls the junction between the Brighton lines and the connection to the LSWR headshunt. The two point indicators have arms marked 'Loop' and 'Platform' and control all 'run round' movements, being connected to and operated by the already installed Tortoise motors.

The photo above right shows the Saxby & Farmer slotted post 'Starter' signal.



Below

A shunting scene showing the 2-2-2 in the yard with two 1851 LBSC 6 ton coal wagons (5&9 kits) and the only Mid Sussex & Midhurst Junction Railway Brake Van bought by the company before it was absorbed into the LBSCR.



Above

Early train at Midhurst

Photographs copyright  
Michael de Jong Smith

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# Lewes, 1886 in 2mm FS (Part 2)

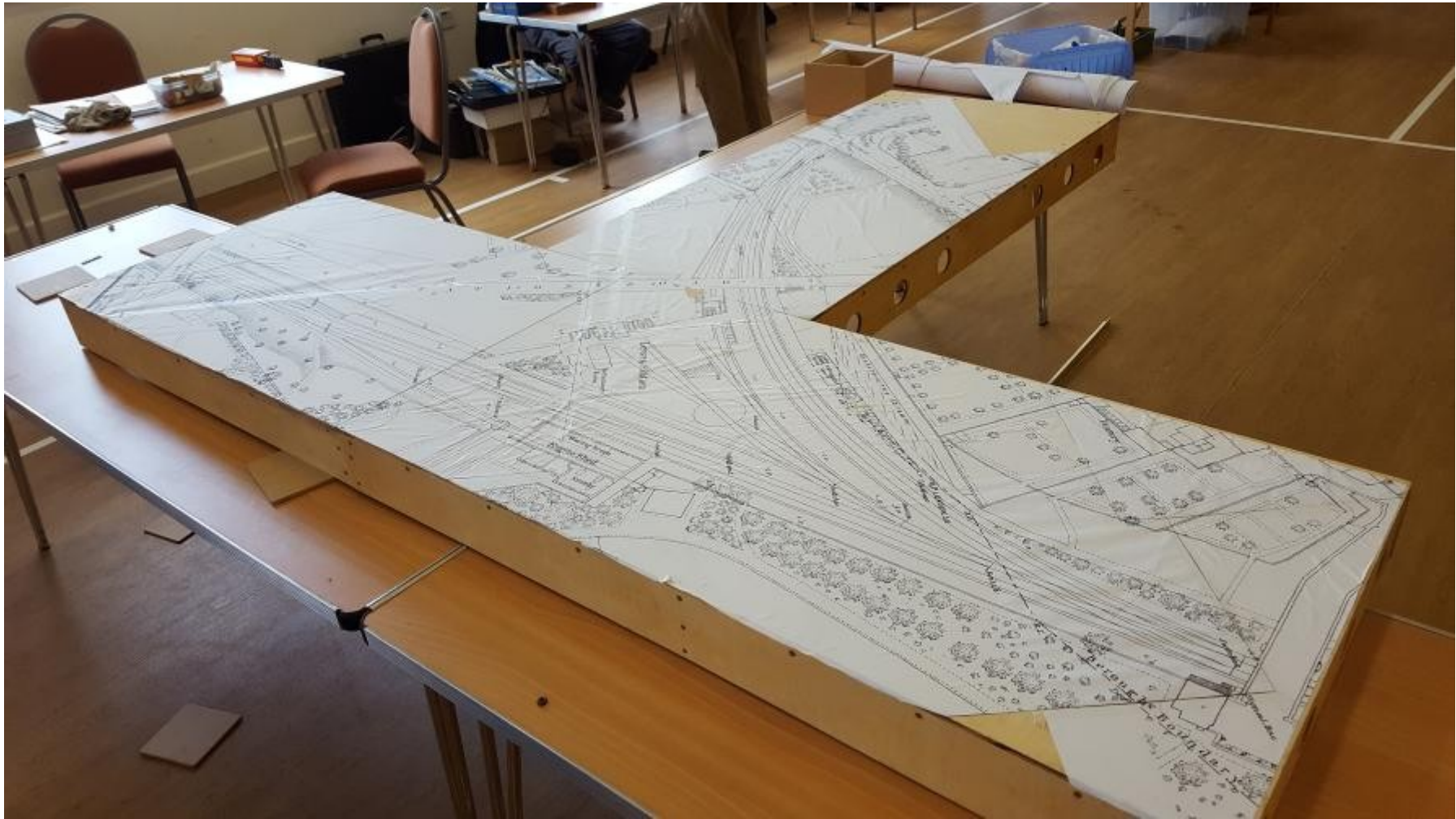
## Dave Searle

### Baseboards

My original bright idea of 'jigsaw' baseboards caused the team too much stress in trying to get the alignment successfully maintained, so we rebuilt the baseboards in a traditional rectangular shape. Once again, we stuck down the enlarged OS 1873 town map to show where everything will go on the first three boards.



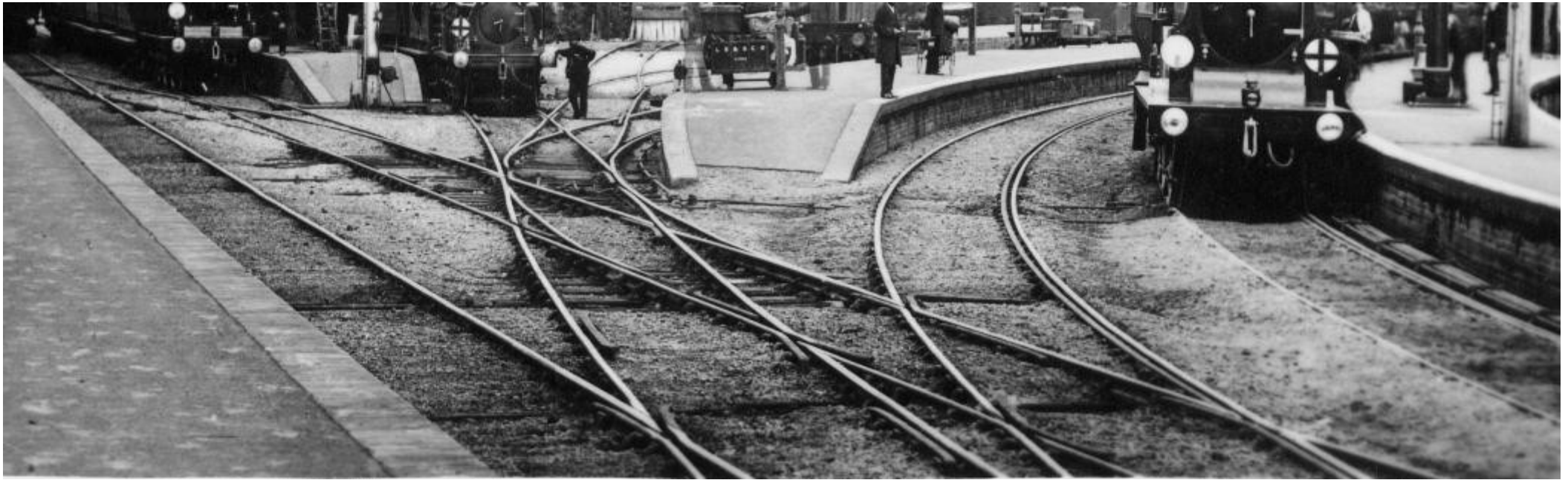




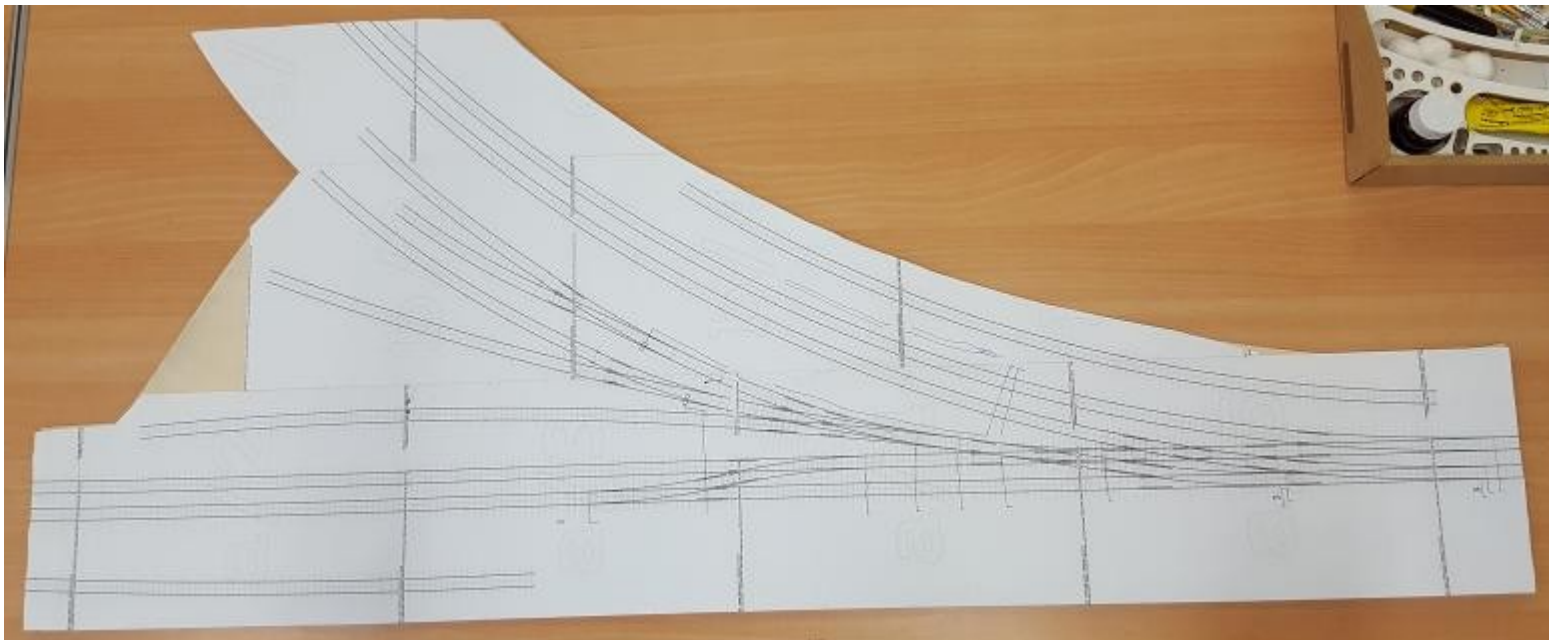
## Track planning

The track will be on a sub-base of 6mm ply and we have cut out the shape for the main double junction and triangle between the platforms.

I spent a long time trying to work out how the prototype track was arranged, starting from an E.J. Bedford photograph of the entrance into the bay platform.

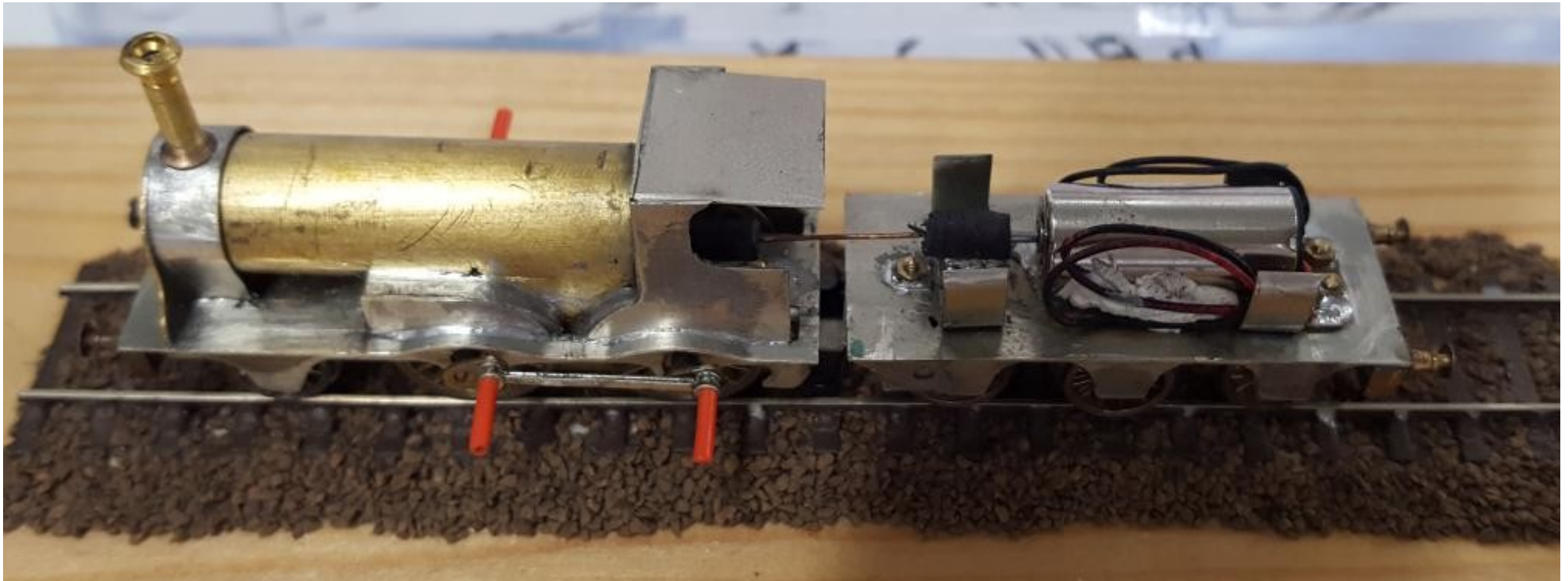


The photo shows lots of details but frustratingly not much of the double junction itself. However, combined with the OS plan, the 1878 signalling plan and a lot of trial and error, I eventually



reached a design in Templot which reproduces quite closely the prototype arrangement. I have added in details of where the point rodding runs so this can be added at an early stage.





### **First Locomotive**

Meanwhile Nigel is making made good progress with our first loco, Sharp-Stewart 2-4-0 No.464 'Epsom'

### **Next Steps**

We are now looking at how the baseboards will be stored and protected, and starting to build the track.

Photographs copyright Dave Searle

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# The Panter 20 ton goods brake van

## - Improving the Hornby model

Nicholas Pryor

This 20 ton goods brake has been described as probably the best such vehicle ever produced by the LBSC. The first 20 examples appeared in 1922 and a further batch of 11 the following year. They were well covered in the railway press at the time and the railway was clearly proud of them. They presented an altogether more modern approach to the task and the vehicles subsequently saw a long period of service with both the SR and BR. Some were heavily modified for engineering department service and survived as such well into the 1970s. I can't trace that any of these have been preserved. Does anyone know better?

The vans appeared so late in the history of the LBSC that they apparently never received a LBSC diagram number and are known only by their SR diagram number 1576. Jonathan Abson's excellent list of all LBSC Brake Vans is at <http://www.lbscr.org/Rolling-Stock/Wagons/Goods-Brakes.xhtml> and these vans can be identified by the SR diagram number and period of service at only 1 or 2 years. LBSC numbers allotted were 25/43/53/66/78/102/109/152/226/280/373-393.

Hornby have been offering a model of D1576 in various different liveries since as long ago as 1980, when it was released to accompany the LBSC E2 class goods tank engine. The latter has long since disappeared, after Hornby altered the tooling in 1985 to create Thomas the Tank Engine. The Panter brake though continues to appear and is rapidly approaching the 40<sup>th</sup> anniversary of its introduction. A version in LBSC grey as No 43 appeared from 1980 to 1982 only,

after which it was replaced by a version in SR large logo livery until 1990. The model reappeared in 2001 and has been frequently available since then in SR brown and in BR grey versions, the most recent in 2010. The latest versions all have full glazing including the prominent side window. The model more accurately reflects the later SR versions of the van with steel sheeting on the lower body sides.





The model is generally a good representation of the original and follows the available drawings and photographs quite closely. See volume 2 of 'An Illustrated History of Southern Wagons' at pages 46-48, and volume 4 page 107.

The photographs attached are of two improved versions of these vans, both adapted from the early 80s LBSC model. The chassis has been modified by removing the moulded brake shoes (replaced by castings in line with the wheels) and the buffers and coupling hooks. These were replaced by more substantial castings from the Lanarkshire Models range (see <http://www.lanarkshiremodels.com/>) though the buffers chosen at the time of the conversion are not as close to the prototype as are now available from this range. The footboards were slimmed down by chamfering the edge of the boards from below to give a finer finish. Scale 14mm wheelsets are an easy drop in fit. Some slight resistance has been added by gluing a sponge pad under the chassis to impede the wheelsets. I find that helpful both to stretch out a train when running, and also to hold a parked train while shunting.

The body has been improved by filling in the slots where the chassis clips in, and by removing the handrails to be replaced by 0.3mm fine wire. Lamp brackets have been added to the ends. Glazing has been added – it was found that a better effect was obtained by cutting the glazing so that it was a flush fit in the side windows. The steel sheeting was removed by carving off the bolt heads and scribing planking to match the upper part of the van. The final modifications were to add etched hand wheels from Roxey to the prominent brake standards on each verandah, and to substitute a cast chimney from Chris Cox's range of parts. Paint is Precision LBSC grey with lettering from HMRS transfers. The vans have been finished as No 43 and No 381, both from the first batch built in June 1922. The casting of the guard is from the Masterpiece Models range.



Photographs copyright Nicholas Pryor

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# Short Trains - the Electrics

Nicholas Holliday

As a solution to the problems of the busy South London Line, and the other commuter lines, after a great deal of research, the LBSC decided to adopt a high voltage AC overhead system of electrification. The relevance to this current discussion is that, despite all the planning, the level of traffic outside the rush-hour on the South London Line was lower than anticipated, and, in particular, very few first class travellers wanted to use this service. The original three coach units included a full first carriage, and once the demand was understood, the first class carriages were removed, and the separate motor units were combined with a newly built composite trailer, of a different style and profile, to create a two coach unit, with a better balance of accommodation. As today, several such units would be combined to form a larger train during peak periods, whilst a single unit was more than enough outside these times.

There are no kits available for the electric stock, although Eddie Carter has created an effective model using the Ratio Midland Railway coach kits, as seen in Digest No. 3, and a slightly more accurate, and much more expensive, version could be created by kit-bashing Roxey or Branchlines etchings.

Slightly outside the remit of this article, the original South London sets, once the Overhead had been made redundant, were converted into two coach units, mainly for use on the 3 rail South London line and the West Croydon to Wimbledon branch, where their great width was no restriction. The motor coaches were put into pairs, as 2-SL, retaining the lowered roof panels at each end, whilst the old first class carriages were paired up and more heavily rebuilt into motorised 2-WIM units.





The later 2 carriage South London set at Peckham Rye depot. The visual differences between the two vehicles are evident. Square panelling, heavy trussed underframe and greater width and height of the original motor unit, compared with the “traditional” Brighton styling, dating back to the 1890’s, of the new trailer.



## Models

3D modelled bodies for the Southern's 2-SL units are available from Shapeways in a variety of scales, including 4mm and 3mm, via the Rue d'Etropal website

[http://www.rue-d-etropal.com/3D-printing/3d\\_printed\\_sg-trains1.htm](http://www.rue-d-etropal.com/3D-printing/3d_printed_sg-trains1.htm)

## Further reading

There is no single book that comprehensively covers the development and rapid decline of the Brighton's Overhead Electric system. Geoff Goslin's London's Elevated Electric Railway, published by Connor & Butler endeavours to address it, but there are holes in its coverage. Volume 3 of Howard-Turner's History of the LBSCR from Batsford contains a wealth of background technical information regarding the initial development. Both Gould and Newbury, noted above, contain drawings and further information regarding the various sets, and Volume 1 of Southern Electric by David Brown, from Capital Transport, details the development of the rolling stock with more photographs, whilst a picture album from Noodle Books, The LBSCR Elevated Electrification, compiled by Stephen Grant, provides extensive photographic coverage of the infrastructure that was installed to run the system.

# Short Trains, a postscript - the Railcars

Jason Liversidge

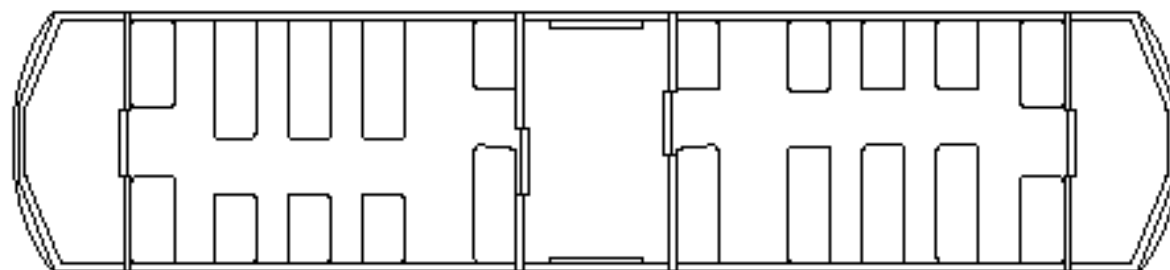
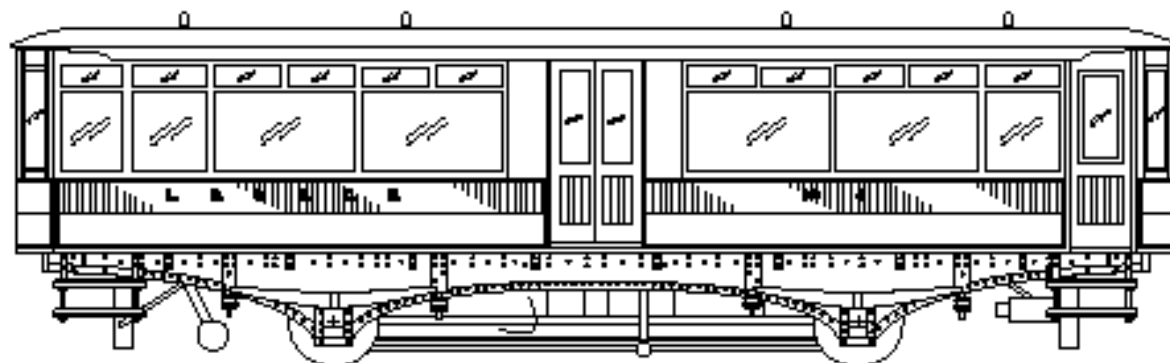
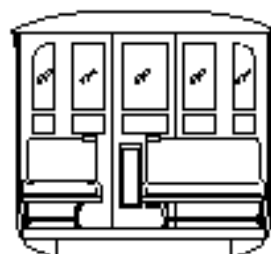
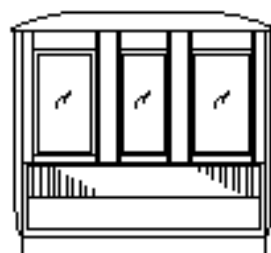
As a member of the GNR Society, I've been looking at the Dick Kerr petrol railcars with a view to creating GNR No.4/LB&SCR No.2. Unfortunately we don't know of any drawings of this vehicle or any good side-on photographs, so I was looking around when I found a link on RMWeb which led me to Peter's model in issue No.2 of this magazine. Peter was very kind in sending me some materials, and the drawing is based on them and other photographs. My own personal project is to use No.4 as a starting point for No.2.

If anyone has further photos or information that might affect the drawing, please don't hesitate to send them to me at [jasonliversidge@hotmail.com](mailto:jasonliversidge@hotmail.com) .

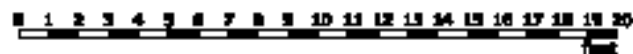
Notes for drawing of No 4:

- These drawings are based on the plans for No.3, amended using a good side on photograph of No. 4 and very occasional references to No. 2 for the location of the radiators and engine equipment.
- The arc of the frames was taken from the side photograph.
- The engine equipment has been blocked in until other photographs come to light that can give more detail. Petrol tanks were on the right.
- I haven't included buffers or detailed axle-boxes on this drawing simply because I couldn't find a good enough photograph or drawing.
- Location of seats is based on the tops of the seat backs in the photographic side view.
- The drawing is of the vehicle as supplied.

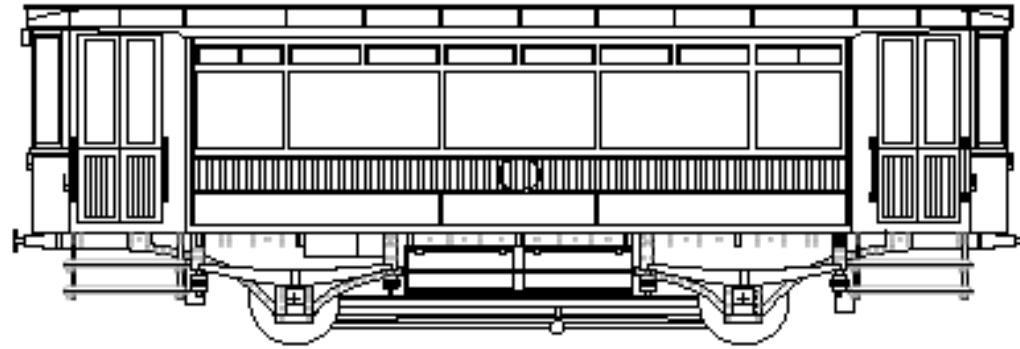
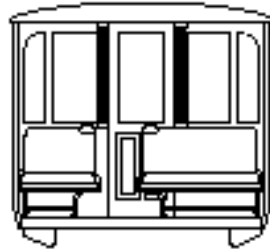
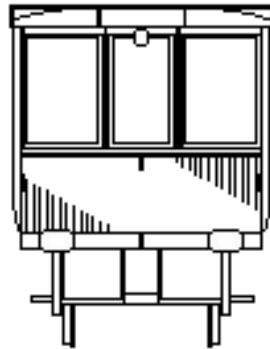




**LBSCR No. 4**  
Original configuration  
Adapted from drawing of No.3  
10-11-03(?) No. 5700A and  
available photographs

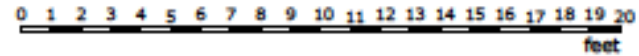


With thanks to Peter Wisdom



**LBSCR No. 2**

After conversion for the Electrical Department. Note that the roof platforms are not included.





The drawing of No.2 is of the petrol powered railcar from Dick Kerr first tested by the GNR. The plans are essentially a cut and shut of the drawing of No.4. The main dimensions have been taken from N.Groves, "Great Northern Locomotive History Volume 3a 1896-1911", and it has been detailed using any photographs I have available. The drawing file I've created has the vehicle shown in three stages of it's life:

- as delivered to the GNR
- modified by the GNR for trials
- modified by the LBSCR for work in the Electrical Department.

Unfortunately I don't have any good photos of the platforms that were installed on the roof of the vehicle. Drawing them would be based on guesswork, so I've made the decision not to include them here.

I have a few questions that I hope someone may be able to help me with.

