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

Issue 6

Christmas 2017

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

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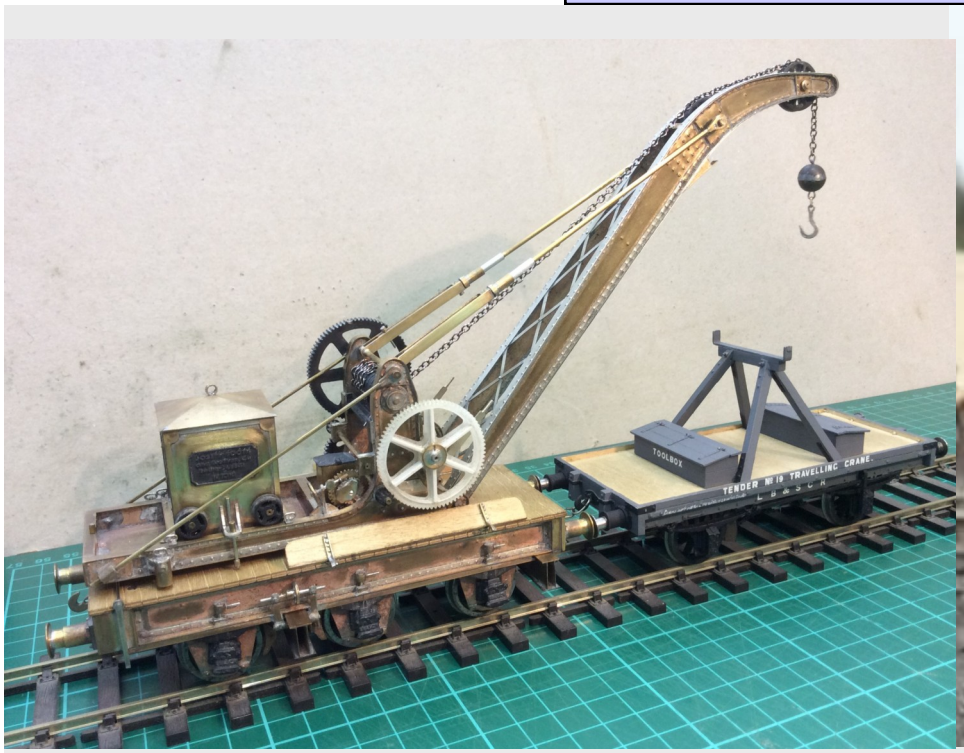

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Editorial

Welcome to Issue 6 of the L.B.& S.C.R. Modellers' Digest, which celebrates the range of models that are inspired by the former London, Brighton and South Coast Railway. In this issue, there are articles featuring 7mm scale in the garden, S scale in Ontario Canada, 4mm in Sussex and 2mm scale at the Epsom MRC, together with some virtual modelling, illustrating the range of interests that are represented.

Many readers will have invested in kits or other etchings from Exclusively Brighton Models (EBM). This range, which covered the Stroudley designs that had not been produce elsewhere and reached back into the era of Mr Craven, was developed by Mike Waldron. Mike now wishes to build some of his kits (and a layout to run them on) and the business has been passed on to Ian MacCormac and David Lowe. Details of the new ordering system are on page 125. We wish Ian and David well for the venture.

As always, there is scope for new contributors, so, if you have something Brighton, whether the beginnings of a layout, or an item of rolling stock or a building, please get in touch. For those who are not currently modelling the LB&SCR, but are looking for a new project, I hope that the following pages will provide inspiration and encouragement to have a go.

Eric Gates

Modelling Steward, The Brighton Circle

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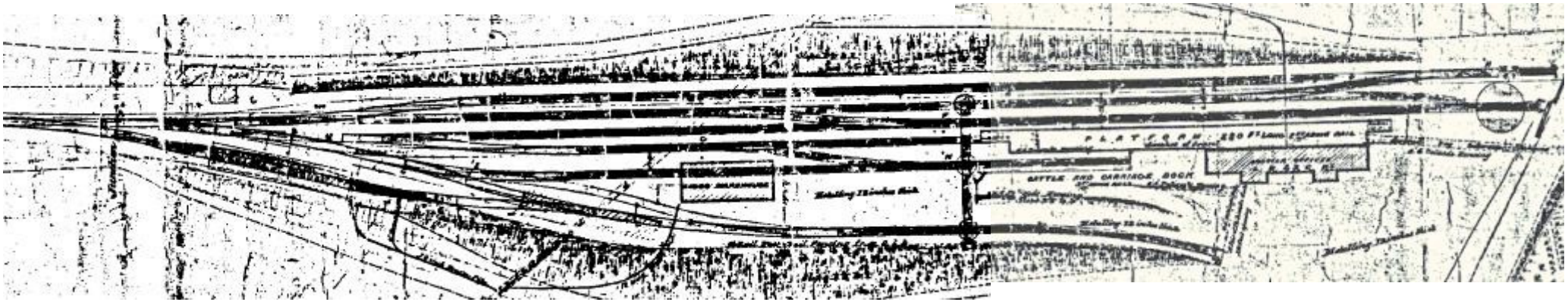
Midhurst 1866 - 4mm scale

By Michael de Jong Smith

I have recently commenced work on the one layout that I have always wanted to build, which is Midhurst LBSCR station, as it was when constructed in 1866. Having reached the age of 84 and suffering from Parkinson's Disease, I am unable to hold things still while soldering or detailing or lining. I have therefore recruited assistance for completing some of the kits which were still maturing in the “to be built” collection.
The early first map below shows the station and platform from the end of the line as far as the wagon turntables, yard and sidings.



The map has north on the lower side and shows that the station was built on a partially artificial embankment, as the original land sloped towards the south. The track at the top of the map was connected to the LSWR line by a bridge over the Bepton Road; I have not been able to learn why the head shunt on this line was so long, as it stretched as far as the LBSCR signal box, a

distance of several hundred yards. Immediately adjacent to the Bepton Road was a 42’ turntable at the end of the platform road, and locos coming off the turntable were straightaway onto a turnout which served the platform road and the run-round line. A crossover connected the line from the LSWR to the run-round track just after the turntable area.

At the eastern end of the platform were three wagon turntables serving the goods yard, which consisted of three sidings, a cattle dock with end-on loading facilities, a goods shed and coal staithes on the single long siding. This siding also incorporated a turnout which could be used either to access the loco shed or for trains using the goods yard. The loco shed line ran through the shed, past a coal loading dock and connected with the main running line.

The baseboard has been constructed on top of a line of cabinets along two walls of the room, and this gives me a 10’ scenic section and an 8’ fiddle yard. The baseboard is 10mm MDF on a rigid frame and was originally fixed down to the cupboards, which was a bad mistake. A lot of time and discomfort was expended trying to work and wire under a fixed top, and after a year of doing this, I decided to remove the whole top with the help of a friend. A batten was fixed along the wall at the required height, and then the baseboard was laid back in place and fixed to the batten by a series of hinges. This meant that the baseboard could be lifted from the front and fixed in a vertical position so that we could work of the underside with it at face level. As a result, I was able to rewire the layout completely in a sitting position.
I have Ian, of Perfection in Miniature, to help me with laying the track, some buildings and scenery, and many of my unfinished kits have been finished off by Simon Howard of S.H. Modelling. I have also received a great deal of help and advice from members of MERG since I joined, especially from Dave in Rome, Rodney Hill, and Tim Pullan, and I am deeply indepted to all the above for their help, work and patience.

As a member of the Brighton Circle, and a life-long railway enthusiast, I have always read

anything about railways that I could get hold of, and the South of England railway companies were what attracted me to modelling. I started as a fan of the LSWR, transferred to the SECR and it's components, and finally decided to stick with the Brighton from its inception up to the end of the Stroudley era. I have a few later 'brown' locos, but most are IEG or various green colours.

I have found the Brighton Circle magazine and forum to be a very good source of information and advice. The Circle has Stewards for every aspect of railway operation and someone has always been able to answer any question I had. I have also been through the records at the NRM and National Archive at Kew and learnt a lot more.

My concept for the layout is not strictly proto-typical, so there may be times when rolling stock may appear which would not have happened in reality, and this gives me the option to run trains from lines that were proposed to run to and through Midhurst but were never built.

Trackwork

The track layout has naturally been constrained by the room available but still gives a good representation of the original. The layout is being built to EM gauge, as

that is the gauge of all the stock I have built over the past forty years. Plain track is SMP and turnouts are mostly custom built by me using copper-clad sleepers, but with two or three ready made turnouts from Marcway. Operation of the turnouts (at the moment) is by Tortoise motors on the approach and exit to the platform road, and on the runround. All other turnouts are operated by Mercontrol using slide switches to change polarity, but the possibility of changing some of these to servo operation is being investigated.

Track is laid on a 3mm cork base and Ian has ballasted it to my instructions to represent shingle ballast, using a mixture (in equal parts) of Woodland Scenics brown and buff ‘N’ gauge ballast held together with Cascamite powder glue. This makes for a quite realistic ballast as can be seen from the following photo.

Operation of the layout is by DC analogue as I don’t understand or have the budget to change forty locos to DCC. Control is from the end of the scenic section and is done with two banks of switches, one bank for the track section power and the other using slide switches for the turnouts. The system incorporates a potentiometer to control the turntable speed.

Turntable

This is from a London Road Models kit and was built for me by Simon. When it was installed I had a problem with not being able to see when the tracks were aligned, as it is ten feet from where I sit. Having joined MERG last year, I asked for advice on their forum and had a fantastic response from various members. A lot of advice and then Dave began asking me about various measurements etc., and the next thing I knew was that he had constructed a jig to replicate my set-up, had worked out an electronic indexing system and posted it to me from Rome. Then Tim got in touch and arranged to come and install it for me. Now I can run a loco on to the turntable from where I sit, press a couple of switches and the turntable rotates slowly until it is in line and then stops, so I don't even have to be anywhere near it.

EBM kit, built by Simon, portraying Stroudley No 21.

Loco shed

Midhurst's locomotive shed was opened on 15th October 1866 by the Mid-Sussex and Midhurst Junction Railway and later taken over by the L.B. & S.C.R., to replace the locomotive shed at Petworth. The shed was located to the east of Midhurst station on the north side of the line and was a timber built single track straight through shed with a pitched roof. The Facilities included a coal stage and a water tank. The shed was left to fall into disrepair and was closed and demolished in 1907. In 1877 Midhurst shed staff comprised four drivers, two firemen and two cleaners.

Construction is on a thick card base, with the addition of real mahogany strips to represent the planking. These mahogany strips were obtained from a veneer supplier and stuck to the card base. End doors were fabricated from Plasticard scribed to look like planking. Finally all was sprayed black to look like the pitch covered planks used for the original construction. The building has been wired by me and is fully lit internally and externally. The windows were made by Ian, I think, using a laser cutter.

To the left is a photo of the shed built by me some fifteen years ago in readiness for this layout.

Coaling stage

This was fabricated by Ian and is based on my interpretation of what might have been. I have added a working light to the stage for the loco crews to use during the long winter nights!

Below

An overall view of the layout

Signal box.

For me, this is a work of art. Ian first made a dummy model of the box, which in itself could be used on a layout, constructed taking measurements from a photograph. He then made the final version from plasticard using a laser cutter. The verandah was a noticeable variation from the standard Saxby & Farmer box of the period. The interior is fully fitted with the number of levers necessary to operate the turnouts and signals yet to come.

Goods shed

Ian has built this to my instructions and made a very good building. My instructions were to use similar materials to those of the loco shed, as my interpretation of the site was that it was all originally built to a budget, bearing in mind that the LBSCR ran out of funds when building the Chichester to Midhurst line in 1865 and Midhurst station was only finished in 1866.

Again, due to the restrictions of the site area, I had decided that the goods shed would have had and end-on loading dock for carts, and therefore this is at one end of the shed parallel to the track on the station side. If there is anyone who can correct me on this, I would welcome information.

Station building

This has been sitting in a box for the past three years and has finally come into use The building was built to my instructions by Wessex Buildings but was very basic when received. The instructions given were based on measurements taken from the site plans supplied by the NRM and on a very poor painting done at the time by an unknown artist.

The plans received from NRM show the platform to have been only 280 feet long and the station building taking up nearly half of that length. There were two entrances to the station from the road side, one possibly for first class passengers and the other for the peasantry! At least, that is my interpretation.

The canopy was constructed by Ian and is supported by correct canopy uprights supplied by 5and9 models. The building has lights in five rooms, three lights under the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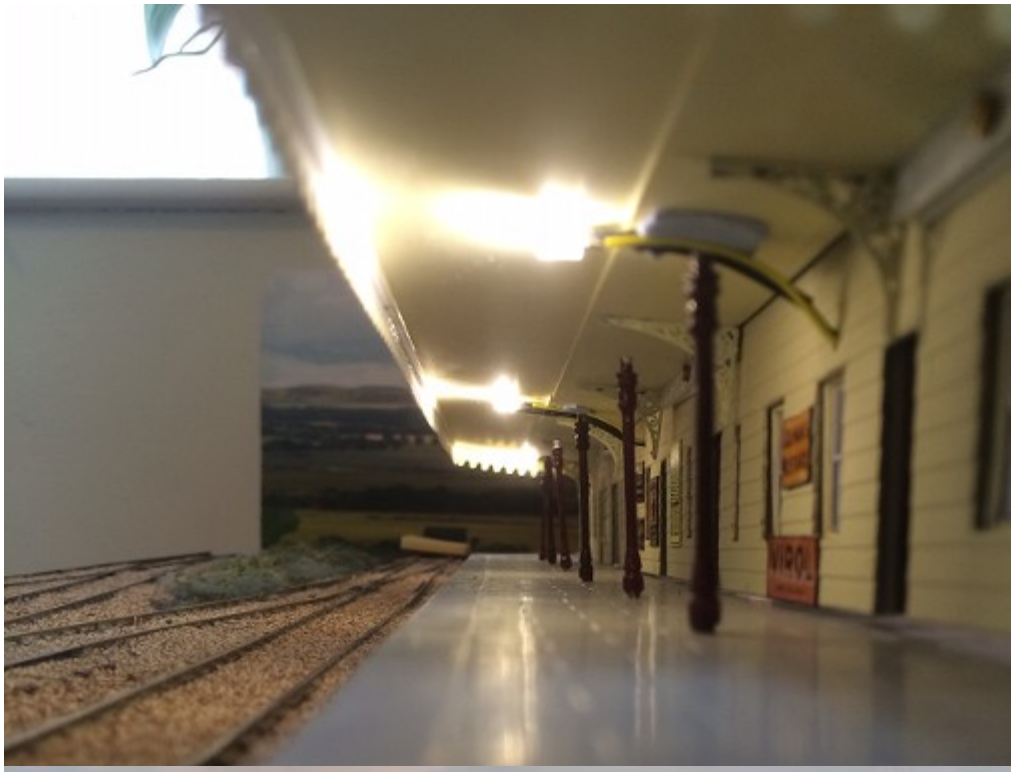
the canopy and one light over each entrance, all of which were wired and installed by me. I can still do some things (not a lot!). Ian also added the advertisements and timetables. In fact, under a very strong magnifying glass you can actually read the times of trains to and from Selham, Petworth etc.

Platform

The platform is shown under construction and has been surfaced with York stone and has been painted to give realistic colouring by Ian. Because of the confined space of the site, the platform fence has been made higher than normal due to the close proximity of the cattle loading facilities. This was done to protect passengers from the noise and noxious smells emanating from any cattle being loaded only a few feet away from the platform. The lamps have been installed on the platform and cattle dock and are wired and working. The construction of the fence is copied from a very early poor quality painting of the station, and the only difference with the model is the height of the running-in board, which I have lowered slightly.



What I have tried to do in the following photo is to reproduce the picture from which the artist previously mentioned took his inspiration. The rolling stock is (I believe) all from 5and9 kits.

West Lavington Hill was cut away up to the point where the tunnel mouth is located. The banking on the opposite of the track, which is cut away underneath to hide the layout controls, has also been shaped and part coloured but is not yet completed. The hill on the main or north side of the track has been created by Ian from a foam compound and he has also coloured and textured the face of the cutting. I must admit that I am very pleased with the end result. It is intended to finish this hill off with a line of scree at the base, to represent any fallen chalk or sand.

‘Hayling’, a ‘Gladstone’ class 0-4-2 tender loco from an etched brass kit (Albion?)
I put this kit together and part painted it, and the finish and lining were completed by Simon.

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LB&SCR Modelling in S Scale - Part 2

By Mike Watts

Following on from my article in the previous Digest where I introduced the building of my LB&SCR locomotives in S scale, I wrote that Part 2 would cover 3 more. The 3 identified were not built as the next 3 constructed in date order, but more to group the remaining small passenger locomotives together.

Craven/Stroudley 0-4-2T No. 373.

No. 373 was actually the next build in date order and the reason I chose it was simple: in the form with its original number, 18, and its subsequent new number, 373, it was stationed at West Croydon for working the Wimbledon services in the late 1870s and early 1880s. The idea of building no. 373 came to me when I came across a drawing and a photo in Brian Haresnape's Stroudley Locomotives (Ian Allan 1985 - page 30). The photo is of no. 467, but I assumed that both 373 and 467 were similar in build. Subsequently I came across a photo of 373 in John Minnis' 1999 book.

My model was built circa 2001 for my Wandle Valley Railway. To accompany it I built a short train of Craven 4-wheel coaches dating from the 1850/60s, although it frequently ran with my set of Stroudley close coupled 4-wheel coaches. All of these coaches were made from styrene sheet construction and so are not too heavy.

Following my usual practice the centre wheels of this loco are not sprung and have the Portescap unit mounted on that axle. The front drivers and rear trailing wheels are sprung so the loco has a tendency to 'lay down' on either the front wheels depending on the direction of travel. But this very tendency is good for finding weaknesses or faults in track construction!

My no. 373 pursued its running career unremarkably for 16 years or so until earlier this year (2017) I was asked if I knew whether there was a gap between the side tanks and the boiler, in front of the firebox of the original. With limited photos available I never even considered this possibility in 2001! It arises because the drawing (by 'H.T.B') shows the lower 'lip' of the dome cover below the level of the top of the side tanks, thus necessitating a gap. My personal view is that aspect of the drawing (on p.30) is in error and the author did not fully take into account the eye level of 1880s photographer. Anyway, regardless of whether I am correct or not, my model has no gap in the side tank top and is not a candidate for reconstruction!

D3 No. 365 *Victoria*

Victoria was the next build in date sequence, but it came about in an unusual way. I have a friend who models O gauge (one of those strange railways north of the Watford Gap!), who was fascinated by my venture into S scale. He likes scratch building and wanted to try his hand at a small tank loco in 1:64. I suggested a D3 and chose *Victoria* as a photo of it in Stroudley livery has been published. With the necessary etched numberplates from Bill Bedford, the basic body and chassis were soon in my hands for detailing and painting.

It is an interesting example of how different scratch building modelling techniques are pursued by different modellers. His chassis methods result in a much heavier chassis and his technique for mounting rear bogies are different from mine. Some of these differences make for interesting discussion, but at the end of the day the running results are not much different! The heavier D3 can pull a much heavier train, but on my average-sized layout that is no advantage. The D3 is a very useful loco but with the appearance of my E4 (see below), the D3 tends to take a 'back seat'.

E4 No. 464 *Woodmancote*

What would a Brighton layout be without an E4? No. 464 *Woodmancote* is the first of two E4s I have built, started in 2013 and completed within a year. In date sequence it actually came after my C class goods loco (to be described in my next article). The choice of the name of *Woodmancote* was by mistake. When I ordered a series of etched numberplates from Bill Bedford I made a mistake with a couple of numbers on my correspondence, but even though the result seems like an unusual choice, it makes for uniqueness. I have never seen another model of *Woodmancote* in any scale and most people do not have a clue as to where that village is located. It is a very scattered community near Horsham.

There is nothing remarkable about this E4, except that it is one of a pair. I had never built two identical locos together and I wanted to see if the net time spent on 2 would be shorter. It was, although the second E4 no. 467 (in Dark Goods Green) still has some painting details outstanding. *Woodmancote* is a nice reliable runner and looks its part pulling my rake of 6-wheeled Billinton coaches in their umber and white livery.

In the next part (3), I will introduce two more of my LBSCR S scale locomotives: the Stroudley C Class Goods 0-6-0 no. 409, the second E4 no. 467 and a few of the coaches and goods vehicles built for my locos to play with.

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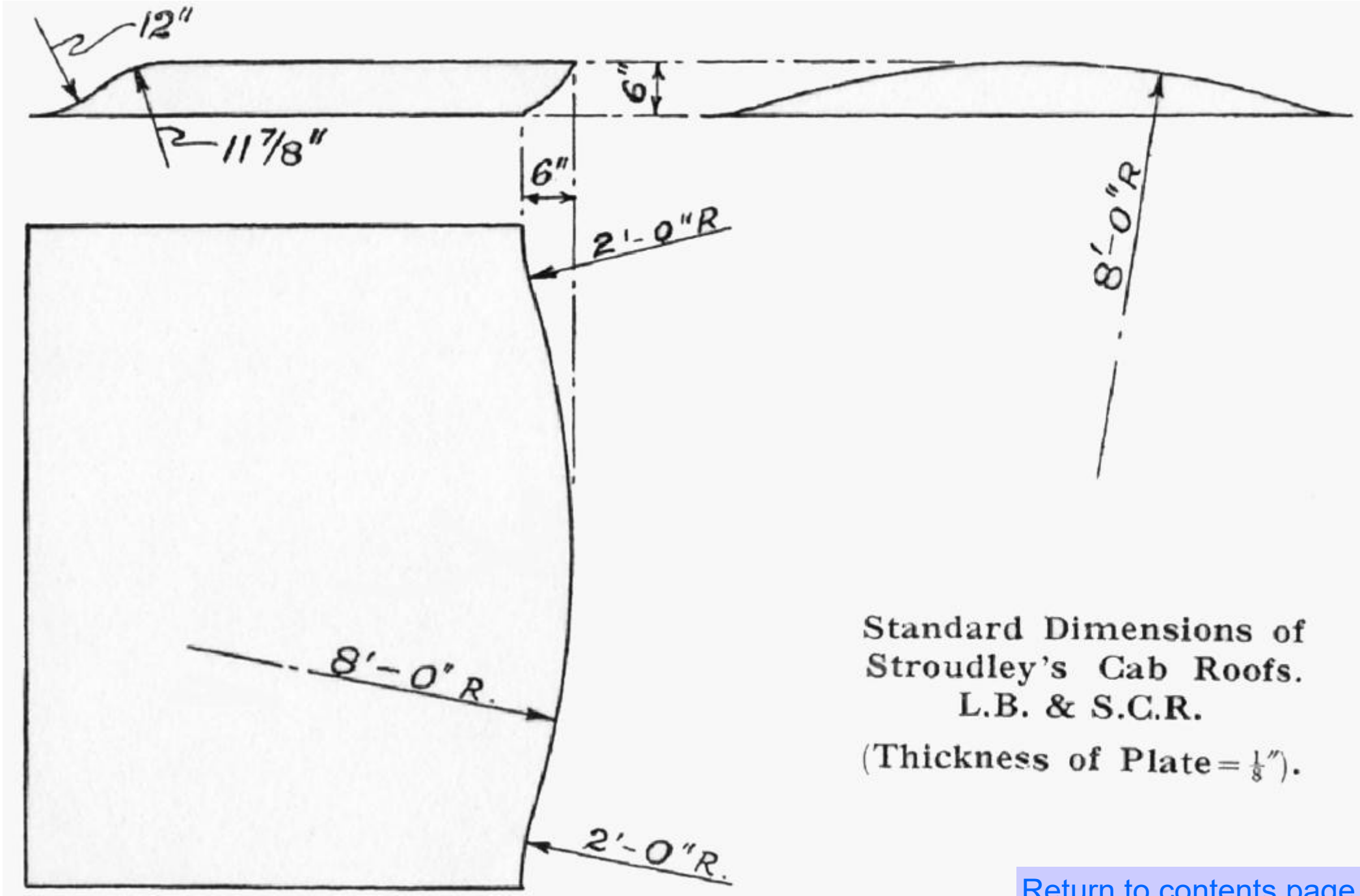
Stroudley Cab Roofs

From: The Model Railway News January 1932 pp 7, 8

Provided by David Lowe

Interest and enthusiasm for the old Stroudley locomotives of the ex L.B. and S.C.R. seems to be maintained at a high pitch, judging from the number of drawings of Stroudley's engines that have been sent to me recently for checking. Generally, the drawings are accurate in details, but I have been considerably puzzled by a curiously consistent error that almost invariably appears on a drawing of any Stroudley engine. The error is that the raised roof of the cab is indicated as being flat; and the same error has been apparent in most of the models that I have seen of Stroudley engines. In view of the prevailing interest, and to help those readers who may be at present engaged on the building of a model Stroudley engine, I have made the drawings reproduced herewith to show the general shape of the cab roof. Looking from the side, the top line of the roof was horizontal, but from the back or front viewpoint the roof arched over from side to side, the radius of the arch being 8’ in *all* types of Stroudley engines. At the outer edges of the front and two sides of tender engine cabs, and at all four outer edges of tank-engine cabs, a reverse curve of 12” radius carried the raised roof down to the coping, or guttering. What puzzles me is how the error I have mentioned ever came into existence. At first, I thought, quite frankly, that it may have been due to a desire to simplify an awkward item of model construction; but so frequently does this error show itself that I am now quite convinced that it must have originated in some other source, though what that source is I have, so far, failed to discover. I hope, however, that my drawings and remarks herewith will stamp it out for all time. The dimensions shown were standard for all types of Stroudley's engines.

J. N. Maskelyne



Standard Dimensions of Stroudley's Cab Roofs. L.B. & S.C.R.

(Thickness of Plate = $\frac{1}{8}$").