- Is this No.1 or No.2? I've read that these weren't identical, and one had 5 bays, while the other had 8 bays. Looking at the photo of No.1 and No.4 at Peckham Rye in 1927 on Mike Morant's website, it looks like No.1 has the 8 bays and No.2 has 5. Could this mean that the ex-GNR vehicle might be LB&SCR No.2?
- Are we certain that this is the vehicle that came from the GNR? The GNR Society is interested as they don't have any information about what happened to the vehicle after it finished its trial period there.
- Does anyone have any photos of No.1 and No.2 while these vehicles were in the Electrical Department that I might not have seen?
- Does anyone have any thoughts on the drawings? Although there has been a lot of squinting at photos, I'm bound to have missed something, or misinterpreted something.

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# Rennie's 0-4-2 locomotive 'Croydon'

– or not as the case may be!

Chris Cox





In the Summer 2016 edition of the Brighton Circular I posed a question regarding the identity of a locomotive illustrated in the second series of Samuel Brees' 'Railway Practice' published in May 1840. His claim that the drawing was of London & Croydon Railway locomotive 'Croydon' was clearly an error. 'Croydon' and sister engine 'Archimedes' were in fact 2-2-2s built by Rennie's on the pattern of those supplied by them to the London & Southampton Railway. Such a loco was illustrated elsewhere in Brees' publication. Unfortunately, Brees' error was perpetuated by E. L. Ahrons, D. L. Bradley et al and so never questioned. However, if the drawing was not of 'Croydon' then what was it?

Thankfully my article sparked some interesting debate and some excellent responses were written in subsequent Circulars. Several alternative theories were discounted including the possibility that it was 'Hercules', a 0-4-2 banking engine supplied to assist trains up the New Cross incline. 'Hercules' was of Stephenson design and quite different with straight frames, inside cylinders and a conventional firebox. Further details of the discussions need not be reproduced here but I would recommend referring to Brighton Circular Vol.42 Nos.2 and 4 and Vol.43 Nos.1 and 3. My thanks in particular must go to Clive Croome, Mike Cruttenden and the late Derek Brown. By the time I had written the article, the model itself was well underway and I determined to finish it regardless of its questionable origins.





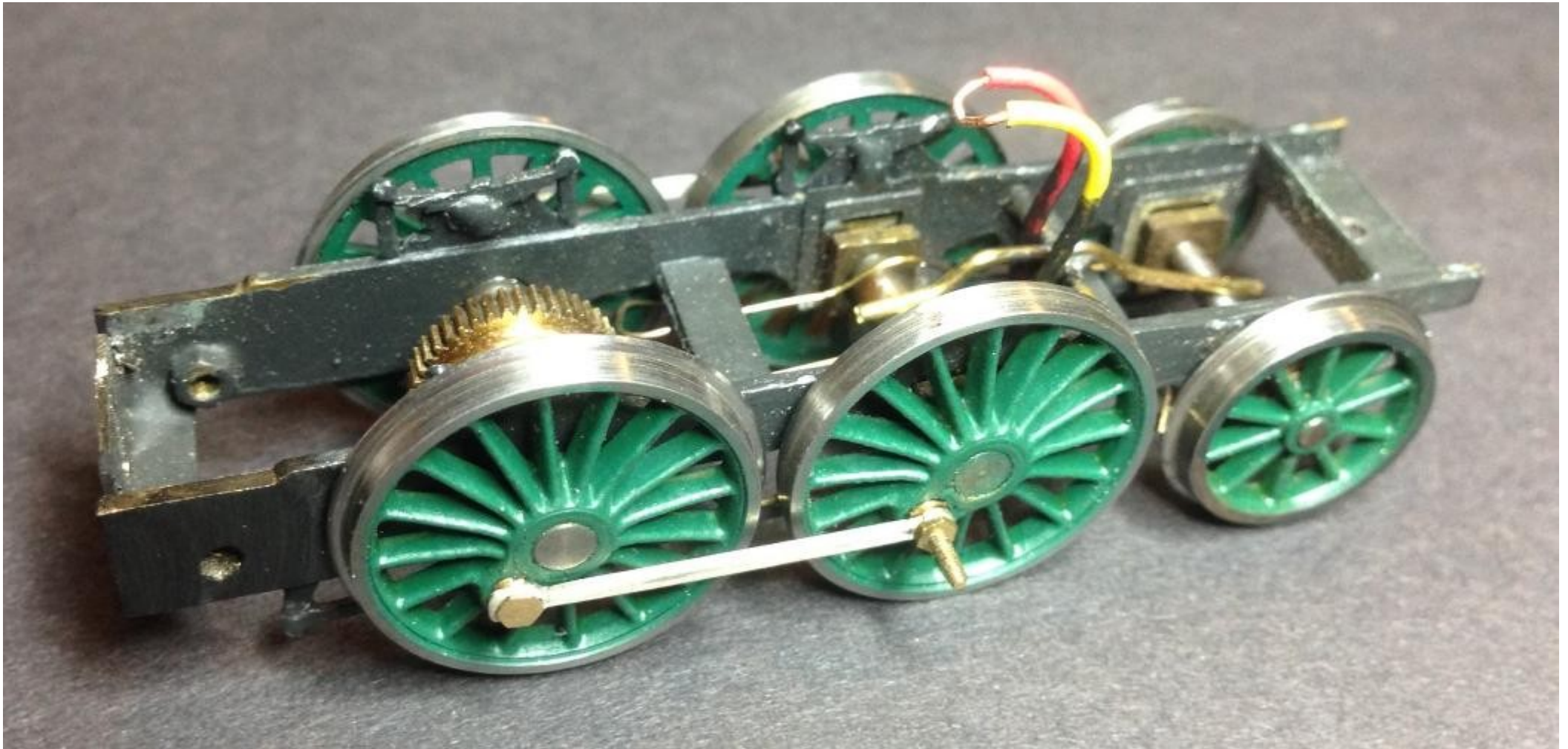
The model itself is scratch built in 4mm scale to EM standards. The first consideration, as with any locomotive build, is that of power and in this case I had decided that it was possible to squeeze a Portescap RG4 inside the boiler with the modified gearbox hidden inside the smokebox. This was made possible by cutting off the lower portion of the gearbox carrying the final drive gear, which was then fixed to the centre of the leading axle. The

chassis frames were cut and built up to carry all three axles, the leading two joined by coupling rods. Pick-ups are simple brass wires wiping the edges of the flanges of all six wheels. The second wheelset required the flanges to be turned off in the lathe to match the prototype and also allow the wheels to be set very close together.





The outside frames were made next, built up from brass with a final overlay of 5thou styrene for rivet detail to be applied. The smokebox is a section of brass tube, a fraction larger than the inner boiler tube with two laminates of brass sheet to build up the diameter. The chimney was turned from copper, and also the curious smokebox front. I have remained faithful to the drawing here but it is a very odd arrangement, either a very early attempt at streamlining (unlikely) or an error. There is no means of opening it and I cannot imagine the cleaner was expected to undo all 48 bolts and heave off a heavy door just to brush the tubes!



After filing off some of the upper portions of the gearbox, it was made a nice sliding fit inside the brass tube boiler. This holds the motor and gearbox steady so that when boiler, frames and chassis are united and held by a single 8BA screw it all comes together and the mesh is just right. The turned copper and brass firebox top lifts off to allow access to the wires connecting the motor to the pick-ups.



I decided to clad the boiler with wooden strips as the process went well with my previous Sharp 2-2-2 'London' and I rather like the effect. 1mm slivers were cut from mahogany veneer and the brass tube boiler was covered in strong double sided sticky tape. Each strip was then applied until the whole lot was covered and could be secured with two coats of satin varnish, gently sanding down between coats. The brass bands were then applied and a further coat of satin varnish for good measure. The same treatment was given to the round firebox leaving an area around the firebox door.

The outside cylinders and motion caused some considerable frustration, the first attempt was eventually chopped off and thrown away as it would not run smoothly no matter how much I swore at it. The cylinders themselves were turned from brass, drilled out to take the piston rod and clad in timber; very fiddly due to their small diameter. Once everything was running smoothly I turned my attention to a suitable tender.

As far as I know, no official drawing exists for a Rennie tender and, since it turned out that this locomotive was probably not built by Rennies anyway, it left me with a blank canvas. Using a number of different illustrations of period tenders, and taking some dimensional and stylistic leads from the loco itself, I sketched something suitable. It was a very enjoyable part of the build as filling in the blanks with research and educated guesswork produced something which I hope looks the part. The lever operated brake and limited capacity are certainly of their time. The rear axle is fixed and the front axle floats on a yoke allowing the weight of the tender to rest on the back of the loco to aid adhesion. It turns out that this was not really necessary as with the various solid lumps of turned brass and copper, it's a reasonably heavy engine, it certainly seems to pull well.

I hope this model is a fitting conclusion to the series of Circular articles, even if we remain none the wiser!



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# A Machinery Wagon in 7mm scale

## by Bob Sankey

As the basis for building an LBSCR machinery wagon in 7mm scale, based on the drawings from “An Illustrated History of SR wagons, vol. 2”, I used a Slaters kit for a MR wagon chassis 11’ wheelbase, catalogue 7037. This is intended for a large cattle wagon with a body length of 19’1”, and the machinery wagon has a length of 16’6”, with a wheelbase of 10’5”, so some changes are needed. There is a base with the inner frames moulded on, and this can be slightly shortened at each end to get the body length right, (allow for thickness of headstocks) and the solebars need a piece out of the middle to match the wheelbase, with a short reinforcing strip behind the join. The solebars then cemented to the base, and once the solvent has set, the outer ends of the solebars are trimmed to match the length of the base, and the headstocks can then go on. There’s a nice set of sprung brass buffers with steel heads which come with the kit, and I fitted my own oversize drawhook with single link coupling, but the kit does have a scale sprung drawhook with 3link couplings. Then on to fitting the axleguards, lining these up with the crown plate on the solebars. The axleboxes can have the fronts filed vertical, and the lugs on the side pared off, so they look more like a grease axlebox. These are fitted to one side, then the bearings and wheelsets, then the guards and boxes for the other side. There is no compensation, so a check is needed that the wheel flanges are all grounding on a flat surface before the solvent is fully set. I find with a wagon of this size with finescale wheels that this is perfectly adequate for good running. The kit gives all the parts for Morton handbrake on each wheel, which later builds had, but I wanted just a single side brake on one wheel, and I made this up from scrap plastic. Then on to the floor, which I made from a piece of Evergreen sheet styrene, vee groove 4188, trimmed to fit on the deck. This



gives me a neat scribed surface for floorboards. The sides and ends are from .060" plastikard, with small details from scrap plastikard. I added side rails from brass rod, presumably these were for lashing loads down, later builds had four holes in the sides, and there is still one like this preserved at Haven Street in SR colours. There's a fabricated beam at each end which acts as a wheelstop for loaded vehicles, which I made from brass strip and square section, with small vertical pieces which could go down into the floor. Then it's just clean up, paint, letter, and weather.





I made the load from another kit, being a pantechicon from Duncan Models, who do plenty of useful kits for a pregroup modeller. The kit is etched brass and white metal castings, and goes together very well. It has placard boards along the roof, but these are out of gauge on the wagon, so they are left off, as well as the draw shaft for the horses. I did a hand lettered paint job for Bishops, who had a depot over the wall from Victoria Station, so a good customer for the Brighton line.







The sides of the pantech icon are flat slabs, so they would be very suitable for labels done on a computer. I find that the pantech icon is an exact fit on the wagon, there's a slight overhang at each end, and I find checking it against my load gauge that it has to be dead central on the wagon, and couldn't be higher or wider. It's secured to the wagon by brass rods hooked over the axles behind each wheel and passing down through the floor, the "lashing" is just cosmetic cotton threads. I'm showing it made up in a train with a mineral and a van to give an idea of how it would look in a goods yard.

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Photos copyright Bob Sankey

Bob's work also appears on RMWeb as Northroader

# 3-D printing the Brighton

## - a beginners tale

Brian Jones

### First Encounters

It started in 2016 when one of my customers mentioned that he was making models for his narrow gauge garden layout by 3D printing. He was using a free 3D drawing program, called Google Sketchup Make, and an Ultimaker 2 3D printer. (*Note: Sketchup is available for both the Mac and the PC*).

I had contemplated for some time, the making of a rake of wagons for my Gauge 1 layout. The problem I was having was in deciding how to make them. Should I design them in etched brass, 3D print, or make them in plasticard cut out by CNC router, or just by hand? I had designed and made etched brass Gauge 1 coaches, using CAD back in 1992, so was quite conversant with that. So too, with plasticard, but both of those methods required much time, either building etched kits, or cutting



The object of this article: A Gauge 3 LB&SCR D1 0-4-2T in SR Livery as purchased before renovation (with cab roof removed)



out pre-drawn parts in plastic sheet. Designing and printing in 3D was not a skill in my possession, and finding time to acquire such skills was limited. Nevertheless, 3D printing was attractive, as the printer could be making parts for my models, whilst I was working on electronics, during the day. If I could draw it, I could make it! So, I downloaded a copy of Sketchup to my Apple MacBook Pro and bought a couple of books on Sketchup - more about them later.

Progress was slow at first, mainly because my spare time was taken up rebuilding a Gauge 3 battery radio controlled LBSC D1 tank loco. This was a model I had bought from a friend, along with a matching set of motor train coaches, as pictured in an earlier issue of the Modellers' Digest. The loco needed a fair amount of TLC which meant making mechanical parts on a lathe, or drilling machine, rather than a 3D printer. However, there were a few items I had identified as possible candidates for 3D printing. A new dome, a new cab roof, and a boiler backhead, which the loco completely lacked.

### **A Short History of 3D Printing**

At this point a brief history of how 3D printing originated may be useful. Home, or desktop, 3D printing has its origin in Rapid Prototyping which first appeared in the 1970s. In those days the machines were based on UV lasers aimed at a tray of liquid resin which built up an object layer by layer. Where the laser struck the resin it hardened, each layer being fused to the previous one. Such machines use a process called Stereolithography, or SLA (actually short for Stereolithography Apparatus). SLA is still in use today and cheaper machines within the reach of home users are available.

In the 1980s came machines using powdered material in a process called Selective Laser Sintering (SLS). Here the material particles are fused together by laser. With these it is possible to print items in ceramics, glass and metal, and not just plastic. Machines using SLS were, and still are, very expensive, in the order of £400K, and are thus the preserve of those with very deep

pockets, typically aerospace, defence, and Formula 1 motor racing.

There are many different 3D printing techniques, but they all come under the same heading of “additive manufacturing”. A process of building items in thin horizontal slices fused together until the object is complete.

That is roughly where things stayed until around 2009 when someone had the bright idea of combining a device like a hot glue gun with a computer and created a cheap desktop 3D printer. A hot glue gun uses a stick of flexible plastic glue which is heated and squeezed out through a small diameter nozzle when the trigger is pulled. In much the same way, the desktop 3D printer heats up plastic wire, called filament, and lays it on the printer’s print bed. The filament is accurately fed and forced through the heated print nozzle by a micro processor controlled stepper motor. Two more micro controlled stepper motors accurately position the print bed back and forth, and from side to side, in what are geometrically referred to as X and Y planes, to form the shape of the layer being printed. A third stepper motor gradually raises the heated print nozzle, on completion of each layer of the object being printed, in what is called the Z, or vertical, plane. As the plastic filament is heated each layer is fused to the previous one in a process called Fused Deposition Modelling, or FDM.

The first FDM desktop 3D printers were usually sold as DIY kits. The most well known model probably being the Rep-Rap. It’s control technique has become a standard for the control software of many of the current generation of desktop 3D printers.

## **Making a Real Start**

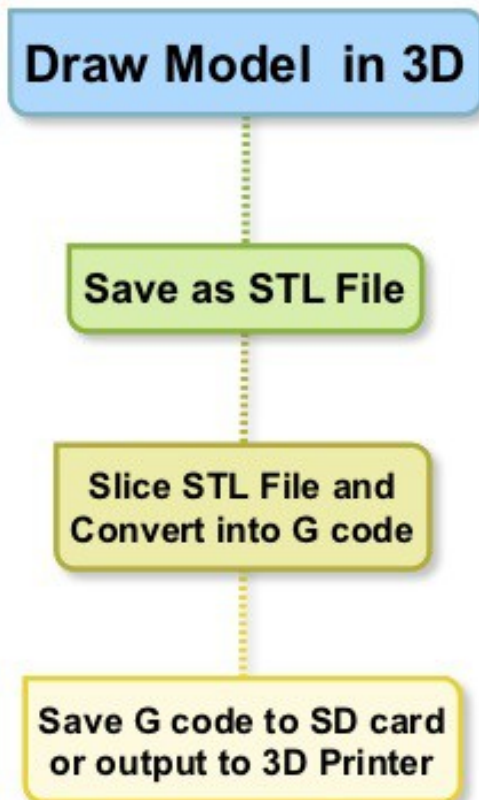
Fast forward to December 2017 and thoughts were turning to drawing the dome for the D1 in 3D. I still hadn’t really got to grips with Sketchup, but a chance encounter with the HobbyKing website selling a mini 3D printer for £128 (+ delivery) gave me the ‘kick start’ I needed. So I bought one, a



real impulse purchase.

Now there was a real incentive to learn how to draw in 3D, and that's the great thing about having a 3D printer, as soon as you finish a drawing you can try out the design by printing it. No waiting for etches to come, no cutting out parts, just make the item and an hour or so later, it's in your hand. Not quite the Star Trek Replicator, but close. Science fiction has come true, well almost!

Figure 1



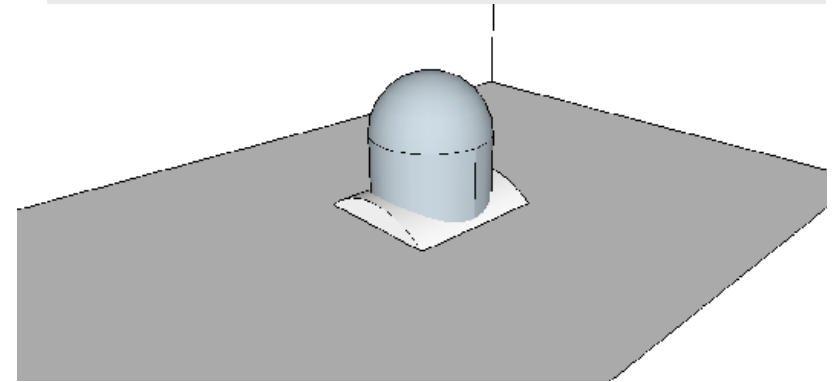
### Producing Parts by 3D Printing

Figure 1 shows the usual process for producing parts by 3D printing. If you have not got a 3D printer you can send the STL file to a company that will do the printing for you.

I had thought of buying an Ultimaker-2 3D printer, but ,at around £1700, I thought it better to learn how to draw in 3D first and maybe use a 3D print service. But, the 3D printer I had bought was cheap enough to 'dip my toe in the water', and it allowed me to learn by experimenting. Learning to draw in 3D was the key step which was easier than I first thought.

Sketchup was a good choice in that respect, as it was relatively easy to learn, is well supported by 3rd party books and online videos, and has a user forum. I did not use either of the latter, but did buy a couple books, having failed to find any copies through my local library service. Two particularly good books on Sketchup are *Sketchup 2014 for Dummies* by Aidan Chopra, and *Google*

The first trial dome drawn with Sketchup.



*Sketchup - The Missing Manual* by Chris Grover. What is not covered by one is covered by the other. At present Sketchup 2017 can still be downloaded for free and used offline, but Google are trying to encourage the use of their latest cloud version. That seems to be the way that other software CAD packages are going 'free', TinkerCAD being another example. But what happens if they suddenly stop the service, and can you save the drawings on your computer, or is that cloud based too? If it is, are your designs your intellectual property or that of the cloud service provider? I have come down firmly on the side of the familiar downloaded and installed software as there is no ambiguity as to who owns what. They own the design software, but I own what I design with it.

## **A First Trial Print**

In around three weeks I had become quite familiar in using Sketchup and by the end of December I had printed my first trial dome for the D1 tank loco using the sample of PLA supplied with the printer. The 3D printer needs another program to actually print the model. For the PC it uses a program called CURA and this is supplied on a micro SD card that comes with the printer, along with the STL file of a sample print model. However, only the PC version was included, nothing for the Mac, yet the printer was described on the HobbyKing website as being Mac compatible. Contacting HobbyKing, through their online web chat service, they gave me the web address for another 3D printer program called Repetier Host. So I looked at their website which was very informative, and they had both PC and Mac versions of Repetier Host. So I downloaded the Mac version, installed it, and to my surprise it worked first time. It has both simple and expert modes, so I tried simple first.

Repetier Host also comes with, and uses, a plug-in slicer program. This is the software that turns the STL file, of the drawn model, into a series of layers i.e. slices for the printer to print. Repetier Host comes with two slicer programs - Slic3r and Skeinforge. Like Cura, Repetier Host is the overall driving program for the printer. It sets the print bed and extruder temperatures, extruder



speed settings etc., but uses the slicer program to convert the STL file of the model drawing, into a series of layers which are converted into X, Y and Z movements by the printer's stepper motors. Slic3r is much more user friendly, having a simple window display with tick boxes, or boxes that can have settings easily changed by typing. If you hover the mouse cursor over a setting, it displays a help window explaining what it does, how to set it, and its default value. Skeinforge is more geeky with a series of tabs and names which are OK if 'you are in the know', or really understand the jargon. I don't, so I used Slic3r.

For 3D printing to become mainstream, it's got to become easier to use for the average person, with less jargon, and more plain English.

Whichever slicer program you use, it produces something called G code. G code is a simple text based code, similar to the key codes produced by a computer keyboard. However, G code describes the movement made by the three stepper motors, mentioned above, moving the print bed in the X (side to side), Y (back and forth), and Z (vertical) planes. G code is interesting because it is a common method of controlling the tool movements on CNC lathes and milling machines. That does not mean that you could take the code produced for a 3D printer and use it on a CNC lathe, or vice versa, just that it does the same thing on different machines in different ways. In theory, if you really got to understand the structure of G code movements you could program a printer by typing a set of G code settings and movements and produce a model directly without a drawing program. That would be a tall order with a complex 3D model, but I do know of a model engineer who turns loco wheel castings by programming his CNC lathe directly in G code, because he fully understands how his machine responds to G code.

## **Printing Materials**

PLA is Poly Lactic Acid. It sounds horrendous, but is in fact corn starch, a plant based plastic that will rot down on a compost heap. It melts at around 200 degrees C, and is available in 1.75mm

and 3mm diameters on 1Kg or sometimes 500 gram reels. The Mini-Fabrikator2 uses 1.75mm diameter filament. It will also print ABS and PET too. ABS is tougher than PLA, and is the stuff from which LEGO bricks are made. It's an oil based product, so is not considered green, but there is a sustainable version of ABS appearing on the horizon. PET is recyclable, better known as the stuff used to make soft drinks bottles. I have got a sample of ABS which I have yet to try. PLA is also available mixed with powdered metal such as copper, and brass. This, I think means that it can be polished like actual metals which if true will make brass capped chimneys and domes a possibility. I've heard of casting resins sintered with metal powder that can be polished like metal so if that can be done with 3D printed parts then I cannot wait to make one of Mr. Stroudley's copper capped chimneys!

Having printed the first dome, it did not quite come out right as can be seen in the picture of the 'white' dome. First, the filament ran out before it finished, and then I forgot to run a check on the STL file produced by Sketchup, before printing. It was not quite what I expected but showed promise!

As I had now run out of filament, there was a short pause whilst I waited for some more to arrive. I bought a 1Kg reel of grey filament from Filament UK, via eBay, and also a sample of their green PLA filament, as HobbyKing were out of stock.



..... and what the first trial actually printed.

## Checking the Model before Printing

The STL file produced by Sketchup (and most 3D drawing programs), stands for Surface Tessellation Language. Some say it also stands for *Silly Triangles Lots of 'em*, because that's how the file describes the shape of the model, by a series of interconnected triangles.

As I was not too sure whether the Sketchup STL file checking plug-in was working OK, I tried looking for a program called Netfabb which was recommended in another book I already had on 3D printing, called *3D Printers - A Beginner's Guide* by Oliver Bothmann.

Netfabb was originally a free to download program, but has now been bought by Autodesk and is no longer free. In fact it's damned expensive! But there is a free cloud Netfabb STL file checking service which I used instead. This works well, but you need to either have a Windows Live ID, or a Google account. Fortunately, I had the latter through having a Youtube account. I never imagined that Youtube would turn out to be as useful for 3D printing as it is to publish a video!

After printing the first trial dome, I thought it might be a good idea to download a proven design from a site called "My MiniFactory" to make sure the printer was working OK. A sample file comes with the printer but there is not enough sample filament to print all of it, and its a bit too 'artistic' for my tastes. There are loads of designs you can download from the web, but they're either quite complex, are just toys, or chess pieces. I almost lost the will to live looking through them on Thingiverse, (another site with proven downloadable 3D models).

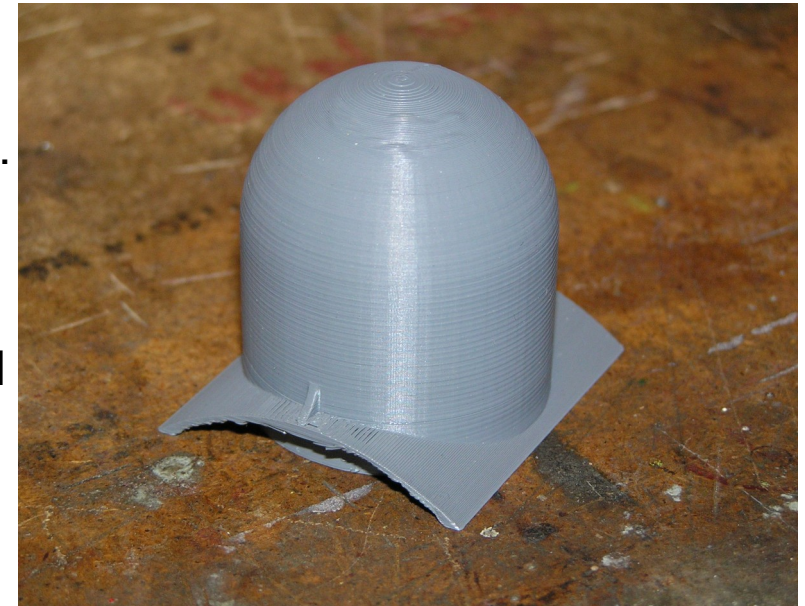
I wanted something simple and of an engineering aspect, and in the end I settled on a large nut and bolt. The designer also had a Youtube video showing how it was drawn. This came out well (in green PLA) and actually works. There are some very clever folk out there in 3D land!