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Short Trains - Part 4

By Nick Holliday

Pull-push trains

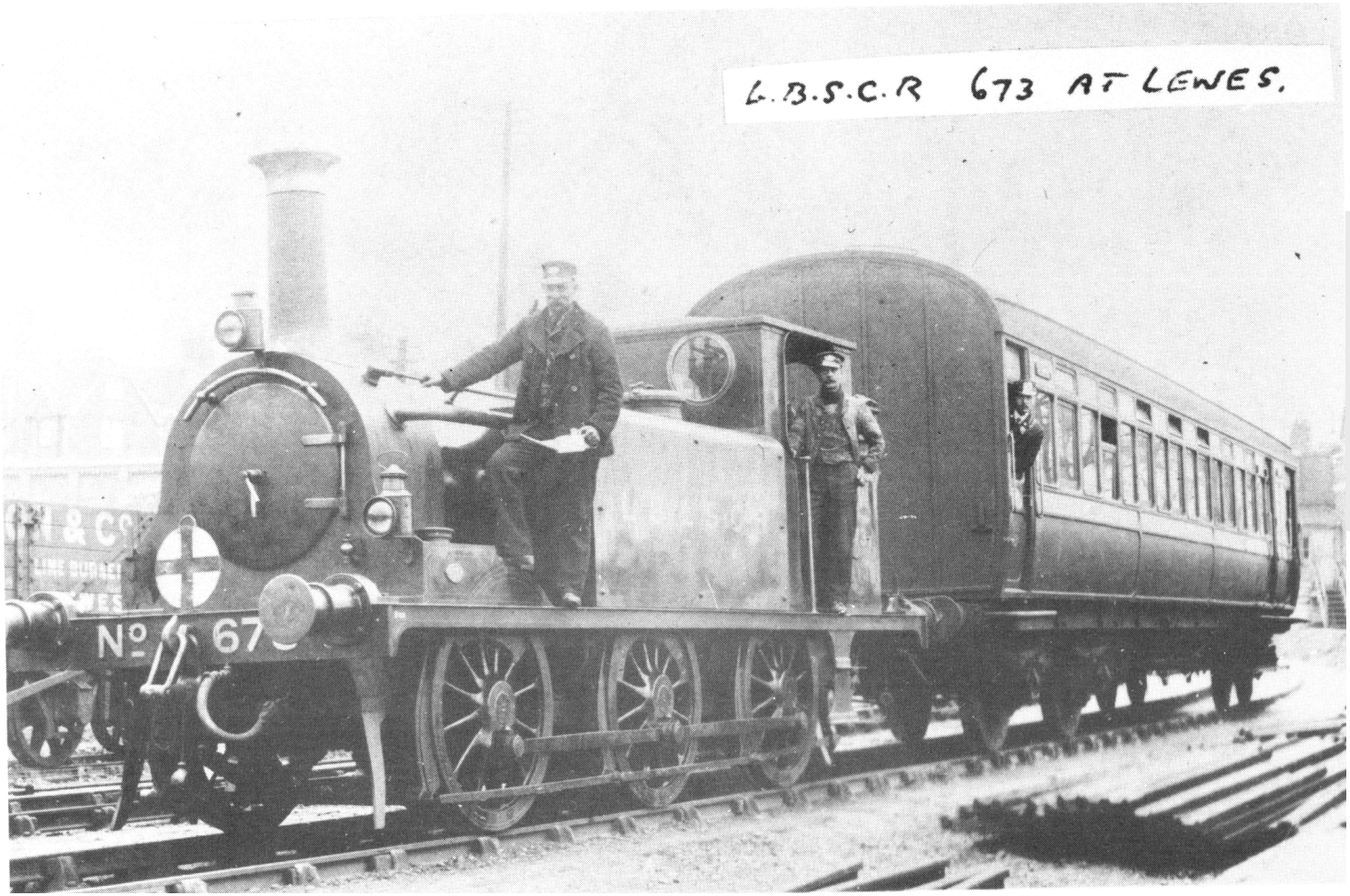
The development of the pull-push concept involved a degree of serendipity. At the time, there were a number of the Terrier tanks becoming redundant and being placed on the duplicate list. This was due to a combination of their age (around 30 years is seen as the optimum “life” of a steam loco), lack of power to cope with the heavier rolling stock that was being introduced, and the arrival of the last tranche of radial tanks, which partly displaced the larger and more versatile D1 tanks for the duties previously within the remit of the Terriers. At this date a number of them were offered for sale, to lines like the K&ESR, contractors and the Government. Meanwhile the GWR had begun experimenting with the idea of mechanically controlling the locomotive from a leading carriage, alongside their development of steam railmotors.

However, Marsh realised that the Terriers still had more than enough power to be able to handle the single trailer coach envisaged, and they had previously demonstrated their ability to run at speed, when required, despite their 4 foot diameter wheels. A pair, Boxhill and Beulah, were taken into Brighton works and adapted for their new role. This involved substituting a small carrying wheel for the front driver, (Marsh hated having leading coupled wheels) which required an alteration to the sanding to get it under the driving wheels, reducing the cylinder diameter for economy, and fitting the necessary mechanical control gear for the motor working.

Both came out of the works in new liveries, Beulah lost her name and emerged as one of the first locos in the new umber livery, whilst Boxhill came out in a version of the old Stroudley livery, retaining her name, with revised lining, and, a subject of much debate and conjecture, possibly painted in a proper green, rather than the yellow of Stroudley's Improved Engine Green. Black and white photos don't help in resolving this issue. Boxhill, in whatever colour, would have been the only Terrier to operate an autotrailer whilst carrying a name or Stroudley livery; all others would have received umber livery at the time of being fitted with the control gear. Barry Luck's model of this initial combination was featured in Digest No. 4.

Boxhill as a 2-4-0T, and one of the original trailers, with the unused gangway connection visible, at Hove

The concept immediately proved a success, being fast, quiet and efficient, and although the LBSC continued with the evaluation trials of the other vehicles, they quickly expanded the scope of autotrain workings, with further trailers being built, and more Terriers being converted, although this only meant the restoration of condensing gear and the fitting of the control gear, the other modifications having proved unnecessary. Subsequently many of the Terriers received more modern boilers, with the extended smokebox, which identified them as A1X class, as shown in the first part of this series, in Digest No. 3.



Terrier 673 (formerly Deptford) at Lewes, before conversion to A1X in 1912, coupled to one of the later Balloon autotrailers.

Modelling these early autotrains is relatively easy in all scales. The Terrier is available ready to run in umber livery from Dapol in 2mm and 7mm, and from Hornby in 4mm, and kits are around in 4mm and 7mm from various sources, past and present, such as Albion Models and SEFinecast. The early trailers can be found in the Branchlines and Roxey Mouldings ranges in both 7mm and 4mm, and from Etched Pixels in 2mm.

Terrier and Balloon autocoach on Barry Luck's 4mm Plumpton Green layout. Loco and coach both scratch built by Barry, who took the photograph.

7mm Terrier and Balloon Coach taken at Church End on the branch line of the Stevenage MRC layout, photo courtesy of Graham Boseley. Models acquired second-hand, maker unknown, but both in brass.

Etched Pixels' balloon autocoach in N Gauge (Photo from Etched Pixel website)

Once the concept had been proved, the LBSC introduced the new trains in earnest, with services being provided in both commuting areas, such as the lines around Sutton and West Croydon, as well as on lightly used branchlines. In many locations simple timber halt platforms were erected at road crossings, in an attempt to draw in more traffic, encouraged by the more frequent and faster service the autotrains offered.

Hurst Green halt – a typical timber platform with minimal facilities. Terrier 677 on autotrain.

One advantage these trains had over the self-contained railmotors was the ability to haul additional vehicles if the traffic required, such as an extra coach or perhaps a horsebox, the load being well within the loco's capabilities.

In 1909 the Brighton introduced two coach trains, with a D1 0-4-2 tank sandwiched between the trailers, together with an improved, air operated control system replacing the mechanical linkages, and two class travel, the early trailers being third class only. The larger locos gave better performance and an enhanced operating range. Over the years, further types of pull-push units were built, many of the later ones being equipped with corridors and operating as couple pairs.

An unknown Terrier passing Balham Intermediate signal box, the balloon coach leading, with a six-wheel brake third behind the engine.

The 1909 pull-push train, with experimental loco livery

These later units are easy to reproduce in 4mm, with the D1 being available from Albion Models and SEFinecast. Full coach kits for the 1909 pairing are produced by Roxey Mouldings, and Worsley Works can supply side and end etchings for a variety of the later units, which were fitted with gangway connections to work as a coupled pair. These would have appeared in all-over umber when new.

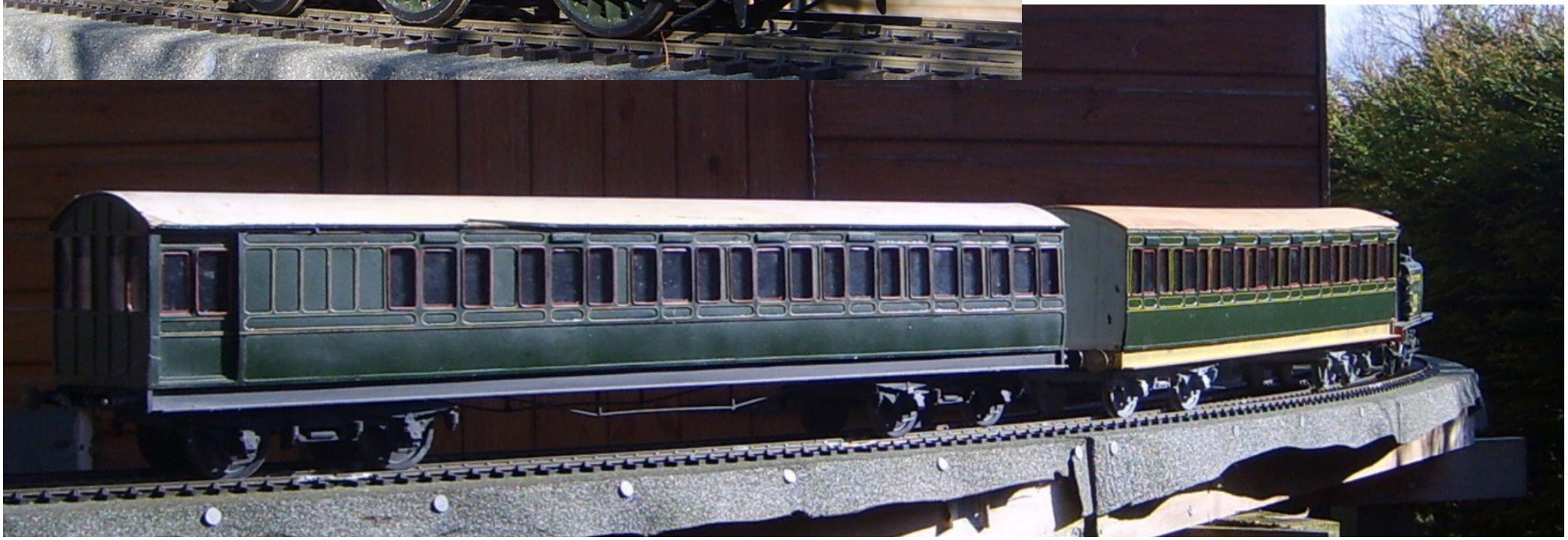
D1 0-4-2T with later two coach autotrain

1909 autotrain on Barry Luck's Plumpton Green layout. Loco scratchbuilt, with coaches courtesy of Roxey Mouldings and built and painted by Barry.

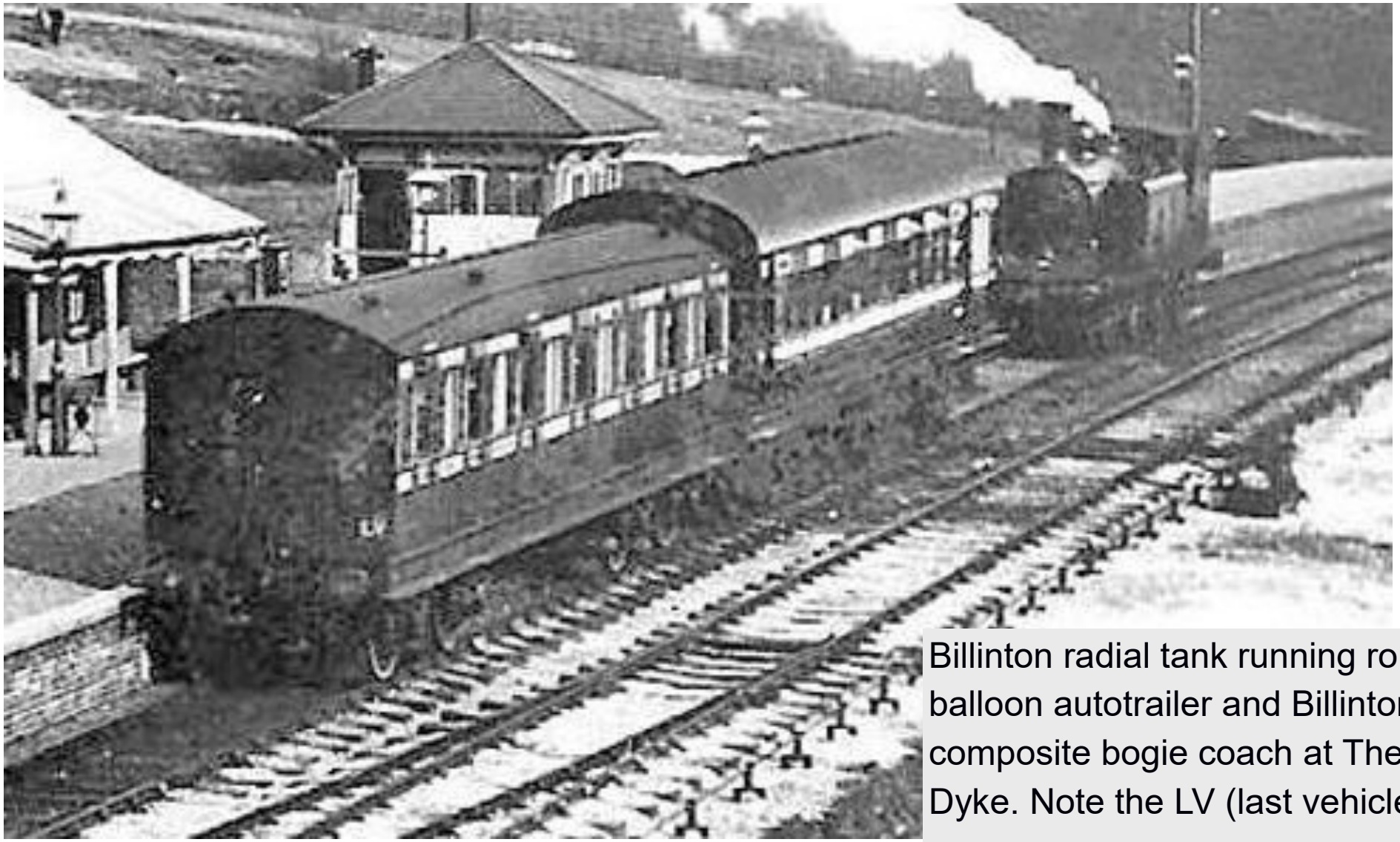
The 7mm modeller is not so fortunate regarding these later units, although Worsley have been known to supply their etchings suitably enlarged. However, the 3mm (TT) modeller is slightly better off. The Worsley etchings are available in this scale, and it is possible to obtain the Albion Models D1 etchings at this scale as well. Peter Bossom has these running on his Thunder's Hill layout, albeit in Southern green!

Two gangway-connected P/P pairs on Peter Bossom's 3mm scale Thunder's Hill layout

Brian Jones even has a D1 and two coach P/P set in Gauge 3, seen here standing on Gauge 1 track!



For some reason, the early balloon autotrailers were very popular on The Dyke branch, even though, for safety reasons they were not allowed to be used in pull/push mode. So it was possible to see different classes, such as E1 0-6-0 tanks, the later radial 0-6-2 tanks and even Marsh's Atlantic tanks, hauling balloon autotrailers, but having to run round their trains at The Dyke station, as fortuitously caught on camera.



Billinton radial tank running round balloon autotrailer and Billinton composite bogie coach at The Dyke. Note the LV (last vehicle).

It is hard to think of a more inappropriate combination! A non-P/P-fitted goods loco combined with a balloon autocoach, the wrong way round, at Dyke Station. Note the single line staff actually displayed in the holder fixed to the cabside. Probably, the only photo that shows this fixture being correctly used.

Suppliers

Roxey Mouldings - http://www.roxeymouldings.co.uk/category/30/4mm-scale-lbscr-bogie-coaches/

Albion Models – Available from Roxey at exhibitions

Branchlines - mailto:sales@branchlines.com

Etched Pixels - http://www.ultima-models.co.uk/catalogue/lbscr.html

SEFinecast – http://www.sefinecast.co.uk/Locomotives/New%20and%20Revised%20Loco%20Kits%20Page%202.htm

Worsley Works – http://www.worsleyworks.co.uk/4mm/4mm_Southern_Pregroup_LBSCR.htm

3mm Society - https://docs.google.com/viewer?a=v&pid=sites&srcid=ZGVmYXVsdGRvbWFpbnwzbW1wdWJsaWN8Z3g6NjFhZDk5ZjM2ZjczMTY2MA

Further reading

The best coverage of Autotrains currently is Mike King's Southern Pull-Push Stock published by OPC. David Gould's Oakwood Press book on LBSCR Bogie Carriages builds on the information contained within an earlier Oakwood publication, Carriage Stock of the LBSCR written by P J Newbury, with drawings in addition to technical details.

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Short Trains Feedback

By Graham Boseley

Graham Boseley has kindly provided pictures showing a two coach pull push train with a D1 in 7mm, which was bought already built. The coaches are built from MSC kits by Peter James and look like vehicles produced after the initial period of push pull construction, and, coming out post 1912, should perhaps not be in two-tone livery, although they do look very well executed and very smart.

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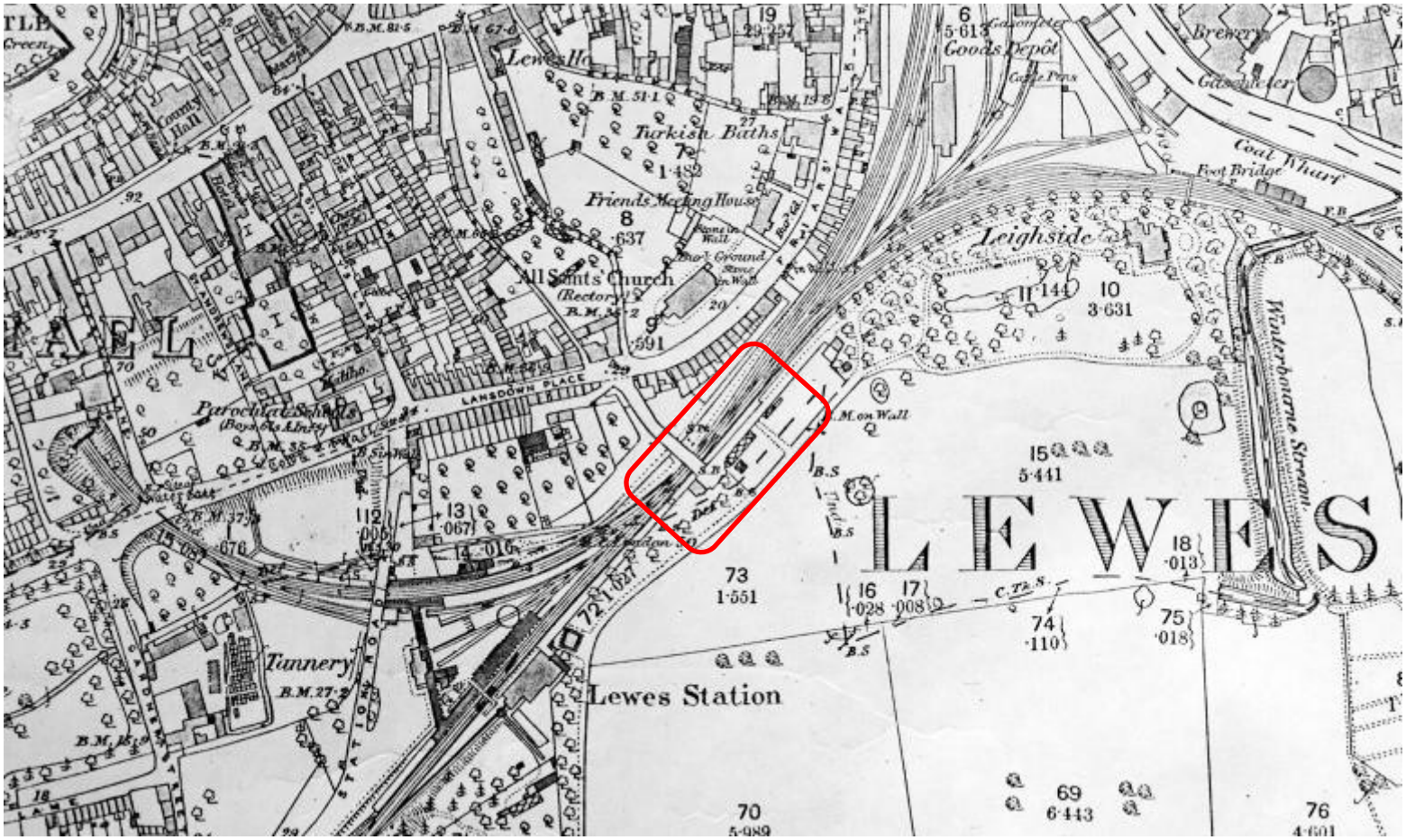
Lewes Second Station - Leighside Access

By David Rigler

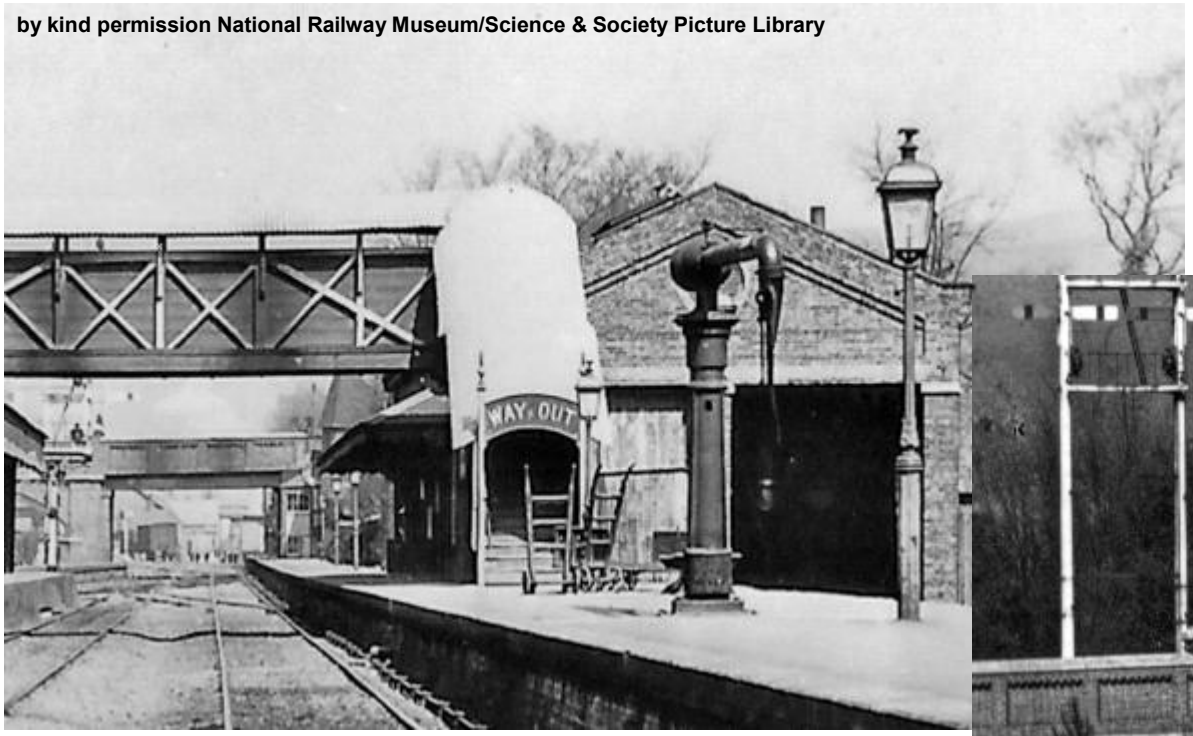
This third article on my modelling in 3D CAD of the second Lewes Station (1857—1889) describes the last major structure required to complete the scene, shown in the Red box on map below.

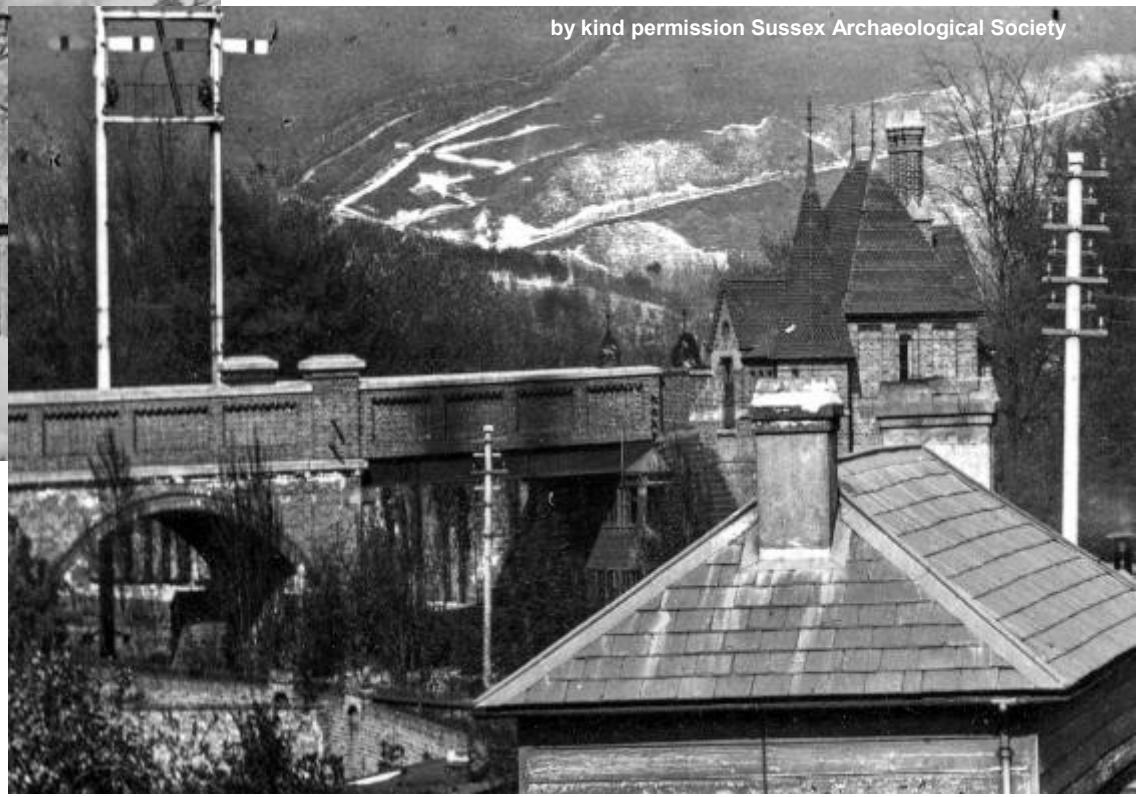
The building of the railway to Lewes cut off Leighside house and estate from the town. To provide access a bridge was built to cross the line from Lansdown Place with a gentle ramp down to the estate. An ornate building on the junction between ramp and bridge was also built although its exact purpose is not clear to me. I believe the construction was at the time of the first station, around 1846.



I had original planned to just model the building and one face of the bridge but this small area proved fascinating in its detail and my boundaries just grew and grew.

As with other structures modelled I have not been able to work from a complete set of data. In particular views of the rear of the building, its entrance from the bridge and the signal box under the bridge are limited. Below and overlaying some of the following CAD render images are the most informative photographs.