The green PLA Nut and Bolt from the 'MyMiniFactory' website



Having proved that the Mini-Fabrikator2 was working OK, I decided to have another go at printing a dome for the D1. I drew a new dome and saved it as a new file, using Sketchup. This is where I found one weakness of Sketchup. It would not form the curved flare at the base of the dome, because the surface was not flat. In technical terms it would not extrude a shape on a curved surface. It did produce a curved segment at the front and back of the dome, so I settled for that, intending to use some body filler to form the flare by hand. I checked the STL file using Netfabb Online which passed it OK. So far, I had only run the printer straight from my Mac laptop USB port, but it will also print from a micro SD card in stand alone mode, and it also has wi-fi capability. Sadly, I have not found the software to run it in wi-fi mode with the Mac, and Hobbyking were not very helpful here, only offering a couple of websites where I might find the information. They have assumed most people are using a PC, and one with a 64 bit CPU at that. I have used it in offline mode with the micro SD card and that works well, but I prefer to use a direct connection for anything new so that I can be certain that everything is set correctly. The print came out OK, as I had expected. It meant cutting and trimming to make it fit the loco, and using some filler, but I had a useable dome at last! The result is shown in the picture.



At last! A dome printed in grey PLA just requiring trimming and shaping



The First Grey Printed Dome (from Sketchup) after trimming

## Trying Another 3D Drawing Program

I'd found an apparent weakness with Sketchup in that it would not form a curved flare, or fillet, around the base of the dome. I had also found that it drew circles by default in 24 segments i.e. short straight lines. If you look at the picture of the first 'white' dome you can see these segments in the picture. Clearly, not ideal. It is possible to easily increase the number of segments in a circle, but at the size I was drawing, 35mm diameter, the top of the dome ended up with a hole in it. The hole only disappeared if I reduced the number of segments to 30, or less. I got around this problem by drawing the dome twice full size, with a circle of 60 segments, and scaling down the finished drawing by half. The result is the first grey PLA dome as shown in the picture.

Looking at Sketchup as a whole, it seems to be a drawing program that is more geared towards architectural design, than engineering. I wondered if there might be other 3D drawing programs, that were geared more towards engineering. A friend had told me that free programs seem to have less capability than those that are bought with money. So, I started to look around.

My friend had suggested a program called Rhino. but looking through their website, it highlighted a problem working with Intel Graphic display chips. Guess what most PC and Mac laptops use! Only high end iMac desktop computers were OK, so that eliminated Rhino. Looking on the Mac App Store there appeared to be two candidates, TurboCAD 3D, and ViaCAD Pro 10. App Store reviews for TurboCAD revealed that a new release (last quarter 2017) had problems with the latest release of Mac OS High Sierra, and it was more expensive at £399. ViaCAD Pro was £250, from the UK distributor, but there were no reviews for it. By chance I found my way to the ViaCAD US website of its designer, PunchCAD, and they were offering a 14 day free trial, and 20% discount if you bought it before the trial ended. It was not so much the price, as the free trial period that convinced me to try it. ViaCAD had built in video and step by step demos too, showing how to draw in 2D and 3D.

The ViaCAD videos are good and make it look easy, but the step by step demos, in pdf format,



are more useful if you want to take your time. They go through the same subjects and drawing sequences as the videos, and I used them as a self teaching aid, along with the 400 page embedded pdf manual. I printed a few examples of the pdf step by step demos, and then realised I could display them on my old desktop computer, whilst drawing on my laptop. That saved a lot of paper, and not to say a forest or two. In around 8 or 9 days I adapted to using ViaCAD, and managed to produce a viable drawing of a 3D dome - the third, with curved flares and base fillets, and all!

ViaCAD also has its own testing software built in, to check that the design is viable

for 3D printing. It can also output the design in various formats including STL, for 3D printing. It is a 3D design program geared towards engineering, designed by someone who had been a CAD team leader at Lockheed Aerospace. That was good enough for me!

ViaCAD does not do everything, no CAD program can. For the maths of working out the correct radii for the base, I still had to do some O level trigonometry based on the overall dimensions taken from a G.A. of the D1 tank loco. The skill therefore, has been transferred from the making of the part, to the designing of it. This would be true of any 3D design software. Even so, I have been quite impressed with how ViaCAD produces filleted shapes around curves, and how they



The (Third) Dome drawn with ViaCAD



can be altered until they look right, once you have clicked on the right objects, of course! Finding those was initially the most frustrating exercise, until I realised where I had gone wrong. One frustration was trying to leave a hole in the centre of the dome, so that it could be threaded 4BA for fixing in place on the loco. I was about to drill a hole in the dome, in my lathe, until I remembered that the centre of the dome was a honeycomb. This is a default process of the 3D print slicer program. It can be overridden, but a honeycomb saves print time and filament. Eventually, I realised what I was doing wrong, and thinking it was more proper to design the dome with the hole, rather than drilling and filling with epoxy resin, came dome no. 4! This cleaned up quite well but still needed some work to get the base radius just right, as it had been filled by support material generated by the slicer program. Having done this, the dome looked OK, but wasn't sitting just right. Then I measured the boiler barrel and found that it was slightly over scale size at 60mm, instead of 56mm to which the dome had been drawn. I could have filed it to fit, but it was easier to draw dome no. 5, with a slightly larger base radius to fit the actual model.

Ah! But that rim is a little on the thick side at 1mm, even for Gauge 3, so I made a sixth dome with it reduced to 0.75mm which was much better. Phew! At last I had a dome which sits correctly on the loco and could be fitted with a 4BA screw, as can be seen in the picture(s).



A Selection of 3D printed domes along with the hand made original (extreme right)

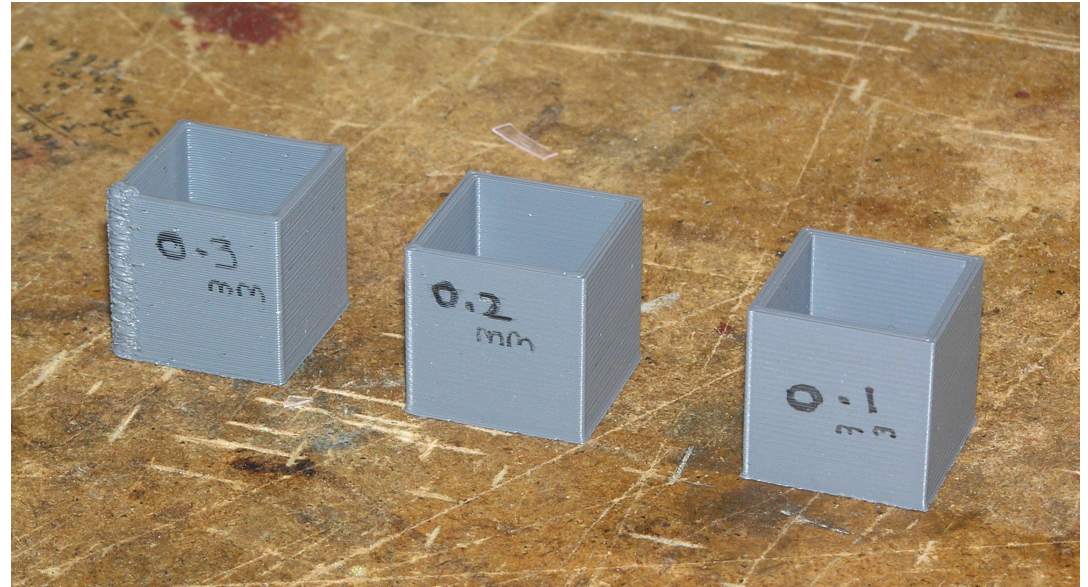
## Testing, Testing .....

Having successfully printed a dome (at last), I did some tests to see what settings gave the best finish. I devised a test piece which was a hollow square box without a base or top, 20mm square, and with 0.8mm thick walls. I printed three boxes, one at 0.3mm resolution, a second at 0.2mm resolution, and a third at 0.1mm resolution.

All three printed OK and came out to 19.95mm, with walls 0.75 to 0.79mm thick.

Amazingly, within 0.05mm (0.002") of the design size which I thought was pretty good. The 0.3mm setting, however, revealed a bit of oozing at one corner where the print nozzle indexed before rising to the next layer. The surface also had tiny spots of filament in one or two places, but nothing that could not be taken off with a small needle file, or wet and dry. On the plus side it printed the quickest, in around 10 minutes.

On the 0.2mm setting the corner oozing was almost gone with only a slightly raised, but even edge, at the indexing corner. The surface blemishes were also gone, but it took a bit longer to print at about 15 minutes. On 0.1mm, the oozing corner had gone, and the surface finish was excellent, only revealing a slightly lined surface between layers. Easily sanded down with wet and dry if you wanted a perfect surface. This took about 20 minutes to print. I tried slower speed settings on a couple of repeat runs at 0.1mm resolution, to see if that improved the surface, but it made no difference as far as I could tell. So, I set it to run at the default 60mm/second when it came to printing the cab roof. All the settings were done in the Slic3r slicing program which ran within the Repetier Host software.



## What About the Cab Roof?

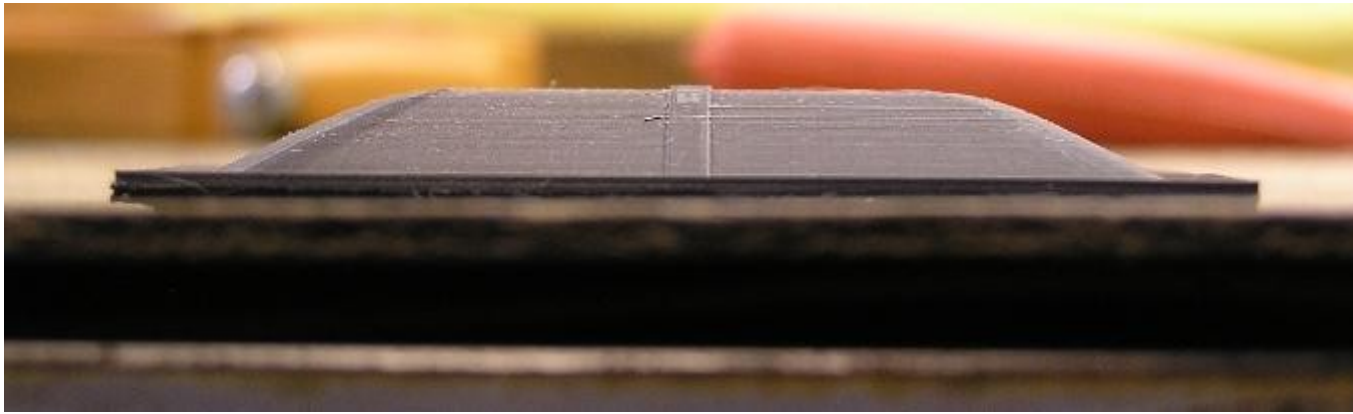
With the success of the dome under my belt, I turned my attention to the cab roof. The original idea was to repair the damage to the existing cab roof. This was cast in resin and had chipped at the corners where it had fallen off the loco. It being removable to get to the radio control receiver. Having now become firmly addicted to 3D printing, I thought I might as well try my hand at printing a new one. The print bed was just about big enough to do it in one go, with just 5 or 6mm to spare all around. I thought it would be a good test of the printer's capability with such a large piece. If it did not work, I could always sub-divide the roof into smaller sections.

As with the dome there was a fair amount of pre-sketching and trigonometry required to get the front and rear angles right.

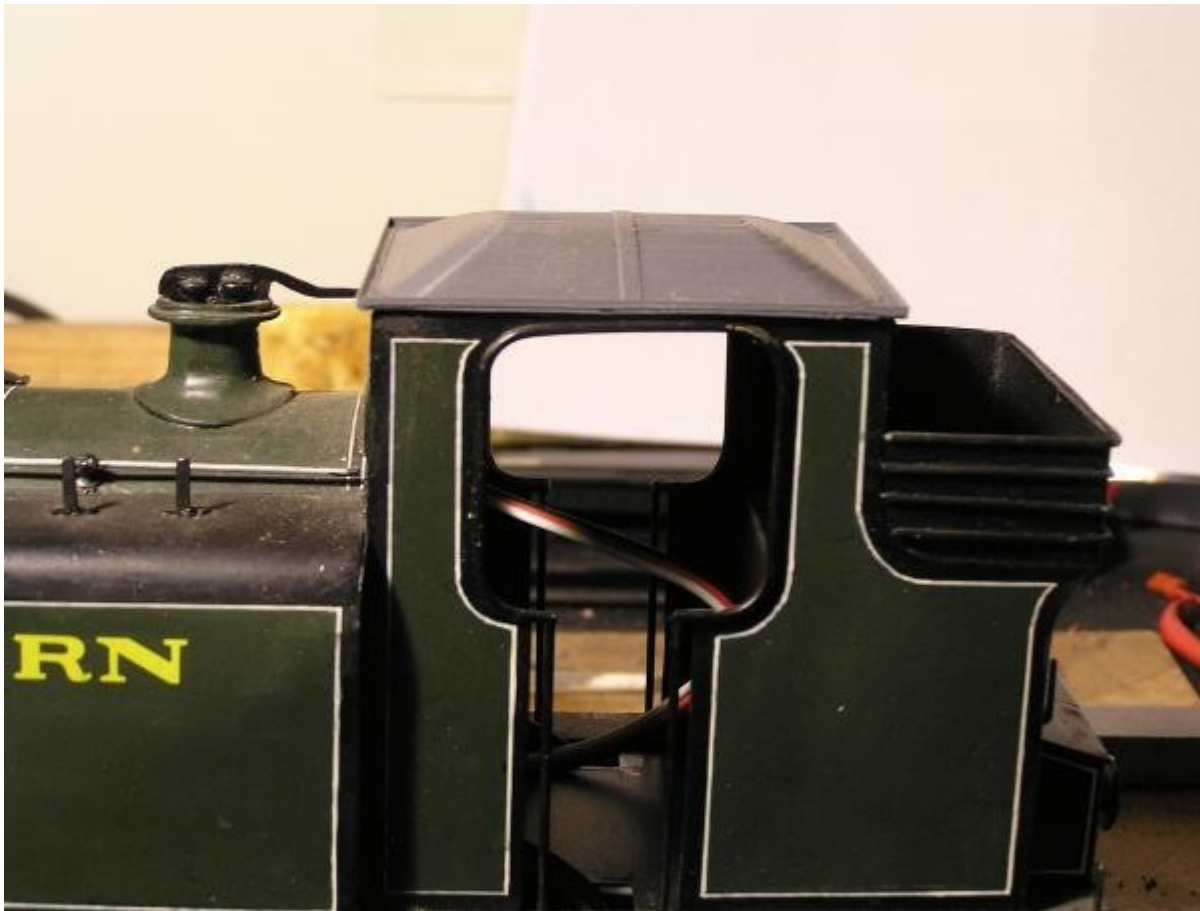
I had the basic dimensions from the General Arrangement drawings of the D1, but the angles of the front and rear 'slopes' I worked out by eye, as I did the curve radii. The nice thing about ViaCAD when drawing fillet curves is making them a sharp zig-zag and then filleting them at the corners into a radius. You can then adjust the radius by altering the setting in the data entry windows at the top of the screen. Once it looks OK, hit return and it sets the value in place, permanently. If you do not like it after that, there's always the 'Undo' command, and try again. With the front and rear slopes done, it only remained to put a curve around the four sides of the roof where it meets the gutter. The latter was formed of 1.5" 'L' angle on the real locos. I thought, I would have to do each side in turn, but to my amazement ViaCAD did all four sides in one go, and to the same radius. It curved the corners which I thought would be sharp, but thinking about it later, ViaCAD had got it right. Crumbs! This program's smarter than me!

That was it, roof done! All I did was check the drawing was OK for 3D printing, dump the STL file and print it. Rather than use the offline print with the micro SD card, I opted to do a USB print with the laptop connected to the printer, so that I could set and see all the temperatures were correct before printing started. It took about an hour to print the roof at 0.1mm resolution, and I could not





resist going to look at it every so often as it was being printed. I was fascinated by the order in which the printer was printing the shape of the roof. Sometimes it did parts in an order which looked wrong, until I saw it do the next bit. Ah! “So that’s why it did that”, was my usual thought.



The roof came out OK, and looked pretty good to me. It’s the only one I’ve printed, it looks the right shape and profile, in all directions. It’s complete with gutter edges, scale depth and thickness, and I’m very happy with how it came out. It required some hand finishing to get rid of the slight (0.1mm) ridges, as did the dome, for which I used a sanding tube on a mini-drill, and fine sand paper. Other than that there was very little additional work. So, I am a happy bunny indeed! In the end the cab roof was easier to draw and print than the dome which surprised me. I thought it would be the other way around.

Two views of the D1’s cab roof right after printing

## The 3D Printer used in this project

As mentioned at the beginning of this article, the 3D printer I used was the Turnigy MiniFabrikator v2, bought from HobbyKing, a Hong Kong based company better known, perhaps, for its radio control models and products. For the price, it is an excellent little 3D printer, but the support from HobbyKing varies from good, to not so good. For example, I found a problem with the print bed being warped, so I contacted them via their online chat, and after sending requested pictures and a short bit of video, they duly ordered a replacement print bed to be sent. This was at the beginning of December 2017, but it only arrived at the end of April 2018, nearly 6 months later, and it is missing the polyetherimide build surface to which the print models attach themselves. When I enquired, after a couple of weeks, they said it might take a while for a replacement to appear, so I decided to remove the print bed and see if I could correct it myself. This I did, and most of the problem seemed to be due to it being incorrectly adjusted, or the adjustment having shifted during transit which stressed the bed, warping it. Releasing the bed and leaving it undone overnight seemed to relieve the stress and it mostly corrected itself, although I did attempt to level it carefully by hand



as well. This was not as easy as it sounds, because it has got a thin heater element stuck to the underside which I did not want to damage. I checked the print bed with a straight edge (the blade of an engineer's square) and it was much better, so I re-installed it. It is mounted on four sprung loaded screws which I adjusted by equal amounts until it was at the correct position. This entailed running the printer with Repetier Host on my laptop, and zeroing the Z travel of the print nozzle until the correct clearance was obtained; given as the thickness of a sheet of A4 paper, as mentioned in the printer's instructions. I ended up using a 4 thou (0.004" / 0.1mm) feeler gauge as A4 paper can vary in thickness depending on its weight per square metre. The clearance check was made by positioning the print nozzle at each corner of the print bed and ensuring that it was the same at all four places. Once done I gave it a little job to do: printing a 40mm disc with a 6mm hole as a holder for the filament reel.

If there is one flaw in the design of the MiniFabrikator2 it is that it cannot hold a standard 1Kg reel of printer filament. I spent Christmas 2017 making a double shelf stand for the printer out of bits of old bathroom worktop and timber supports from an abandoned 00 gauge railway layout. The second shelf is in case I want to buy another printer!

If you decide to buy one of these printers, I suggest you get it from HobbyKing's UK warehouse, if you live in the UK, or whichever of their warehouses are closest to you. Why? Because of the shipping cost if you have to return it. On Youtube there is a video of a Dutch gentleman who also bought his printer from the UK warehouse, instead of the EU warehouse. He found his printer did not work. When he contacted HobbyKing UK, they were not willing to pay for the return carriage of 50 Euros, or for the carriage back to him. As 100 Euros was half the price of the printer, he decided to fix it himself. He found that one motor connector was badly soldered, and a second had two motor leads reversed. After that it worked OK, and he saved himself 100 Euros. Had he bought his from the EU warehouse, it probably would not have cost as much to ship back. Also note on their site that the printer may look cheaper from their US warehouse. But, do not be



tempted by the cheaper price from an overseas HobbyKing warehouse, in case you have to send it back half way across the globe!

The odd pricing may be a website error too. I found this when I was about to buy my printer. Selecting it on the UK site, it changed in price by £30, from the original selection to going to the checkout. HobbyKing only sell online, not over the phone, so when I pointed out the error they said the checkout price was correct. I cancelled the order before signing out, and went back 3 days later, to find it was even cheaper and that the selection price and checkout price were the same at £128 + delivery (about £10). I bought it quickly before they changed it, in case they had made another error!

On Youtube you'll also find three reviews by Dirk Herrendoerfer of the MiniFabrikator2, in which he gives it a good workout over three videos and he comes out suitably impressed. I must say that I have been impressed by mine too. I just wish that HobbyKing's customer support was better.

The running costs are pretty good too. I found that my printer was only taking 50 watts to print models in PLA at 215 degrees C. On peak rate electricity, that worked out at less than 1p per hour! The dome weighed in at 20 grams, and even using the more expensive filament, from Philament, that came to 0.65p. Around 1.5p to make a dome for a Gauge 3 loco (excluding the cost of the printer), 'You do the maths' as they say in a well known car advert!

There are other low cost 3D printers on the market, but the specification for this one with heated print bed, operation in 'stand alone' mode, by direct connection to a USB port, or by Wi-Fi (if you have a 64 bit Windows PC), is remarkable. There is perhaps, room for improvement in the Turnigy quality control department, but if you have got a working machine like mine, it is quite amazing what can be achieved. Set at 100 micron (0.1mm) layer height, it produces parts which need little extra work to finish. There are machines such as the Ultimaker 2+ which will operate to 20 micron resolution ( 5 times finer), and come with two print heads, but they cost in excess of £1500.

It would not surprise me if the market began to segment in time to sub £500, sub £1000, and sub £2000 3D printers. It has been said that the 'big boys' such as Apple, HP, Canon, and Epson, are showing interest in 3D printing. If that's true we are likely to see the price of machines coming down, whilst they make money out of the consumables i.e. filament, as they do with 2D inkjet and laser printers. Home 3D printing could be the next big thing now that the sales of smart phones has peaked. As they (used to) say in Fleet Street - "Watch this space!"

## **Conclusions**

Is 3D printing cheating? Is it de-skilling the hobby of model making? I would say 'no', on both counts. Why? Because it still requires skill to draw the model, though not so much to make it. It's transferring skill from making to designing the model. There is one big advantage to 3D printing - It becomes possible to make models that will probably never appear commercially, because a commercial producer will not see a return for their efforts. That's very true of a specialist group such as the Brighton Circle, modelling the LB&SCR. Hornby produce the Terrier in 00, and so do Dapol in 7mm scale, but will they ever produce a Saxby and Farmer signal box of the type found on the LB&SCR? Probably not. But with 3D printing, it opens up a whole new load of possibilities as to what models we can have.

It might not suit everyone, I have a friend who almost freezes at the sight of a computer, even though he deliberately bought one faster than his son's just to wind him up! However, give him a sheet of steel and a MIG welder, and he can conjure up something in metal that is quite amazing, just from a quick pencil sketch on a piece of paper. Each to his own. There will always be people who amaze the rest of us and produce models like that, purely by hand.

I for one can see a bright future, and the chance to obtain models of which I previously only daydreamed. I have wanted a Gauge 1 model of Class L Baltic tank 'Remembrance' for some time. Now it is a distinct possibility I could make one. It would be nice to do it before 2022, its 100th anniversary.



The dome and roof painted and fitted to the loco



Finally, I'd like to say 'Thank you' to the two lads, White and MacCormac for their assistance with G.A. drawings of the D1 tank loco and for Ian MacCormac's STL file of his Stroudley cab roof which although I didn't use, did indicate I was thinking along the right lines. Also, to Gerry Nichols for the pictures he had taken of the cab roof of Terrier 'Boxhill' at the NRM. They were most helpful in solving a mystery, or two, of the Stroudley cab roof.

## References and Further Reading

*Sketchup 2014 for Dummies* by Aidan Chopra, published by J. Wiley & Sons. ISBN 978-1-118-82266-1 Regularly updated so look out for later versions, but this version is still useful with Sketchup 2017.

*Google Sketchup - The Missing Manual* by Chris Grover, published by O'Reilly Media Inc/Pogue Press ISBN 978-0-596-52146-2. As above, always look for an updated version.

*3D Printers A Beginner's Guide* - Oliver Bothmann, published by Special Interest Model Books Ltd. ISBN 978-185486-274-7. A good book, but some software mentioned in the text is no longer available free. However, it does give good advice in setting up a 3D printer with various slicers, and control host programs.

<https://uk.rs-online.com/web/generalDisplay.html?id=our-services/designspark>

Web address for RS Components free Designspark CAD software, which is great if you've got a windows PC, and I haven't!

<http://www.punchcad.com/trial.aspx>

Web address for the PunchCAD 14 day free trial of ViaCAD Pro 10 3D drawing software which I used for the dome and cab roof design of the D1 tank loco. It's available in PC and Mac versions.

[www.hobbyking.com](http://www.hobbyking.com)

Web address of the company from whom I bought the MiniFabrikator2 3D printer.

# Lewes Second Station

## - Leighside Access 4mm Scale Model

David Rigler

My past articles have all been about virtual modelling of the second Lewes Station (1857—1889). The last CAD model of the Leighside access interested me so much that I decided to create a 4mm scale physical model. This will probably take quite a while but I thought it might be of interest to see the start with maybe updates in subsequent (many) journals.

This is not my first venture into modelling Lewes, I have an almost finished model of the main station building and a half complete refreshment building. Neither have been worked on for many years. The main reason for this being the slow realisation that, as usual, I had bitten off more than I could chew and would never have the time or space to complete the whole thing (How many of you recognise that!)



The starting point for all my models is a solid and stable base to work from.

As this model is quite large I have created a join between the approach bridge and the building so that the two can be worked separately without being too unwieldy.



Tacked down to the base are the structure plan shapes in plasticard, around and on which the walls are attached.

The basic construction will be in plasticard with photorealistic brick papers solvent welded to it.





As I already have the CAD model it is efficient to print off elevations to precise scale, tack them to the plasticard with solvent and cut directly through them. This saves a lot of time marking out of windows etc.

The paper is then easily peeled off again with the application of a bit more solvent.



It was easier to add any protruding stone work detail before assembling walls together.

One tool I have treated myself to this time is a miniature block plane by Veritas. It is excellent for putting clean chamfers on the edge of plasticard or just forming a true 90 degree edge.

This is not a toy and unfortunately not cheap. I justified it on the basis of my other hobby of woodworking. (You may have to think up alternative excuses!)



Three views of the model so far. Apertures and corners need to be cleaned up before applying brick papers / paint etc.

Still much to do, but a start.



Photographs copyright David Rigler

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# Blatchington Mill meeting

Mike Waldron

The first, and most enjoyable railway get-together I manage to attend each year took place on Saturday 17th March 2018. Despite the original inclement January weather being the reason for changing the date from January to March, it snowed! Ironic.

What accompanies this brief piece only partly illustrates the sheer enjoyment of such a day. You can't photograph, or even write about those gems of conversations, reminiscences, shared tips and hints exchanged - but you can often head for home with few goodies to put the icing on the cake! Those who weren't able to make it were missed - not least those of advancing years or faltering health. Our best wishes to you all.