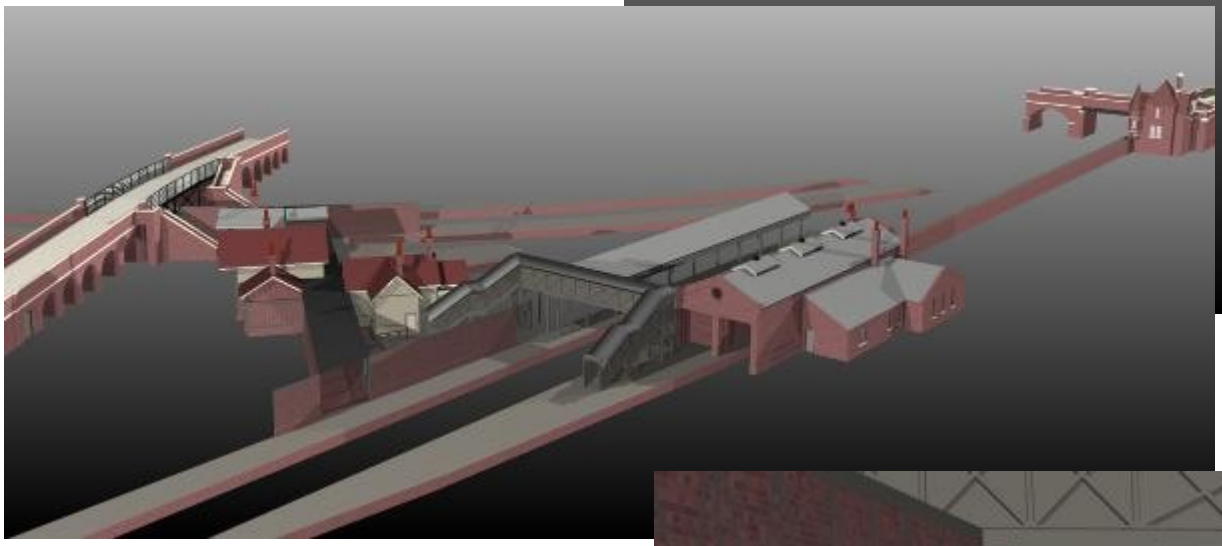




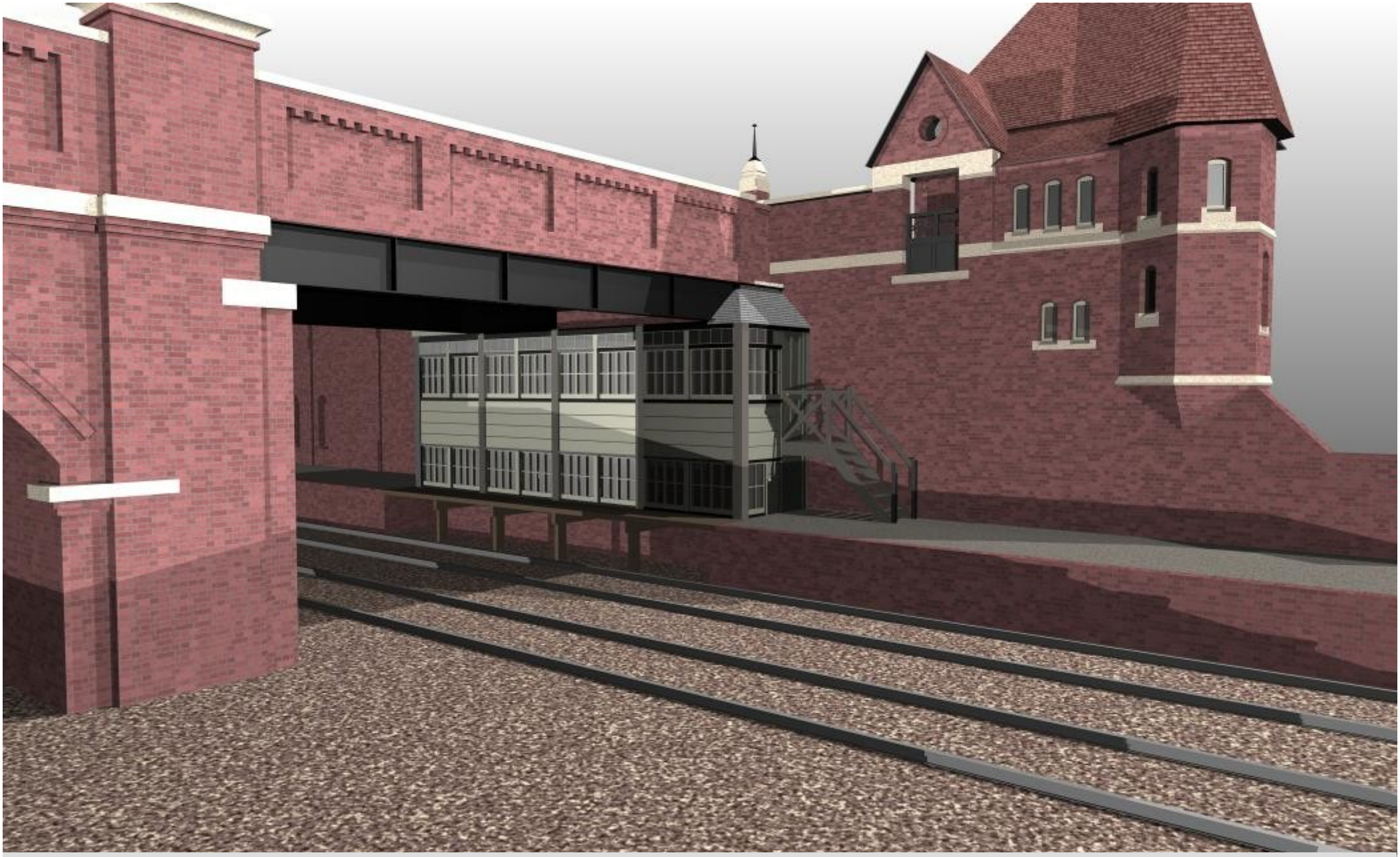
These two are from the period of interest. Note brick bridge parapet and signal box detail.

These two are later in the 1900's after the 3rd station was built. Good detail for counting of building brickwork and window positions.

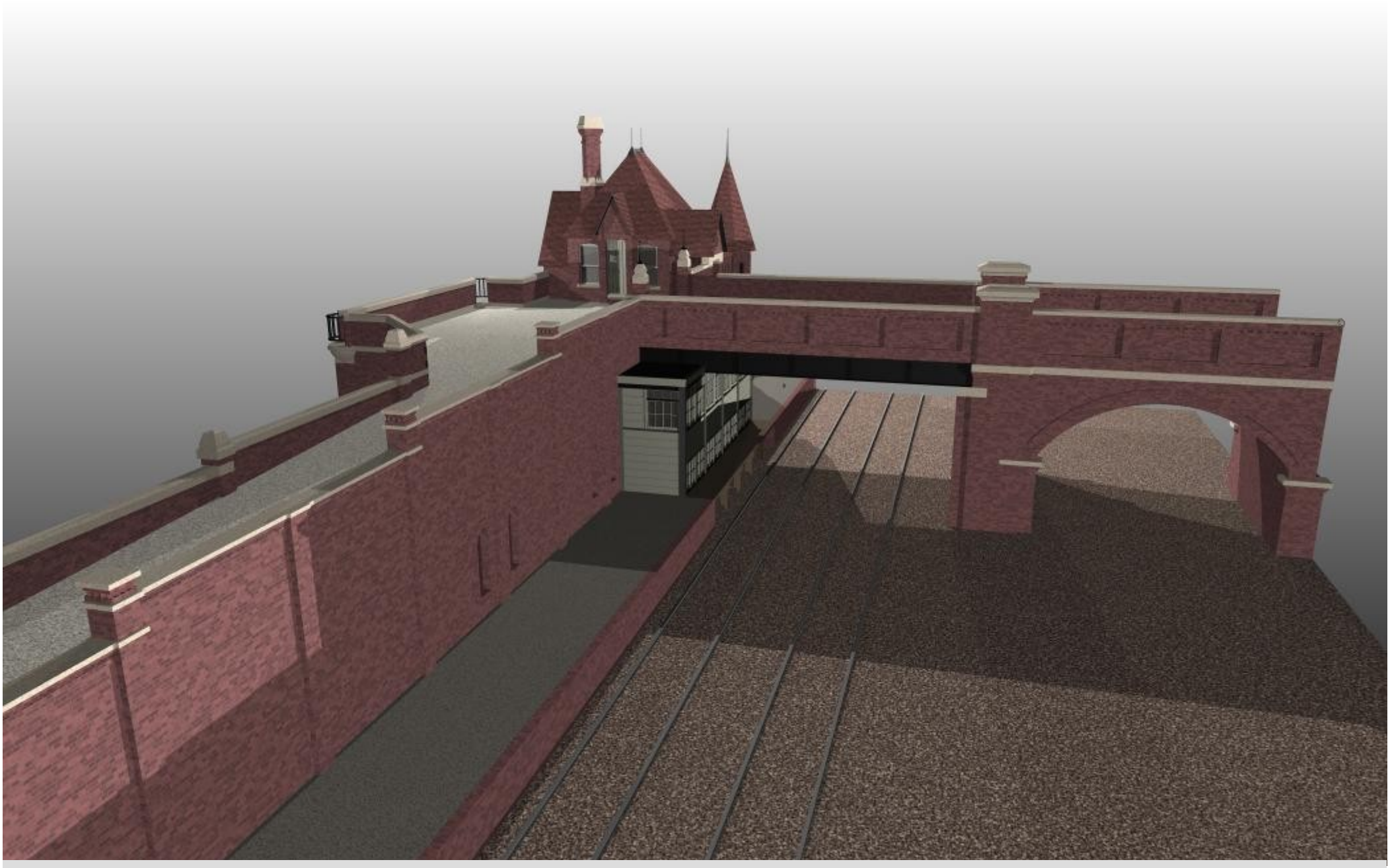
Views to show how the model fits into the overall scene. Note that the Leigh-side access from Lansdown Place has three additional arches that are not modelled.



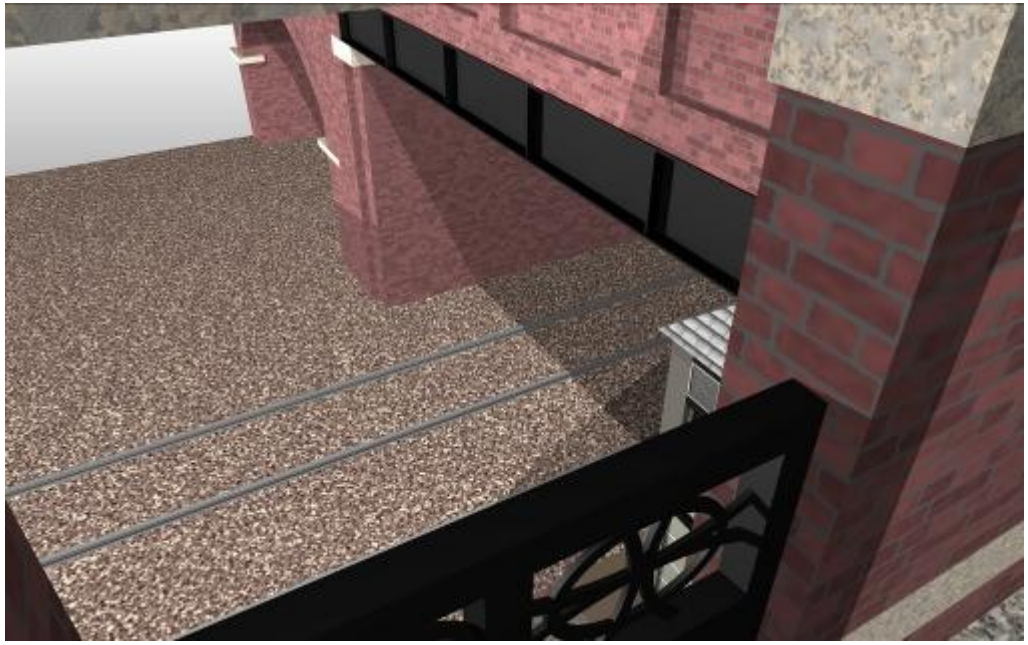
View looking East. Note bricked up opening in parapet where stairs to platform once existed.



Side view of signal box. The change to trestle platform in front is assumed to give routing for control rods.

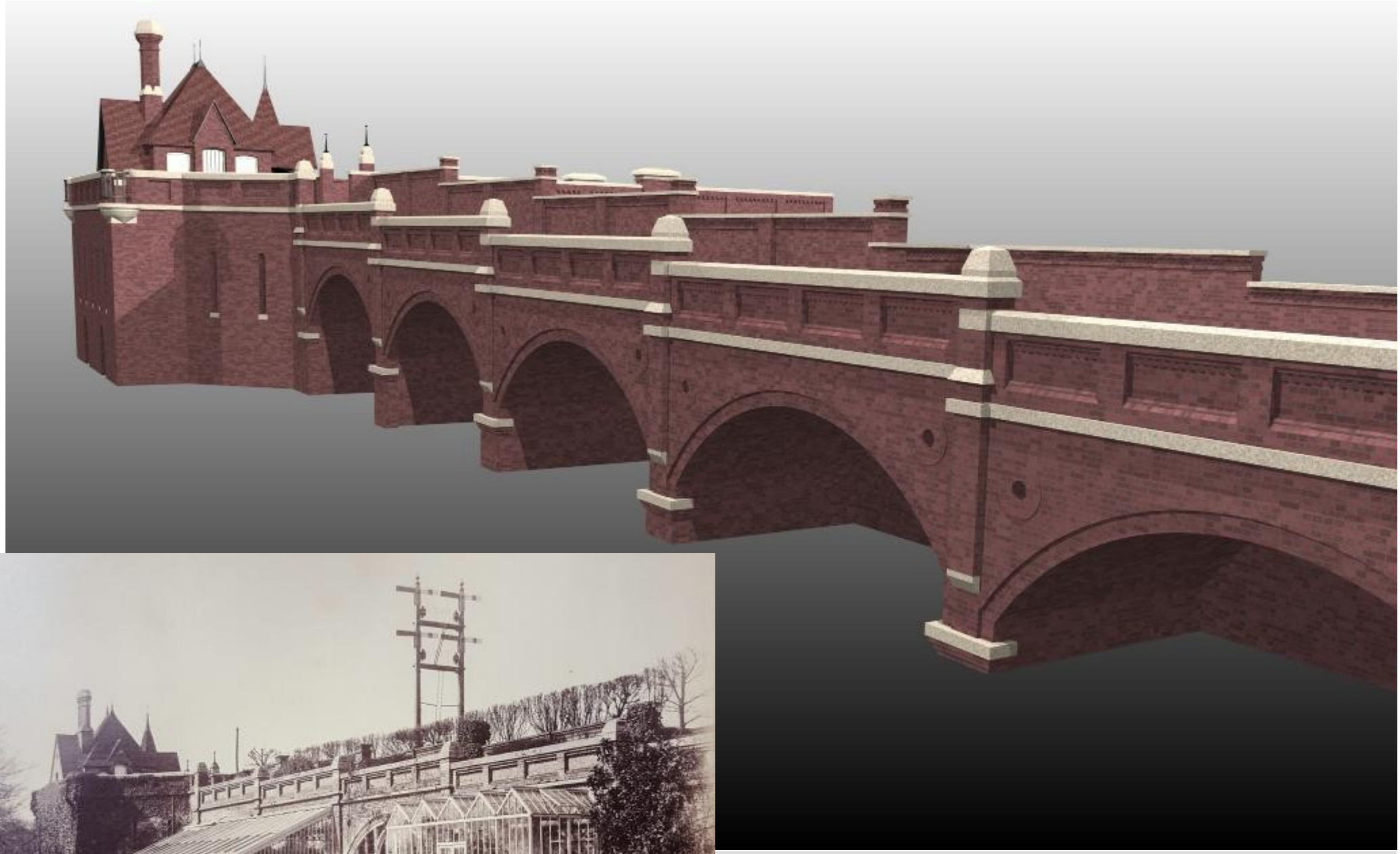


Note: Roof rendering is plain tiles whereas the prototype has alternating bands of plain and scalloped.



Various views of building from entrance level.

View downward is from the arch overlooking the platform.



Greenhouses and magnificent signal post are not modelled!

Iron railings on view points are place holders pending finding some accurate detail.

The building has gone but fortunate to have taken pictures before the ramp was demolished, c 1980.

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Lewes 1886, in 2mm finescale

By Dave Searle

Photo from the Burtt collection NRM

Background

The “Little People” from the Epsom & Ewell Club, had built a contemporary N gauge layout “Hinksey Yard”. It's been out to several shows and been well received by the public. However, there were a few aspects that we were not totally happy with:

- It was effectively complete, just minor scenic bits to add, extending it would be complicated.
- Without building a large extension fiddle yard, there was no need for new stock.
- The track (Peco code 55) and point motors (SEEP) could be improved upon.
- The wiring was too complex for the way we actually used the layout. So we looked into building a new layout.

Why 2mmFS?

Whilst we could have used the new “fiNetrax” for N gauge, we felt that moving to 2mmFS would give us more opportunities. We are builders, and are looking to extend our skills, so we wanted to try track building as well as kit and scratch-building stock.

Why Lewes?

Hinksey Yard had been based on a real location (simplified a bit to fit in the space available) and we had enjoyed researching it (especially with help from RMWeb members). So we looked for another real location which would allow site visits and research.

Lewes met several criteria:

- It is an interesting place:
- Its railway history is complex.

- Lines from four directions (London, Brighton, Uckfield and Hastings) converge onto a pair of double junctions (almost a flattened “X”).
- The station is in the angle of one junction and goods yard in the angle of the other.
- There is a combination of long distance main line trains and shorter local ones (both passenger and goods), and everything in between. Basically any main line stock could be seen there.
- There is a riverside wharf by the goods yard.
- The whole site would fit into a reasonable space for a medium sized club layout

(about 20’ x 7’).

- Andy has liked the place since he was a lad and
- I have an interest in the LB&SCR which leads to...

Why 1886?

- Probably the best time to set a layout:
- Some Craven stock is still running.
- Stroudley’s classic locomotive classes are all present.
- Lewes’s second station is at its peak, just before the rebuilding into the more familiar current (third) station form.
- ·Shorter train lengths than the 8’+ of Hinksey Yard
- The National Archive have working timetables for that year (amongst many others)
- We chose Tuesday, 1st June 1886 as our target day as the Lewes Races were being held that day and would provide some special horse box traffic.

Research

We spent some 18 months doing background research: collecting photographs, books & maps, visiting Record Offices, Lewes itself (especially Harvey's brewery) and scouring the Internet, Brighton Circle and Census records. This has provided a great starting point and we now have enough information to start building.

Stock

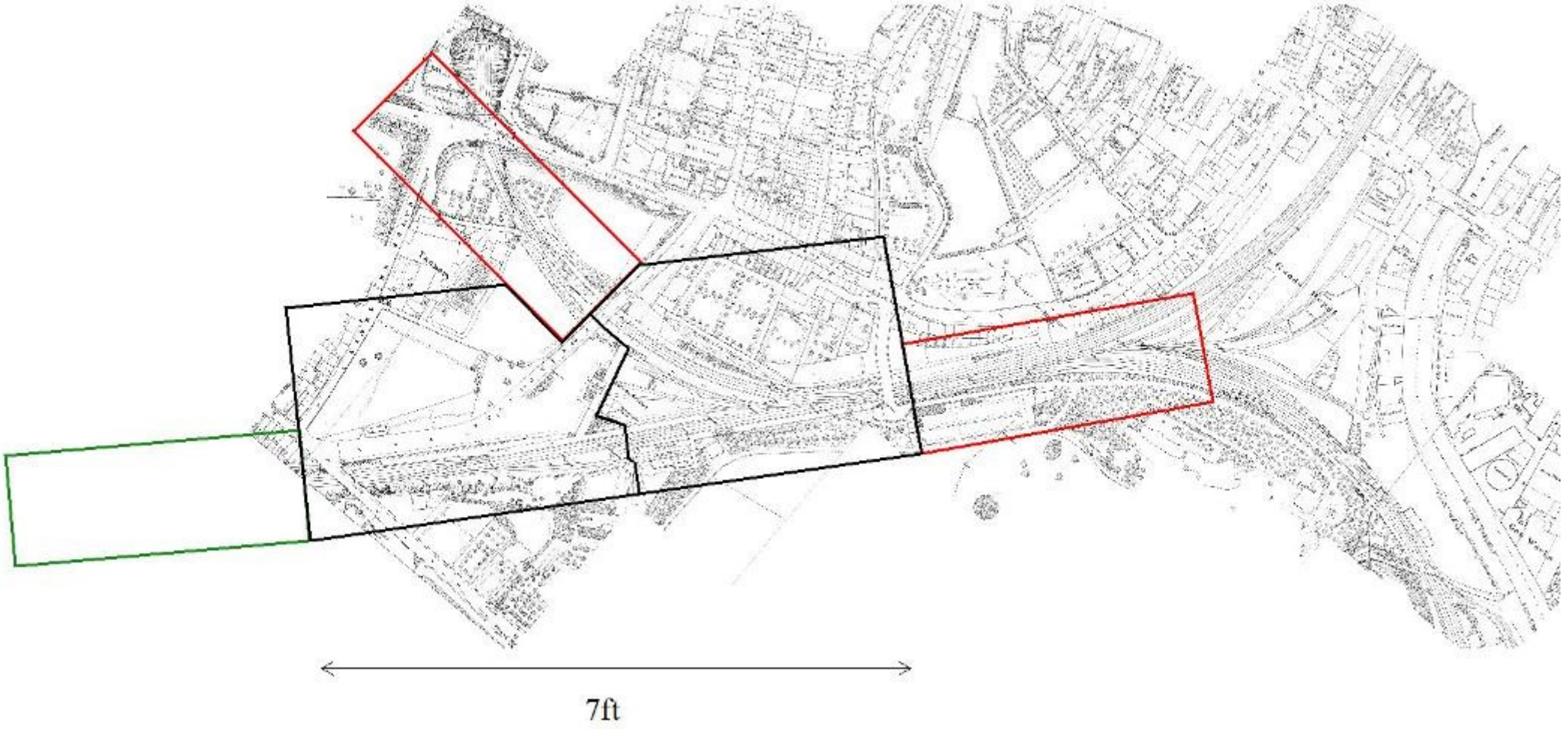
The main question from the club's committee was "where will the stock come from?". There are very few RTR items for the LB&SCR at this period in any scale, let alone N or 2mmFS, we just have the Dapol Terrier (or 10 of them in my case) and a couple of possible PO wagons. However, with the advent of 3D printing, Eddie Poole has produced wagon prints for the main wagons types for this period. Etched Pixels provide etchings for Stroudley coaches.

A chat to Mike Waldron of EBM got the 4mm W-Irons for coaches and wagons reduced to 2mm and we were in business. I am also talking to the manufacturers of other LBSCR Stroudley period kits in 4mm about reducing them to 2mm.

A major step forward was when Nigel Ashton joined our group. He is an accomplished 2mm loco builder and is teaching us how to build loco chassis and has himself started on a scratchbuilt model of the Sharp Stewart 2-4-0 "Epsom".

The Design

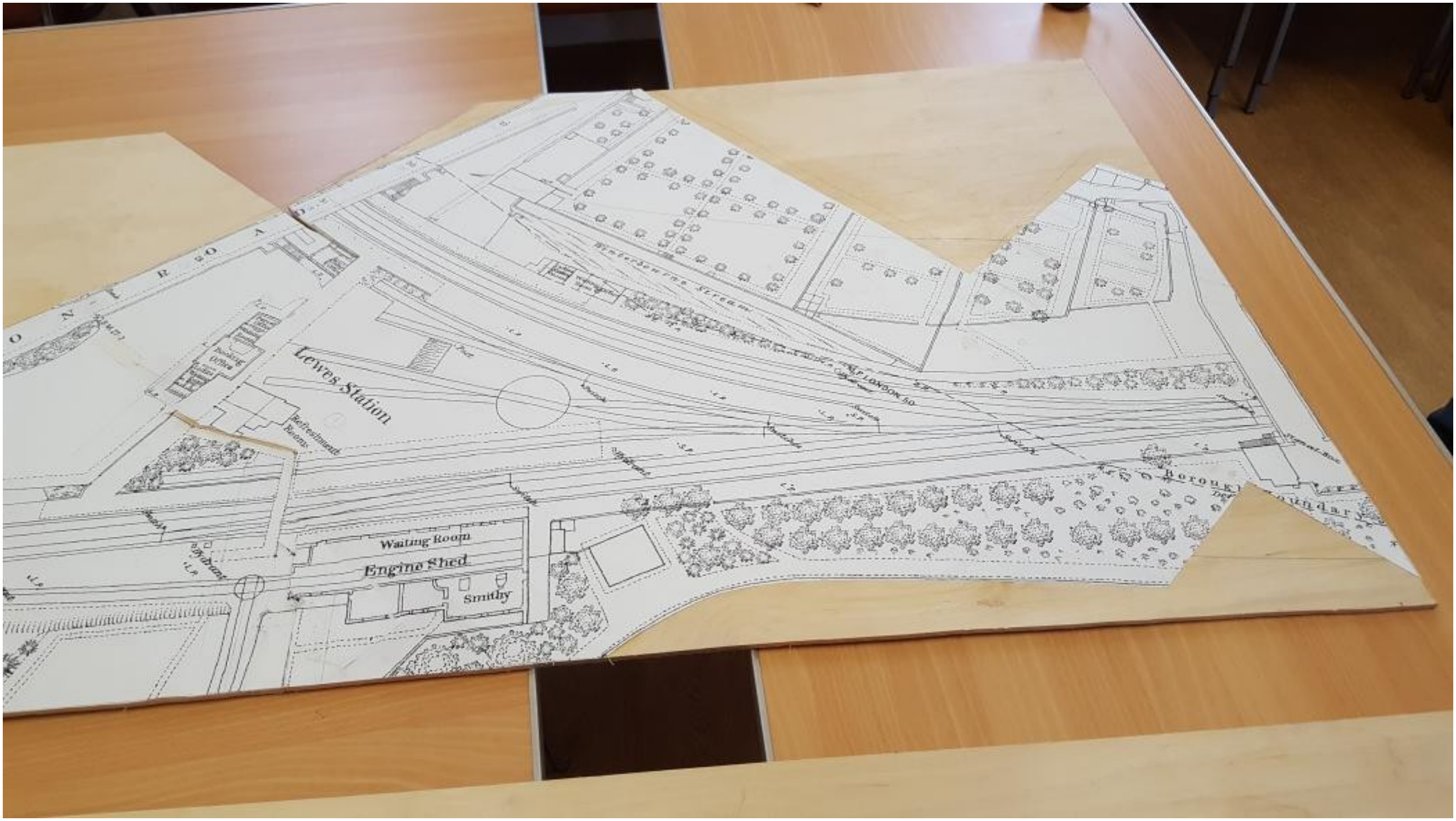
The committee gave permission to build the layout in stages: Phase 1 would be the main station board; Phase 2 would be the goods yard.



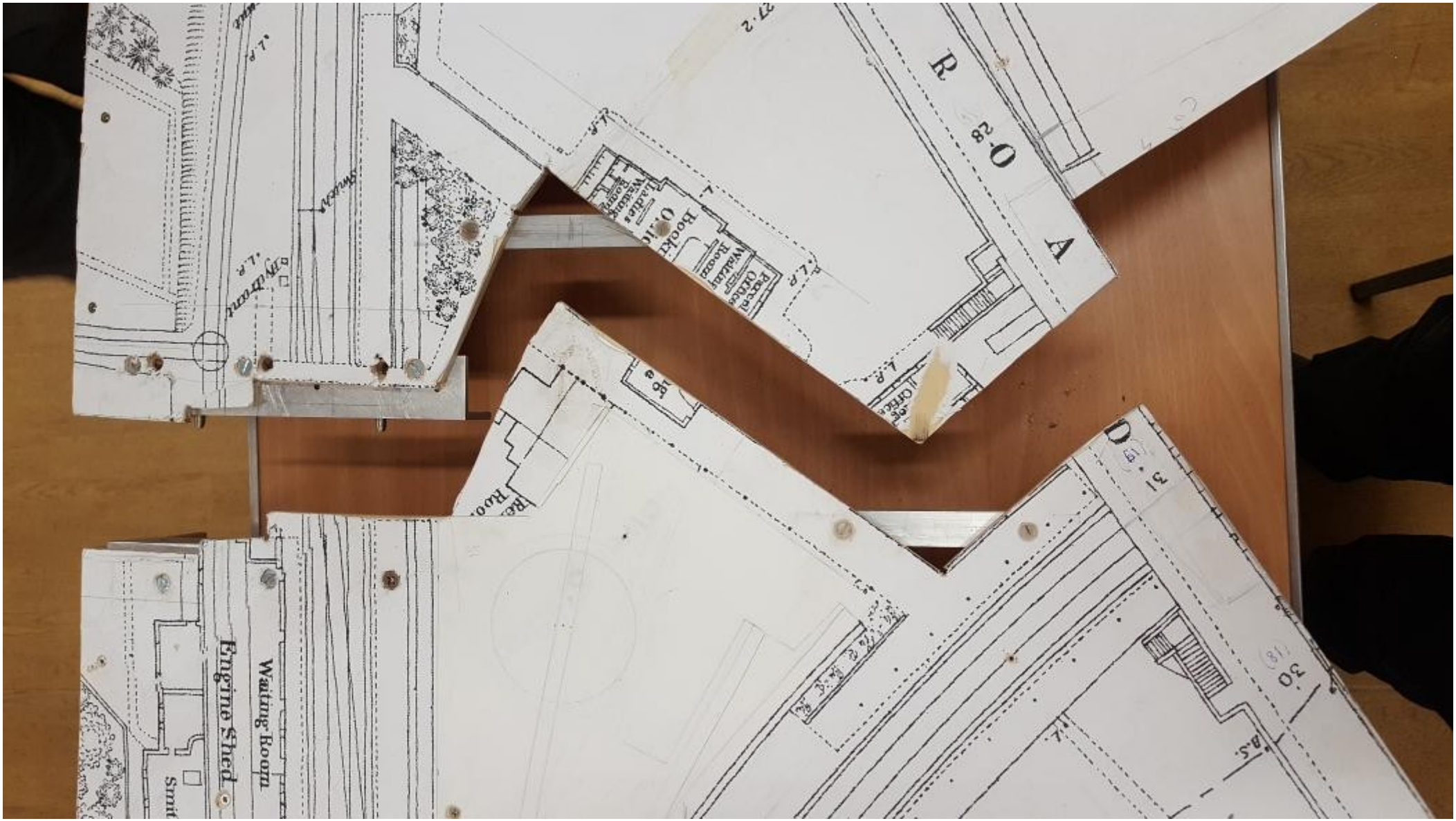
The drawing above indicates how the base-boards for Phase 1 fit over the 1:500 scale map of Lewes dating from the mid-1870s.The green and red rectangles are fiddle yards, the red ones will change position as the layout grows.

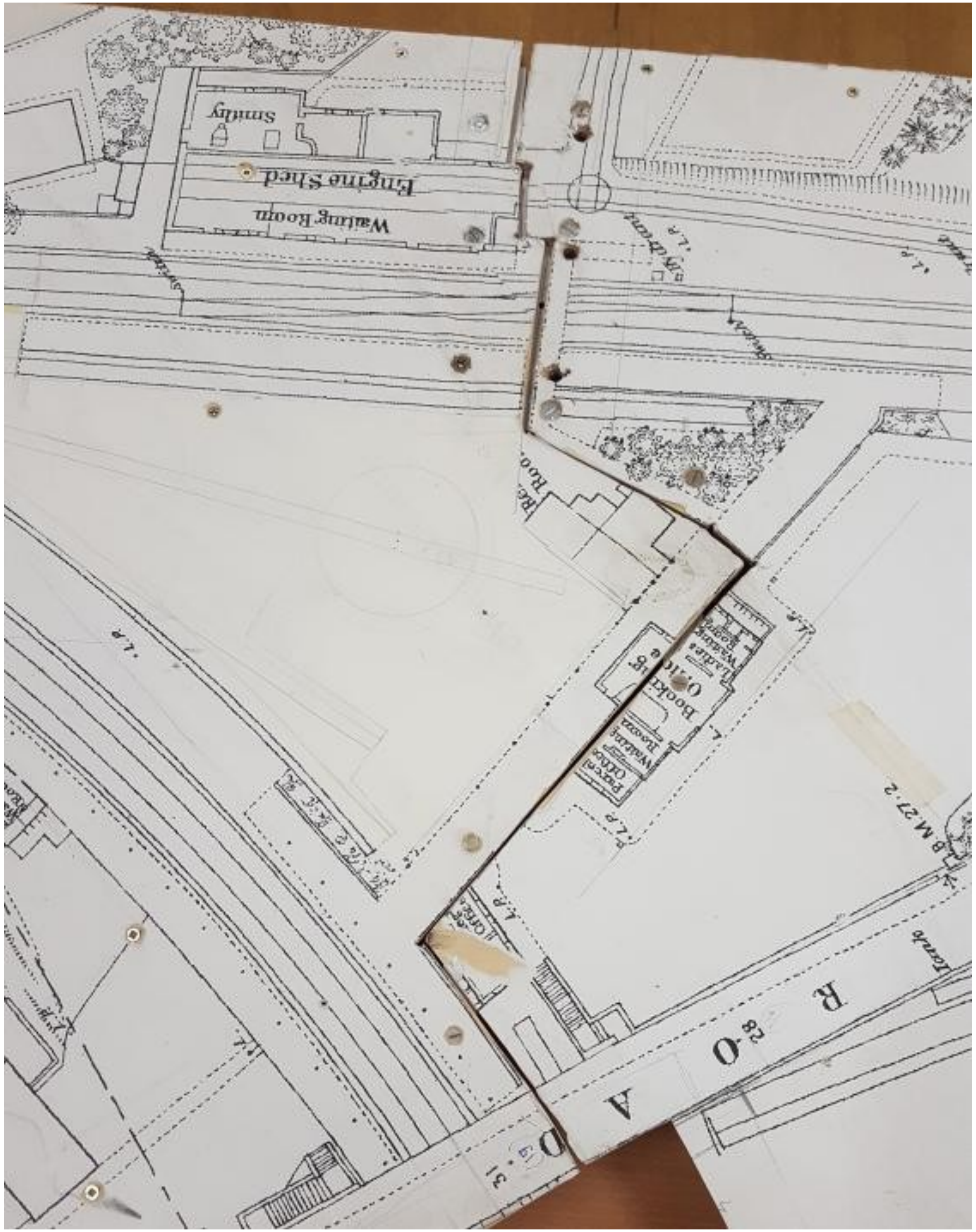
Work begins (Phase 1)

Our first step was to enlarge part of the 1:500 scale OS map to full size for 2mmFS (1:152.4). These were then stuck down on some 6mm birch plywood as the first steps towards the baseboards.



One thing that I wanted to try was the idea of a “jigsaw” baseboard joint to try and make it less obvious when the layout is assembled. This explains the weird zig-zag between the two main boards shown below and has given the team much cause for thought in the way to make it join successfully.





We plan to use a number of sub-bases to support the trackbed and groups of buildings. This will raise the ground level and allow for dropped features such as the Winterbourne stream.Lewes was resignalled in 1878/9 and the details are in the National Archives including a scale drawing. This shows several changes from the 1870s OS map, including an increased size of turntable in the station “V”, which has been added on our plans.

We are now looking at how the baseboards will be stored and protected, and preparing the track plans in Templot.

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Ashcombe Down - 7mm scale

By Mike Cruttenden

D3 class 0-4-4T on a push pull set, which has just left Ramber Park, on a 1 in 40 grade, crossing the Edward VII memorial bridge. The bridge swings to allow access to the rear of the house. The loco is owned by Colin Paul.

Ashcombe Downs station stock sidings. Craven goods 0-6-0 in the foreground with a horsebox special passing. An E5 radial tank is on the 1 in 70 down grade of the avoiding lines.

Manning Wardle goods loco awaiting the road - the crew have gone for some tea....

Horse box special climbing the 1 in 40 gradient approaching Ashcombe Downs race course station.

Stock by Arch Overbury

Stroudley rebuilt 2-4-0 Epsom, by Peter Wisdom. Early Stroudley rolling stock by Arch Overbury. Crossing the Edward VII memorial bridge.

Ashcombe Down viaduct. E5 0-6-2T hauling a Royal Train empty stock working, returning to Ashcombe Downs race course station. The loco is E5 Hickstead, built by Arch Overbury and the train is by Colin Paul.

D tank on a push pull set departs Ashcombe Down for Ramber Park. The train is about to join the main down line, descending down the 1 in 40 gradient to Anscombe viaduct.

The locomotive headshunt and carriage sidings at Ashcombe Downs station, with a D2 class heading a cattle train. The loco belongs to Arch Overbury.

Finally, one for the modern image enthusiasts! A push pull set in Southern days headed by a Dapol Terrier. The carriages were built by the late Duncan Bridge and are now owned by Colin Paul.

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Brighton wagon drawing

By Simon Turner

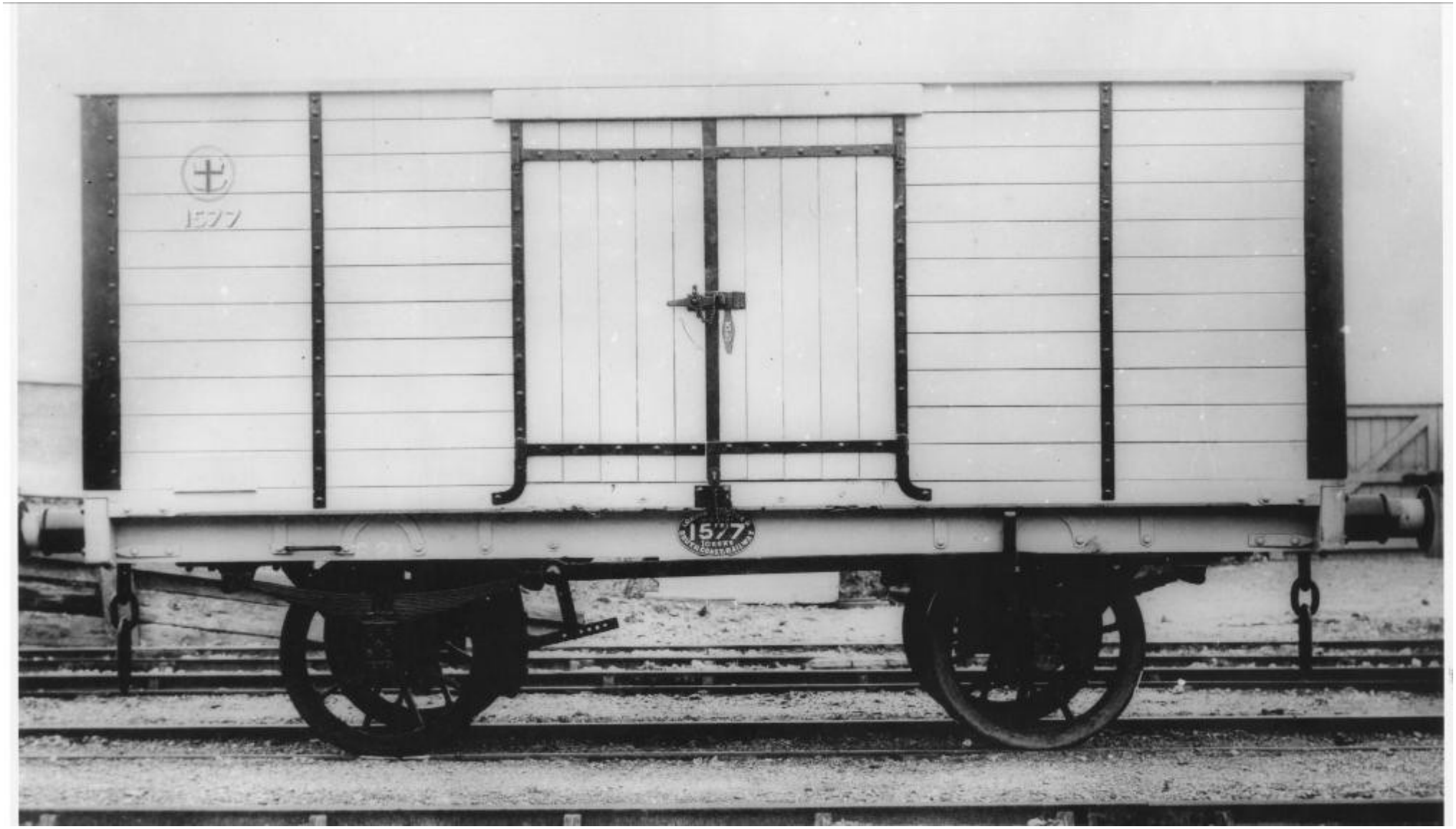
When Stroudley arrived at Brighton there was a stock of four hundred or so covered vans, half of them dating to the 1850s and the other half built by the Metropolitan RC&WCo in 1866-67, with a few other Brighton built vans from 1862-66. It was obviously concluded that the Company was well served, since no new vans were built until 1877, when the substantial vehicles represented here began to be constructed.

The first vans to this general design were built in 1877 and the number block 1501-1600 was allocated and gradually filled. The number 1600 was reached in 1880, after which the new series started at 8001 and ran to 8258. It should be noted that some or all (the evidence is equivocal) of the first twelve were to a slightly larger design which were fitted with Westinghouse brake and intended for Grande Vitesse services. The same design was built throughout Stroudley's incumbency and into the early 1893.

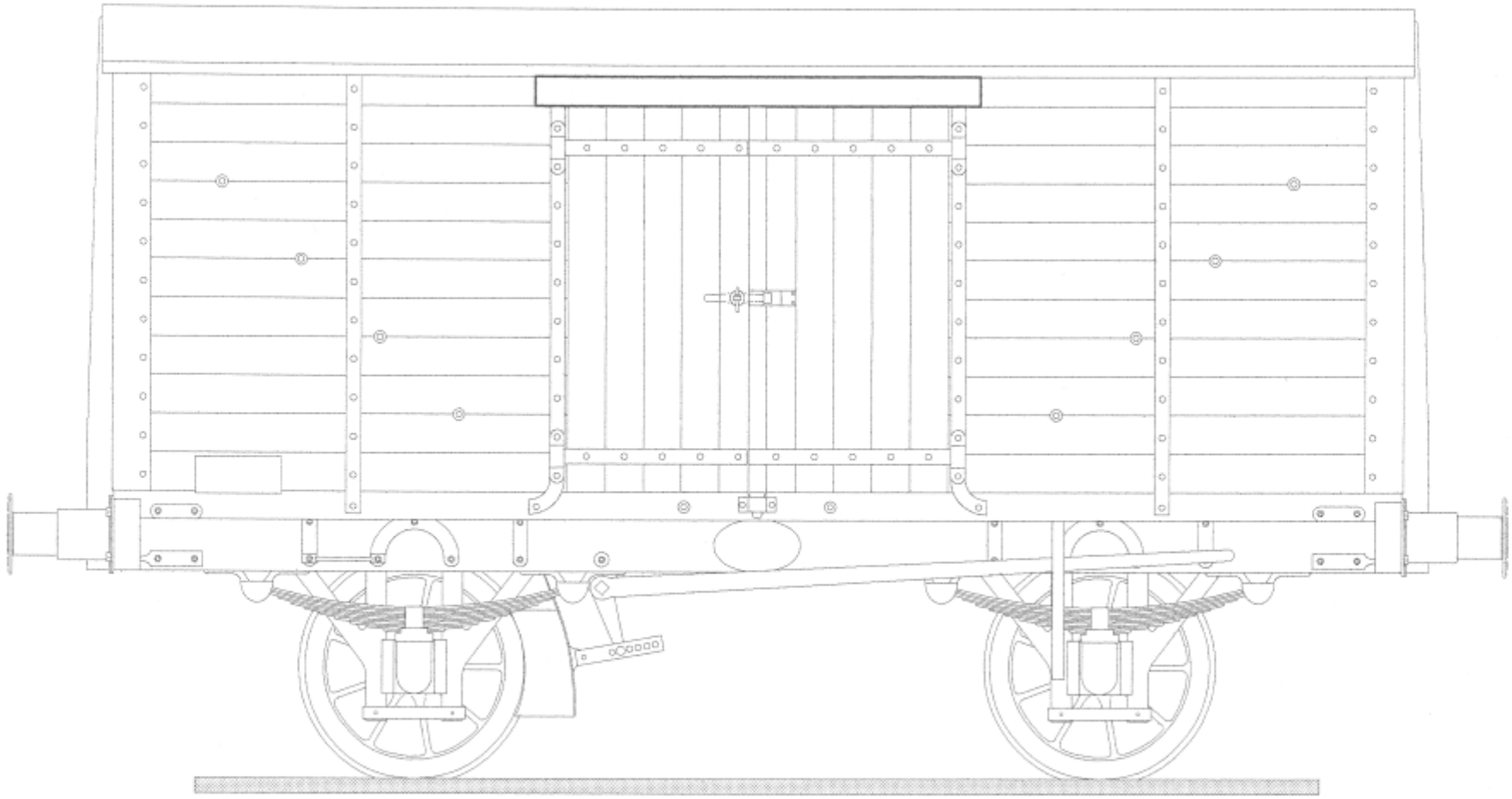
It is probable that, as the LB&SCR had so few vans (less than 5% of goods stock), their usage was carefully monitored. The majority of goods would have gone in sheeted open wagons and only those cargoes considered too delicate for such treatment would have been carried in vans.

In common with other LB&SCR goods stock these vehicles would have travelled far and wide. We know that wagons from as far away as the Highland Railway were seen on the LB&SCR and it must be assumed that the Brighton’s wagons were similarly widespread.

As far as can be ascertained, no vans were built for special traffic. Two however were allocated to poultry traffic from Heathfield and Uckfield to Willow Walk. Initially (1880 WTT) this service was



carried in van Nos. 3635 (Heathfield) and 2763 (Uckfield), both of which dated to 1866, but by1883 Stroudley designed vans Nos. 8015 and 8033 had been substituted. It is not thought that these vans differed in any way from standard, other than that they were possibly appropriately branded for this traffic.

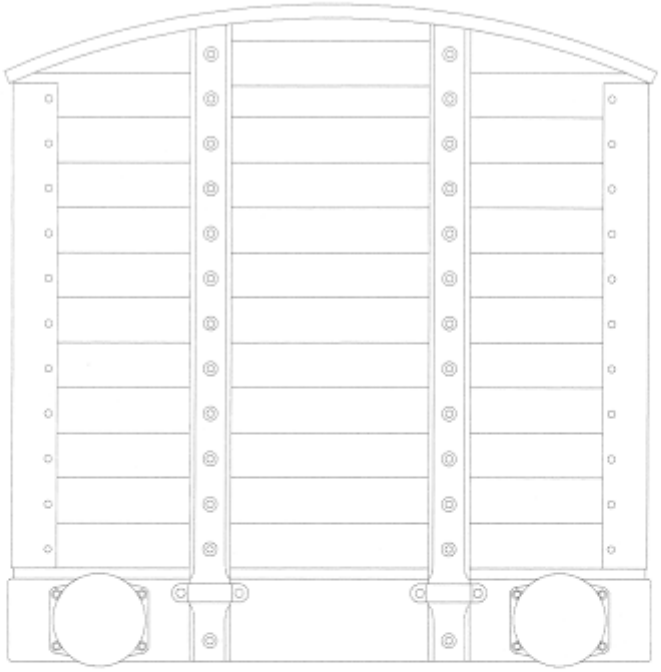


LB&SCR Covered Goods1877

Drawn by S.T.Turner *February 2002*

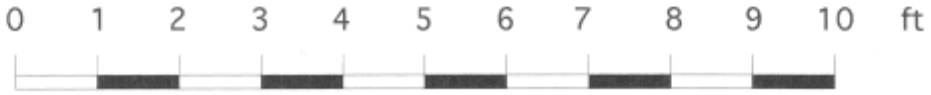
0 1 2 3 4 5 6 7 8 9 10 ft

Van



LB&SCR Covered Goods 1877
End View

Drawn by S.T.Turner *February 2002*



Van E

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Southern Belle Marquetry

By Cliff Pester

Having decided to build a rake of original 1908 Southern Belle Pullmans, a problem immediately occurred as to how to reproduce the ornate interiors of the cars. Luckily just as I was about to give up, the excellent book by Antony Ford on the 12 wheeled Pullmans was published. This publication included reproductions of the paintings. by Fortunino Mantania of the interior decoration of each car. These paintings give a very good indication of the actual colours used in each individual car. To support these paintings, a series of photographs taken of each car interior where also found. With this amount of information and detail it should not be difficult to reproduce a fairly accurate model of each Pullman interior.

So how to reproduce the marquetry panels? My first attempt was to use wood veneers of each type of background wood used in each car as an overall finish to the interior walls and partitions. Onto these veneers a simplified version of the marquetry designs was painted using a Bow Pen and fine paint brushes. The result was basically a mess and did not achieve the required effect at all. Having abandoned the first approach an alternative method was required.

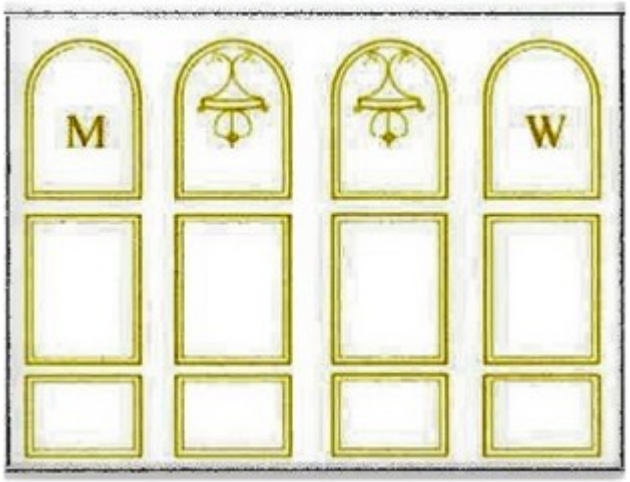
At about the same time, an article appeared in the Railway Modeller on creating coach sides using a Silhouette Cutting Machine. The article seemed to offer a possible solution to my problem and the machine could also be useful for other modelling applications. A Silhouette Portrait (basic model) was purchased and an interesting time was spent investigating the capabilities of the

machine along with very helpful advice from Ian White's articles on the Silhouette Cutter in the Modellers Digest.

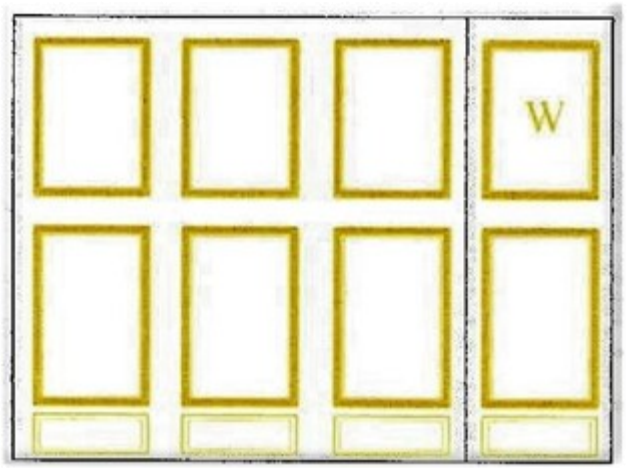
I needed to produce the detail of the marquetry panels, so these where drawn using a simple CAD drawing package on my laptop. Using his method, a more detailed and finer version of the panels was possible. Examples of the artwork panels are shown on the right.

This panel is for an internal partition, the M and W indicate the position of a wall panel mirror, and the W is the position of an inter-compartment door window.

What was now required was the background wood colour for the panels. This was produced by scanning into the laptop copies of the various wood veneers used in the cars. Oak panels are used in Verona and Alberta, and mahogany panels in Grosvenor.



Marquetry panel for the Brake Cars Verona and Alberta

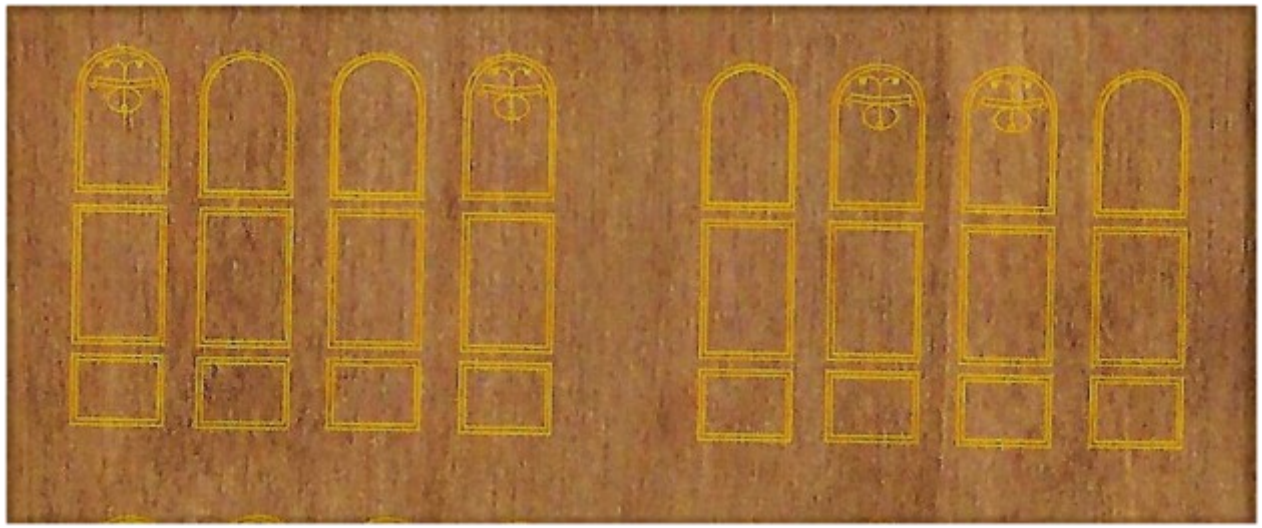


Marquetry panel Grosvenor

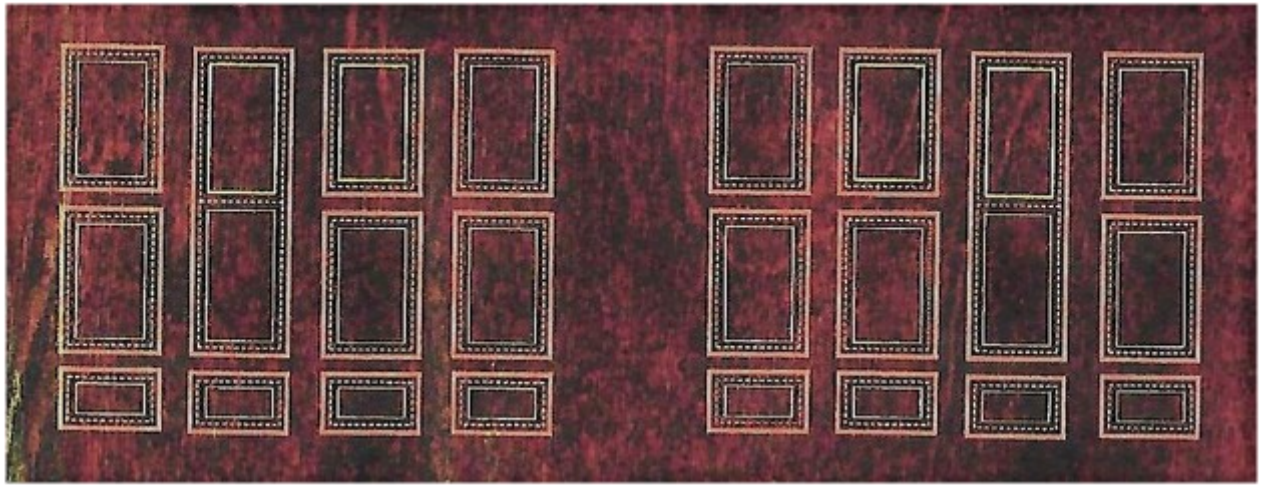
Mahogany veneer scan for Grosvenor

Oak veneer scan for Verona and Alberta

Onto these veneer scans the marquetry artwork was overlaid. The result was a reasonable reproduction of the marquetry panels.



Final version of Oak Marquetry Panels for Verona and Alberta.