It was a good turnout, with the far-flung corners of the LBSCR modelling fraternity represented by our furthest-west member - Mike Watts of Ajax, Ontario, Canada - present in person, complete with a display stand of his S scale Locos and some stock. He had even further to travel than the old Southdown No.31 coast bus! Ian from Blackpool had to settle for second place this year!

















Richard Barton made a brief appearance with his beautiful S scale Terrier 'Bodiam' in K&ESR blue livery. This was, apparently, a rare S scale kit!

Also on show were several lovely 7mm Terriers - including Peter Wisdom's 'Beulah', and his second Terrier - 2-4-0 in works grey with accompanying Marsh Balloon trailer carriage, along with three others - 'Kempton', 'Thames' and also 643 in Marsh Umber, also with its own Balloon trailer.





The suggested E tank line up was slightly thin on the ground (my 3 4mm E1s - Durdans, Brindisi and Trocadero or Versailles aren't completed as yet) - however those that were brought were beautiful representations; there being a 7mm E1 no.100, as well as E3 no.165, both beautifully presented in Marsh black lined red goods livery. I suspect these were Colin Paul's, as they were right next to his crane, which we are very familiar with, as it has been most fully described in recent Digests.







An excellent pair of Tyers block section units were on display, beautifully crafted by Phil Taylor, even incorporating two of my EBM slotted post signals as the indicators! Happy to help!







Eddie Carter's 00 gauge IOW Billinton carriages demonstrated the ancient art of 'kit-bashing' with a 4 carriage set, and an extra brake with two compartments, compared to the others with three, which, he later discovered, was built to plans of one built to house the Stroudley carriage electric generating system.







## Exclusively Brighton Models - EBM - [www.mjwsjw.co.uk](http://www.mjwsjw.co.uk)

### New availability

4mm scale kits for the

Diagram 54 Covered Carriage Truck 14' long – see etches, castings and instructions.

Diagram 51 Dead Meat Van 22' 6" long – see etches and castings, instructions now being tackled.

Umber Passenger Loco lining & Lettering – see sample on ordinary paper. Will be digitally printed by Wessex Transfers (of Tasmania) – same as has been used by Eric Gates and Guilplates in past years – as a waterslide transfer. The A4 sheet should work out at below £20 incl postage to you from sunny Blackpool. Approx one month from now.

7mm scale etches for the

G class and Grosvenor are being drawn from the 4mm etch drawings. I am test building Grosvenor at present.

Umber Passenger Loco lining & Lettering – see sample on ordinary paper. Will be digitally printed by Wessex Transfers (of Tasmania) – same as has been used by Eric Gates and Guilplates in past years – as a waterslide transfer. The A4 sheet should work out at below £20 incl postage to you from sunny Blackpool. Approx one month from now.

Stroudley Passenger Loco lining and lettering, and carriage lettering and numbers has now been started.

Awaiting completion of test etch building, casting masters, castings, instruction, etc:

Early Pullman Car in both 4mm and 7mm scale



### E. B. Models Stroudley Covered Carriage Truck Diagram 54.

**Introduction:** This kit is derived from a vehicle for which there is a simple drawing, but of which there are no known photographs. Therefore the details are drawn either as per the drawing, or presumed, based on kindred types of vehicle. In the case of the underframe, it is taken from the Stroudley Horsebox.

I must pay tribute to Simon Turner, of the Brighton Circle, who drew it up originally, and from which drawing I have derived this kit. Also my thanks are due to Ian White, also of the Brighton Circle, who generously lent me the original drawing – one which, I believe, may shortly be due to be included in a forthcoming book on LBSCR 4 wheel vehicles.

As always, my thanks are due to the members of the Brighton Circle, whose encouragement, have given rise to all the kits I have produced, and whose help and advice, when it is most costly to correct is magnanimous to a tee. Thank you, ladies.

Wheels and couplings are not included – those of the Stroudley Covered Carriage Truck are from the Chatham kits c/o Roxey Mouldings.

#### Construction:

As is usual with



1. ...
2. ...
3. Remove the body ends, 7 & 8, and clean up. Fold the ends of the inner solebars outwards at 90° to butt against the lower body ends. They should be flush with the side edges of the ends, when later soldered in place.
4. Remove the body sides, 9 & 10, clean up and carefully bend the long roof location tabs inwards, to align exactly with the curvature of the ends. (Bending bars would greatly assist here, though you could use two strips of wood protecting the brass in a vice of suitable capacity.) Make the bend with the support of a steel rule. Slightly too much bend is better than not enough, as the roof will not sit down properly under the latter conditions. There are tiny protrusions at the 'apex' of the curved top edge of both end panels, which locate later into the small



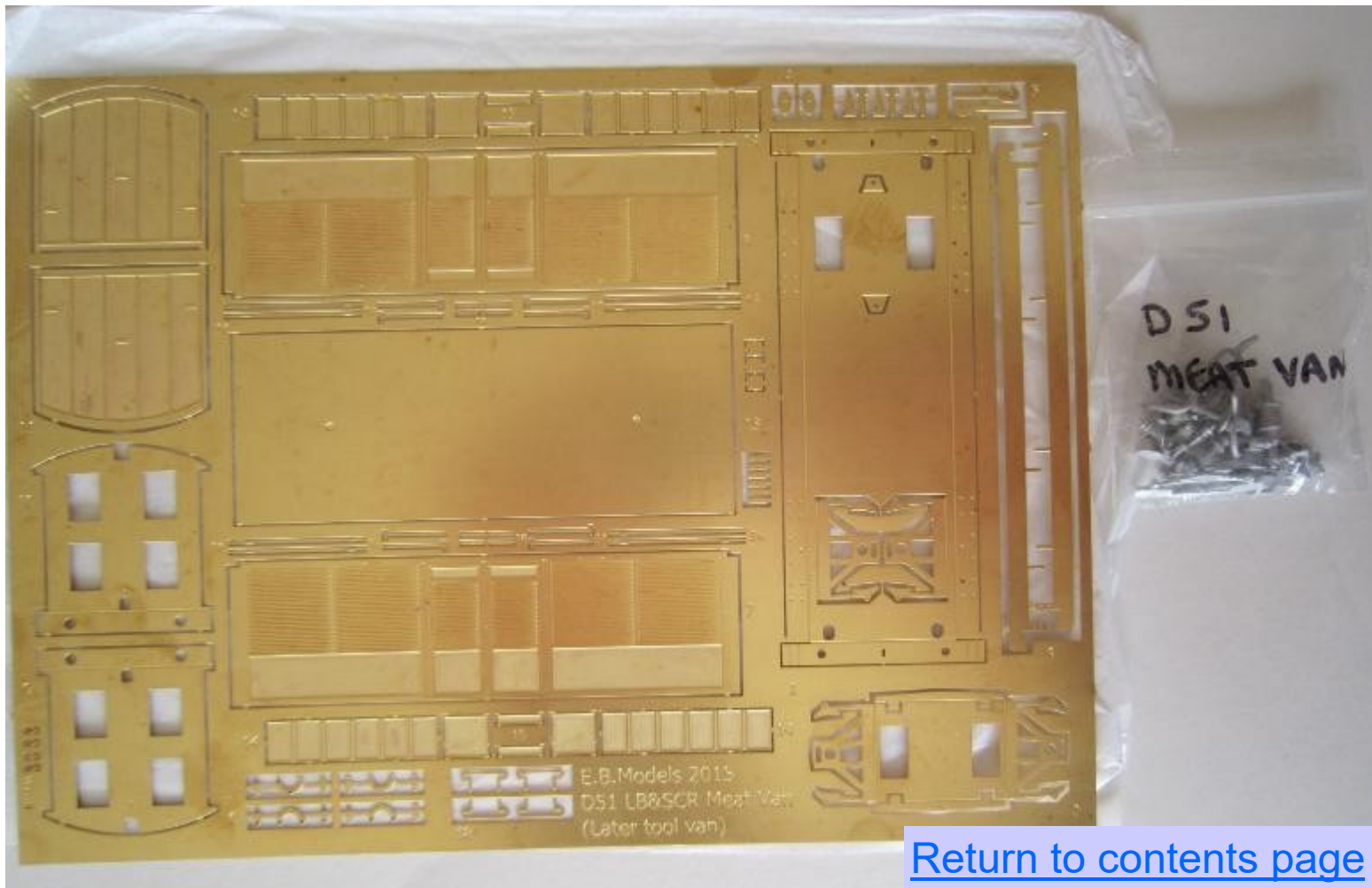




Oh and one or two examples of EBM items put in an appearance - from now on he has the heavy bag to bring to Blatchington and the AGM!

A personal thanks for not only keeping things going, Ian, but also developing so much brilliant extra material! You LBSCR modellers never had it so good, as someone once said!

The day was most enjoyably rounded off with Barry Luck's comprehensively illustrated account of both the rationale and outline of how his latest layout Plumpton Green was built - inspirational in every way, with many tips and hints offered to be picked up along the way.



Thanks Barry - your many efforts over the years, and layouts shown around the country, continue to bear witness to the attraction of 'The Brighton'.

Our grateful thanks are also due to Peter and his wife Dolcie for the organising of yet another great Circle occasion with its usual wonderful luncheon spread! So much appreciated by us all. Thank you both.

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# Pulborough

- best in show Scalefour North

Scalefour North was held in Wakefield over the weekend of 14th and 15th April and Pulborough was voted best layout in show. This constituted an impressive “double” as the same team won the show with Plumpton last year!

Congratulations to Barry Luck and the Mid Sussex 18.83 group.

Ian White was at the exhibition and took the following photos, which highlight the magnificent level of detail throughout the layout - even before you get to the rolling stock!



















Photos copyright Ian White

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# Travelling Hand Crane No.19 Part 6

By Colin Paul

## Painting and Lettering

Until this point, the axleboxes and leaf springs on the underframe were temporarily held in place with doublesided tape. It is amazing how long they survived in situ. I had expected them to part company long ago, but obviously not. All were removed, cleaned of tape residue with white spirit, and Araldited back in place. The centre axle also required attention, as it was merely floating up and down with only the weight of the wheels and axle keeping it on the track. Although the weight was sufficient, a small springy wire was added (which was attached to a piece of square rod soldered on the underside of the decking) acting on the centre of the axle. The weightbox could be moved backwards or forwards for simulating the crane in either a working or travelling position. If in the travelling position, there was an annoying hole in the base of the crane body which could be seen which did not look very nice (a design fault with the position of the box in the travelling position). Only I knew it was there. The solution was to fix a small 'L' bracket on the bottom of the box pointing outwards covering it up. This to me did not look very nice so it was removed. This then showed the hole once more. In the end I decided to fill it in with a small round brass plug and soldered it in position. So now, reluctantly, the crane cannot realistically be shown working as the box cannot sit flat on the runners. And, lastly, the Laurie Griffin coupling hook required six specially made homemade 0.8mm nickel silver links as the buffer shanks were slightly longer than usual. They were later "oil quenched" (heating the links up to a cherry orange/red colour, then submerging into motor oil) giving them a translucent blackish hew, requiring no painting.

Its final viewing was at the recent Brighton Circle's 2018 Spring Meeting in Hove, where fellow modellers and members of the Circle could see it. Although the model has been well documented and photographed over the years (Parts 1 - 6, Modellers Digest Issues 2-5), they have shown the materials used on it from nickel silver, brass, the 3D printing of the gearwheels, pulleys, pinions, and axleboxes etc. Eventually all would be hidden from a layer of LB&SCR Goods Grey livery (Humbrol No.27 Sea Grey in this scale). Anybody seeing the model finished for the first time would think nothing of what is lying underneath, hiding many long hours of hard work in fabricating the items from scratch.

From the outset, the model had been designed so that individual items can be added as the project progressed. But more importantly, they could easily be taken apart for final painting. On past models that I have built, some items have had to be kept on and painted around. This time, I did not want this to happen. With the large openings in between the spoke of the gearwheels, I wanted the outside of the frames devoid of grime.

From extensive testing over the latter part of 2017 with the newly completed brass jib fitted, no problems arose in any areas. Its last run was at Mike Cruttenden's garden railway open day in September 2017.

So finally after nearly 4 years (has it really been this long?), the time had come to actually paint the model. It was finally stripped down for good in March 2018 into its individual components, which was very hard to stomach, but it had to be done once and for all. On previous models I have felt exactly the same way; no doubt other modellers feel the same. The first thing was to remove the decking and keep the footboards in situ. It had been designed to slide in underneath the brake lever bar and secured in place by four 12BA cheesehead bolts and nuts. All of the items were carefully checked over for any imperfections and cleaned appropriately. I was amazed to find quite a number of solder seepages from joints that required attention especially in and around



corners of the rivet strips. Up until then, I thought the model was squeaky clean after every modelling session. Obviously not. The underframe and jib took an amazing eight hours (minimum) of de-soldering and cleaning. Getting inside the jib's sideframe was the trickiest, as there was not a lot of space either side of the inner frames and cross members. It had to be cleaned because it was in a terrible grubby state. A specially designed tool was made to hold a worn out glass fibre stick (at an angle) on the end which made it easier to clean. In the end after many hours, all of the sub-assemblies were washed, dried, and wrapped up in tissue paper to stop any oxidation.

## Painting

All of the items were then masked off (where applicable) and primed using Halfords Grey primer. When the crane was delivered to Brighton in 1904, it was presumably painted in the standard Goods Grey livery (\*1) as it was the responsibility of the Goods Department. So this is what I finally decided to paint it. When completely dry (a day), the parts were then

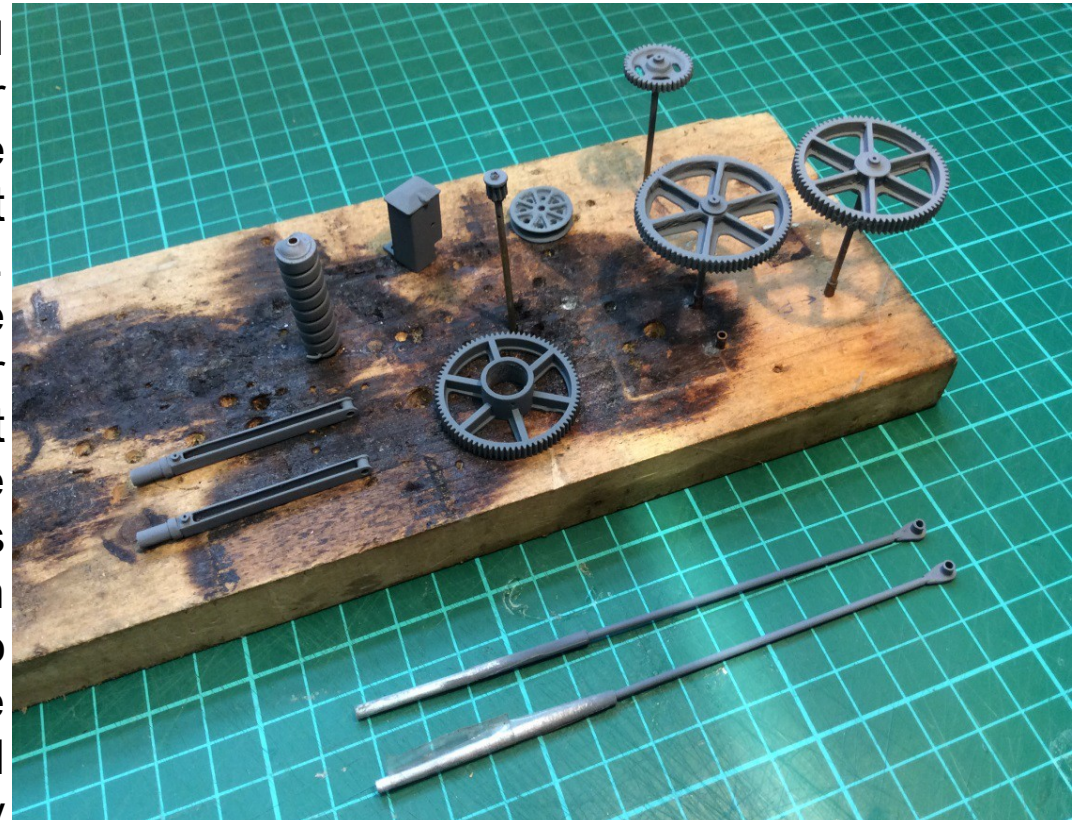


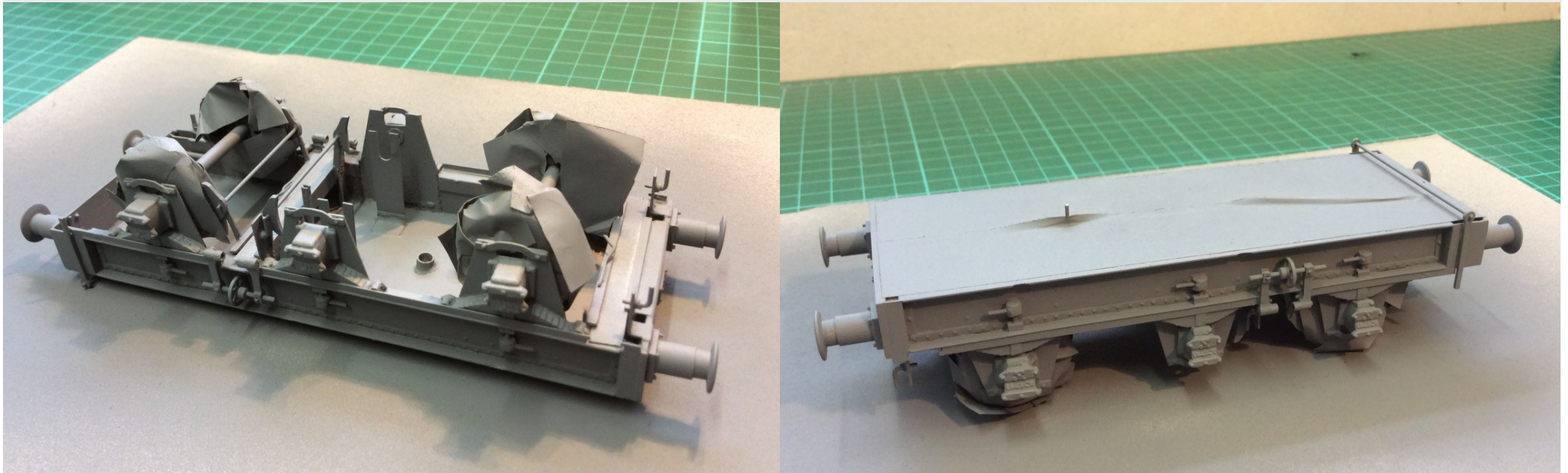
Photo 1

The individual items having been washed and primed (Halfords Grey primer), are now drying after been given a spray of Humbrol No.27 Matt Sea Grey. Only one chain pulley wheel (in the centre) can be seen. The reason is the other one could not be removed easily from the jib itself for some strange reason. The two long jib stay rods still have masking tape around the shafts of the steel rods which were soon removed.

sprayed using Humbrol No.27 acrylic spray (AD6027) which dries very flat matt with no spitting. The finish is as good as that from a spray gun. No.27 is a close match the Halfords Grey being very slightly darker, but not by much. At quick glance, you'd be hard to see the difference. When completely dried (another day), all masking was removed. Some of the axles for the gearwheel and pinion cross shafts required removal of paint so they could pass back through the sideframe axle holes which would be repainted at a later date after fitting.

### Photos 2 and 3

After cleaning up, the six axleboxes and leafsprings (3D prints) were properly glued in place using Araldite. The underframe was then masked off around the wheels including the top. The two guides for the supporting beams were also masked off within the slot. Just visible underneath the right hand brake pull rod in Photo 2 is a small rectangular piece of tubing sticking up. This is for a springy wire to be inserted for the centre axle to float up and down. It worked perfectly before being painted. The reason I decided to keep the buffer heads in place prior to painting was because the ones fitted on the jib end were a pig to get at for removal. So I left them on. They still work perfectly well even after painting.





All ironwork, including buffer shanks, drawbar backing plates, W-irons and axleboxes, brake blocks, supporting struts, wheel treads and axles were painted Humbrol No.33 (Matt Black). The wooden decking piece was left unpainted matching the match truck.

(\*1) As stated in "An Illustrated History of Southern Wagons OPC Vol.2", Plate 121, Page 72. The photograph indicates a very light colour presumed to be grey.

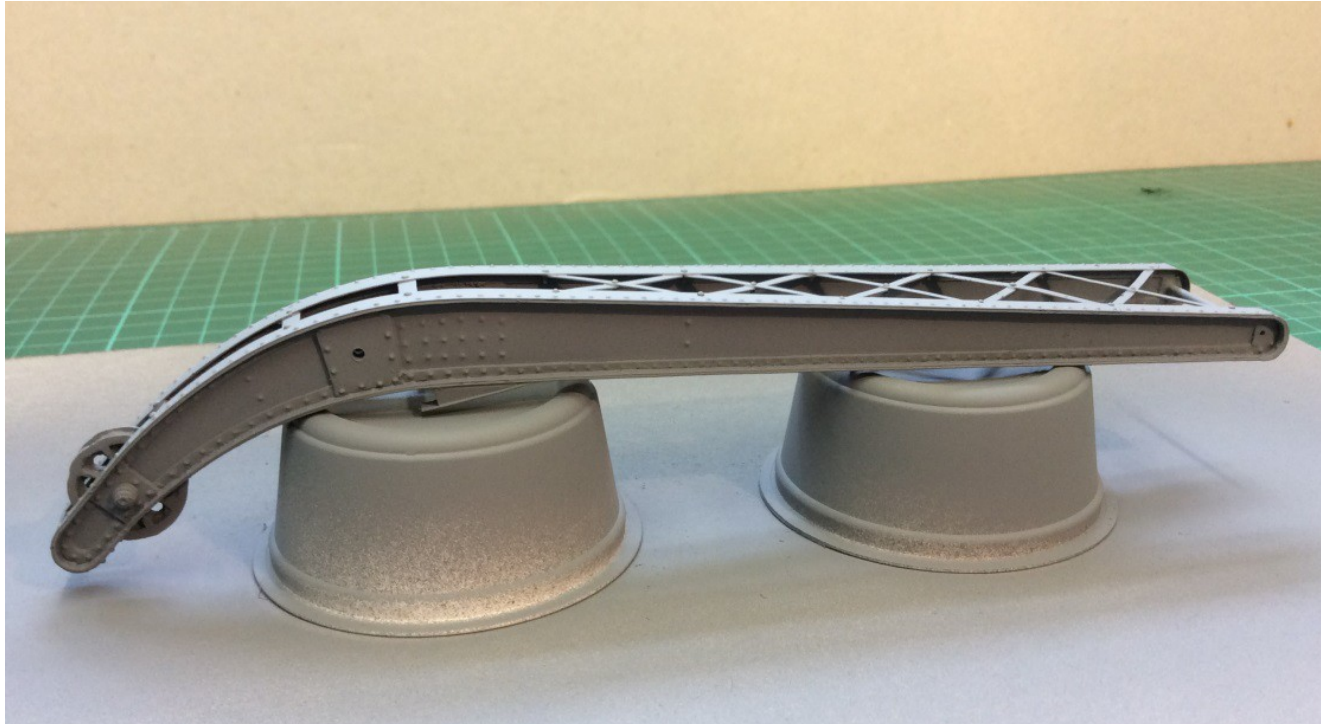
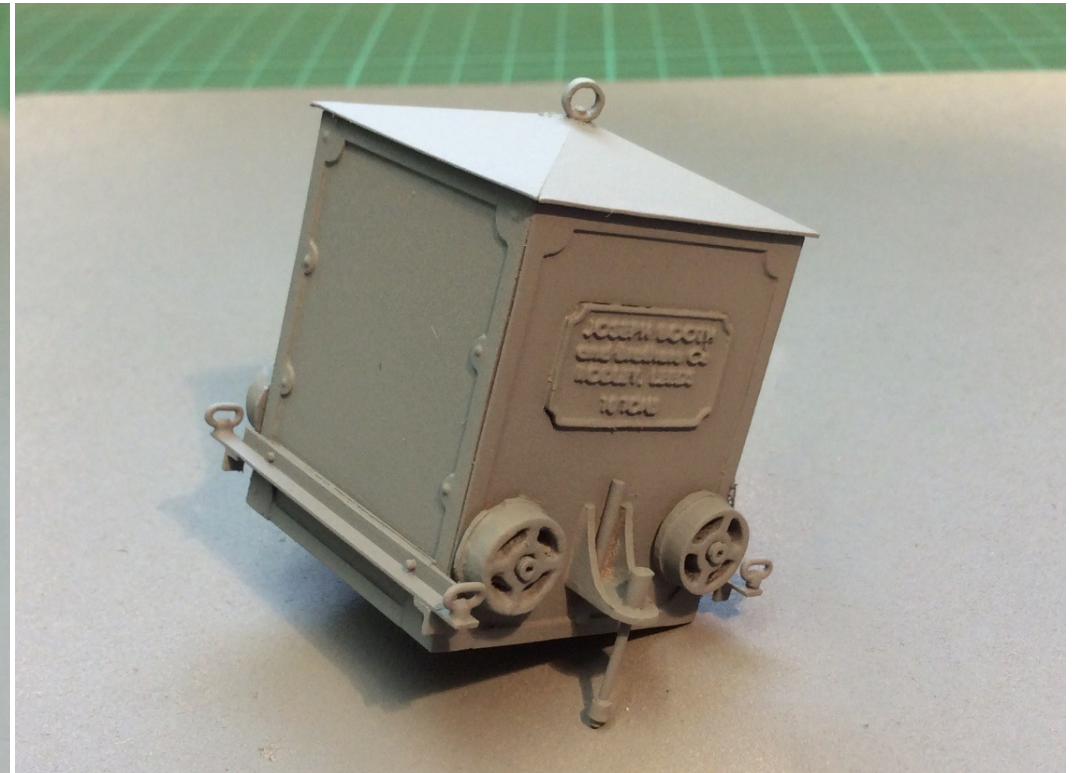