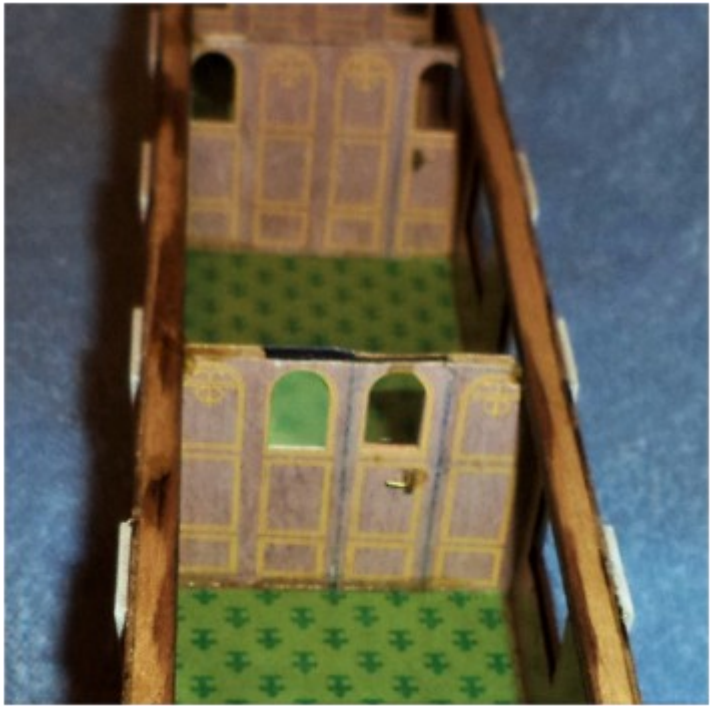
Final version of Mahogany Marquetry Panels for Grosvenor

To reproduce the actual finished panelling for fitting into the models, the artwork was printed out onto semi-matte photographic paper. This gave the marquetry the correct appearance. It was now a case of cutting out the panels from the sheets of photographic paper ready for fitting into the body of the model. This was where the Silhouette Cutter came in, the Silhouette software has a feature called “Pixscan” which enables an image to be scanned into the Silhouette and cut lines can then be placed over the image. This enables the Silhouette cutter to accurately cut out the item from the image sheet.

The finished panels were then fitted to the model to represent the marquetry panelling which formed an important part of these Southern Belle Pullman Cars.

The following images show the finished marquetry panelling in two of the Pullman bodies.

Brake Car Verona



Parlour Car Grosvenor

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Panter Brake Vans

By Nicholas Pryor

These two models are of the D24 4 wheel 15 ton and D25 6 wheel 20 ton Goods Brakes. A.H.Panter introduced these designs during WW1 and they bear a strong resemblance to his father's design for the LSWR in the 1880s. All of the Billington designed vans had end verandahs and no side doors and therefore could not act as "road vans", and this design did much to fill that need. The resulting vehicles were attractive and sturdy, and several examples survived to give over 30 years' service.

I am not aware that these are types for which a kit has ever been available. I have not previously seen models of these vans, other than the splendid large scale model of the D24 van in the Bluebell Railway Museum. This was the initial source of my desire to see one in 4mm. The only option was to build from scratch. I found photographs of these vans and detailed drawings with principal dimensions in the LBSC section (Vol 2) of An Illustrated History of Southern Wagons. The two models were built for me by my good friend, John Houlden, a master craftsmen mainly known for his truly splendid ECML layout 'Gamston Bank' set to recreate typical train formations during the summer of 1956. John accepted the challenge and armed with no more than the information in Vol 2, he produced these two models from plasticard. Construction was by orthodox methods, with layers of thin strip to represent the external framing fixed over a plain plasticard box, with scribed planking. Etched W irons with cast LBSC axleboxes and springs (thanks to Chris Cox at 5&9 Models, who also supplied the stove chimney casting) were used with Gibson 12mm split spoked wheels.

The centre axle of the 6 wheel version has internal bearings and is sprung so as to give sideways movement. This has proved effective in service, though it is often easy not to spot that the centre axle is not properly on the rails. Buffers and coupling hooks are from Lanarkshire Models & Supplies, and the guard is from the range offered by Masterpiece Figures. John used POW transfers for the lettering and numbering.

While the prototypes would not have stayed as pristine as this for long, and would have rapidly weathered in traffic, I am reluctant to dirty up John's work. The D25 in particular looks very imposing at the tail of a long train of wagons.

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Travelling Hand Crane No.19 Part 5

By Colin Paul

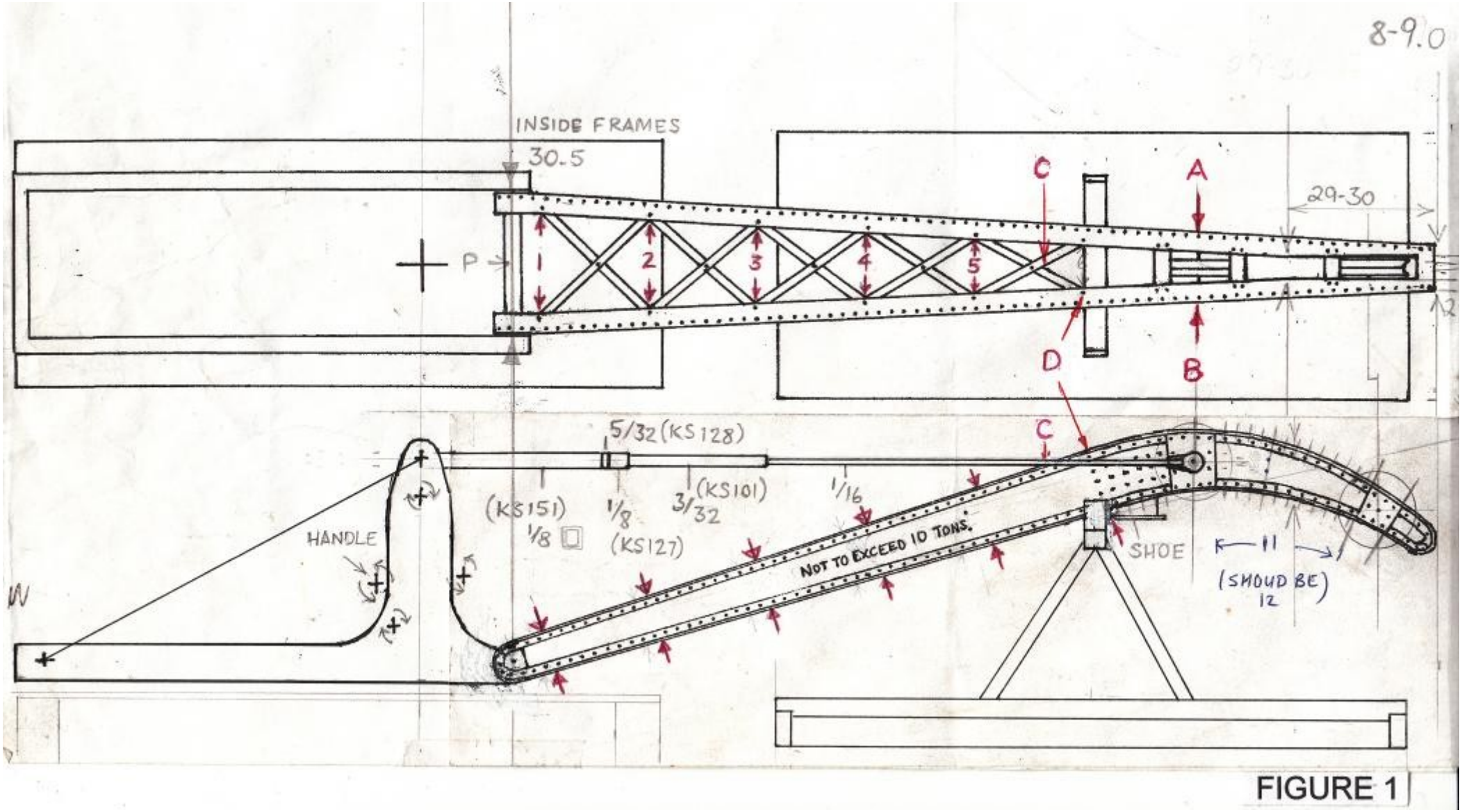
Before I give a blow-by-blow account of construction of the jib, I must give a brief outline as to the different jib designs used on the LB&SCR 5 & 10 ton cranes.

As mentioned before, when I did my original crane drawings way back in 1993, two were drawn and one abandoned. The first one depicted No.19 (1), the other SR No.307s (2). The latter, if modelled, would have been in LB&SCR livery. To the layman and myself back then, both jibs looked identical in having tapering sideframes towards a curved swan neck with a small rounded nose. But No.19 had a much longer length jib whereas all of the others were shorter. I am not sure if this length was unique just to this crane? Both have the top and bottom wrap round strip forming, in effect, an I-section on each sideframe. The cranes, as can be seen, have a riveted strip running around the vertical outer edges of the sideframes. In reality, this strip would be L-section and riveted to the wrap round strip. The jib design on the 5 ton 4 wheeler SR No.305s (ex-LB&SCR No.5) (3) has the short length profile, but slightly different, in that the outside edges are flat on the outside faces which lack the I-section, but has, what appears to be C-section. Also there are five pairs of X bracing on the underside of the jib which can clearly be seen. It is my assumption it had the same bracing on the top. I cannot say if the other 5 tonners had the same design due to the lack of photos. 10 ton 6 wheeler BR No.DS314 (Ex-LB&SCR No.15) (4) on the other hand is completely different again, being formed of four long L-angle sections with open X bracing both sides and five sets of X bracing top and bottom. It shows the same swan neck profile as the others. It also has much larger gusset plates. I was wondering again, if this particular jib

was `as built`, a modification, or a later replacement. We may never find out. The only similarity is the overall shape which mirrors the profile of SR No.307s.

From the photos of No.19 and SR No.307s, it is not very clear as to how the frames are braced or strengthened (from the pivot to the first pulley chain wheel) due to the low camera angles. On No.19, day light can definitely be seen in between the frames (far side) with a slight hint of a one narrow thin line (strip?). Could this strip be part of a cross brace member possibly forming an `X` as on SR No.305S? Sadly, nothing can be made out on No.307s. From the different styles of bracing mentioned above, I have subsequently copied the X bracing design onto the model of

Figure 1 On the next page is a well warn and dog eared 7mm – 1ft scale master schematic drawing of the crane. It was prepared transferring the measurements of the model built so far, along with the (already finished) match truck. After numerous different designs of the jib, this was the final version I settled on, as noted by the slightly wider pivot end. By no means is it 100% correct but near enough. The swan neck was virtually traced from the photo of No.19. At first glance the jib looks too long, but it is more or less correct. The only problem encountered on the drawing was the position of the match truck which is set too far to the left by 4mm. Looking at it, it gives the impression the nose is too far outside the end of the headstock. Due to the buffer heads being set further out from the buffer housings, especially on the crane chassis, the trestle should be set further along the bottom flat of the shoe. Drawing it this way, I was able to work out the position of cross bracing struts noted by the **12 red arrows** ending at `**D**`. It was imperative the chain did not foul the intersection at `**C**`. When coupled up, the end of the nose jib and headstock line-up perfectly. Also shown are the different segments that make up the stay rod. In the end, four different sized telescopic tubing would eventually be used. And lastly, only 11 rivets have been drawn along the bottom curve of the swan neck instead of 12. 12 would have been too cramped.



No.19`s jib. There are clearly two small narrow strips (frame spacers) located in between the two chain pulley wheels with a third the other side of the inner wheel. One must presume there were three on the underside matching the top ones?

Photo from the Colin Binnie collection

Lastly the design of the chain pulley wheels which appear to be the same for each type of jib. They were estimated at 2' 3” (16mm) in diameter and would seem to be cast `as one` with 8 holes in the centre with adjacent strengthening bars. Around the whole circumference in the centre, there is a recessed slot. This slot is for the vertically positioned chain link to sit in. The flat links would lay flat on the rest of the curved area of the wheel.

Happy with the match truck which was successfully constructed first (LB&SCR Modellers Digest Issue 2), I was still not completely happy with my original jib drawing. From this drawing a cardboard mock-up was made and successfully used for a year for trials. In the end, it proved to be a good 4mm too short and was a bit too thin on the pivot end. The second problem was the “shoe” (see explanation below) position that never sat perfectly on the trestle of the match truck.

Clearly seen from the photo, the extreme end of the nose seems to be virtually flush with the headstock end of the match truck. Now knowing the exact position of the crane body on the decking of the chassis, the jib length could be worked out more accurately. For the record, the jib length was now estimated at around 27' 6” (192mm). From the `side on` camera angle of the jib’s end on the screen, I zoomed in until the headstock of the match truck was a scale 1' high. I then simply traced the profile of the swan neck straight onto greaseproof paper, then onto normal paper. The pivot end was also thickened up slightly by 2mm as the original one, as mentioned, was on the thin side. Another tweak required was to move the pivot hole of the jib closer to the end, thus moving the nose closer to the end of the match truck headstock. From this tracing, a final master jib drawing was prepared as shown in Figure 1. This time around it matched more or less perfectly with the photos. From this drawing, yet another new mock-up was made, and extensive trails conducted through standard Peco 6' radius pointwork. Again, no problems arose. The sliding movement of the jib along the trestle top still gave me a 3mm leeway to each “end stop” on the trestle. If the model ever runs on sharper radius curves, it should (fingers crossed) be fine. It pays in the end getting these measurements spot-on from the start before any metal is cut.

Jib Sideframes

Having constructed the crane body from 10thou (0.3mm) brass sheet (Eileen SBA010B), I thought long and hard about using the same thickness for the jib, though I was worried the jib would be a bit flimsy and liable to twisting. Having used 18thou brass for the sides of the crane`s underframe, some of the rivets in front of the W-irons did not punch out very well due to the thick material used. As there are quite a number of rivets to punch out behind the large gusset plates (18 on each sideframe) and two pairs of vertical rivets, I plumped for 10thou in the end. I wanted the rivets to show up rather than not showing at all. In the end, 10thou was perfect.

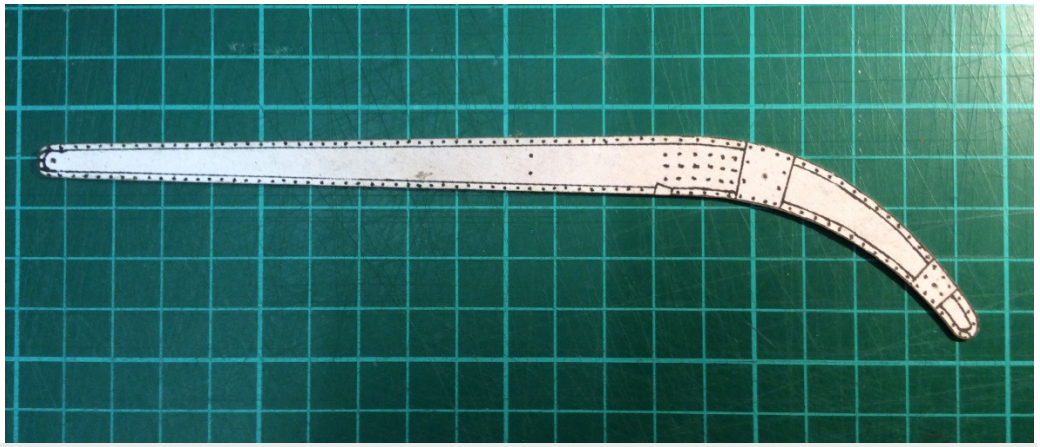


Photo 1

The paper template of the `JIB` was glued straight onto two pieces of 10thou (0.3mm brass) which had already been soldered together first. It was then **very accurately** cut out using a fine piercing saw blade. With the aid of a steel ruler, it took some time getting the top and bottom straight cut lines dead straight with no unsightly gaps showing. The swan neck was the trickiest area in obtaining smooth transitional curves. If there were any slight gaps showing through, the solder and outer rivet strips would eventually hide them.

Two rectangular pieces of brass were cut to 20cm x 4.5cm, and soldered together using Carrs 145. A photocopy of the jib was then printed off and glued straight onto the brass. 0.7mm holes were then drilled out corresponding to the two main chain pulley wheel and pivot positions. As I did not know the exact position of the front pulley wheel (there was the possibly the chain links were slightly over size) in relation to the curved nose frame spacer, two holes were drilled either side of it spaced at 1mm each. Later in

the build any one of the three holes could have been used. The frame was then very carefully cut out using a piercing saw. Time was taken here (in excess of four hours) to get nice straight lines and smooth transitional curves with no gaps showing through the edges. The finished frame was then unsoldered and cleaned up.

The group of 18 rivets (three horizontal lines of 6 rivets each) that are position in between the top

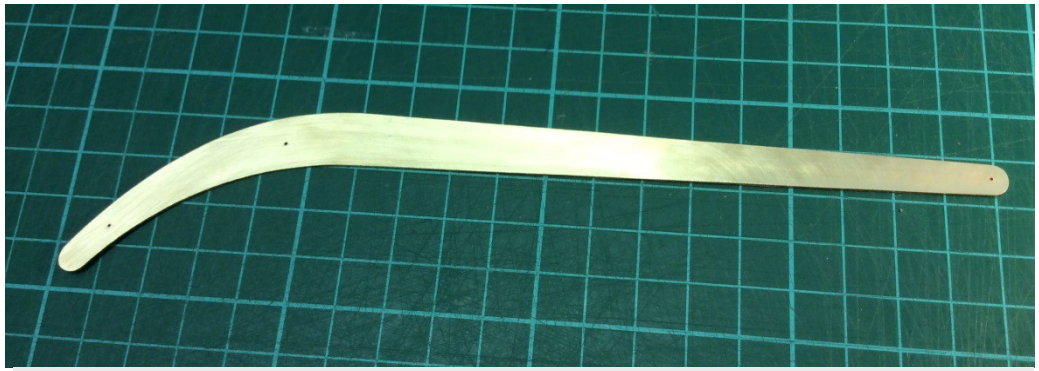
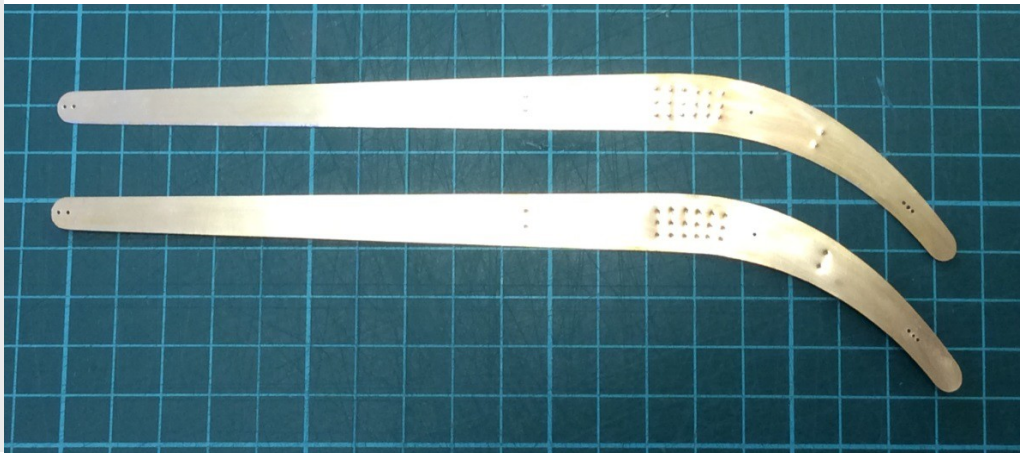


Photo 2 above

The reverse side showing the frames cut out. Before unsoldering, the two chain pulley wheels and pivot holes were drilled out with 0.7mm pilot holes as shown. After the photo was taken, I decided to drill two more holes, one either side of the swan neck front chain pulley wheel axle hole, and end extra pivot hole closer to the end curve.

Photo 3 right

The two frames were now separated and cleaned up. The position of the rivets were then carefully marked and scribed on (on the insides of both) having been transferred straight from the drawing. As the group of 18 rivets were not in a straight line (in both plains), they were very lightly punched out first just in case of misalignment. It took sometime before they looked correct. When I was happy, they were punched out proper. Also shown are two more pivot holes have been drilled out on the extreme end as the original ones were drilled slightly in the wrong place. If they were used, the nose of the jib would be too far in from the headstock of the match truck.



and bottom curved rivet strips gave me quite a headache. Careful marking out was required getting them to fan outwards towards the top as the rivet positioning's on the top curve (strip) are widened slightly to approximately 2.7mm, whereas, the bottom ones were squashed slightly to 2.3mm. There was also the problem of the two pairs of vertical rivets on the outside face. One pair to the right of the letter **N** on **TON**, with another pair positioned in between the two chain pulley wheels. Both had eventually to line up with the outer riveted strips later in the build. After double checking a number of times, the rivets were (tentatively at first) finally punched in.

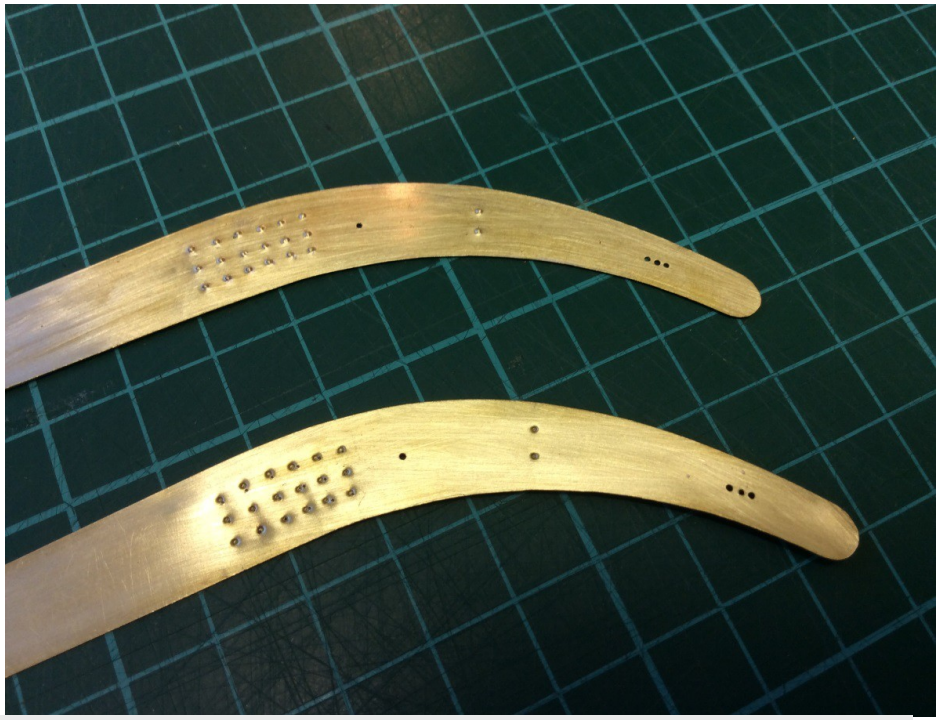


Photo 4 above

A close up showing both inside and outside rivets on the swan neck areas. The bottom (inside) frame clearly shows the sunken in indentations of the rivets. This area will eventually have a large inner gusset plate fitted hiding them. Using thinner 0.10mm brass, forming the rivets was much easier this time around. Inevitably there was still some slight deforming of the brass around some of the rivets but not much. Just visible on the photo of No.19, two vertical rivets can be seen midway between the two chain pulley wheels which have been added. They must be for an internal frame strengthening spacer.

RIVETED SWAN NECK OVERLAYS & LONG STRIPS

From the outset, I did not think the 1.5mm strip could be bent to match the profile of the rather sharp curvature of the swan neck even after annealing. So a photocopy was prepared and two overlays painstakingly cut out "as one" in pairs from scrap 0.3mm brass. Two solid areas were left for the gusset plate

overlays. When cleaned up, the rivet spacings were marked on matching the already punched in group of 18 rivets on each side. The remaining rivet positions towards the nose end were also marked on. Some subtle widening of the rivets had to be done for a non-cramped look towards the front which doesn't show. Both overlays were then riveted and soldered in position using Carrs 145. The same 1.5mm wide x 6" n/s rivet strips (Eileens Ref:NF01003D) were used again for the top and bottom long straight rivet strips. These were easy to mark up and punch with standard 2.5mm spacings throughout their length. As mentioned in my previous articles, when riveting, the metal has a tendency to deform and distort badly and has to be straightened out and tweaked as you go along re-establishing the original profile. Before soldering them to the frames, I had to make sure the last and first rivets matched the 2.5mm spacings.

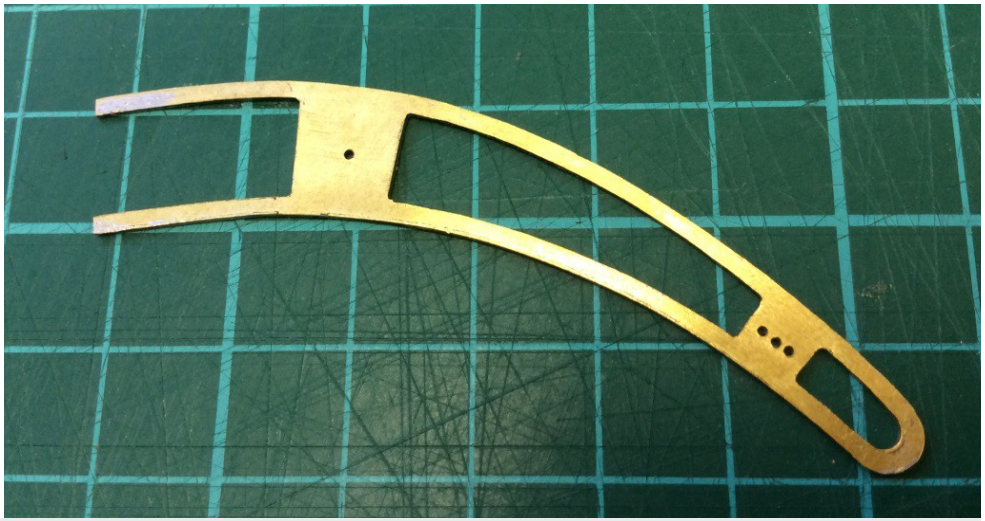


Photo 5 above

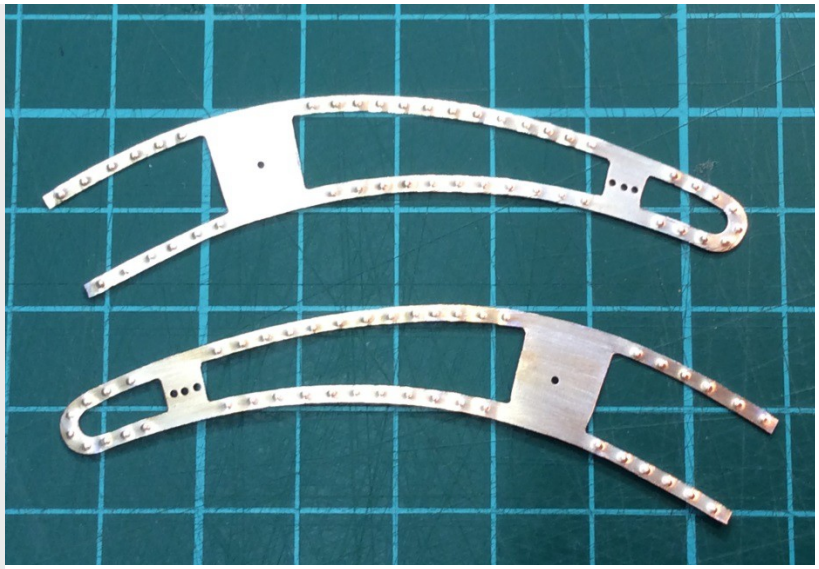
As explained in the text, I did not think the 1.5mm wide n/s strips could be bent successfully to this sharp angle even after annealing. So they were cut out in pairs as one, as shown before separation. For the overlays, two rectangles (8mm x 4.5mm) of 0.3mm brass were soldered together. A photo copy print of the swan neck was then glued on. The outer area was cut and filled out first, checking and overlaying it with the already prepared frames. The middles areas were then very carefully cut out making sure the plain rivet strips remained constantly at 1.5mm wide throughout. The two ends (left hand side) indicate the end of the transitional curves, and the start of the long straight strips.

WRAP ROUND STRIPS

Looking at the front facing view of No.307s, the sideframes of the jib are formed by an outside

Photo 6 right

Both left and right handed swan neck overlays separated, cleaned up, and riveted. They were marked out (in pencil) using the master jib drawing as a guide. Even then the marking out took some time to get them in the correct position especially with the group of 18 rivets and the two vertical rivets. Some compromises had to be factored in though especially with the spacings. Some had to be stretched slightly and some squashed. There are a couple of rivets missing totally but they do not show up. It is the overall look I was after in the end. The riveting was pretty straight forward and relatively easy to achieve.

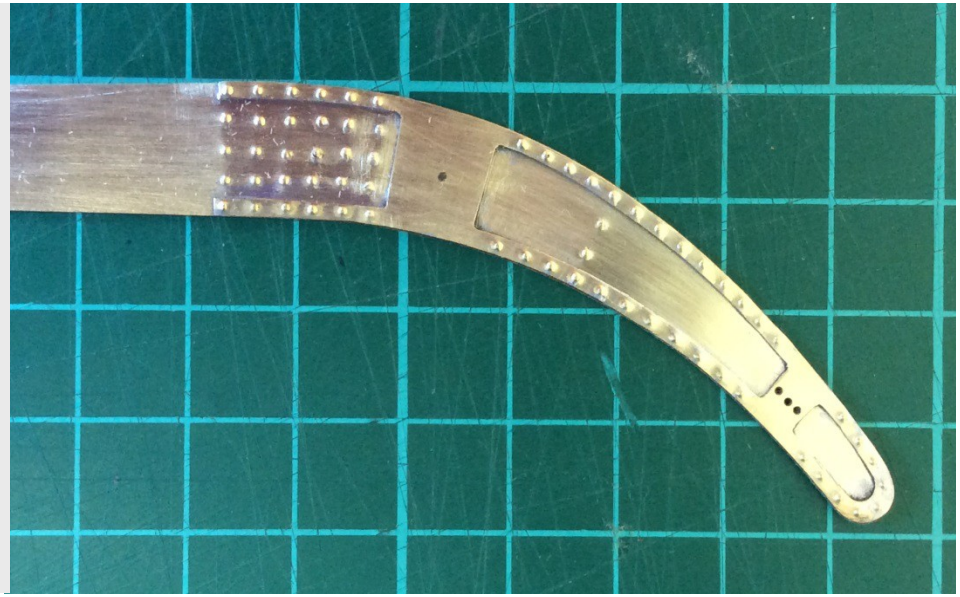


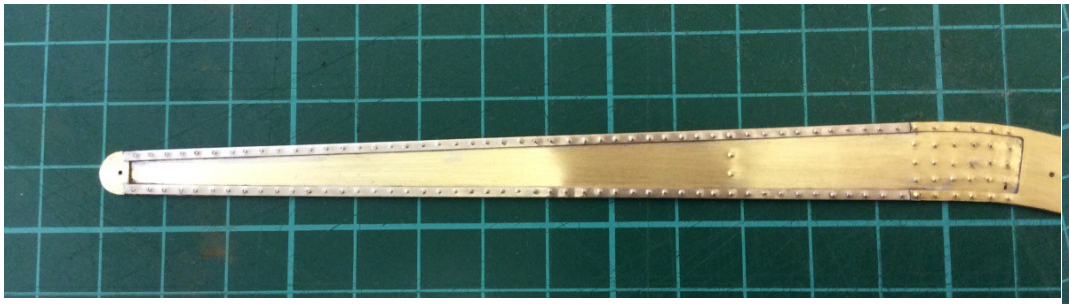
riveted wrap round strip encapsulating the sideframes inside forming an I-section. Running around the inside edge of the wraps are a single row of equally spaced rivets on a strip. Conveniently the recess of the sideframe roughly worked out at 1.75mm in from the front edge which tallied nicely with the 1.5mm wide n/s strip used throughout so far. The outside face of the crane appears to be dead straight, whereas, in the area between the two chain pulley wheels, the metal starts to taper inwards towards the nose end. Not knowing precisely what width the strip was, a bird's eye drawing was done to calculate the size (this drawing was spliced in above the Master Drawing). Give or take 0.5mm, it worked out at around 4mm throughout. The mock-up jib was modified (not photographed) by gluing on a 4mm wide strip of card around the sideframes just to double check before any metal was prepared. In the end the 4mm wide strip was perfect and looked like the photos. I pondered for a day as to what thickness it should be. In the end, I decided on 10thou (0.3mm) again (Eileens Ref:NF 04003D). A top wrap round strip was tried out

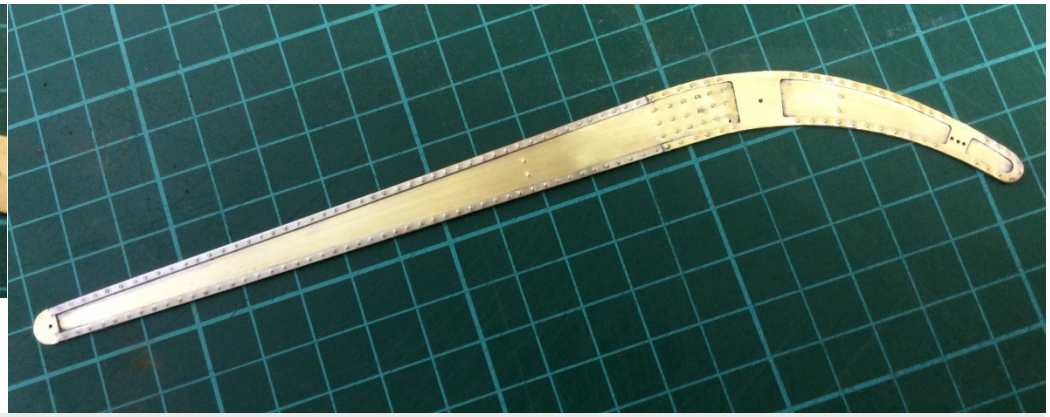
first. It was annealed on the end, then pre-bent around the shape of the nose leaving 1cm on the underside to hold it securely in place. The strip was then (finger) bent to the same profile as the rest of the jib. Placing it on a sideframe, the overall thickness looked correct. I was worried it would be too thick. It was then held in place and carefully marked out, matching the previously positioned rivets on the sideframe. It was imperative that they are all in-line with each other. Only then were the rivets formed. The same procedure was applied to the other three wraps (one other top and two bottoms). The 1.5mm wide inner riveted strip running around the underside edges of the wrap was, again, pre bent to the outer wrap profile, and, again, carefully marked and riveted. All four strips were then soldered in position on the wraps, double checking the rivets still lined up. When it came to solder the sideframes onto the wraps (tacking at first), the riveted strip acted as a ledge for the sideframe to sit against whilst soldering, making the process relatively easy. The hardest part of the process was keeping the wraps at a perfect right angle to the sideframes throughout, forming the I-section, which had to be checked every centimetre or so. The ends of the bottom wraps (nose end) had to be cut and filed back slightly matching up with the ends of the already soldered on top wrap. It was imperative the rivets matched up perfectly.

Photo 7

One riveted swan neck overlay soldered in position on a sideframe. The rivet positioning is not that bad considering the transitional shape. It was imperative the row of rivets were equally spaced out with the gusset plate rivets which have yet to be fitted. By this stage, I was pretty confident the centre hole of the three for the (front) chain pulley wheel was going to be used.





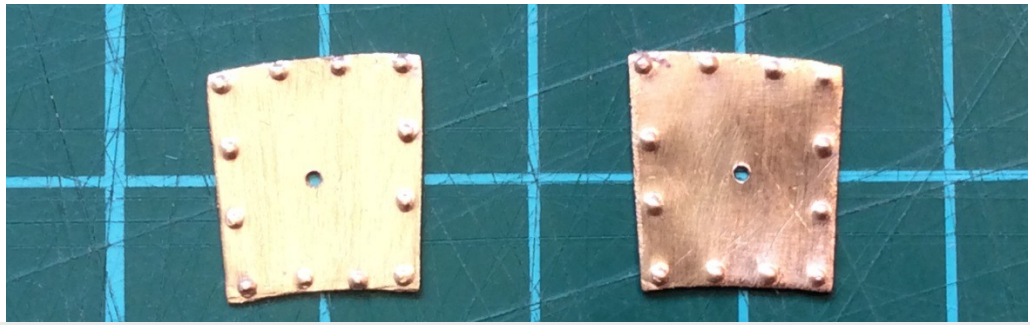


Photos 8 and 9

Not the easiest of photos to take showing a whole sideframe which is nearly 19cm long. Hopefully the rivets can just about be made out. The long strips are 1.5mm wide x 0.3mm n/s strip which were riveted with conventional 2.5mm spacings throughout their length. Although hard to see, again, it was crucial that the pair of vertical rivets (from the pivot to the first chain pulley wheel) were in perfect alignment with the outside rivet position. The extra curved end piece over the pivot hole has also been fitted. Later in the build, these ends will be bent inwards slightly for the pivot

LARGE INNER & OUTER GUSSET PLATES

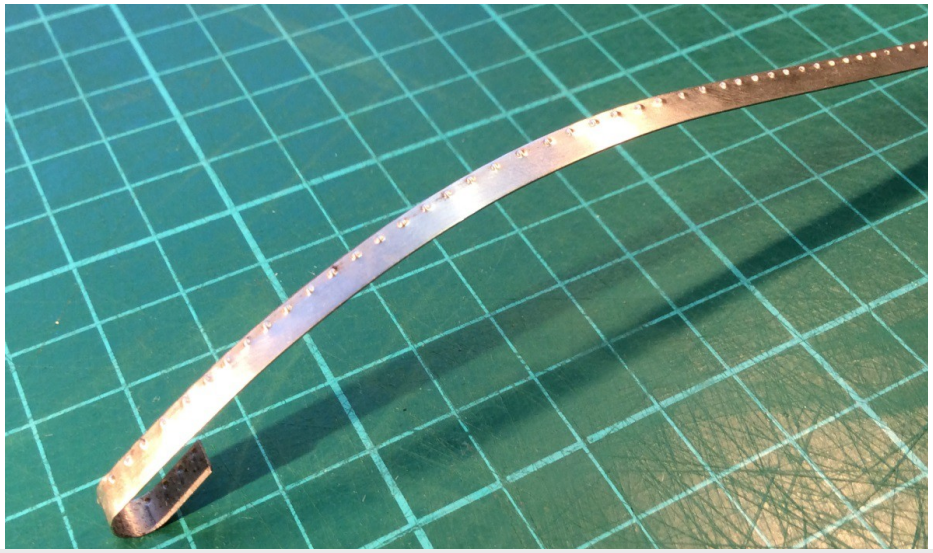
Two large gusset plates (the plates in front of the top chain pulley wheel) were cut out, and riveted with 12 rivets and soldered in place. They were a bit tricky to make matching the curvature of the frame. Again, the small front pulley wheel gusset plate would be left until last, as I do not know yet what hole of the three will be used. As the group of 18 rivets on the inner face were sunken inwards (pointing outwards), they did not look right i.e. not attached to anything. So two large inner gusset plates have been prepared and riveted and will eventually cover them up. At least now the outside rivets would be attached to something inside.

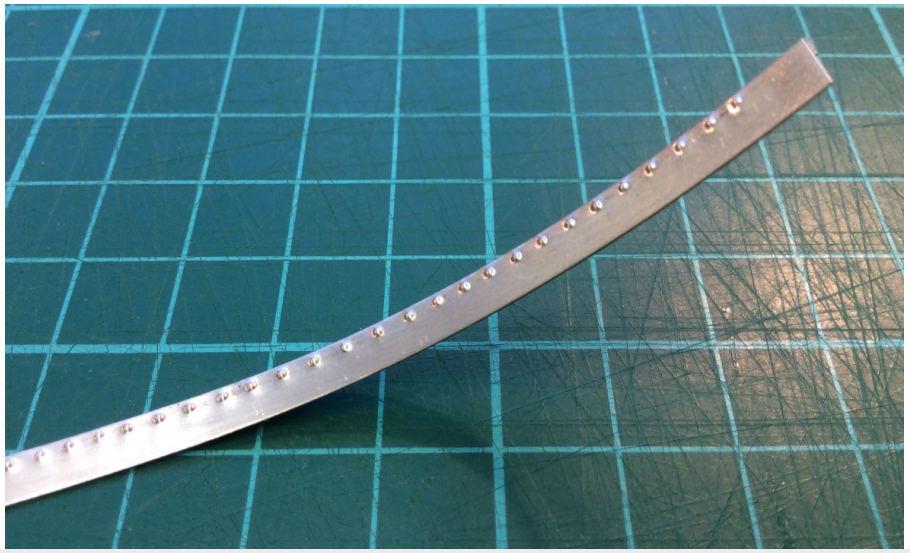


Two pairs of small (Photo 10 left) and large (Photo 11 right) gusset plates which were made from scrap 10thou brass. These too were very tricky to make. The curvature was straight forward, but I had a lot of trouble with the angles of the straight sides as they were not at perfect right angles with the sideframes. Again, some compromises had to be done with the rivet spacings, especially with the top rows which were spread slightly further apart.

INNER RIVETTED SIDEFRAME STRIPS

After the two frames were soldered up, I noticed a rather large error which I had completely overlooked. I had totally forgotten to punch in the inner row of rivets (around the edges of the frames) on the inside face of each sideframe, corresponding to the outer ones. From certain angles, the frame was devoid of any rivet detailing and looked a bit out. In hindsight, the error was a blessing, as it was much easier soldering the frames to the outer wrappers from the inside. If the rivets had been punched in, no doubt the rivets would have been filled with solder. I assumed that pre-bending the 1.5mm n/s strip to the profile of the swan neck was a no-no (too sharp an angle), so, as an experiment, the area of metal was annealed. To my surprise it was relatively easy to bend to the correct shape. Carefully matching with the outer rivets along the straight areas they were again marked on and formed. As mentioned before, the metal deforms badly especially around the curves and had to be straightened and re-bent to the original profile as I went along. Hard work but well worth the effort. Finally, the four strips were soldered on.





From 4mm wide x 0.3mm n/s strips, a top (Photo 12 left) and bottom (Photo 13 right) wrap round strip were formed. The area around the tip of the nose was annealed first, and then formed around a suitable sized file matching the nose profile. By gentle finger pressure, the rest of the strip was bent accordingly. Positioning a frame within the wrap, the rivet marks were pencilled onto the underside of the wrap and the rivets punched in. The tip had to be straightened out for me to form the rivets though it was relatively easy to re profile the curve once again. The bottom strip was made in exactly the same way. Both were cut slightly over length by 1cm and have ends devoid of rivets. They will eventually be trimmed back for a seamless joint once the top wrap has been soldered on first.

This view (photo 14 left) shows a top wrap round strip that has had a riveted 1.5mm wide n/s strip soldered on the underside of it. It was imperative the rivets lined-up perfectly with the outer ones that had already been done. Again, the bottom wrap will be done in exactly the same way. A small pre-curved inner riveted strip on the nose end will be inserted later.

Photo 15

A nearly completed sideframe, barring the fitting of the small gusset plate on the right. As mentioned in the text, the lip of the inner riveted strips acts as a ledge for the sideframes to rest against whilst soldering on the wraps. All soldering has been done using Carrs Speedy solder from the inside keeping the rivet detail (on the outside) free from any solder. If you look closely on the curvature of the bottom wrap, all of the rivets line-up perfectly with each other. As the large gusset plates are very thin, it tucks nicely behind the front row of rivets.

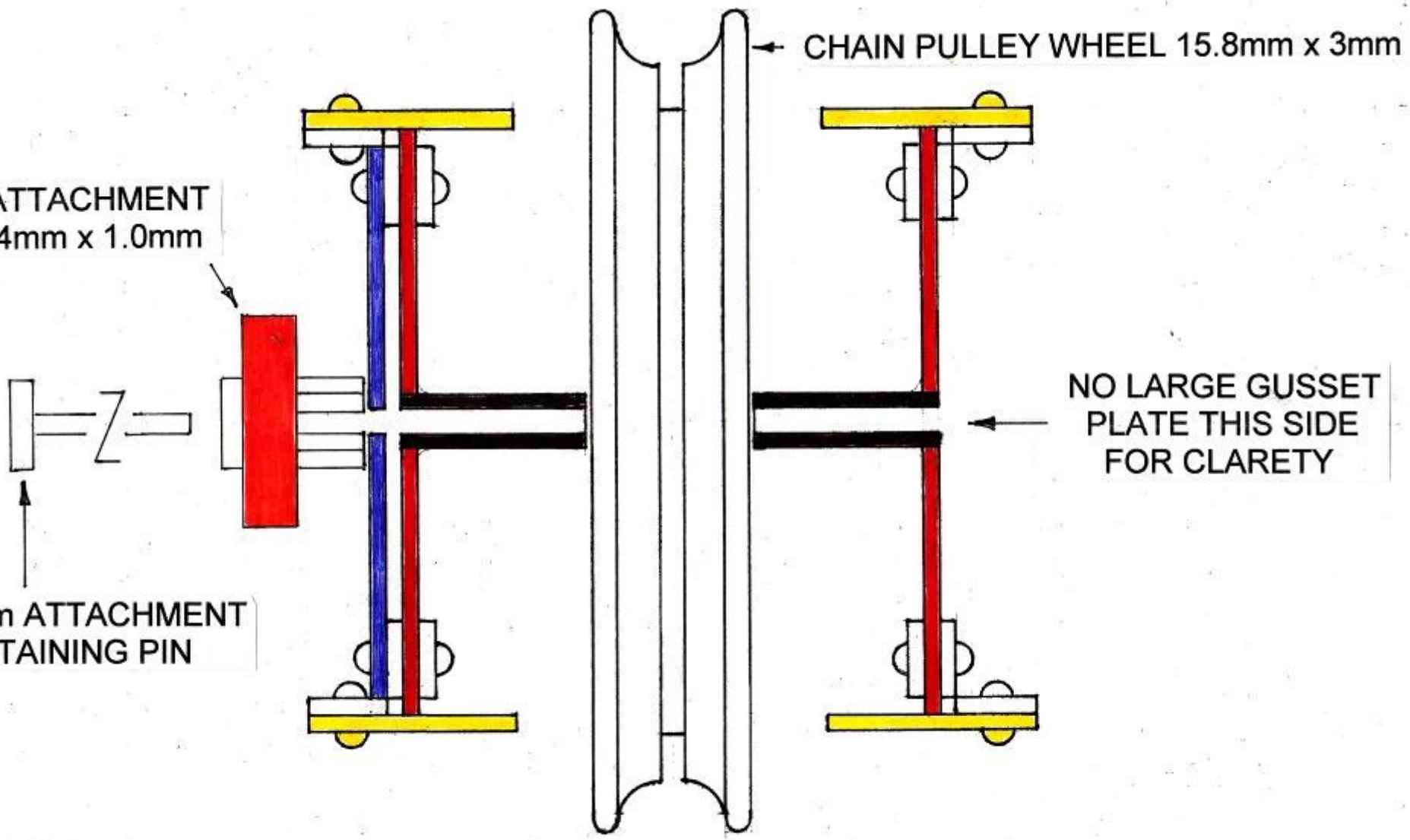
TAPERING THE NOSE

With both frames now complete, the photo of No.307s was very carefully studied again, as the next stage was crucial: filing away the correct amount of metal off the insides of both frames as they tapper inwards either side of the chain pulley wheel. Any mistakes here would be catastrophic after many hours work. On top of the frame, a slight “kink” can just be seen behind the nearest wheel. From the kink towards the front, the edge seems to be dead straight. The gap in between the crane body is 30.5mm (on the pivot end), whereas the nose end was estimated at around 8.5mm wide. From these measurements and my birds-eye drawing, the tapered slot was estimated at around 32mm long (4' 6”) tapering down to 2.5mm at the tip. The gap throughout had to be 3.5mm wide for the 3.0mm wide chain pulley wheel to pass through. I then very carefully started to file away the area making sure the slot was parallel and **not** go past the 32mm mark. This filing took quite a long time, as I did not want to make any mistakes. When the metal was being filed away, especially on the nose ends, the rear face of the sideframes began to get very close to the edge of the frames. Thankfully, the 3.5mm gap was maintained throughout.

JIB JIG

To hold the jib together for soldering, I designed and made a jig. A thick piece of ply was used as a base. It was very carefully marked out (with pencil lines) transferring the measurements from the birds eye drawing straight onto the ply. There were two crucial areas though. Firstly, the outside face of the jib (pivot end) did **not** exceed 30.5mm. Secondly, making sure the pivot line was square with the centre line. Any error here would lead to the jib not sitting **dead centre** of the trestle when resting on it. 1/4" x 1/8" wood strip blocks were cut to various lengths then superglued vertically in place at two strategically placed points on the outside of the two outside diagonal lines. Each sideframe was then offered up within the jig with a tempory sized 0.7mm brass rod acting as the pivot rod. When the brass rod was in line with the drawn pivot line, two small blocks of wood were glued in place in the pivot ends to stop the frames from moving. A second row of blocks were then glued on behind the sideframes. At least now I knew the frames would be perfectly square and held snugly within the jig for soldering up. Also at this stage, the two chain pulley wheels were inserted using 0.7mm rod to check for clearances, especially the front nose one (FIGURE 2 on next page shows a cross section through **A-B**). With the two frames in position, the 3.5mm wide parallel slot required some extra filing, as it was not quite parallel. The extreme end of the nose was packed out with a block of wood and again glued in place. There was a very small amount of movement (slop) on the nose, so a bullnose clip was used to hold it firmly in position. Will everything set, a start was made to solder it up. As a temporary measure, five 0.8mm n/s rod frame spacers were soldered on the underside (face up in the Jig). Once done, a 26mm length of 1/16th tubing was soldered in between the frames representing a thicker pivot rod. It was then time to tentatively remove the jib from the jig. The bullnose clip was removed first followed by gentle finger pressure to remove the jib. Once free, the jib seemed very ridid which was a complete surprise. So no extra temporary frame spacers were required until the cross bracing struts were fitted.

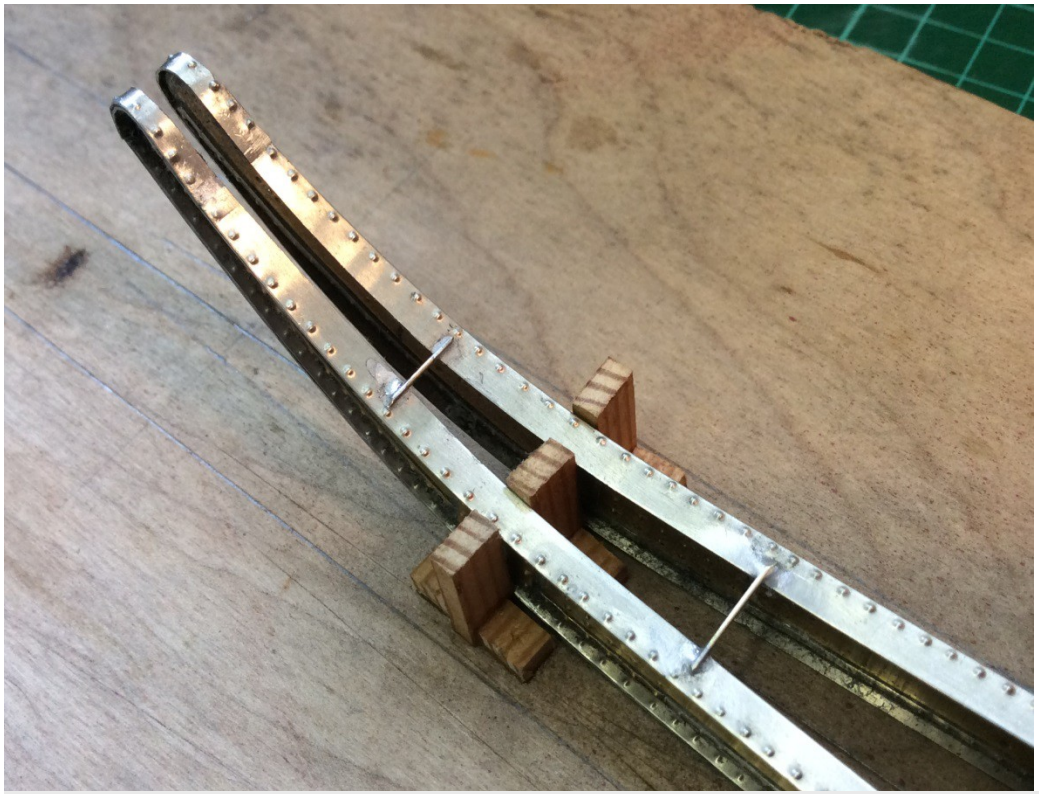
CROSS SECTION THROUGH A-B

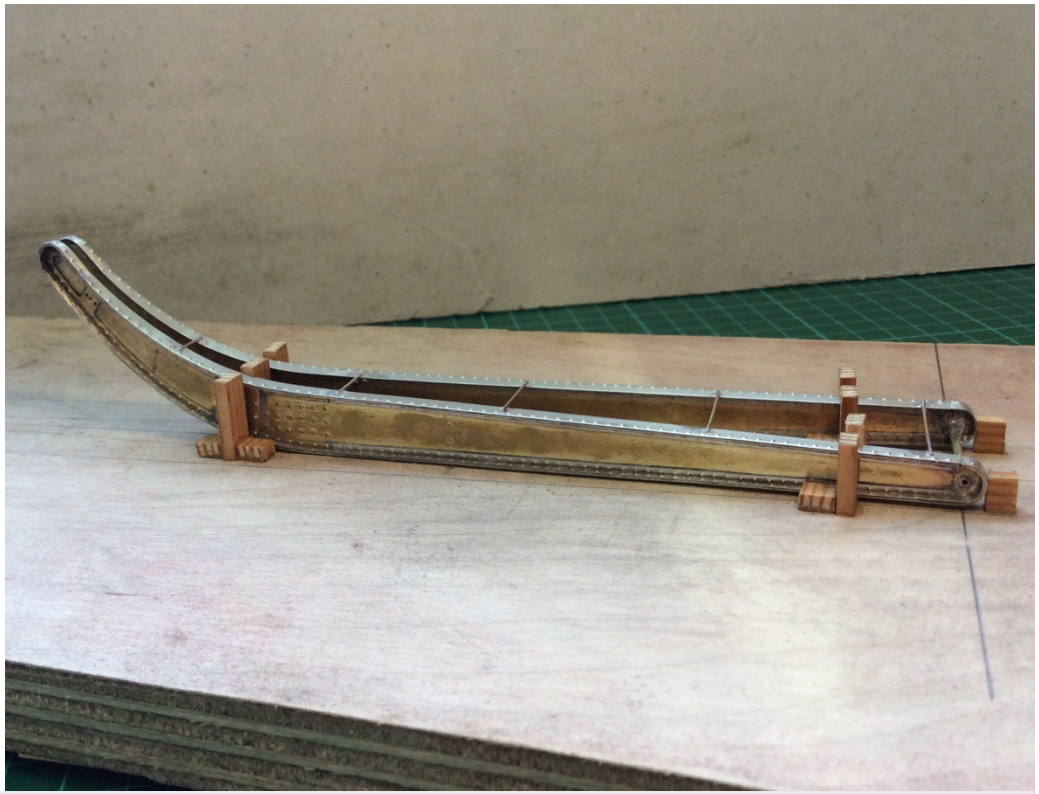


3/32nd BRASS TUBE (Black)
SIDEFRAMES 0.3mm BRASS (Red)
LARGE GUSSET PLATE 0.3mm BRASS (Blue)
WRAP ROUND STRIP 4mm x 0.3mm N/S (Yellow)

RIVET STRIPS (All uncoloured)

FIGURE 2





Photos 16 and 17

To assemble the two frames together, a jig was designed to hold them perfectly square and upright ready for soldering. An outline of the jib was pencilled straight onto thick plywood, then cubes of strip wood superglued in place. Before any soldering, both swan necks had to be filled down towards the tip of the nose making sure the slot was perfectly parallel (3.5mm throughout). This took me some time filling small amounts off at a time and re fitting the frames back in the jig. The end of the parallel slot is just visible by a slight kink which is to the left of the last frame spacer (0.7mm n/s rod). The frames then had another four tempory frame spacers fitted which will be removed later. Just visible are the inside riveted strips. With the frame removed, I found it quite ridged and did not twist or move too much. Before going on further, it will be test fitted to check clearances within the sideframe of the crane body.