Photo 4

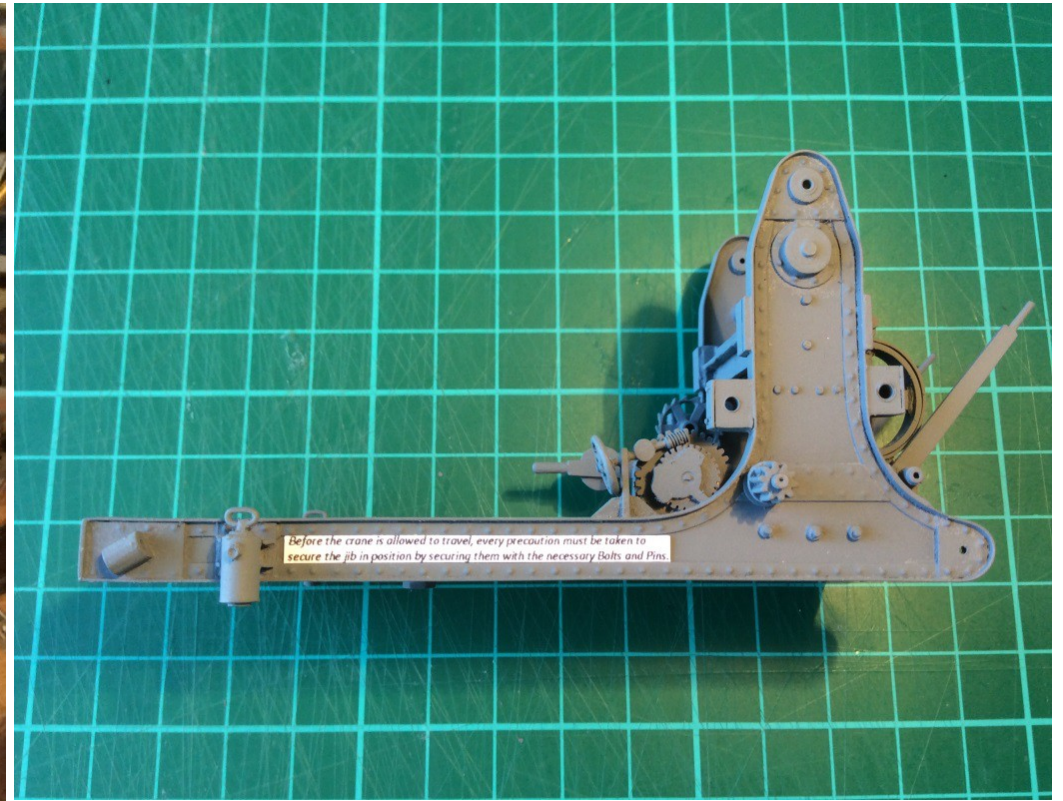
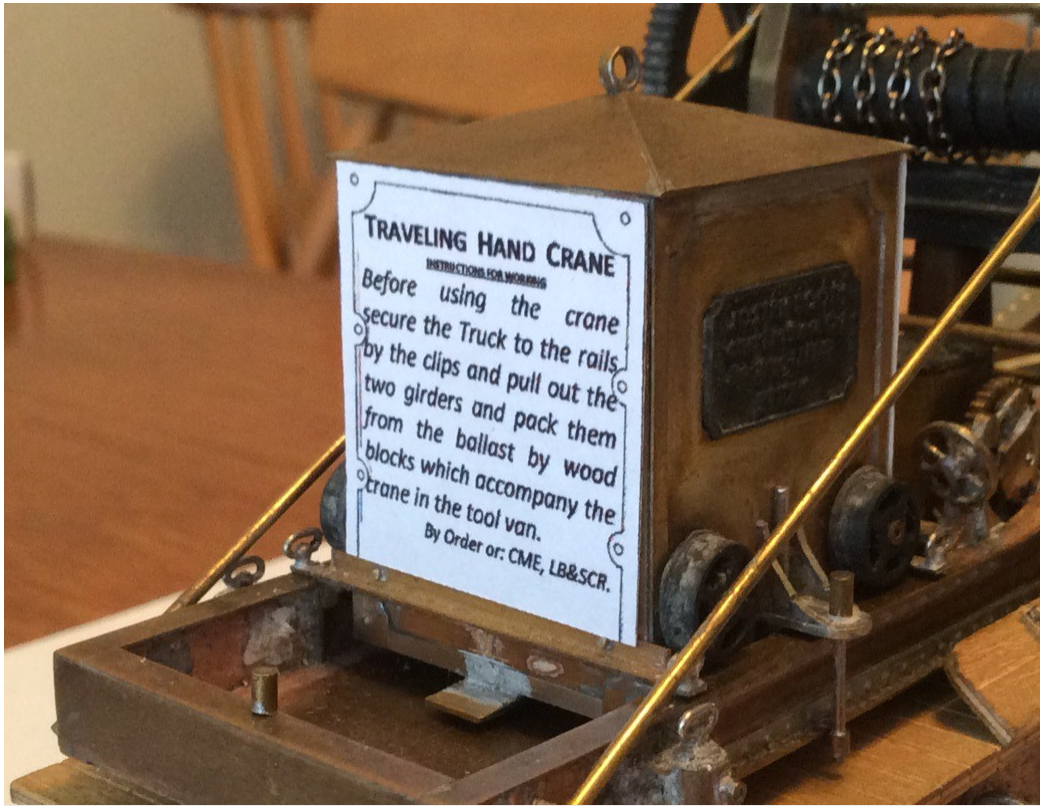
Surprisingly all of the rivet detailing can still be seen after painting on the jib arm. This is evident on the rest of the crane. I thought many times some rivets would have been filled in with paint. Also shown is the stubborn chain pulley wheel that could not be removed. For some strange reason the axle was a very tight fit anyway with possibly a burr on the end. As it could be rotated, the paint covered all of it on both sides.



Photos 5 and 6

Two views of the weightbox which were not the easiest items to paint or photograph. The wording on the manufactures plate still shows up well, though some of the letters appear to have filled in slightly especially around **B**, **O**, **Rodley** and **10**. This is not paint, but from the 3D printing process. After final lettering, I will dab some blobs of black paint giving them a hint of shadow and raised letters again. You may also notice small areas of flange on the pulley wheels are missing. This is intentional and allows the removal of all four the axles and wheels from the box for maintenance if required. When I fitted the four lock down screws (hand loops) on the ends of the `L` sectioned brass, the flanges fouled them slightly. When finally reassembled, the wheels will be turned around facing the bottom out of view hiding missing flanges.





Photos 7 and 8

The weightbox on the official photo of No.19 along with SR No.307s(\*2), have wording inscribed onto the outer and inner recessed panels in white paint. Both are slightly different. Here I am only concerned with No.19. The information I have come up with can be read in the main text (also see drawing Figure 1 on following page). The main criteria was that **TRAVELLING HAND CRANE** had to fit within the recess area. The second criteria was to fit in seven lines of text below it, with a shorter line on the bottom. Through trial and error using different sizes of text, I was able to fit it all in. A copy of the panel was drawn to scale, then the text cut and pasted on. After printing off, it was cut out and placed in position as shown in Photo 7. To my eye, it fits perfectly and looks exactly like the photo. The other area of wording ***Before the crane is allowed to travel*** etc,

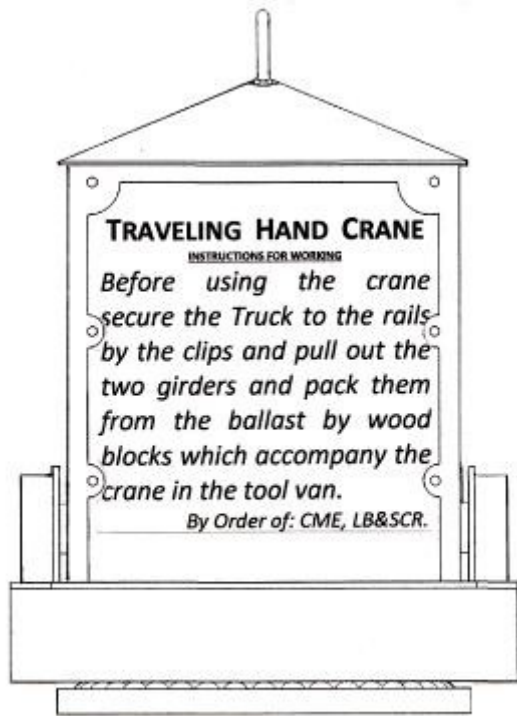


FIGURE 1

can be seen on the moving crane bodyside partially hidden by the raised footboard. It is not known how long the actual lettering travels behind the footboard. Again it was trial and error with the size of lettering. It was again printed off, and placed in position. A representation of wording on both is better than none at all. Hopefully in the near future, one piece transfers can be produced that fit within these panels. Since the photo above was taken, the small rectangular plate projecting out from the bottom edge of the box has been removed. It covered a small hole on the base of the crane body which has also been filled in.

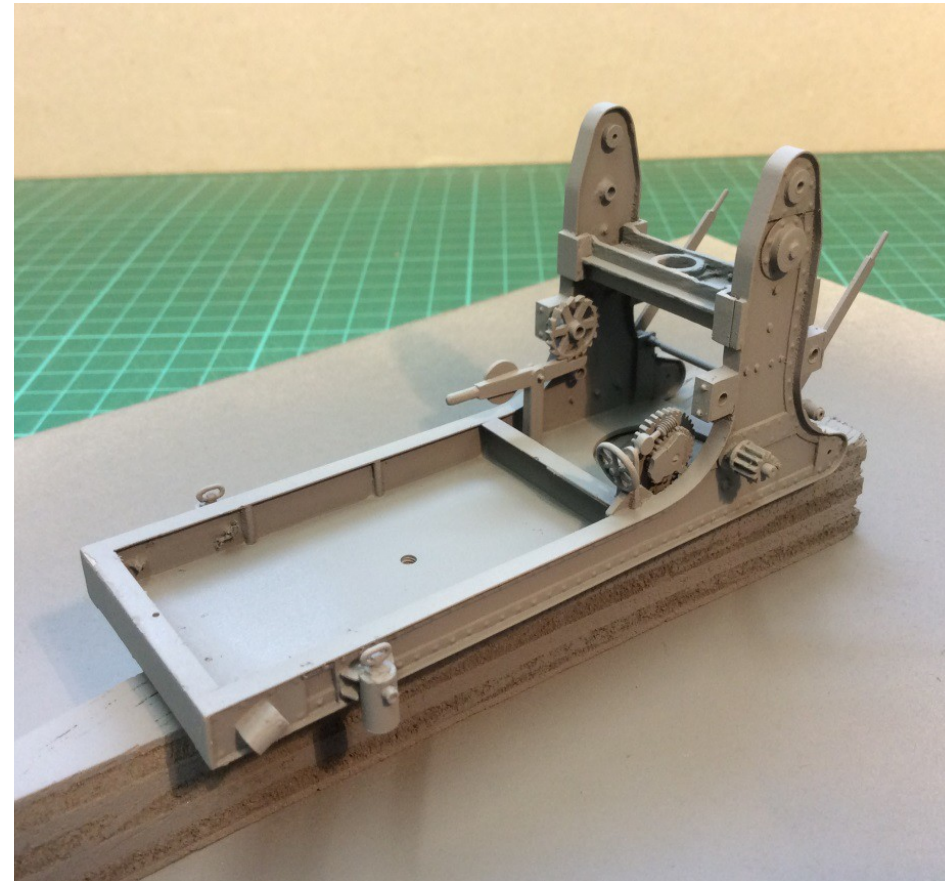
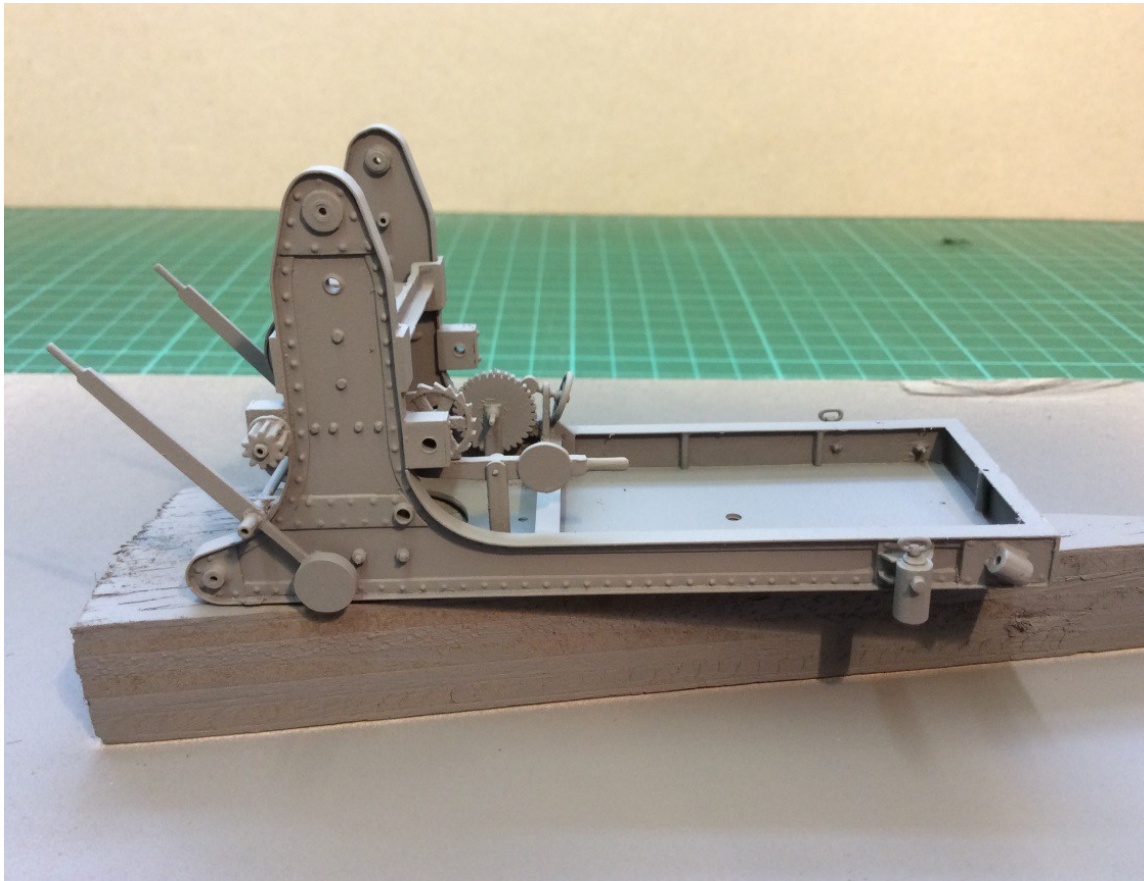
(\*2) An Illustrated History Of Southern Wagons Vol.2 (OPC), Plates 121, 123, and 124.

Photo 9

The tapered central column on which the crane body turns has been painted. It was not until the crane was put back together that I noticed the top of the unpainted base showed through the open areas of the slewing ring. Before reassembling, the base of the column was painted. There are two holes clearly shown. The one in the base locates onto a pin on top of the decking that can be seen in photo 3. Firstly, it is to stop the column from revolving if the securing screw underneath the frame should ever work loose. And secondly, the hole in the tapered column lines up for the securing pin of the slewing ring. Lastly, the bottom of the column required a packing piece of 30thou (0.75 mm) Plastikard (white in colour) fitted to give the crane body slightly more clearance from the bottom of the two screw down hydraulic jacks above the decking.







## Photos 10 and 11

The crane body took many hours cleaning it up prior to painting which has paid off with no blemishes to be seen. There was quite a lot of crud in and around the mounting for the hydraulic jacks and within the frames themselves which had to be cleaned. Barring the removal of the winding drum, two gearwheel axles, a pinion axle, and the gearbox housing (for the slewing ring mechanism), the rest of the items were constructed onto the frame. The two long brake levers were, and still are, very vulnerable to damage. Care was taken not to handle the frame too much.

For some strange reason, the LB&SCR had decided not to use conventional sized lettering for the crane, especially on the sides of the underframe and the weightbox. They appeared slightly smaller in height and slightly wider than they would normally be, but not by very much. Working out their size from the official photo of No.19, I could not easily find suitable letters on any of the HMRS Pressfix transfer sheet No.13 in both 7mm and 4mm scales (SR wagon insignia with LSWR, LB&SCR and SECR). What letters are available were either slightly too small, or slightly too big on both sheets. This left me in a quandary as to which ones to use. In the end, the slightly smaller ones were picked.

**L B & S C R**  
**No.19**

on the sideframes of the chassis was tackled first, being a relatively easy job to start with. On the camera side, the extreme outside edges of the **L** and **R** letters had to fit within a pair of vertically positioned rivets (20mm apart on the model). In reality, these rivets would have attached part of the large W-irons onto the inner face of the solebars. Spacing the letters out was quite easy, as was the **No.19** positioned directly underneath.

*Return To  
Newhaven*

The inscription on the extreme left hand end in italic letters reads: .

which can just be deciphered. When first delivered in 1904, No.19 was based at Newhaven (it is not known if it was moved to another shed later). This led me to the first area of concern. Do I attempt to hand paint the letters on the side, or try and apply individual letters? The latter was preferred from the outset as I am not confident in using a lining pen. A sheet of HMRS Private Owner Wagon Lettering (Sheet PO7) was obtained, with 1.5mm high italic lettering which seemed suitable. Each character was painstakingly cut from the sheet and applied individually. There are very slightly too big which I can live with. The next size down appeared to be way too small. The other side was copied but not mirror imaged.



The height of the **L B & S C R** letters on the weightbox sides were chosen at 2mm high. Again, these were very slightly too small but had to fit in between the radiused corners of the recessed area and the top of the makers plate.

On the inner and outer faces of the weightbox, lettering can clearly be seen. The top line definitely reads: **TRAVELLING HAND CRANE**. Below is a very faint line with the words possibly reading as: **INSTRUCTIONS FOR USE**. Below this line are seven rows of lettering. Corresponding with Ian MacCormac, he found a view of a MR Crane with similar wordings as set out below. I came up with plausible wording which reads:

Figure 1 (3 pages previously) shows the artwork I have prepared which closely resembles the layout from the photograph.

On the sides of the crane body partially hidden by the raised footboard (camera side), two rows of tiny italic wording can be seen. These too cannot be deciphered. My chosen wording for these are as follows:

*Before using the crane  
secure the Truck to the rails  
by the clips and pull out the  
two girders and pack them  
from the ballast by wood  
blocks which accompany the  
crane in the tool van.*

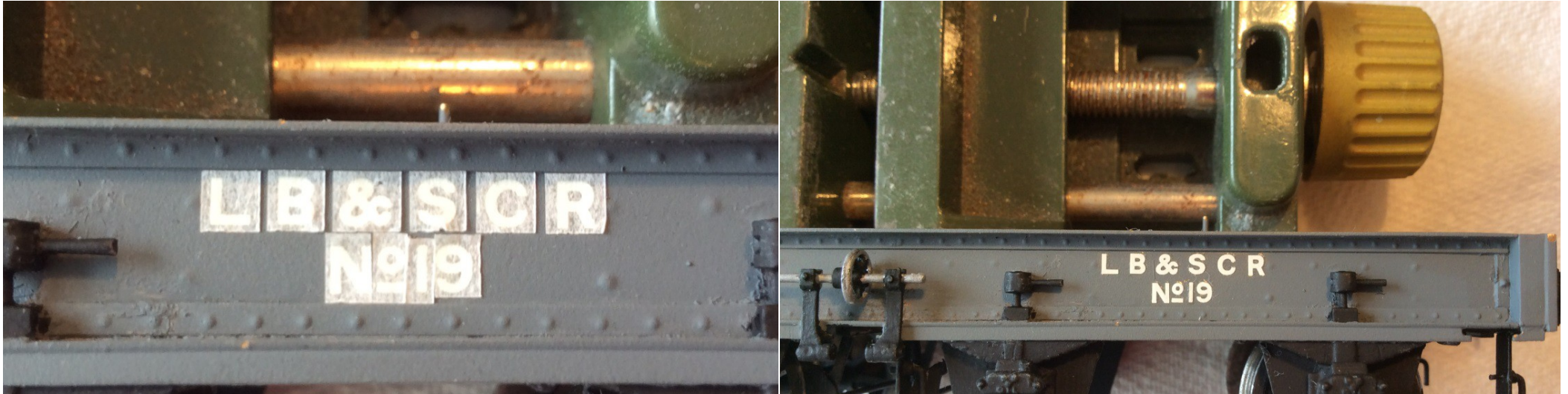
*By Order of: CME LB&SCR.*

*Before the crane is allowed to travel, every precaution must be taken to securely  
`Lock-down` the jib in the travelling position with the necessary Bolts and Pins.*

Both of my wordings above could be completely wrong. As there haven't been any new views of the crane that have come to light, I am happy to go along with them.

As Ian (of EBM MODELS) is producing sets of transfer lettering sheets for LB&SCR locomotive and goods wagons, he was approached to see if he could help in commissioning me the above

transfers for the crane. In principle he said he could. Remember, these characters are between 1 - 1.5mm high. Both the weightbox and side lettering will be on `one transfer` each. Both will fit within their corresponding recessed areas for a snug fit. When produced, they will be positioned on the crane. Sadly they are too late for inclusion here and will have to wait to be shown in another Modellers' Digest.



Photos 12 and 13

After the ironwork of the underframe had been painted Matt Black (Humbrol 33), including the outside face of the wheels, it was time to start lettering. Firstly though, a new HMRS 7mm sheet No.13 was purchased as my old sheet was life expired. Photo 12 shows a rather crude close-up of the positioning of **L B & S C R** letters prior to removal of the backing paper. As mentioned in the text, the outside of the letters **L** and **R** had to fit within two vertical rows of two rivets (which can just be seen) as shown in the official photo of No.19. The rest of the letters were spaced out accordingly as shown. The small vertical pin that was mentioned in Photo 10 can clearly be seen protruding out from the top of the flat top. The hand vice is purely there to support the frame to work on.





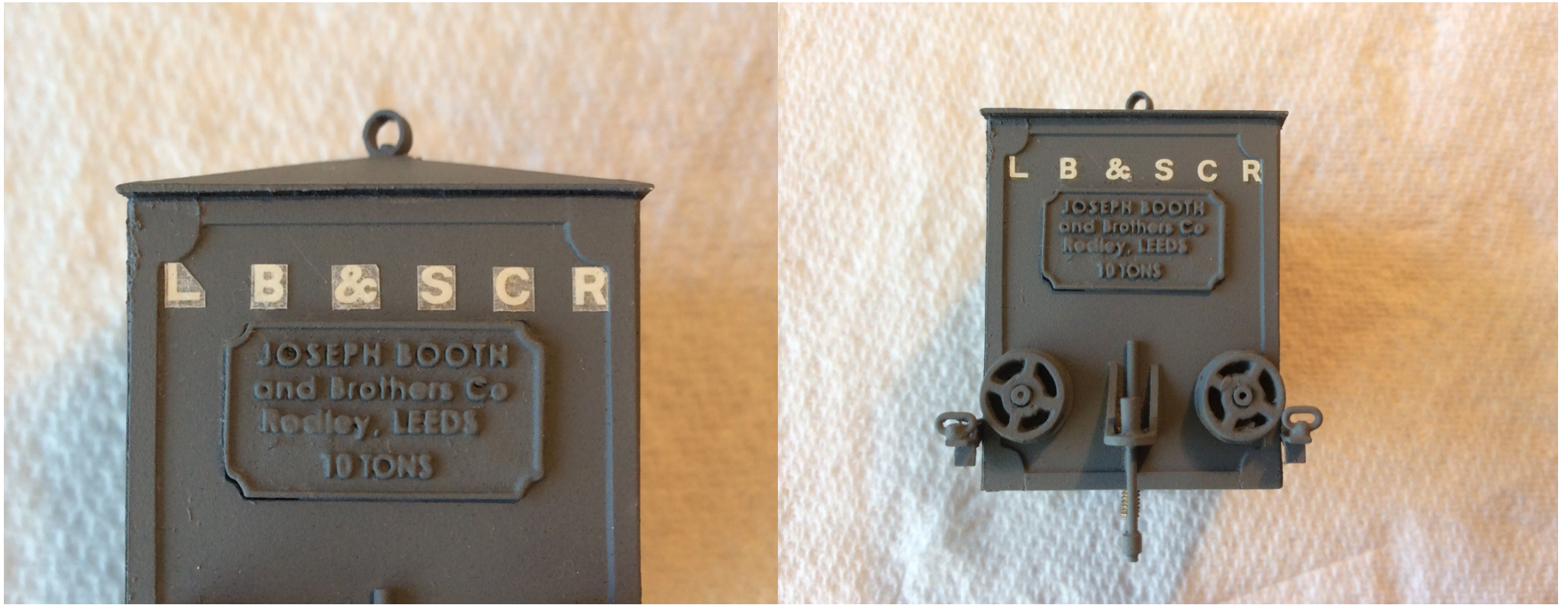
Photos 14 and 15

On the left hand (camera) side of No.19. the words lettering. I am presuming these letters would be on side. This posed the first of the lettering issues. What style and size of letters to use? In the end, HMRS Sheet PO7 was purchased. Having to make up the wording from individual letters on the sheet, I chose 1.75mm high for the upper cased letters, and 1.5mm high lower cased letters. Working backwards from the corner, **To** was cut away from **TON**. This gave me an idea as to the spacing of the next letters along. **RETURN** was added next working from right to left. The same was then applied to **NEWHAVEN**. It was imperative the letter **N** did not go further than the **R** of **RETURN**. After I had completed the lettering, I personally think the letters are very slightly on the large side.

*Return To  
Newhaven*

can just be deciphered in italic the right hand end on the other





## Photos 16 and 17

The lettering on the weightbox sides were a compromise being slightly smaller than they should be. The next size up would have looked ridiculously over scale. The top corners of the **L** and **R** had to fit underneath the bottom corners of the curved recessed panel which was the key. It was also imperative there was a distance of approximately 1mm between the bottom of the letters and the top of the maker's plate. Just visible behind the vertical outside support, a brass screw thread can be seen. This is for securing the box to the bottom of the crane body via the round ring on top of the roof.



The other area of concern was with the lettering on the sideframe of the jib, which reads: **NOT TO EXCEED 10TONS**. These letters too have been a thorn in my side from the outset, as they stand out clearly in the photo. Any errors here would not look very convincing. From the outset, you will also notice there are two sizes of uppercased lettering with the letters **N**, **T**, **E**, and **10T** slightly larger in size. They would also have to be in the same style as the Brighton letters (if at all possible). As an experiment, I chose to use the 1.5mm high thick uppercased letters again from Sheet PO7. They also closely resembled the same style used by the Brighton which was a bonus. Up until then, I had no idea as to what height they had to be. A copy of the master sheet from the pack was photocopied, then the individual letters cut out, then glued onto a piece of paper. For the time being, all of the letters were the same height. It was cut out and placed into position on the sideframe. To my amazement, it looked in proportion with the photo exactly. For the larger uppercased letters, 2mm looked about right. As they were not on the sheet, suitable ones were found on Sheet No.17 (LMS) which matched exactly the same style as on sheet PO7. Now very confident all would be fine, a start was made proper. Working from right to left (from the two rivets), the letter **T** was lightly positioned first roughly where it had to be placed. More crucially though, it was placed centrally in between the top and bottom riveted strip. This then gave me a bottom line to work from (either side) on which to place the letters **O**, **N**, and **S** as they are not centrally placed but slightly lower down off centre. The **T** inevitably had to be repositioned in slightly up to the other letters. Overall, I am very pleased the way the lettering has come out.