With only a small amount of filling to be done on the outside faces of both sideframes (pivot end), it was offered into the crane body. A 0.7mm retaining pin was then passed through one crane body sideframe, through the inside of the jib pivot tube, then through to the other body sideframe. The jib was tentatively raised upwards and no binding or fouling was found. Placing the crane and match truck on a straight piece of track, the jib was placed in position on top of the trestle. To my amazement, it was dead in-line with the centre of the trestle. Everything seemed to be spot-on and square (what a relief). If not, the whole frame would probably have had to be unsoldered and started again.

To check sideways movement of the jib on top of the trestle, the crane and match truck was thoroughly tested (yet again) on my own garden railway during early summer of 2017. The majority of track and pointwork used is standard PECO (6' radius) barring one slightly tighter scratch built catch point (5' 10” radius). When passing through these points (in both directions), there was roughly 28mm of movement of the trestle still leaving approximately 3mm clearance both ends (as mentioned above). As described in Part 1 (Match Truck construction), the trestle had not been glued in place just in case the length of the trestle required shortening or lengthening. Thankfully it does not require any remedial work.

ROUND NOSE END PIECE

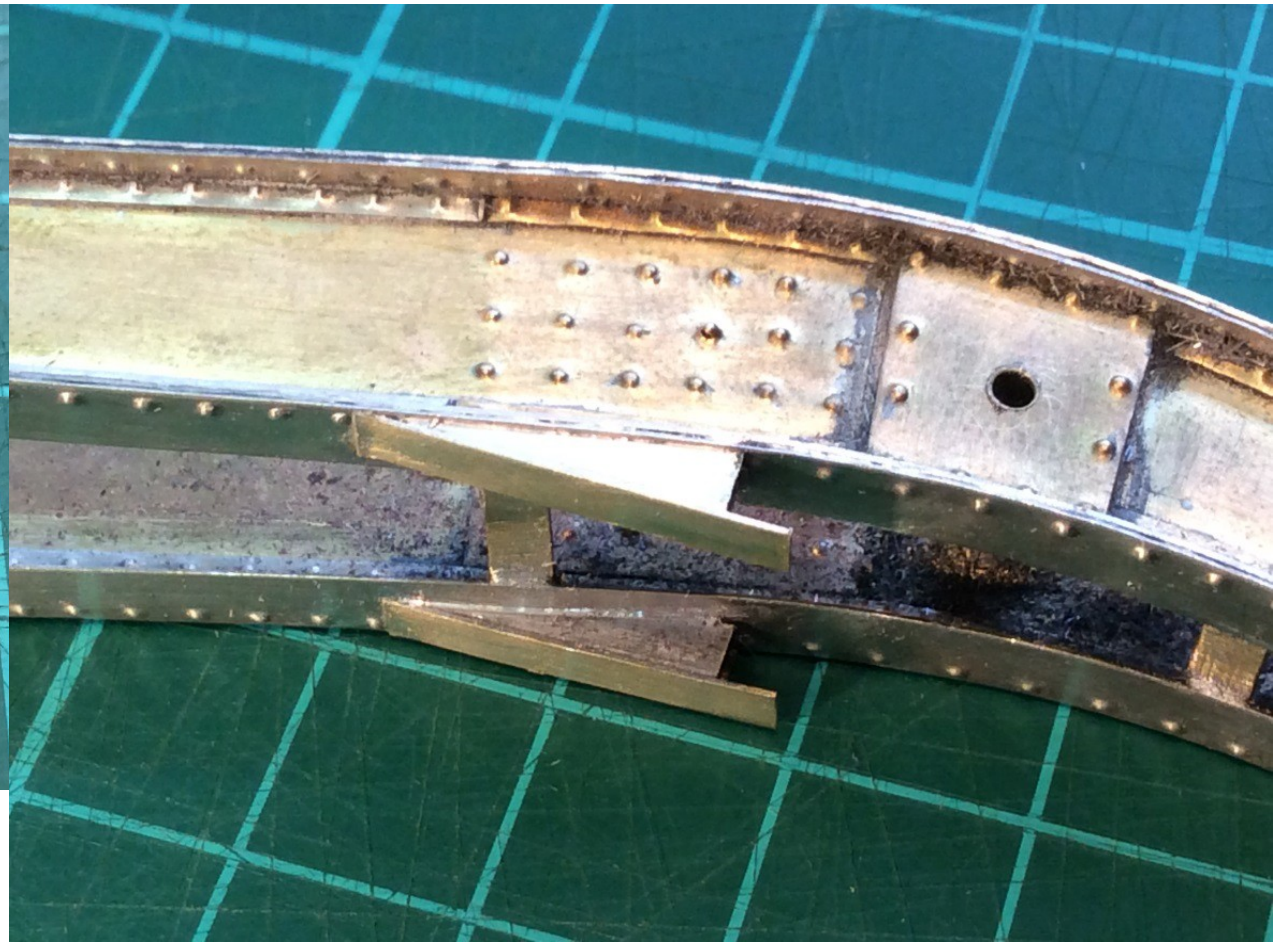
The next stage was to fit a round end piece on the end of the nose closing the slot. A section of 3.5mm x 0.3mm n/s strip was rounded to the same profile, and soldered in place. There are two very faint seam lines around the joints that have been filled smooth (as much as possible) and hopefully will not be seen when painted and weathered. With the front chain pulley wheel re-fitted and the chain temporarily wound around it, the chain slightly fouled the bottom (underside) edge of the strip when the jib was in the lowered position. So a small amount of metal (2mm) had to file away for chain to pass.

On top of the swan neck just behind the frontmost pulley wheel and either side of the other pulley wheel, there are three strategically placed frame spacers. Offering up various strips on the model, 3mm (5”) looked about right. Not having any n/s strip this width, the equivalent in brass was used instead. For extra strength, Carr's Speedy solder was used which is a bit stronger than their normal 145 degree solder. Three more strips were soldered onto the underside of the frame. I was very careful not to foul the pulley wheels in anyway, because they will have to be made removable. These six spacers now give the frame even more rigidity.

SHOES

On the underside of the jib there are two right angled triangles with flat bottoms. Friend and fellow Circle member John Ritter in Australia, has kindly given me the technical term for these triangles as “Shoes”. He went onto say that they are an object that supports a load (i.e. the jib) or pressure on a bearing surface (i.e. the trestle) where rubbing/sliding is involved. Their purpose then is to gently rest the jib on top of the trestle for travelling and to slide along it when the crane negotiates curves. Remember, the crane body is in a locked position for travelling and does not move - only the match truck.

Comparing the photos, close examination reveals each one had two flat sides with a hollow centre. On my drawing, I estimated the triangle at approximately 12mm x 3mm, with the flat strip (on the bottom) at roughly 17mm long with a small projection in front. Not knowing the precise thickness, 3mm looked about right. In the end, 3/32nd x 3/16th rectangular section (KS262) was chosen. A length was cut to 13mm long (filed to length later) and cut diagonally in half. As a temporary measure, it was Blu-tac’d in position making sure the flat bottom was horizontal with the trestle. To obtain the correct angle, only a small amount of filling had to be done. It was then removed and a strip of 3mm x 0.3mm brass was soldered on representing the rubbing plate. Soldering on the completed assembly, I had a bit of luck. The slot in the angle fitted snuggly over



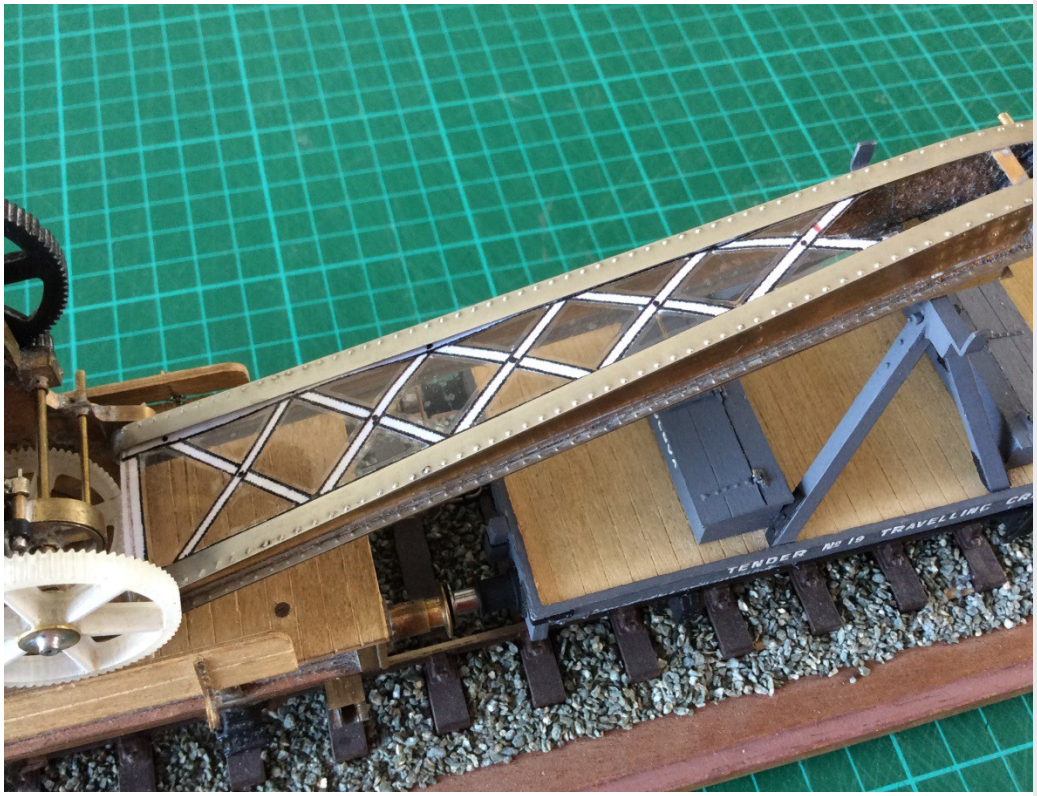
Photos 18 and 19

The two right angled items that are mounted on the underside of the jib (that rest and slide on top of the match truck trestle) are called Shoes. On the prototype jib, a hollow rectangular end can just be made out which I have replicated. This hollow section was a bonus as it fitted snuggly over either side of 6 rows of rivets aiding positioning ready for soldering. Clearly shown in Photo 23 are two wide frame spacers mounted in between the frames. As mentioned in the caption to Photo 7, the sixth rivet in on the top row of rivets was slightly out of alignment, but it matches perfectly with the top left rivet on the large gusset plate as shown, so my error was not that bad after all.

the row of rivets of the wrap round strip except for a couple which had to be filed off. Re checking on the trestle again, all was fine. The second shoe was then made like the first.

SMALL GUSSET PLATES

Now knowing what hole the front chain pulley wheel axle passes through (the centre one in the end), the two small gusset plates were cut out from scrap brass with a corresponding drilled out hole in the centre for the chain pulley wheel. On each plate there are 8 rivets in all. Each rivet was marked on matching the spacings on the top and bottom rivet spacings. Both were then soldered in place.

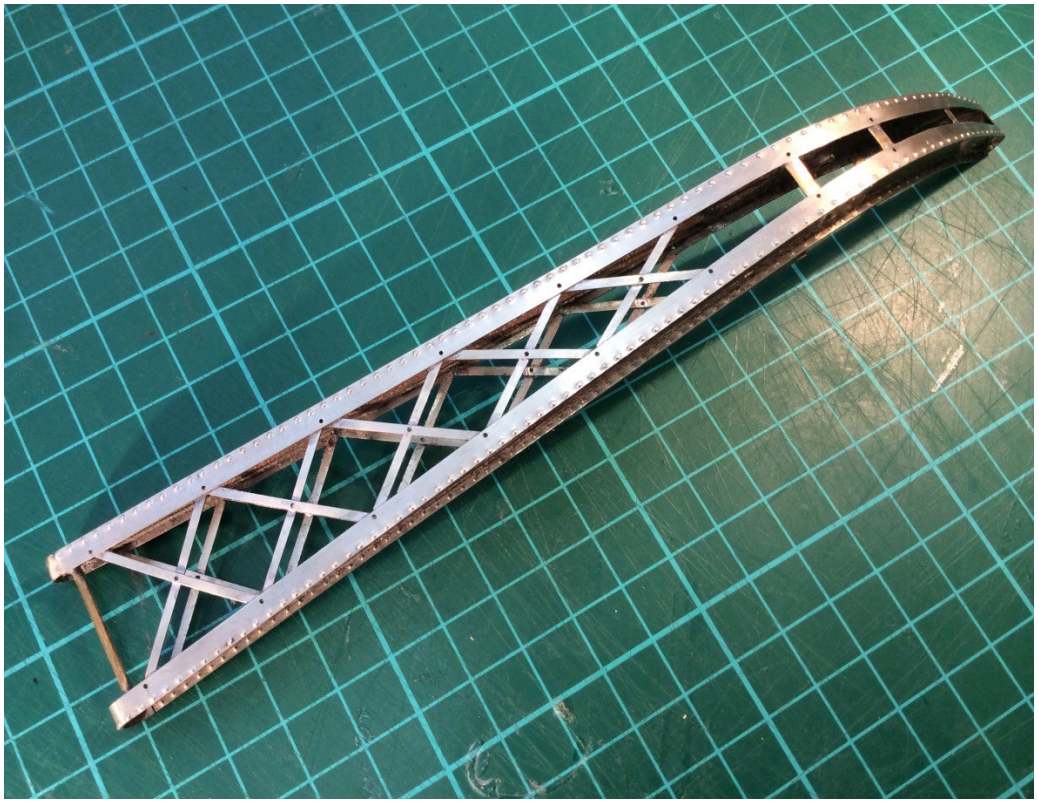


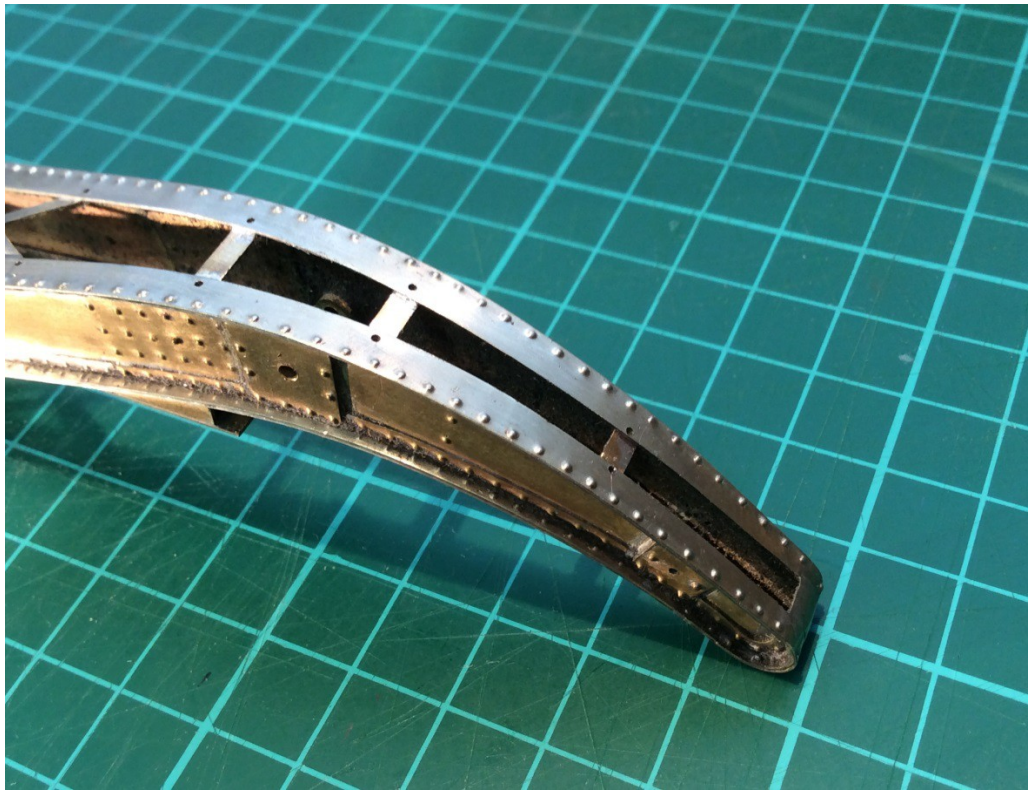
By the time photo 20 was taken, the jib had already been fitted and tested. It only required a small amount of filling to get it to fit snuggly in between the inside faces of the crane body. It raised and lowered perfectly. Before any cross bracing struts were even cut to length, a paper template was first cut out from my jib drawing. It gave me the opportunity to check the final position of the cross bracing. The template could be moved a few millimetres either way if I wanted it to. The position shown looked about right, but more importantly, the chain cleared the centre of the cross brace positon (`**C**` on the Fig 1 drawing). From the template, all of the intersections were marked on top and bottom of the wrap round frames ready for drilling out of the rivets.

CROSS BRACING STRUTS

I decided to copy the jib design from the 4 wheel, 5 tonner No.305s (ex LB&SCR No.5) (3) which definitely has five cross bracing struts on the underside of the jib which can be clearly seen. A sixth may well be hidden in between the shoes. In the end, I decided to stick with five cross bracing struts on top of my bird's eye drawing thinking a sixth would be a bit cramped. The cross bracing strut area on the drawing was photocopied and printed off and used as a template. To stop the paper tearing, it was covered with Sellotape. I then carefully cut out all of the waste bits leaving the struts and sides tacked in place. It was then offered up and tucked in place underneath the wrap round strip. To my surprise it looked right though it may not be 100% prototypically correct. It was imperative that no part of the chain fouled the top most cross brace centre area which is arrowed `**C**` on the drawing (`**D**` denotes the positions of the end cross bracing struts). The chain was temporarily wound around the winding drum and up over the first pulley wheel. With the jib resting on the trestle and in the raised position, at no stage did any of the chain touch the cross brace centre (a relief). As an experiment, I thought it best to double check the position of the bottom sets of cross bracing just to see what it looked like. Using the same template as above, it was slid in place. It was no surprise it fitted in exactly the same position as the top, but more importantly, none of the cross bracing struts required any new angles for it to fit in (a bonus). Also the ends of the smallest cross brace struts stopped just shy of the shoes by 2.5mm. If the model was ever viewed directly from above, each cross brace would be in perfect alignment with each other.

Happy in my mind that everything would come out fine, I very carefully marked the intersection of each cross brace strut. In reality, the ends of each strut would overlap each other and be secured in place by a rivet. Offering up various widths of strip, 1.5mm wide looked the best whereas 2mm was too wide. The top cross brace nearest the pivot point was tackled first, cutting two strips (for the struts) to the same length. Double checking with my marks, they were soldered in place. It





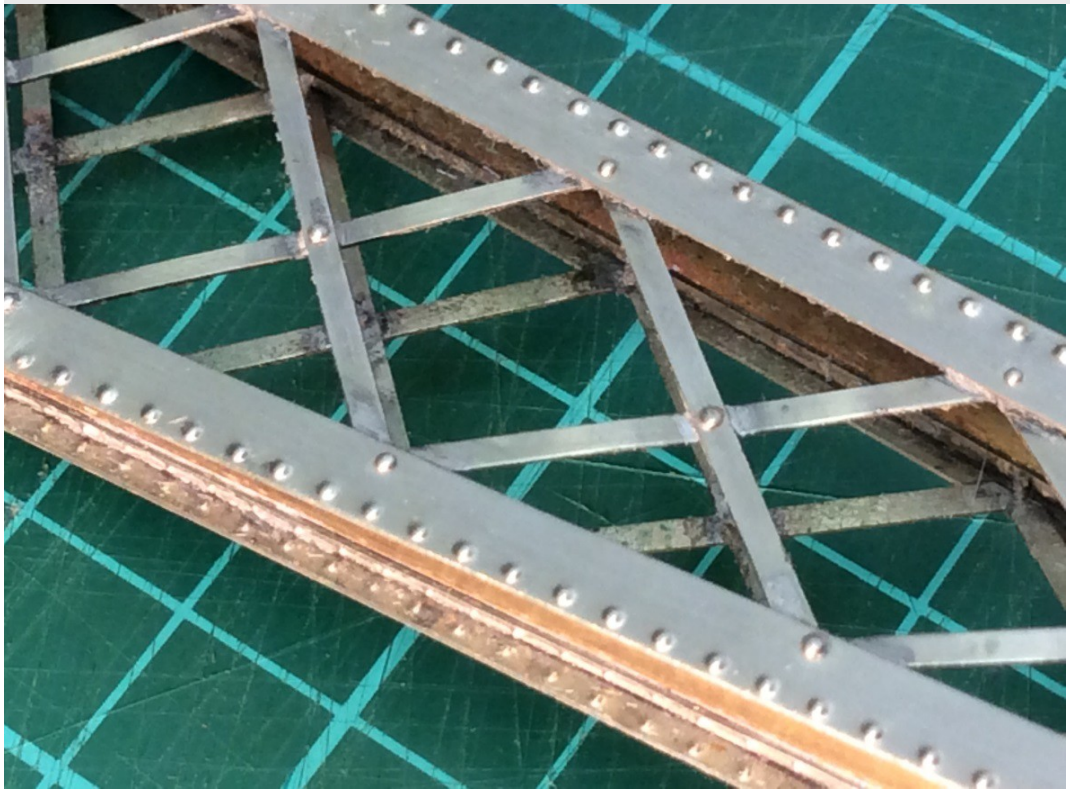
Photos 21 and 22 showing the top and bottom cross bracing (1.5mm x 0.3mm n/s strip) fitted along with three swan neck frame spacers (3mm x 0.3mm brass strip) in position. Before they were fitted though, the previously marked pencil holes were carefully drilled out (0.6mm) for the rivets using a home-made jig. After drilling out the holes, it was relatively easy cutting the strips to length, positioning each one by a hole, then soldering them on from underneath using Carrs Speedy solder again for strength. Holes were then drilled out in the centre of each cross brace member ready for more rivets. The same procedure applied to the bottom members making sure they lined up perfectly with the top ones and at the same angle. Photo 22 shows the small gusset plate has now been soldered in position. A larger 1/16th hole has been drilled out in the larger gusset plate ready for the chain pulley wheel axle.

was imperative the centre of the X was dead in the middle with the centre line of the jib. I then carried on with the remaining four cross members. For peace of mind, the jib was re fitted and tested again for clearance of the chain. The same procedure applied to the underside of the jib. This time though I made sure the struts were at the same angles as the top ones.

HOME MADE RIVETS

It was obvious the ends of the struts required securing rivets. I could not press them in earlier in the build, as I did not know precisely where they would be located - which is a shame as it would have saved me many hours work in making them from scratch. Holes at the intersection of the struts then had to be drilled out. Not wanting to guess each holes position, I made a simple homemade unequal `L` shaped jig (from scrap brass) with a 0.65mm hole drilled in the top. This hole ensures each drilled out hole is exactly 1mm in from the each (inside) edge of the wraps. The jig is simply held in place (with fingers) on the outside face of the jib sides precisely where the hole had to be drilled. After the drill had made a small divot in the frame, the jig was removed and the hole drilled out properly. Measuring the heads of the pressed in ones, they worked out at around 0.7mm in diameter by 0.5mm high. Looking on the internet (at that time), I could not find any pins this small, so I had to turn up my own, all 44 of them (plus loads of extras). 0.7mm n/s rod was used leaving 10mm on the end. Each stem was

Photo 23 showing the rivets soldered in position.



then turned down to 0.6mm. The `blank` head ends were cut to 1mm, and then turned down to a dome representing the head. After soldering them in place (from underneath using 145 solder), they look very close to the prepressed rivets. Only a small amount of solder seepage crept through some of the holes in the frame which was easily cleaned up.

STAY ROD CONSTRUCTION

The next stage was to design and construct the two long stay rods (one either side of the jib from the top shaft to either side of the first pulley chain wheel), and more importantly how they worked.

Only having the three photos to go by, none were that clear. Zooming in for a closer look (on screen) the pictures started to pixelate badly loosing much of the detail. I came to the conclusion that when the ball and hook is raised via the crank handle, it comes into contact with the underside of the nose. Continuing turning the handle, the jib then starts to rise upwards. The steel rods then slide inside the rectangular open slotted beams until they are forced against the top shaft (its maximum angle). When the angle of the jib is established for a lift, the stay rods are then `locked` in position by means of `pin` or `screw` locking devices which are located underneath the beams which are clearly visible on the photos. The ball and hook can then be lowered knowing the jib is in the `locked position`.

Scale drawings were then prepared based on my own long jib drawing, the short jib NRM schematic drawing, and the photo of No.19. With the jib resting on the trestle, the individual parts of the stay rods were worked out into their respective lengths. Trial and error was the order of the day before any metal was cut. Two paper templates of the stay rods were cut out: one with the jib in the lowered position, the other at an angle of 45 degrees just to see what the individual components looked like. This position also determined the overall length of the steel shaft having passed through the slotted beam. On paper, calculations of the individual items seemed right. Only when the parts had been made did I know for sure my measurements were correct.

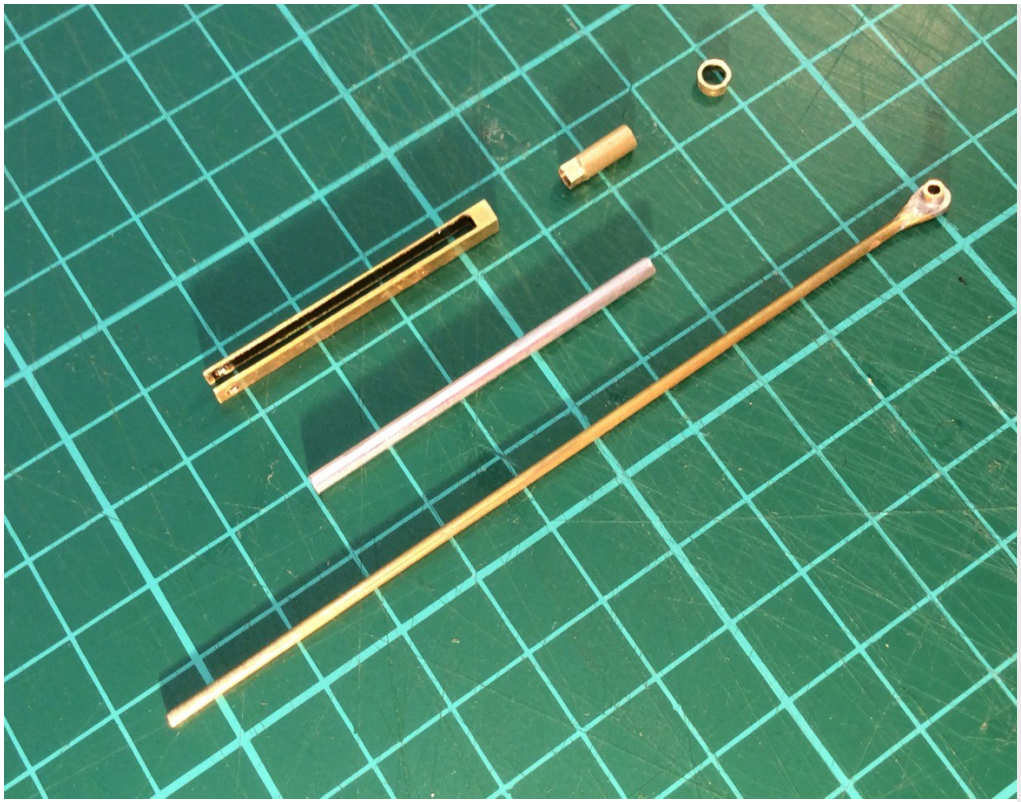


Photo 24

The individual components that make up one working stay rod. Not having any measurements of a long jib crane (only the shorter one), each item was calculated from the photo of No.19, and my final working drawing. By no means are these lengths or diameters spot-on but near enough to my eye. The small 10mm long cylindrical tube with the square end is soldered directly into the end of the slotted beams. The tiny collar was then slid on and also soldered into position. The aluminium tube (representing the steel rod) is positioned 17mm onto the long rod and glued on using Araldite Metal.