To protect the lettering on the underframe, weightbox sides, and jib, all were sprayed using Humbrol Matt Enamel Spray Varnish (AD6998) straight from the can. This again went on nice and flat with no spitting.



Photos 18 and 19

The other problem was the lettering on the jib arm. This too, as mentioned in the text, has been a problem from the start. The main problem was again the style, which I wanted to match, as near as possible to the `Brighton`. By pure chance on sheet PO7 there was some upper cased letters that looked bang-on to the `Brighton`. They measure 1.5mm high. They appeared ideal for the smaller upper cased letters. On the sheet, there wasn't any larger ones of around 2mm high for **N**, **E**, **10**, and **T**. Gleaming my other HMRS transfer sheets I found what I was looking for. On HMRS 4mm Sheet 17 (LMS) there was a few available of the correct height. Starting on the official photo side of No.19, I had to work backwards again from right to left from the two centrally placed rivets. The letter **T** was lightly positioned first a few millimetres inwards of the rivets. It was imperative it was on the centre line. This then gave me a bottom line for smaller uppercased letters to work from. The total length of the lettering worked out to 33mm. The other side was a bit more difficult as it had to spread over the same 33m length. In the photograph, I don't think I am that far out.





Photo 20

A view showing the underframe reassembled with the decking and tapered column ready to accept the moving crane body. The two bolt heads securing it place have been painted wood colour matching the natural colour of the ply and are virtually invisible. The centre axle has also had the springy wire and internal keeper plates fitted. The two footboards can, if required, be removed from the main decking section, but are very difficult and fiddly to slide in the unequal 'L' shaped 0.3mm hinge pins. You may also notice the top of the base of the column has now been

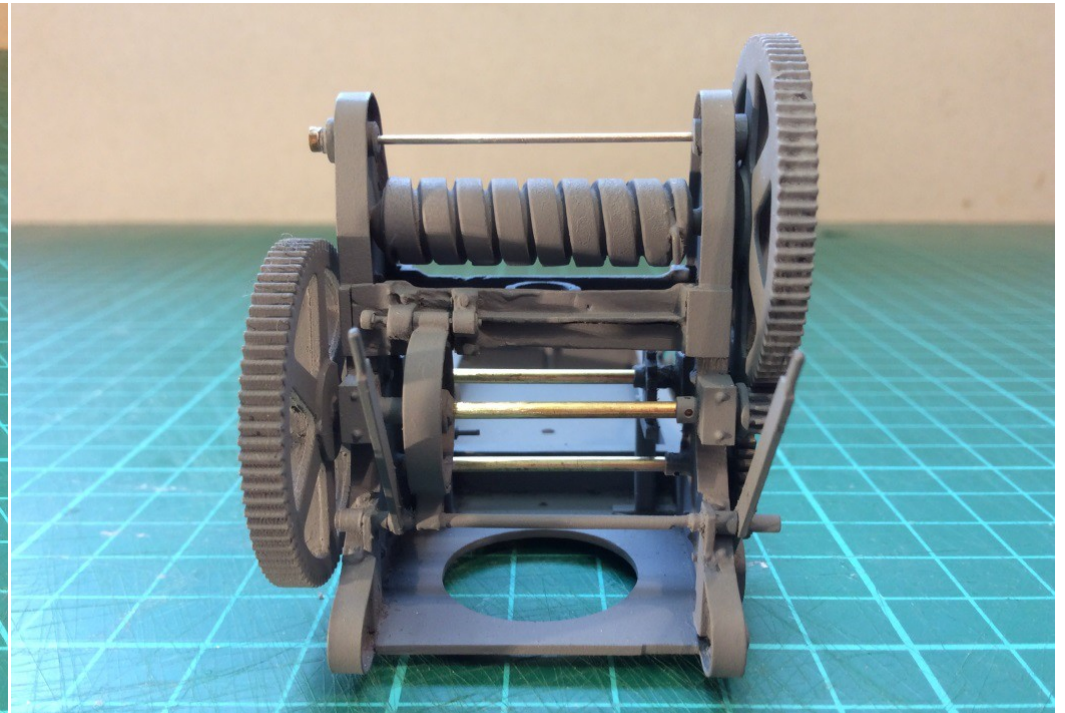
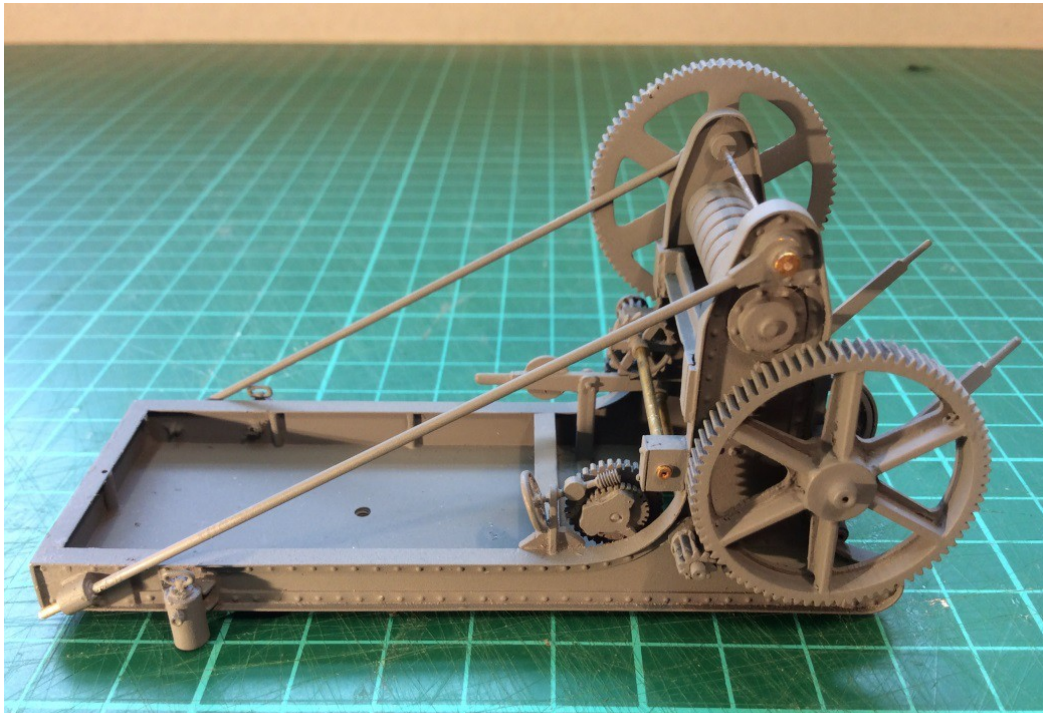
painted grey. From the photo of No.19, all ironwork is painted black including the buffer housings, drawbar backing plate, screw down jacks, footboard support brackets, W-irons and axleboxes. Buffer heads have been painted weathered black (Railmatch) with the external brake wheel rim given a coat of silver which shows up nicely.

## Reassembly

The first item to put back was the decking piece. As mentioned above, it slides snugly underneath the long round bar which is attached to the two thin vertical brake levers on the sides. The fit is so tight the two securing bolts were not required in the end. The two originally drilled out holes that had previously been used were filled in the same plywood using Superglue and sanded flush. The heads of the two remaining bolts were painted wood colour. The gearwheel and pinion axles were cleaned of paint and slid back into place matching the photo of No.19. Up until now they were placed incorrectly. As the paint had filled in between the teeth, the fit was quite tight getting then to re-fit once more. From the outset, the axles had holes drilled in them so they could be secured by pins holding them in place. With the paint and tight meshing of the teeth they will not be required. There is absolutely no chance of them coming adrift even with handling. The winding drum was replaced making sure it was the right way round. The two diagonal stay rods were slid in position encapsulating the slotted beams (for the long jib stay rods) at the same time using the previously made long bolt. The jib was fitted, again with a previously made bolt. I required many fingers to slide the stay rods in position. One to hold the jib, two to position the slotted beams, and two again to slide in the stay rods into them. All this had to be done in one action. Finally a retaining pin was placed back in position stopping the jib from dropping down.

Finally the chain, ball and hook was replaced and wound around the winding drum until it reached midway matching SR No.307s. The chain will later be chemically blackened along with light weathering. The latter will not happen until the transfers for the weightbox etc are produced.





Photos 21 and 22

In progress of reassembling the moving crane body back together. The large gearwheels have been fitted matching precisely their position as shown in the photo of No.19. The brass axle rods will eventually be painted grey. The two long diagonal stay rods have been fitted, but as yet, the top shaft that holds in place the slotted beam section (for the two long jib beams) behind the frames has yet to be added. They are flimsy and prone to being bent and will be added soon after. Photo 22 shows well the large hole for the tapered column to pass through eventually encapsulating the slewing ring at the same time. The top of the column passes through the bottom of the support beam and up through into the small round hole (underneath the winding drum) which can just be seen. Only when the slewing ring is fitted and locked in place, can the gearbox housing be fitted over the top of it. The hole in the base plate in Photo 21 is for the bolt to pass securing the weightbox to the body via a captive nut underneath.



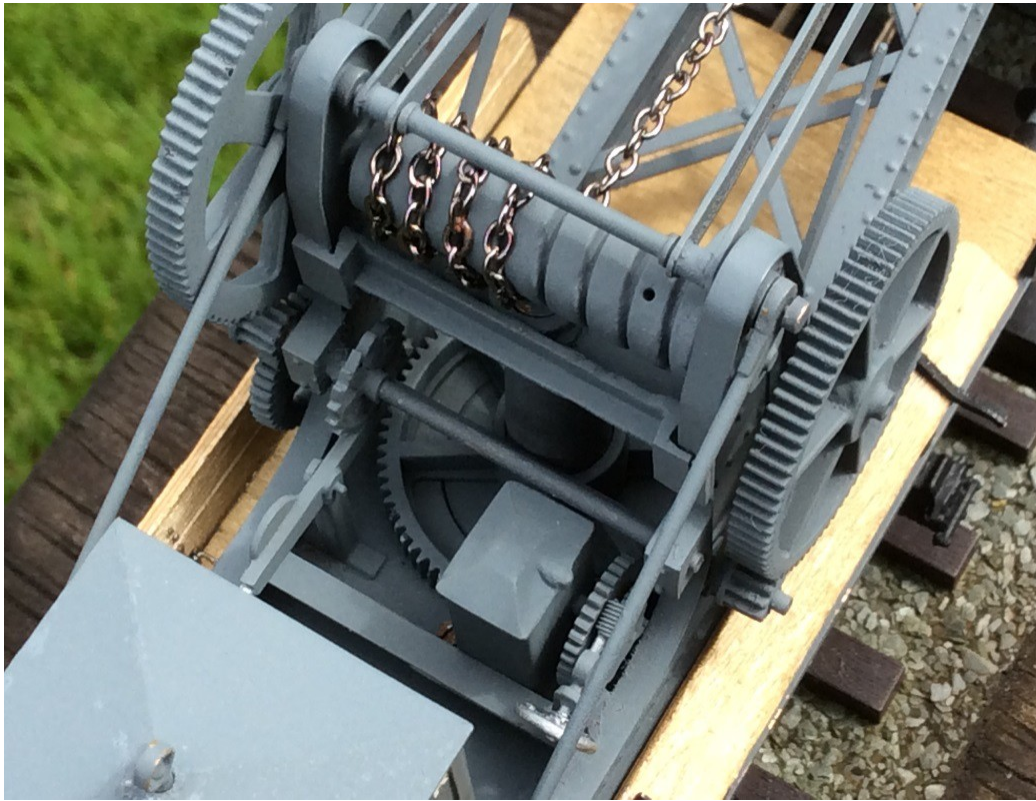


Photo 23 - A bird's eye view showing the slewing ring encapsulated over the tapered column. The ring is retained by a pin locking which goes through the front of the column. For the moment, the pin is held in place by paint. If the body had to be removed, the paint joint can easily be broken. When the crane body is rotated, the ring is fixed and does not move. The gearbox housing (with the rectangular roof) has now also been fitted in place. Also fitted is the top shaft, slotted beams, and jib. The small hole in the winding drum is for a pin to stop the drum from rotating. I could not find to easy way of stopping the drum from moving. The handle for rotating the crane body has been painted silver which can just be made out below the right hand stay rod.



Photo 24 - A pair of spare Laurie Griffin drawbar hooks painted. I had to make new nickel silver links (in a homemade jig) slightly longer due to the buffer housings being that much larger and the heads protruding out more from the headstocks. I did not want to fall into any traps of not being able to couple up to other stock.





## Photos 25 and 26

These photos show the crane completed and on test on my garden railway. The jib, chain, ball and hook, and stay rods were the last items to fit which have now been added. Also the two supporting beams have also been repositioned. When the match truck is pulled away i.e. in the right direction from the crane, the trestle slides across the bottom of the job in a prototypical manner. The jib of the crane when negotiating curves down to 6 feet radius does not touch the end stops of the trestle top.

A full description on the construction of the match truck can be found in Modellers' Digest Issue 2, page 17.







This finally completes the crane. It has been a mammoth project. If I knew it would take me this long to construct, I wouldn't have started it in the first place. If we all felt like this, nothing would be made. I personally don't know how many hours it has taken me. It could well be into four figures. All that has to be done now is for me to enjoy running it during the summer months and years to come.

To go with the No.19 would a Stroudley 8 ton van as its tool van. There is a lovely photo of one at the derailment of D1 No.237 taken at Buxted in 5th April 1916. So the next logical step is to scratch build a model of one with opening side doors and two footsteps each side. The underframe was started prior to the start of No.19 five years ago. I have also got (still in the box) a Roxey Stroudley 3<sup>rd</sup> Brake kit as the riding van. So watch out for these in the next Modellers Digest.



Photographs copyright  
Colin Paul

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# Backdating Burgess Hill

- Train Simulator Meddling

sem 34090

At the editor's request, this article describes the creation of an LB&SCR scene in the virtual world.





As a brief introductory note, before I describe the process of taking Burgess Hill back 120 years, the simulator used here is produced by Dovetail Games, and currently marketed as Train Simulator 2018 (It is available here: [http://store.steampowered.com/app/24010/Train\\_Simulator](http://store.steampowered.com/app/24010/Train_Simulator)) though it has now existed, in multiple permutations originating with 'Rail Simulator', since 2007, a long time for any game to exist. It is, at its core, just that – a train simulator, as opposed to a railway simulator. The main activity in the game is to drive trains, and there are a multitude of different locos, coaches, wagons, units and routes available from a variety of developers, both as 'freeware' and as 'payware'.

At present there are no pre-grouping routes available in any form - though I aim to change that and, as far as the LBSCR is concerned, there are three locomotives available, these being the Billinton E2, the Stroudley A1 and the Stroudley G classes. In the near future, a Billinton 'K' Class Mogul is to be introduced, and the recent upsurge in Caledonian Railway content is promising for all pre-grouping fans. The game has an editing facility, both for scenarios (these are the 'activities', an example could be "46100 – 9:30 1Z46 London Victoria – Bognor Regis" on the London to Brighton route as far as Preston Park) and for routes. This latter facility is used in the backdating of Burgess Hill, and can also be used to create one's own routes.

To find out more about train simulator itself and what is available, I recommend looking through the "TS13-17" section of the [UKtrainsim forum](http://www.uktrainsim.com), which is free to browse and join. Joining also allows access to a huge variety of free content, including the Stroudley G Class Single mentioned above. Also worth reading is the 'Virtual Pre-Grouping' thread on RMweb, to be found here: <http://www.rmweb.co.uk/community/index.php?/topic/131654-virtual-pre-grouping/>. The thread also features the 'Trainz' simulator, which has more Brighton content available but is more of a model railway simulator than a train simulator.



The best pieces of LBSCR downloadable content (DLC) for Train Simulator are the Terrier Packs, produced by renowned third-party developer 'Victory Works', available in three packs (covering most liveries and variations carried by both the A1's and the A1x's) from Steam Sounds Supreme here: <http://steamsoundssupreme.com/ts-multipacks.html>.



I have previously created an LBSCR scene based on Malmesbury (in Wiltshire, and very much in GWR territory, in case anyone is wondering), and decided that I could do better. I looked around on Google for stations that would fit the bill, and, after deciding to backdate a station already



modelled in train simulator, I settled on Burgess Hill, as I had found a rather nice 'Postcard' view (shown on the first page) of a down express passing. Following this decision, I opened up train simulator and cloned the 'London to Brighton' route, set roughly around 2010, using the in-game 'clone' tool.

The starting point - a modern Burgess Hill.



The London end of the station, showing much of the modern equipment, including Health & Safety signs, a 'DOO' Mirror, third rail, and (in the distance) relay boxes and colour-light signals.



The first step was to identify any eminently 'modern looking' assets and to delete them, thus providing a blank canvas onto which period details could be added. The platforms were completely cleared of equipment, which was deleted, then modern trackside equipment was removed.



The next step was to delete the myriad of housing estates surrounding the station, based on an elderly OS map. Even though I was only intending to recreate a single scene for this article, I do intend to expand the backdated route at least as far as Hassocks and Wivelsfield in the future.

After the removal of the housing estates, the traces of the roads can be seen. These will be textured over later.





After this, my attention returned to the station area. The modern equipment had all been removed, and as such I was left with a problem. The original canopies used on the route had been flat and modern-looking, so were unsuitable, but I had no alternatives to substitute, certainly nothing close to those shown in the reference image. I therefore decided to compromise with the only LBSCR canopies currently in

train simulator, and used those from Sheffield Park. The other buildings were also compromises, with the cottage being generic, and the store/shelter building alongside it being adapted from the shelter at Ribblehead on the Settle & Carlisle! The platforms were the most suitable I could find, though seem a bit too modern still. These came from the Woodhead Route.

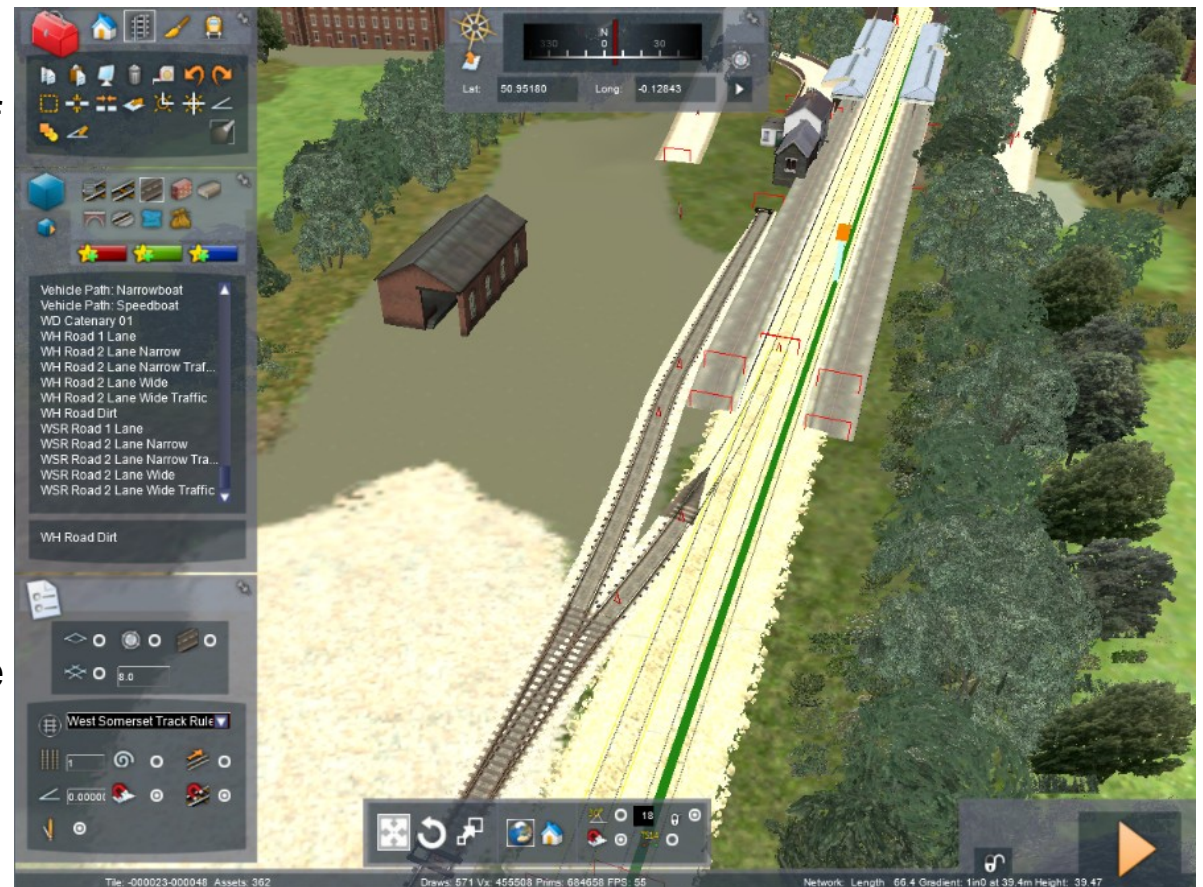
The station begins to resemble the reference post card.





Next I decided to reinstate the goods yard, even though it is not visible in the reference image, using the bullhead track included with the West Somerset Railway route. This was done by using both the OS map and the modelled buildings and contours as a guide for the location of sidings, starting with the siding immediately behind the platform. The goods shed was moved, then eventually replaced, whilst I did this. In the below screenshot it can be seen that I had begun 'ballasting' over the sleepers. Although this is a distinct diversion from the original image, I decided to do it both as an experiment and because the only LBSCR express loco currently available in train simulator is a Stroudley 'G' class 2-2-2, putting my image somewhat earlier than the one I was using for reference.

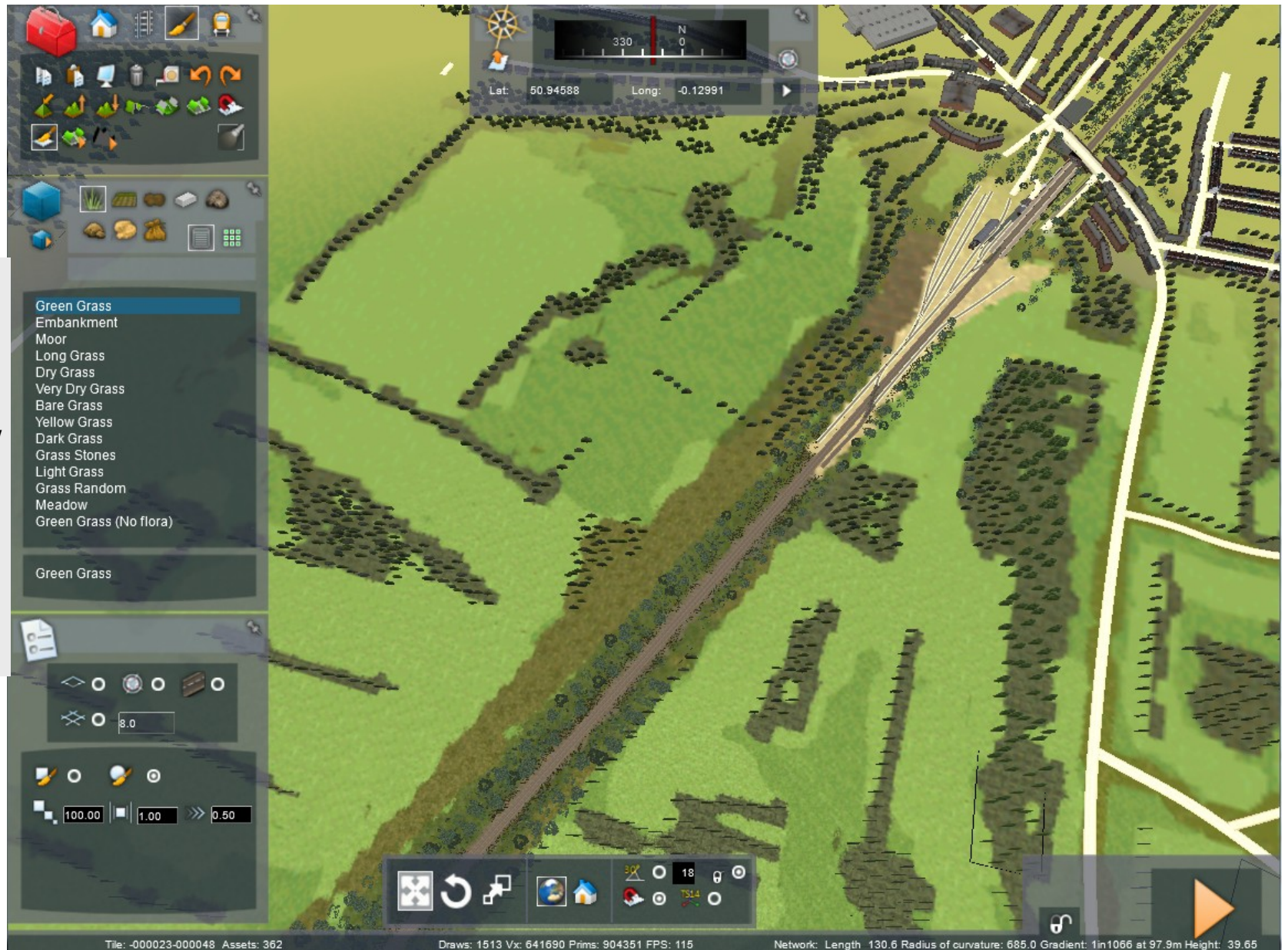
Ballasting over the sleepers proved to be an interesting challenge, as no such track has been produced for the simulator as of yet, probably due to the fact that no pre-grouping route has been produced. To avoid having to completely relay the mainline, I decided to cover the existing concrete-sleepered track with a suitably coloured loft. Having tried a few different lofts, I settled on one from the Woodhead Route named '*WH Road Dirt*'. I laid this using the offset tool (with the 'distance from track centre' set at 0.0001) to ensure that it stayed aligned with the track. I then lowered the road until the rails could be seen, but not the sleepers.





Having covered much of the track, and having finished laying the sidings, I turned my attention back to the surrounding scenery and retextured the fields to remove the traces of roads that had been left behind following the elimination of the housing estates.

The fields in the process of being reclaimed! Note that a yard has now appeared. From this height the 'ballasting' cannot be seen.





After this I decided to play with some trains for a bit, under the pretext of getting the express in the right position for the final screenshot.



Mucking around with a 'G' Single and a few Stroudley 4-Wheelers.

Having taken the previous shot, I then added details to the scene in line with the original image, including station staff (wearing slightly-too-modern uniform!) and a dog, plus gas lamps.

The same train, but now with added staff and a slightly-oversized dog...



And with that, I think I've managed to capture something of the original image, if not an exact replication in digital form.



I then got somewhat carried away, and as such I will leave you all with a couple of shots of other trains passing through my backdated-Burgess Hill!



Boxhill arrives on an Up Local, headed for Haywards Heath, then perhaps on to Horsted Keynes, East Grinstead, Redhill or even Victoria.

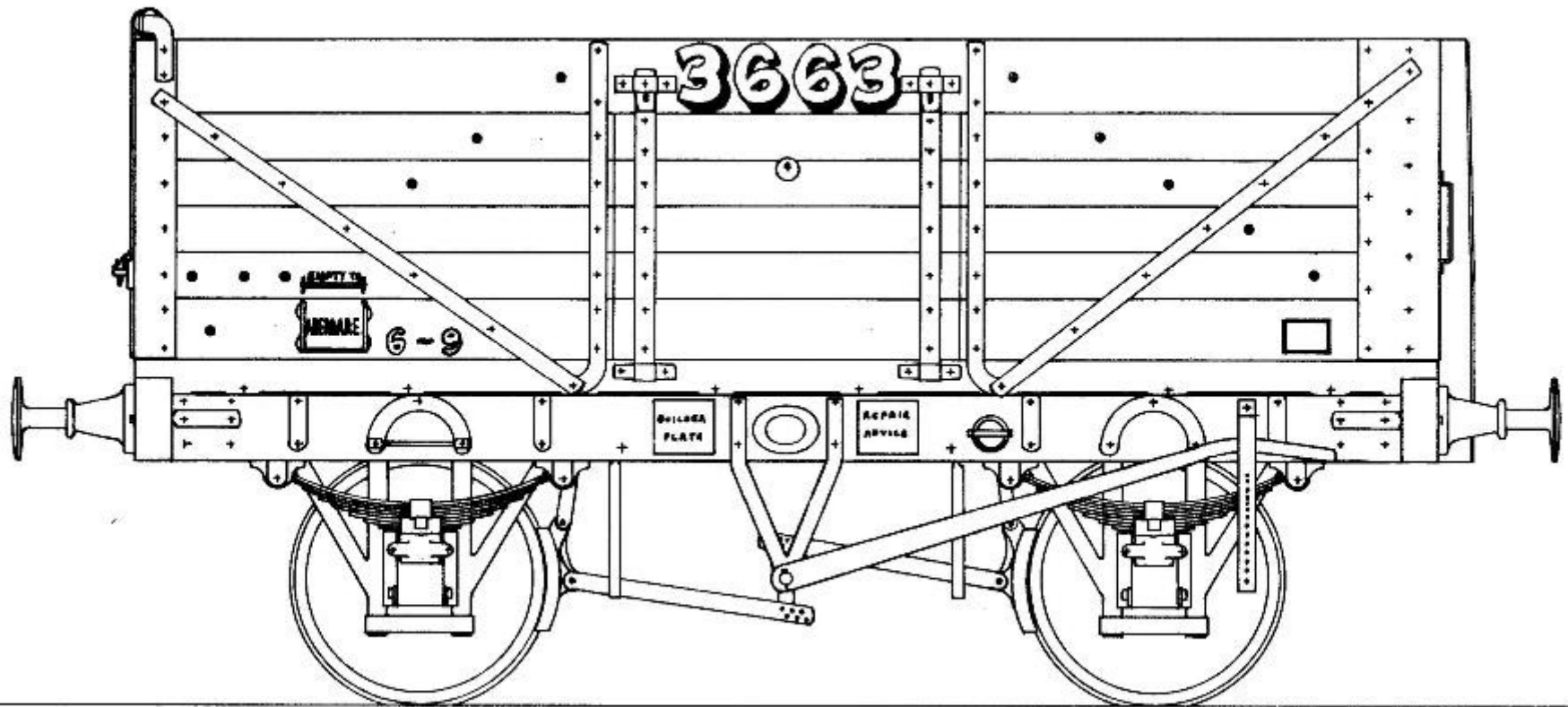


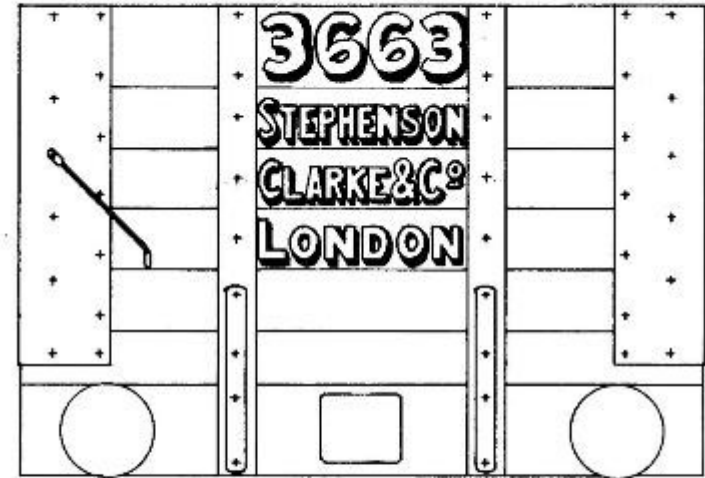
Finally, No.40  
'Brighton' Arrives on a  
Down Local,  
presumably headed  
for its namesake, or  
heading off round the  
Cliftonville Spur.



# Stephenson Clarke coal wagon

Simon Turner





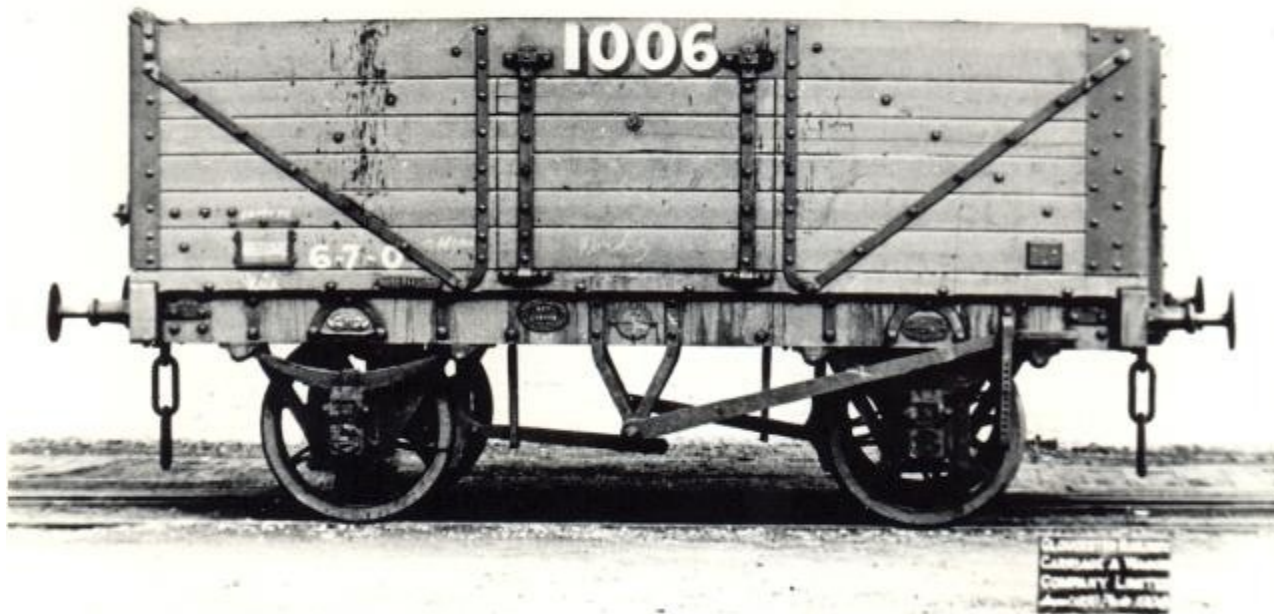
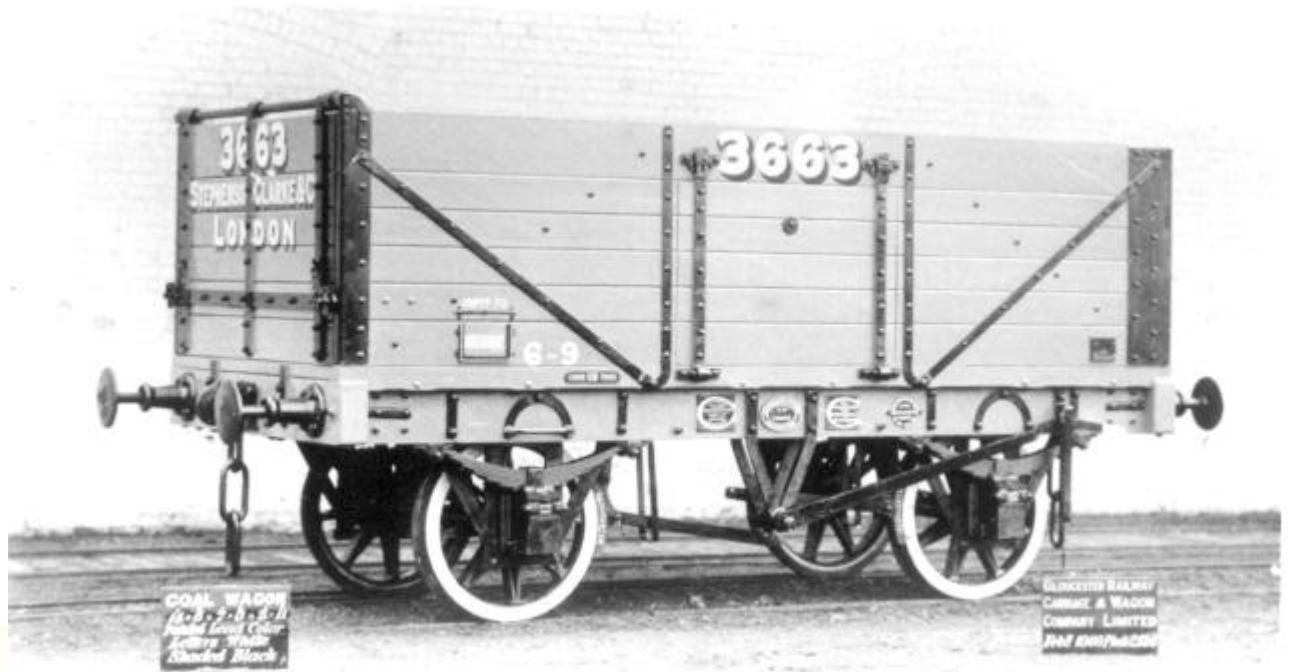
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As a variation from the LB&SCR's own wagons, Stephenson Clarke was a private owner coal factor, whose wagons appear in almost any photo of a Brighton loco depot (and lots of others as well). The company had the contract for the supply of the Brighton's loco coal for many years and was therefore seen widely across the system.

Stephenson Clarke was a major coal factor, with a London address, but acting as an intermediary between collieries and customers widely across the country.



Wagon No.3663 was one of five hundred acquired from the Gloucester Wagon Co. in 1899, which were registered by the GWR and carried painted numbers 3501-4000. The detail of the wagon design was peculiar to Stephenson Clarke for whom Harrison Camm of Rotherham was the more usual supplier.



The pattern wagon for the Gloucester batch, No.1006, was from Harrison Camm.

Photographs Gloucester Library

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# HMRS – New Website Launched

Ian White, HMRS LB&SCR Steward

The HMRS have recently updated [its website](#) and I hope that members of the Circle will take a look.

The HMRS holds a wide range of archive material related to the history and modelling of the LB&SCR. Many tens of thousands of photographs and drawings are listed, and an ever growing range have an associated preview image. I recently reviewed the unrivalled coverage of original LB&SCR C&W drawings held by HMRS in *The Brighton Circular* **42:84-89**.

Don't be put off by the web site opening image of the driver's desk of a modern diesel locomotive!

Use the menu bar at the top or scroll down the page. Drawings, photographs, HMRS books and transfers can now be ordered on-line. The library catalogue is also on-line and HMRS members may borrow by post or in person. Non-members are also very welcome to visit the Museum and Study Centre. So, if you happen to be in Derbyshire, pay us visit. The county has a lot of railway interest and a National Park to explore! I'm at the Centre most Wednesdays, and it is also open on Fridays, and by special arrangement on other days.



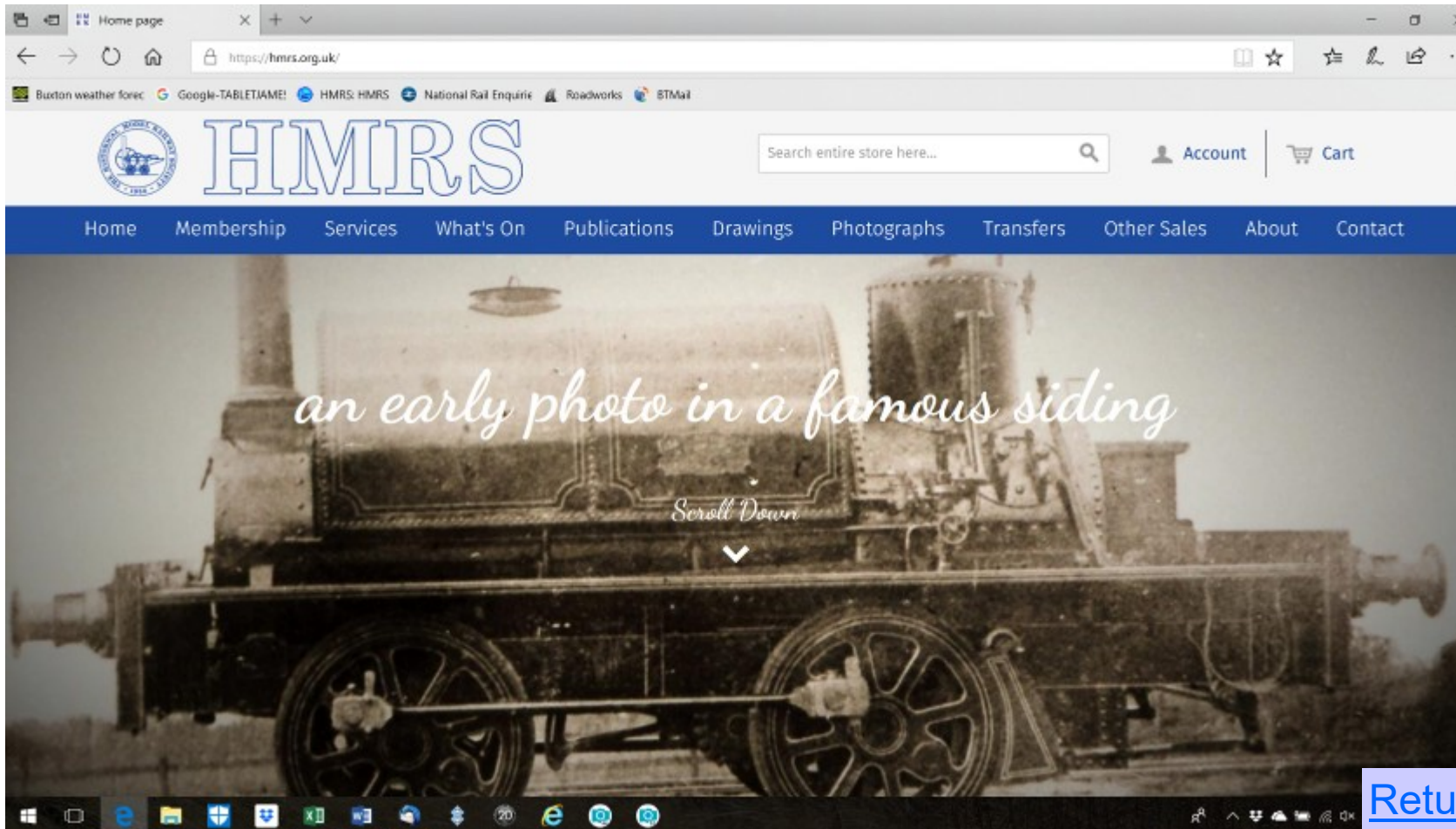




Ian can be contacted at [lbscr@hmrs.org.uk](mailto:lbscr@hmrs.org.uk)

A line-up of D1s "under the wires".  
An example from the HMRS archive

This photograph is from a collection of about 170 glass plates which were given to HMRS a few years ago by Adrian Birtles (S.W. Circle). He passed them on to HMRS on behalf of D.C. Williams, but the original photographer remains unknown, and they have yet to be indexed into the HMRS collection (temp.ref. HMRS-Williams-R217). Most of the photos were taken at SR locations around 1923, and most have been noted as "new" by John Minnis. Some are of LB&SCR subjects but sadly most of the plates have degraded badly. I re-photographed them all about 12 months ago, and scanned a small proportion to try to get the best out of them, including the example on the previous page. Writing captions for photographs is a huge task and one which



the regular volunteers at the HMRS Study Centre, and elsewhere, cannot carry out without additional help. It is an example of the sort of activity HMRS members can get involved with without having to live in close proximity to the Study Centre.

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# Bachmann H1 Atlantic

In addition to the planned H2 Atlantic, to go with the Bluebell Line's replica, Bachmann has also announced a 4mm scale H1 Atlantic in full umber livery.

The most noticeable difference between the two classes was that the footplate on the H1 featured five different levels, whereas the later locos, built under Billinton kept to only three. The umber livery, as shown in Bachmann publicity photos, shows the original boiler fittings, accommodated by the LB&SCR's generous loading gauge, rather than the cut down versions fitted by the Southern to provide greater route availability.

The image on the following page takes the Bachmann image, but with some additional foreground and background by Rob McG.

Release of the H1 in umber is understood to be scheduled for 2019 and the H2 for late 2018.

<http://www.bachmann.co.uk/product/branchline-h1-class-atlantic-4-4-2-no-39-la-france-lbscr-31-910/>



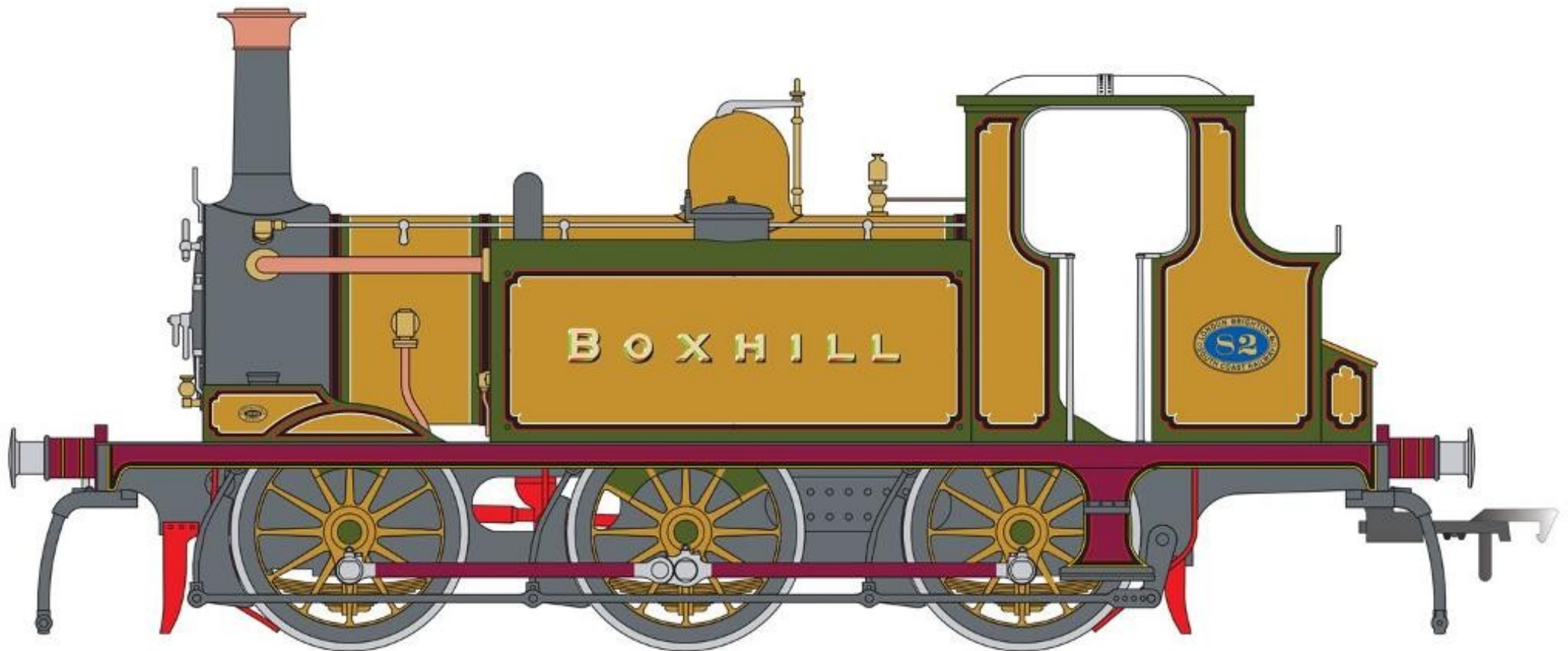
Photograph by Bachmann, with additional photoshopping by Robbie McG

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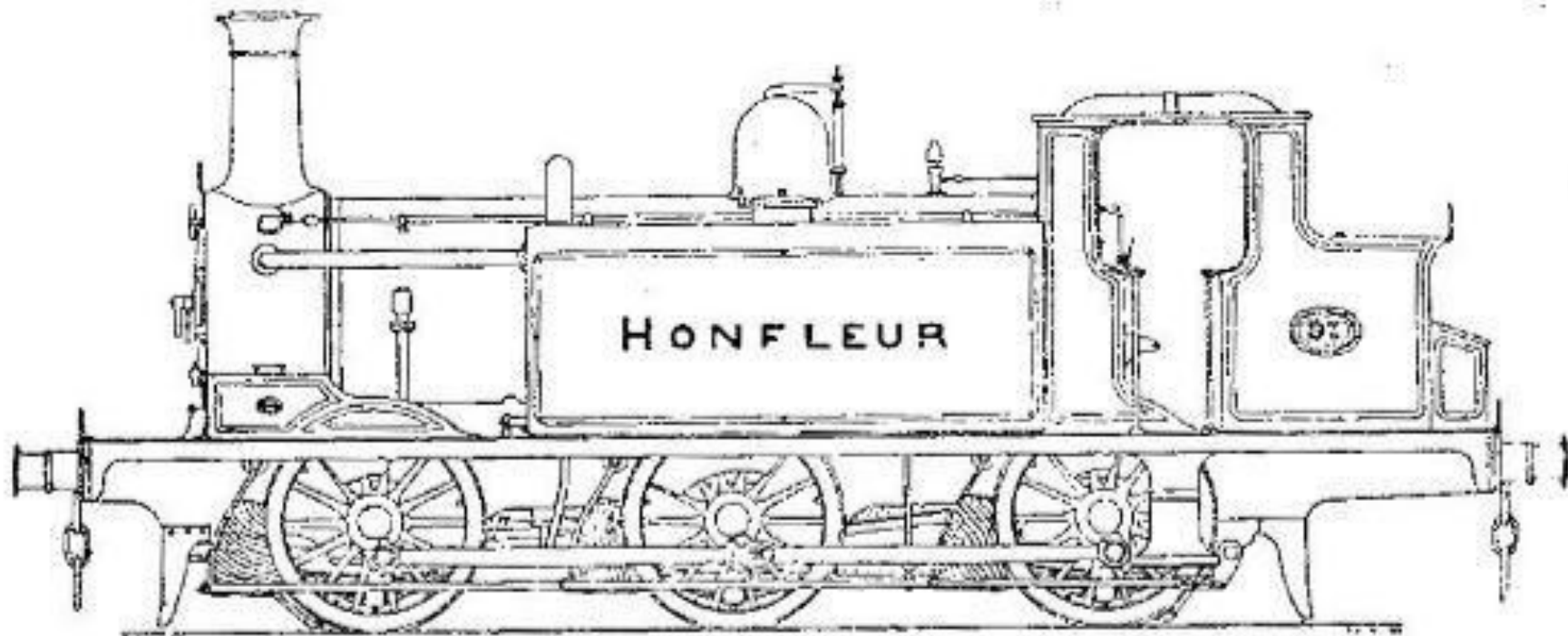
# Rails of Sheffield/Dapol/NRM Terrier

[Rails of Sheffield](#) and the [National Railway Museum](#) are commissioning Dapol to produce a new 4mm scale version of the Stroudley Terrier. Of the initial versions, Boxhill, appropriately, will appear in Stroudley's Improved Engine Green. Particularly welcome news is that Dapol will be using the much richer shade of Improved Engine Green, that has recently appeared on the 7mm scale model of the Terrier liveried as "Brighton Works".

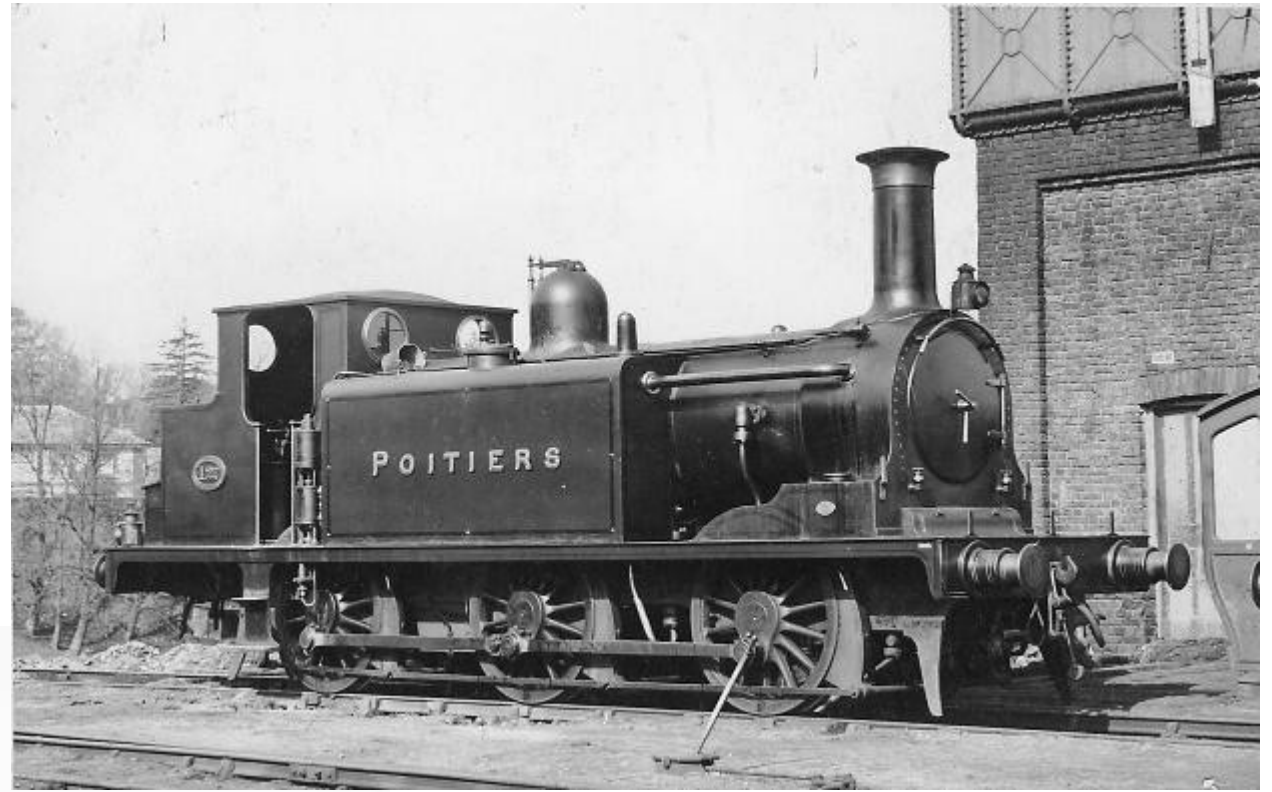


# Model Rail/Rapido Stroudley E Tank

Model Rail magazine has announced that it is commissioning Rapido Trains to produce the Stroudley E tank in 4mm scale in a number of versions. MR-401 97 - Honfleur will be offered in LBSCR Stroudley Improved Engine Green, MR-402 127 - Poitiers in LBSCR Stroudley Goods Green and MR-403 B96 in Marsh umber but with 'B' prefix as applied by SR. Availability is currently forecast for 2020.







# Stroudley 4-wheeled carriages in card

Linny Linehan



When thinking of model railway carriage kits, one might think of etched brass, whitemetal, or even plastic (if you're very lucky!). Card kits for rolling stock have an old-fashioned air - yes, they were the state of the art back in the 1940s or so, especially if you wanted panelled carriages, where the panelling was ready-embossed, but a modern kit in card? Surely not...

Until now.



These carriages started as a challenge. I gained access to a laser cutter through the Edinburgh Hacklab ( <https://edinburghhacklab.com> ) and was struck by how quickly and accurately it could turn wood and acrylic sheet into slot-together boxes, engraved signs, and suchlike. Unfortunately, the cutter will not cut plasticard (apart from certain specialised, eye-wateringly expensive types!) but it will cut card, and for larger scale modellers, plywood and MDF. I resolved to see just how fine the cutting of the beast

was, and decided to draw up some Stroudley 4-wheelers, as I had the drawings to hand. The result: a set of kits for Stroudley 4-wheel carriages: A D41 1<sup>st</sup>/2<sup>nd</sup> Composite, a D43 2<sup>nd</sup>, a D44 3<sup>rd</sup>, and a D45 Brake 3<sup>rd</sup> - enough to form a variety of LB&SCR passenger trains in 4mm.

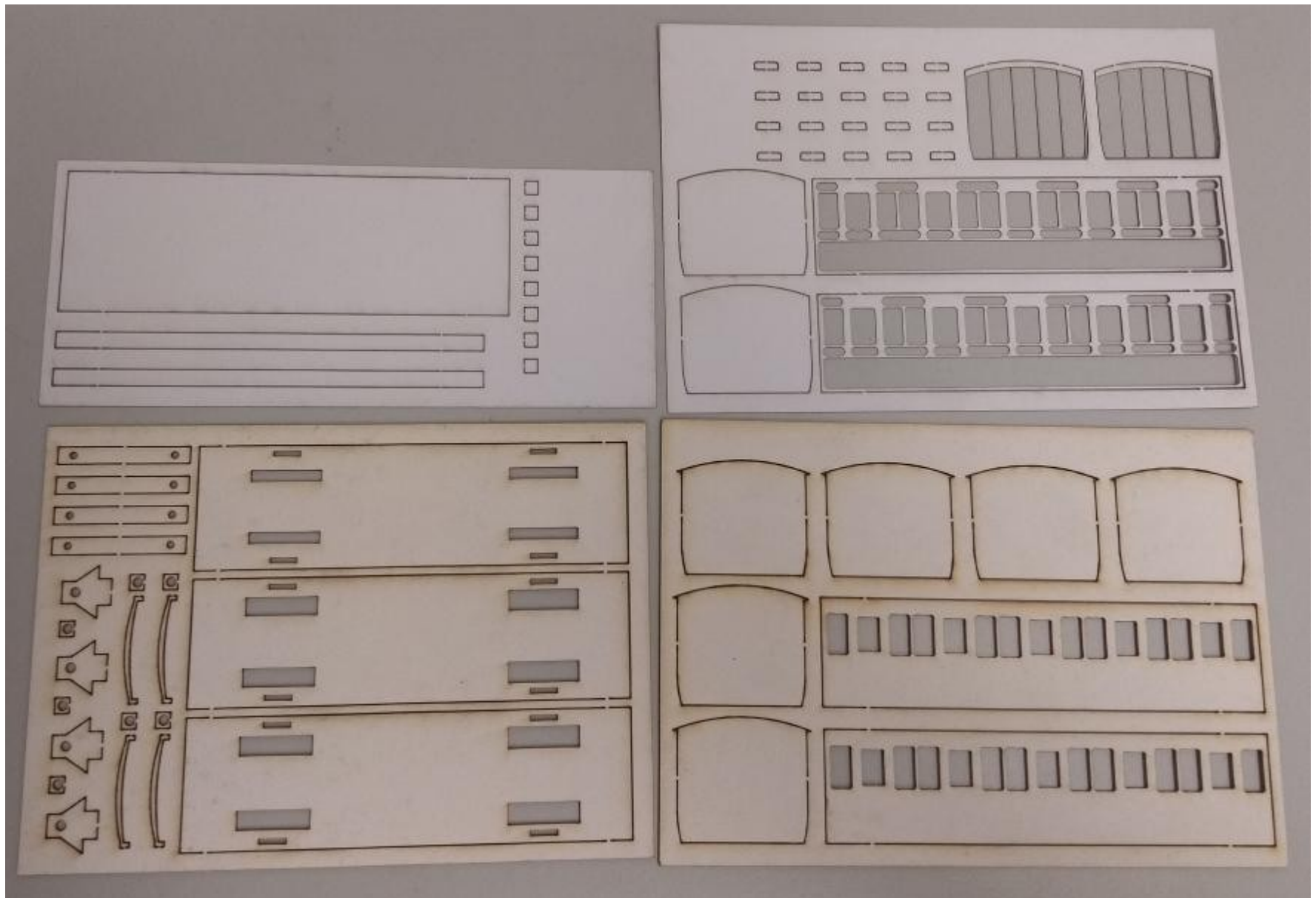
The kits are basic, intended to provide a cheap but solid bodyshell with beading etc, to allow the modeller to detail them as much as possible. I recommend adding etched grab handles, cast buffers and lamps, and brake gear. This last is not included due to the variety of styles fitted (none on most carriages as originally built, with wooden hand brakes on the brake carriages, varying through to cast-iron Westinghouse brakes later on).



Each carriage kit includes four cards: Two in 1mm card, providing the basic bodyshell and a simple card chassis, and two in thinner, 250gsm card, which provide the beading overlays, roof, and various detailing parts.

The picture below shows the first prototype kit fresh off the cutter - a D44 5-compartment 3<sup>rd</sup> Class.

The kit has since been improved by the addition of a false floor to hide the wheels from the inside of the bodyshell.





The laser cutter allows very fine details to be cut out . I have measured the finished beading for the carriage ends at about 0.35mm wide - much finer than I could cut by hand with a scalpel, and much neater than trying to assemble the beading from plastic strip. Below is an unpainted example of the guard's ducket end of the Brake 3<sup>rd</sup>.



The carriages have been designed to need minimal tools to assemble - a scalpel or sharp knife, PVA glue, superglue... and that's it. The joy of computer-aided design and manufacture is that there's no fettling needed - the parts just fit. I hope these kits can offer an approachable start to kit-building rolling stock for those who aren't comfortable with soldering irons and etched brass. They're not as exquisitely detailed as some of the etched kits out there, but it's certainly possible to turn out a very respectable model, especially if you choose to add extra detailing parts (whitemetal axleboxes and springs, etched grab irons, etc.)



I am currently working on several more kits, including a Stroudley 20ft full brake, two horseboxes (Stroudley and Billinton) and a set of Billinton bogie coaches. There is also an SE&CR 6-wheel push-pull set on the list, to go with the Hattons P class (an outsider to Brighton layouts, perhaps, but still of interest for joint-operation stations), and more kits are planned for the future .





More details of currently available kits can be found at <http://linnyslaser.wordpress.com>, along with instructions and a list of recommended detailing parts to complete them. The Stroudley 4-wheel carriages are £9 each, plus £3 postage per order.

If you're interested in how these kits came to exist, details can be found on my thread on RMWeb at <http://www.rmweb.co.uk/community/index.php?/topic/130588-great-southern-railway-fictitious-laser-cutting-lbscr-coaches-coaching-stock>

Photographs copyright Linny Linehan

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# EB Models

The first sheet in the new transfers range has now been released, and covers lining, lettering, numbering and crests for Marsh passenger locomotives. It has been produced for 7mm scale only, and availability is limited to the current production run (May 2018).

All tank and tender engine classes are catered for, from the introduction of Marsh's livery changes towards the close of 1905 through to the end of the LBSCR's separate existence at the Grouping. The latter took effect from 1923, but the Southern Railway livery only began to appear late in that year. There is sufficient material to line out a number of engines.

The price is £25.00 per sheet including P&P.

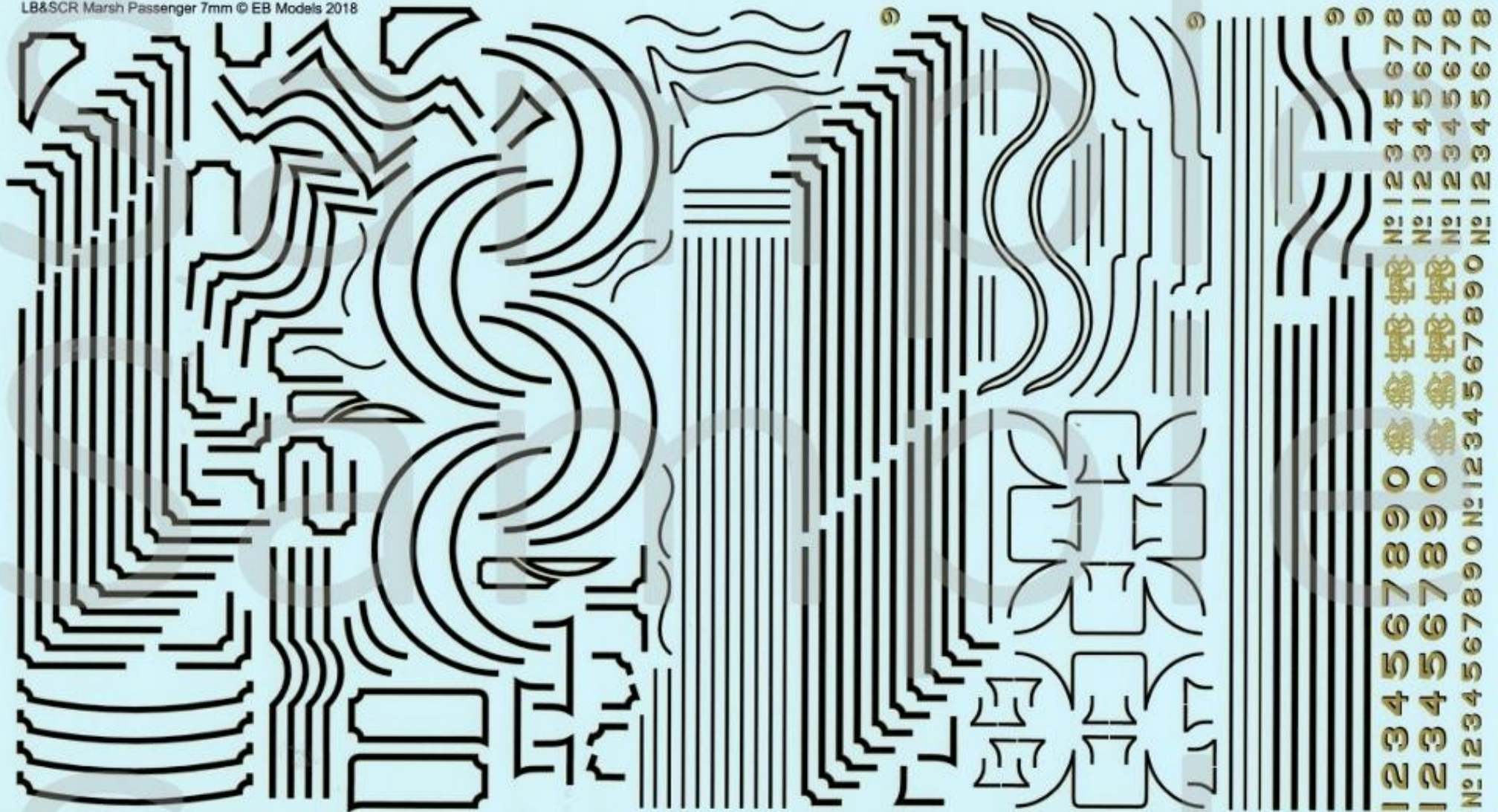
Next on the list will be the 4mm version of the Marsh sheet. This will be followed by Stroudley lining and lettering for 7mm locomotives, together with some for carriage stock.

The 4mm versions of the CCT and Meat Van are now available, and all signal etches will become available again in the near future.

Work is in progress to produce the masters for 7mm carriages castings as per Digest 5.

The EB Models website (<http://www.mjwsjw.co.uk>) will contain information on the new products as they become available.





L	B	&	S	C	RL	B	&	S	C	R	1	2	3	4	5	6	7	8	9	0	1	2	3	4	5	6	7	8
L	B	&	S	C	RL	B	&	S	C	R	1	2	3	4	5	6	7	8	9	0	1	2	3	4	5	6	7	8
L	B	&	S	C	R	1	2	3	4	5	6	7	8	9	0	1	2	3	4	5	1	2	3	4	5	6	7	8
L	B	&	S	C	R	1	2	3	4	5	6	7	8	9	0	1	2	3	4	5	1	2	3	4	5	6	7	8
L	B	S	C	L	B	S	C	1	2	3	4	5	6	7	8	9	0	1	2	3	4	5	6	7	8	9	0	

Nº	1	2	3	4	5	6	7	8
Nº	1	2	3	4	5	6	7	8
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Nº	1	2	3	4	5	6	7	8





Possibly a treat for the AGM?

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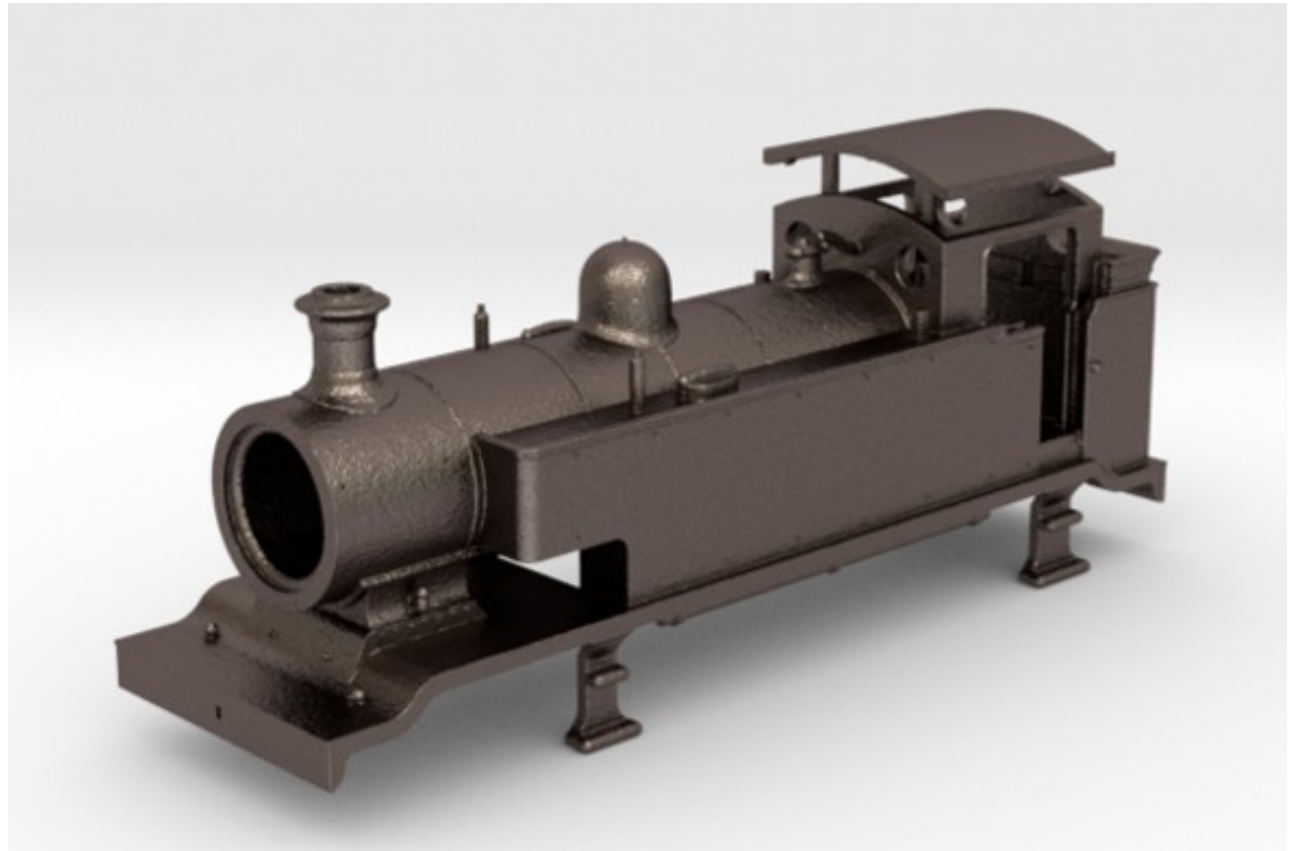


# Sparkshot Custom Creations - E2 tank

A previous issue featured an article on 3D printing by Sparkshot Custom Creations featuring the LB&SCR Extended Tank E2 in 4mm.

That particular variant has been very well received so it has now been re-scaled following several requests. As a result it is now available in 2mm N Gauge, 3mm, 3.5mm H0, 4mm (with 3 chassis options, 00/EM/P4), 7mm 0 Gauge (with chassis option), 9.5mm and 10mm Gauge 1! The latter will probably soon receive a chassis option too.

<https://www.shapeways.com/shops/sparkshotcustomcreationsscc>  
<https://www.shapeways.com/shops/sparkshotcustomcreationsscc?section=4mm+LB%26SCR+Loco%27+Bodies&s=0>



Gavin Rose

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# Etched Pixels - 2mm scale

2mm scale modellers will be pleased to see that Etched Pixels is back in business at a new address.

5 Richmond Villas  
Ffynone Road  
Swansea  
SA1 6DQ

Or by e-mail to [sales@etchedpixels.co.uk](mailto:sales@etchedpixels.co.uk)  
Website <http://www.ultima-models.co.uk/catalogue/lbscr.html>

Photographs copyright Etched Pixels





# 3D printed well wagon by Rue d'Étropol

<https://www.shapeways.com/product/CDHQPL3SE/a-76-lbscr-well-wagon-1a>

Available in 1:32, 1:43, 1:64, 1:76, 1:87, 1:100 and 1:148 scales

Built by the LBSCR in 1893. 6 examples only built. All survived in SR , but 3 did not receive new allocated numbers. The final one was condemned in 1946.

Requires wheels and finishing.

So who is going to be first to build a model of the Brighton's rail mounted gun?



# Brighton Layouts that you may see at Exhibitions

[Ferring](#)

[Plumpton Green](#) see linked website

[Hailsham](#) see linked website

[Saltdean](#) see linked website

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# East Grinstead, LB&SCR at the HMRS Butterley

[East Grinstead Town](#) - Ian White's Victorian era layout is on loan to the Historical Model Railway Society for the rest of this year. It is expected that it will be operated on at least the Saturday of most of the Midland Railway - Butterley special event weekends, starting on 21st April.

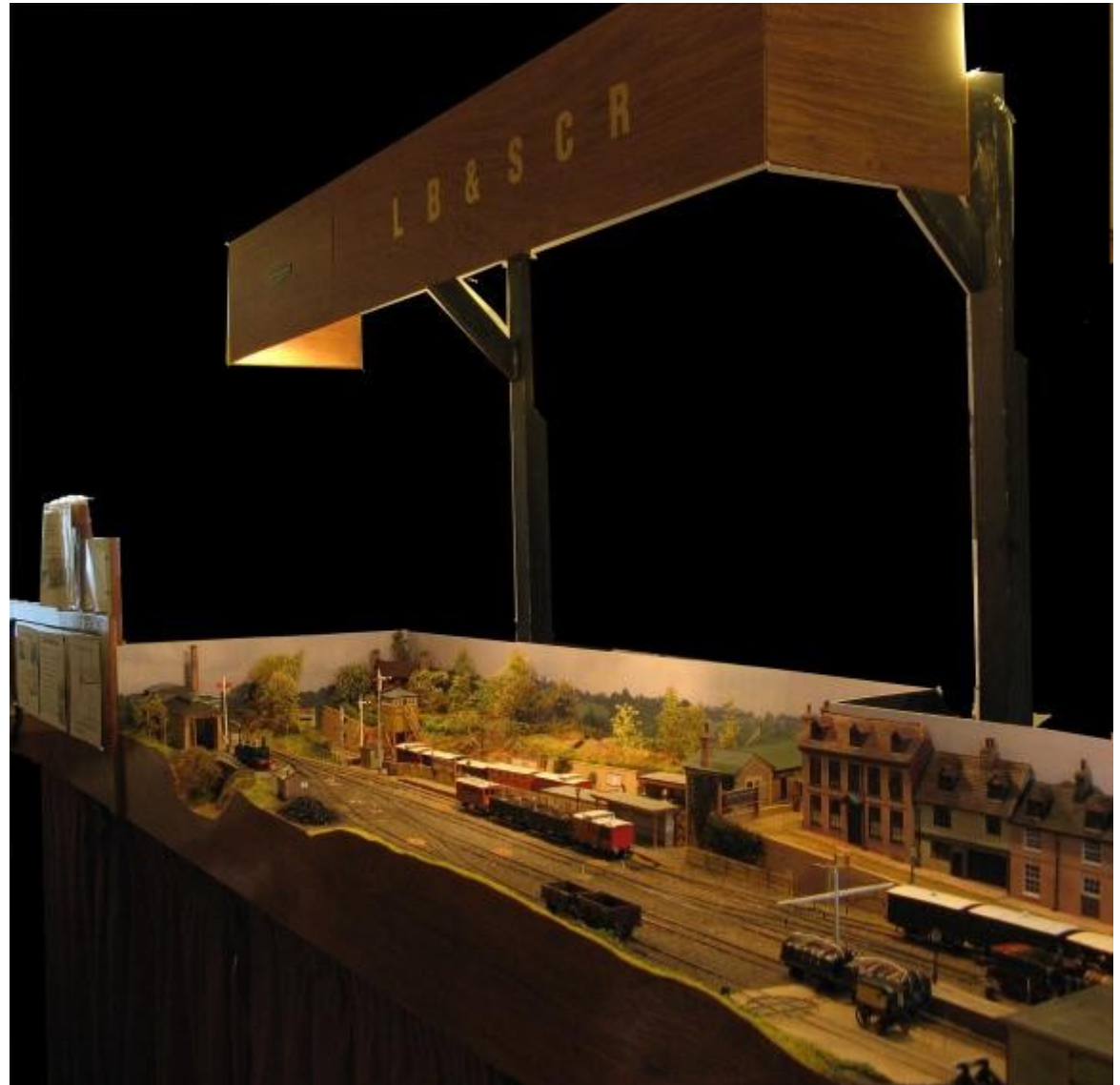
For details of these events see:

<http://www.midlandrailway-butterley.co.uk/special-events/>

Ian is usually at HMRS on a Wednesday and/or sometimes on a Friday.

Anyone wanting to arrange a visit to HMRS to see the layout or use HMRS research facilities, should e-mail Ian:

[lbscr@hmrs.org.uk](mailto:lbscr@hmrs.org.uk)





[Two views of East Grinstead](#)

Photographs copyright Ian White

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# The Brighton Circle

The Brighton Circle is the Historical Society of the London, Brighton and South Coast Railway (L.B & S.C.R.). It is dedicated to the research and publication of information about the company and it produces a quarterly journal entitled the Brighton Circular.

While the Circle is primarily focussed on railway historical research, there has been an important interaction with preservationists, particularly on the Bluebell Line, and with railway modellers. The Bluebell line provides an important source of original artefacts, which contribute valuable information about the company's practice. Modellers have benefitted by access to data about the physical appearance of the company and its operations and, as a result, members of the Circle have been able to produce scratch builder aids, paint and lettering on a limited run basis, which are made available among other members.

Membership of the Brighton Circle for 2018 is  
£18.00 for full membership

Applications should be sent to

[The Membership Secretary, Peter Wisdom](#)

[peter.wisdom.wisdom@btinternet.com](mailto:peter.wisdom.wisdom@btinternet.com)

The Circle is also in contact with local historians, industrial archaeologists, family historians and other groups whose interests intersect with those of the Circle.

# THE BRIGHTON CIRCLE

An historical society dedicated to the furtherance and publication of original research into the history of the  
London, Brighton and South Coast Railway

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## MEMBERSHIP APPLICATION FORM

To the Hon. Secretary, Peter Wisdom, 76 Woodbourne Avenue, Brighton BN1 8EJ

I hereby apply for membership of the Brighton Circle.

**SIGNED**..... **DATE**.....

**NAME**.....

**ADDRESS**.....

.....

.....**POSTCODE**..... (BLOCK CAPITALS PLEASE)

It would be helpful if you could give some idea of your main interests in the history of the LB&SCR and any special interests. Please indicate if you are a modeller and give any details.

I enclose a cheque/postal order for £19.00/£10.00 to cover the joining fee of £1.00 plus twelve/six months membership of the Brighton Circle for the calendar year 2018 (please delete as necessary).

Cheques should be made payable to **The Brighton Circle**.

### Privacy statement

The personal information provided above will be stored on a computer database of members' details and used for administration purposes by the Brighton Circle's appointed representatives.

Please sign below to indicate that you agree to give the Brighton Circle permission to use the personal information that you have supplied in the following ways

- To store it securely for membership purposes
- To communicate with you as a Brighton Circle member
- To send you general information about the Brighton Circle

Please be advised that you can request for your data not to be used for any of these purposes at any time by contacting the Honorary Secretary by e mail at peter.wisdom.wisdom@btinternet.com or by post to 76 Woodbourne Avenue, BRIGHTON BN1 8EJ

**Signed**..... **Date**.....



L

V

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