The first items to make were the two stay rod attachments that are located on the ends of the long thin rods. These in turn are attached to the ends of the axles of the top chain pulley wheel. Each one is shaped like a light bulb. The attachments looked exactly the same in design (and size) as those used on the crane body, though the camera angle makes them appear much larger. The same scrap 1.25mm brass was used again for each one, cutting two out at the same time to 7mm x 4mm. A slot was then cut out for the thin tubing which would eventually be soldered on.

I then hit a problem. What diameters of various sized tubing (4 in all) to use? It was obvious that all of the tubing had to be telescoping. Studying the photos, the ideal diameter of the longest (thinnest) rod I wanted to use was 3/64th solid brass rod and slide it into a 1/16th tube but it does not fit. Even after turning the end down and sliding it in, I felt the diameter of the rod was way too

thin and vulnerable to bending and breaking. So reluctantly the slightly larger 1/16th tube was selected in the end and cut to 120mm long. The attachments were then soldered on both ends. Just visible on the photo, a very faint line can be seen three quarters of the way along these thin rods. This line is the end of the steel rod. This rod eventually slides into the slotted beams when the jib is raised. To represent these rods, lengths of 3/32nd aluminium tubing (KS101) were cut to 47mm long which were then glued on using Araldite Metal to the long rods. The width and depth of the slotted beams

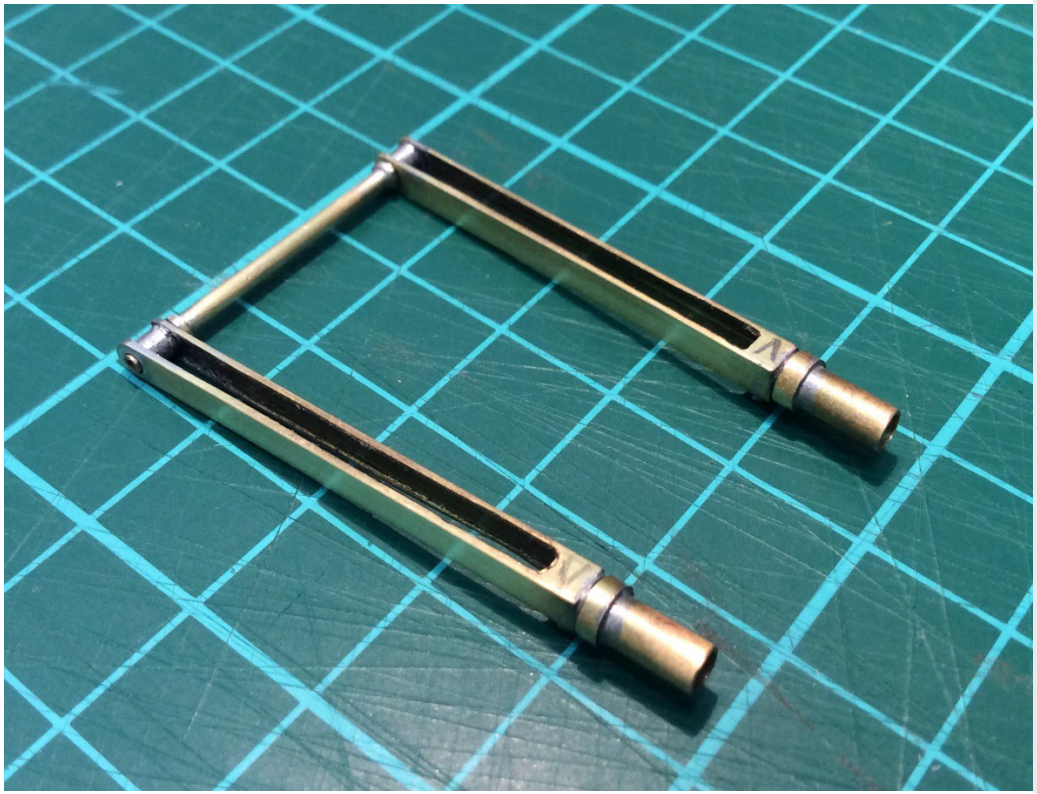
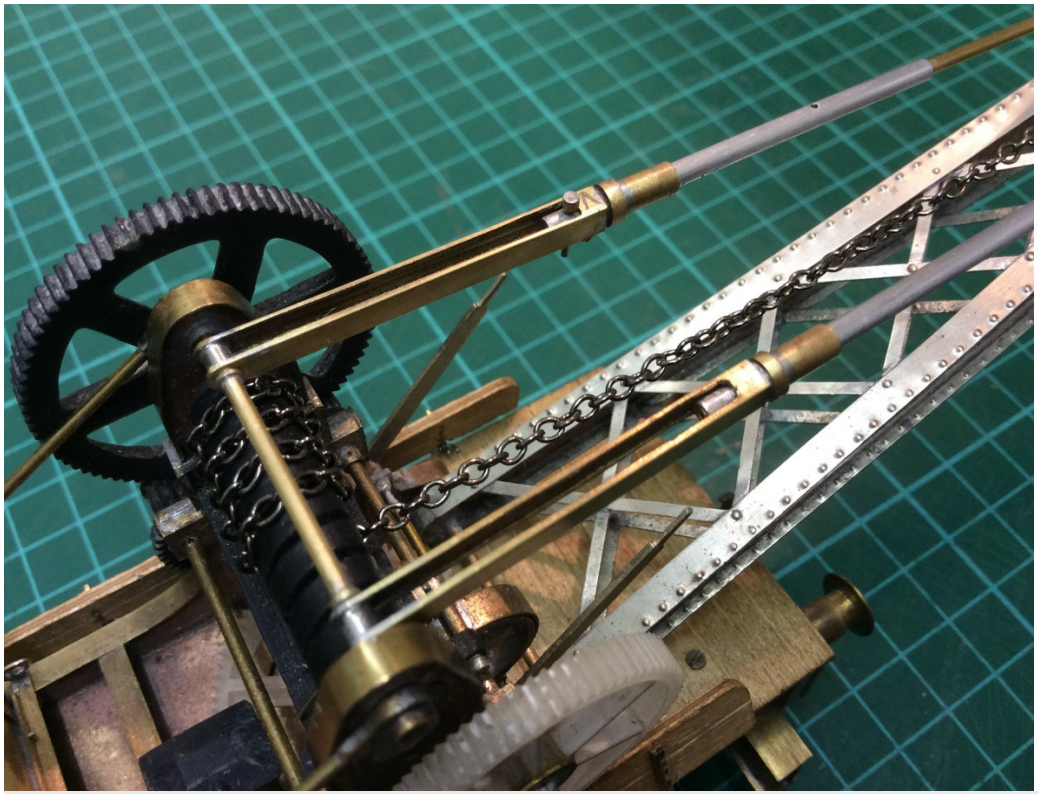


Photo 25

The two cylindrical tubes (with the square ends) have now been fitted and soldered into the ends of the slotted beams and the small collars added. It was imperative the tubes were perfectly aligned with the beams for the aluminium tubing to slide in and out within the slots. On each end (in between the slotted gaps), small 3/32nd collars have been soldered in at a very slight angle. The angle of both beams point them inwards towards the narrower swan neck of the jib. The top shaft rod (top left) is made from 1/16th brass tube which fits snuggly in behind the sideframes. A 0.7mm n/s rod will eventually secure it in place. Just in from the both ends, two very thin 3/32nd collars have been fitted to stop the beams sliding inwards when the jib is raised and lowered a few times. This happened a couple of times in testing. On top of each slotted beam, I have pencilled on two `V`s. They are there to identify both the top of the beams and which one goes where.

appeared to be square in section with a slot cut out in the top and bottom areas leaving the sides intact. Guessing various sizes, 1/8th square section (KS151) seemed the right size and was subsequently used. A length was cut to 38.5mm long, and had a 1/16th hole drilled out (in the sides) ready for the top shaft to pass through. A 35.5mm long slot was cut and filed out leaving a small amount of brass (1mm wide) in each corner for strength. In between the ends of the slots, a 1/16th tube was cut to length and soldered in place. Eventually the top shaft will pass through this tube. Finally, the ends were rounded off. On the other end of the beams, the square portions have what appears to be a round tube secured onto the ends of them. 1/8th brass tubing (KS127) was used for this. Not wanting simply to solder them straight onto the ends (too fragile), I filed a square 3mm square `nut` x 2.5mm long end which fitted (very) snuggly inside the square beam. When soldered in place, the tube was cut to 8mm long. A small 1.75mm wide 5/32nd diameter collar (KS128) was then fitted behind the square end and around the tube.

Having double checked the individual components on the drawing for one last time, it was time to fit the components together on the crane body. The first item to fit was the long rod with the attachment through the slotted beam. I noticed straight away that both rods were at a perfect right angle to the top shaft, but should be angled inwards parallel with the jib. So the original inner end spacers were removed, the inner hole elongated, and new tubes soldered in at an angle. With a bit of tweaking, both the long sections and slotted beams were then in perfect alignment with the jib. Another small problem then revealed itself. The attachments being straight, the ends of the long rods required bending outwards slightly so the retaining pin could pass through, more easily encapsulating the chain pulley wheel. With everything set-up, the jib was tentatively raised off of the trestle of the match truck for the first time. To my amazement it rose upwards with no snagging. The aluminium tube slid perfectly within the slotted beam. Lowering the jib revealed no problems either. To stop the aluminium tube from falling out of the slotted beam, a hole was drilled in for a tiny retaining pin/peg. When the jib is taken off the trestle, the jib drops a further 0.5mm



Photos 26 and 27 show the stay rods assembled and fitted onto the top shaft. Photo 26 shows the jib in the lowered position, and Photo 27 in the raised position, again, no major problems arose with my design. The only tweak required was bending both end attachments at a slight angle (not shown) making them parallel with the jib sideframes. To keep the jib held in either position as shown, a small pin is inserted (on the far steal shaft) via two small pre-drilled out holes which can just be seen. Because the winding drum cannot be turned via any of the gearwheels, the chain cannot be easily raised or lowered (only by nibble finger movement). This problem area I thought would lead to trouble when the jib is raised i.e. the ball and hook would be too low down and would require rising slightly everytime. I needn't have worried though as the top of the ball is only 25mm lower than the bottom of nose tip. Note also the chain has been wound towards the middle of the winding drum as per the photo of SR No.307s.

downwards. In reality, I don`t think the jib would be lowered anymore. As the jib is quite heavy, it had a tendency to drop down by itself and not stay put in the raised position, so a second hole was drilled in further along the aluminium for another retaining pin.

WINDING DRUM

The 3D printed winding drum has caused me a few problems right from the start. Though it can be fitted and removed quite easily, it still had a tendency to rotate and unwind the chain. I haven`t found a solution to stop this, though it is a tight fit. Not wanting to glue it in place (remember the chain has to be fitted later), the only way it could be fixed was to drill a hole right through it (on one end) and insert another retaining pin. When, or if, it required attention or the hook raised or lowered etc, the pin could then be removed, the drum rotated by fingers, adjusted accordingly, then the pin reinstated. When painted, the pin should hopefully blend in and not be seen.

HOOK AND BALL

It took me two attempts to make the hook. Both were made from scrap n/s etch. The first one was on the small side, so a second one was cut out and made again. This time it looked much better. The supplied 3D printed ball was very tiny at 7mm diameter and way undersize, because at that time, we were not sure what its final diameter would be. Popping down to my local fishing shop, a small metal fishing weight measuring 9.2mm in diameter was purchased, which proved to be more or less spot-on. A piece of 0.6mm n/s rod had a loop formed on one end. It was passed through the hole in the weight and another looped formed on the other end encapsulating the ball. There was just enough space to solder the other loop. Two homemade links were then made in readiness for attaching the completed weight onto the chain.

CHAIN FITTING

Early in the build, and to save me time, Francis (www.3d-companions.com) sent me some

suitably sized chain at 12 links to the inch (I am hoping it can be heated and placed in motor oil, chemically blackening the links). Fitting the first link onto the winding drum (via an `L` shaped piece of rod glued in place), it was wound on to roughly half way along it. The chain links fitted perfectly within the continuous slot of the drum as it would in reality. The chain was then fitted over the two chain pulley wheels and the end passed through the open gap behind the nose. Resting the jib on the trestle, the chain was cut to length. The ball and hook was then fitted via two brass rings. With the larger diameter ball, the hook is a now slightly lower but it still does not touch the decking of the match truck.
This finally completes the jib construction.

Finding a suitably shaped hook could not be sourced, so a scratch built one had to be fabricated. Scaling the photo of No.19`s jib end to 7mm scale on the computer screen, the hook and ball weight was measured and drawn. A suitable piece of thick scrap n/s etch was found and the hook shape painstakingly cut out. This took me many hours to get it looking correct. The ball weight is a fishing weight measuring 9.2mm in diameter. The weight had a mould line running around the middle of it which was filled off noticed by the silver area. Links were fashioned from n/s rod. Note also the front chain pulley wheel fitted in position. These wheels would have been very hard to fabricate from scratch as they are a very complicated design. Thankfully they were 3d printed for me. The small gusset plate shows up well.

UPDATE ON THE CRANE BODY

BRAKE LEVERS

At long last, it was time to fit the two long brake levers, clearly visible on the photo of No.19, which are positioned at an approximate angle of 45 degrees. They were briefly mentioned in the Modellers Digest Issue 5 but not photographed at that time. The one closest to the camera is fitted on the inside of the sideframe, whereas the far side one with the counterweight is fitted on the outside. With the jib resting on the trestle, the precise angle could be determined. They again had to be perfectly in-line with the crane body. There was not a lot of space between the edge of the counter weight and the adjacent (outside) 40 toothed gearwheel.

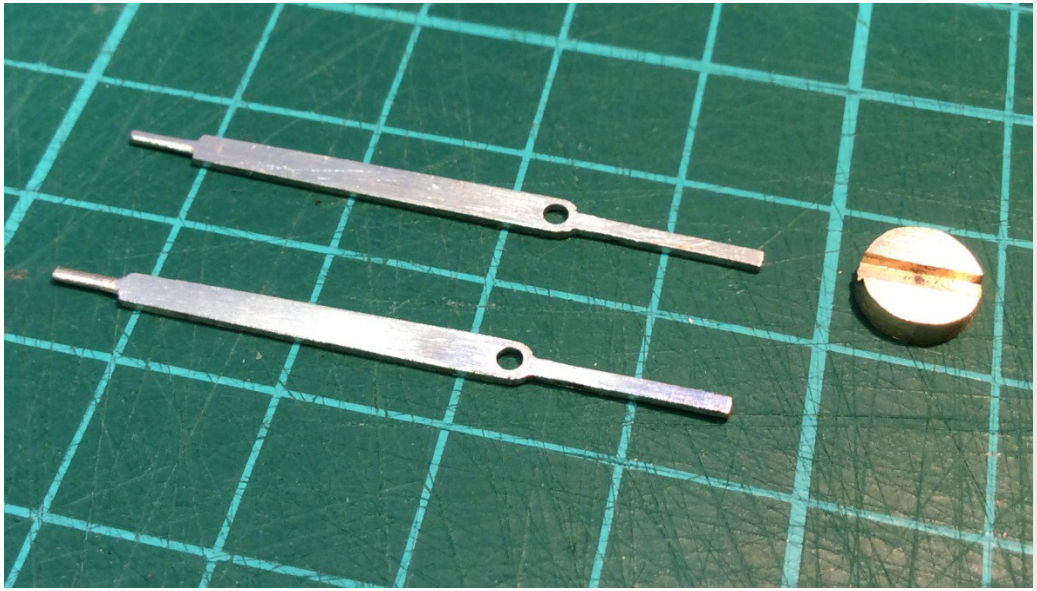


Photo 29

Briefly mentioned in the main text, the two brake levers and counterweight had already been prepared. They were only fitted after the jib was completed due to their vulnerability to damage i.e. being bent. The levers were cut out from thick 1mm scrap nickel silver etch (4cm long) and shaped accordingly. The 8mm diameter counterweight (only one required) was cut out from a thick piece of 2mm brass. On the back, it has a small narrow slot cut into it so it could be slide up or downwards to the correct position on the bottom on the lever. On No.307s, only the top half of it can be seen behind the raised footboard. When finally fitted, the weight can be moved up or down matching the photo. The bottom of the inner lever will be cut just short of the pivot hole.

RATCHET WHEEL, SUPPORT STEM, and DETENT LEVER

Not being an expert when it comes to crane design or their workings, I thought the crane would have some form of cogged, toothed or ratchet wheel fitted (primarily on the last crank handle shaft) to stop the gears unwinding themselves if a load was on the end. From the photos no such fitting can be seen. The internet was sourced for suitable photographs of different types of cranes, including goods yard, derrick, and travelling hand crane mechanisms. Also sourced were drawings. A couple seemed feasible. On one particular drawing it had a 6 spoked ratchet wheel, with a fail safe lever (Detent) which was in contact with the teeth via a spring. When rotated, the spring kept the lever in contact with the teeth of the ratchet wheel. Another drawing showed a weight on the lever. Would the latter have been a fitting on this particular crane? We may never know for sure. In the end, I decided on the “weighted lever” method. Various sized copies were scaled down and printed off. They were cut out, and overlaid onto the crank handle shaft on the master drawing. Space was limited due to the forward (travelling) position of the weightbox.

Happy it would fit in, work started on the most complicated item first, the ratchet wheel. The outside diameter on the drawing was 10mm with a thick rim. As it happened, I had already made one earlier in the build which was never used. It was made from 9mm and 10mm (KSM37 and KSM38) brass tubing cut to 1.50mm wide. A centre disc was cut out for a snug fit inside the rim, then six, 1mm wide spokes were cut out. A 3/32nd hole was drilled out in the centre for securing it to the inner side frame tube. It was now time to file out the ratchet teeth (no turning back now). The angle of the first couple of teeth looked fine to me and looked prototypical so I carried on. To my total surprise my estimated tooth spacing worked out perfectly with the first filled tooth (a relief). In all 18 teeth were filled out in total.

A lever was cut out from scrap 1.25mm brass. Guessing its design, I plumped in the end for a plain length with a pivot point just off centre. From this point, both sides were tapered down

slightly towards the ends. One end had a grab handle filed on: the other a notch matching the tooth notches. A small disc measuring 6.5mm in diameter x 30thou was cut out and soldered on representing the counter weight.

Photo 30 left and 31 right

The shape of the detent lever was total guess work, having no knowledge of what they actually looked like. The only clue came from the similar design as used on a Ransom's Mike's Models Yard Crane so it was copied. The overall length of 26mm was determined by the space available (from the bottom notch of the ratchet wheel and the front of the weightbox). It was cut out from a piece of scrap 1mm thick brass along with the small (6.5mm diameter) counter weight. There was enough thickness in the brass to round it off for a model workman's hand. The stem was made from a length of 3/32nd square section tubing and has been included to show the splayed out base which was bent out first. With a bit of tweaking and bending, it was tricky getting the stem perfectly vertical from all angles. The pre-determined height of the pivot hole was drilled out, then a slot cut into it for the lever to past through.

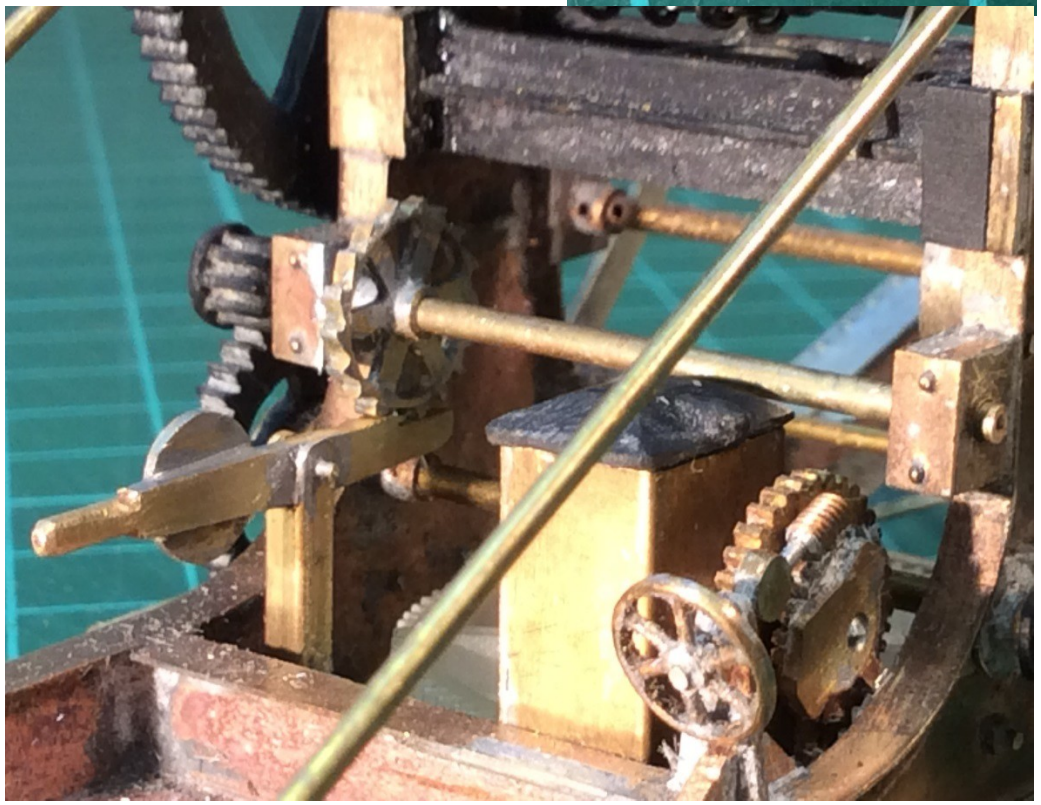
The stem for the lever was the simplest item to make being a simple 3/32nd square tube (KS150) cut to a length with two 3mm long feet splayed out either side for securing it to the floor. From the floor to the lever pivot point was 13mm, so a hole was drilled out accordingly. A slot was then cut out for the detent lever to pass through.

The ratchet wheel was then soldered in place 3mm in from the inner sideframe. With a securing pin through both the stem and lever, the notch in the end was positioned in a tooth of the wheel. The stem was then soldered onto the floor, although it was a bit tricky getting it vertical from all viewing angles. Before the lever was finally soldered in place, the counter weight actually worked in practice as the prototype would have done.

Photos 32 upper and 33 lower

The ratchet wheel has an outside diameter of 10mm and was cut out from brass tubing. Filing out the individual notches around the circumference was not easy to accomplish. Thankfully only one had to be made. The location of the wheel would most probably have been on the crank handle shaft as shown (the handle would be placed inside the small far side pinion via a square hole). Even on the model, there is no other place for it to be located. Partially hidden by the `I` beam is the stem which is mounted directly onto the floor. The notch in the lever has not been soldered to the ratchet wheel just in case my design is wrong and requires amending. The gearbox, gearwheels, cam and hand wheel (all scratch built barring the worm) show up well in the foreground. Note the 3d printed gearbox roof.

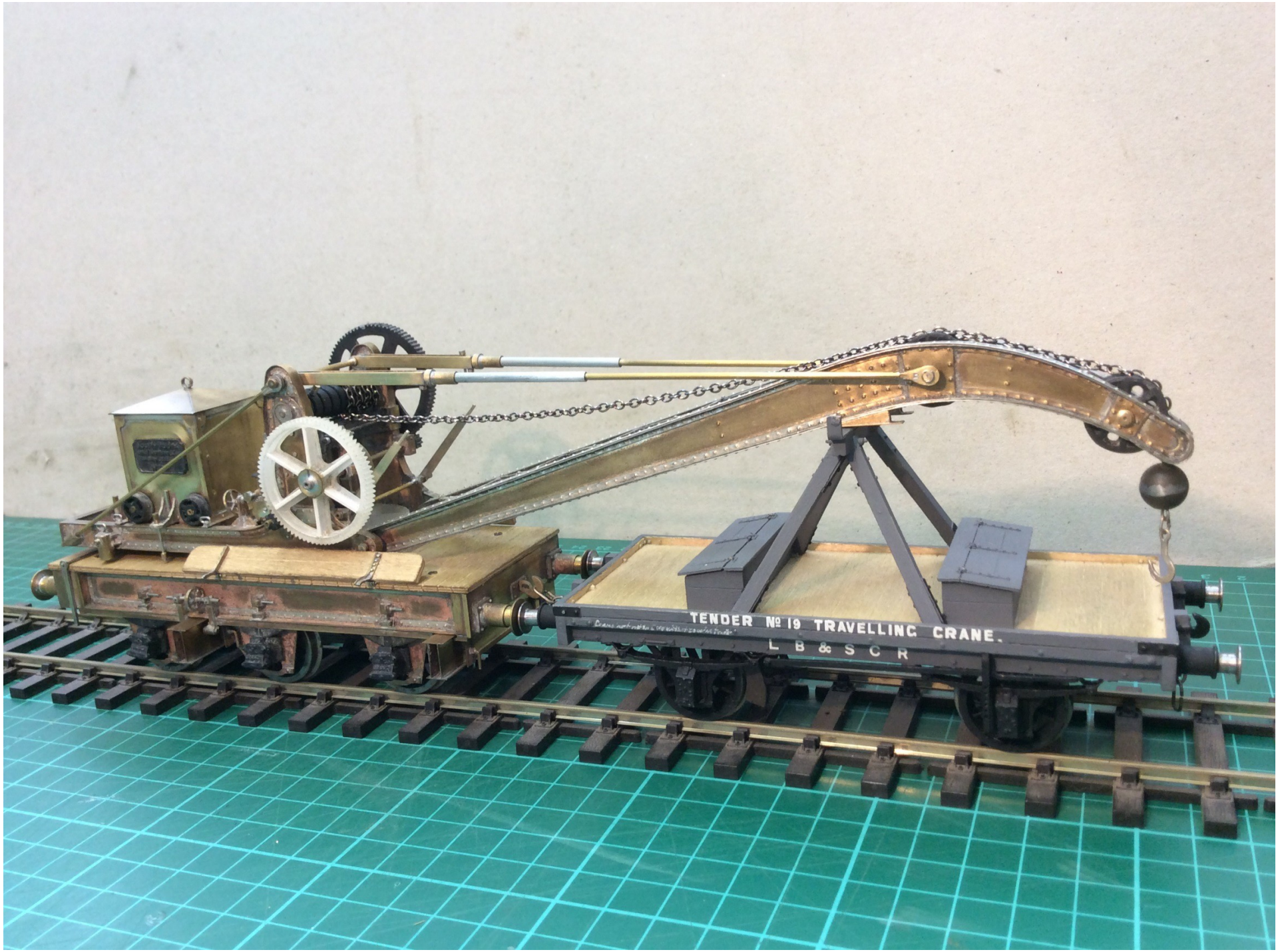
The very last item to make would be a crank handle. For normal running, it would be stowed away in the tool box.

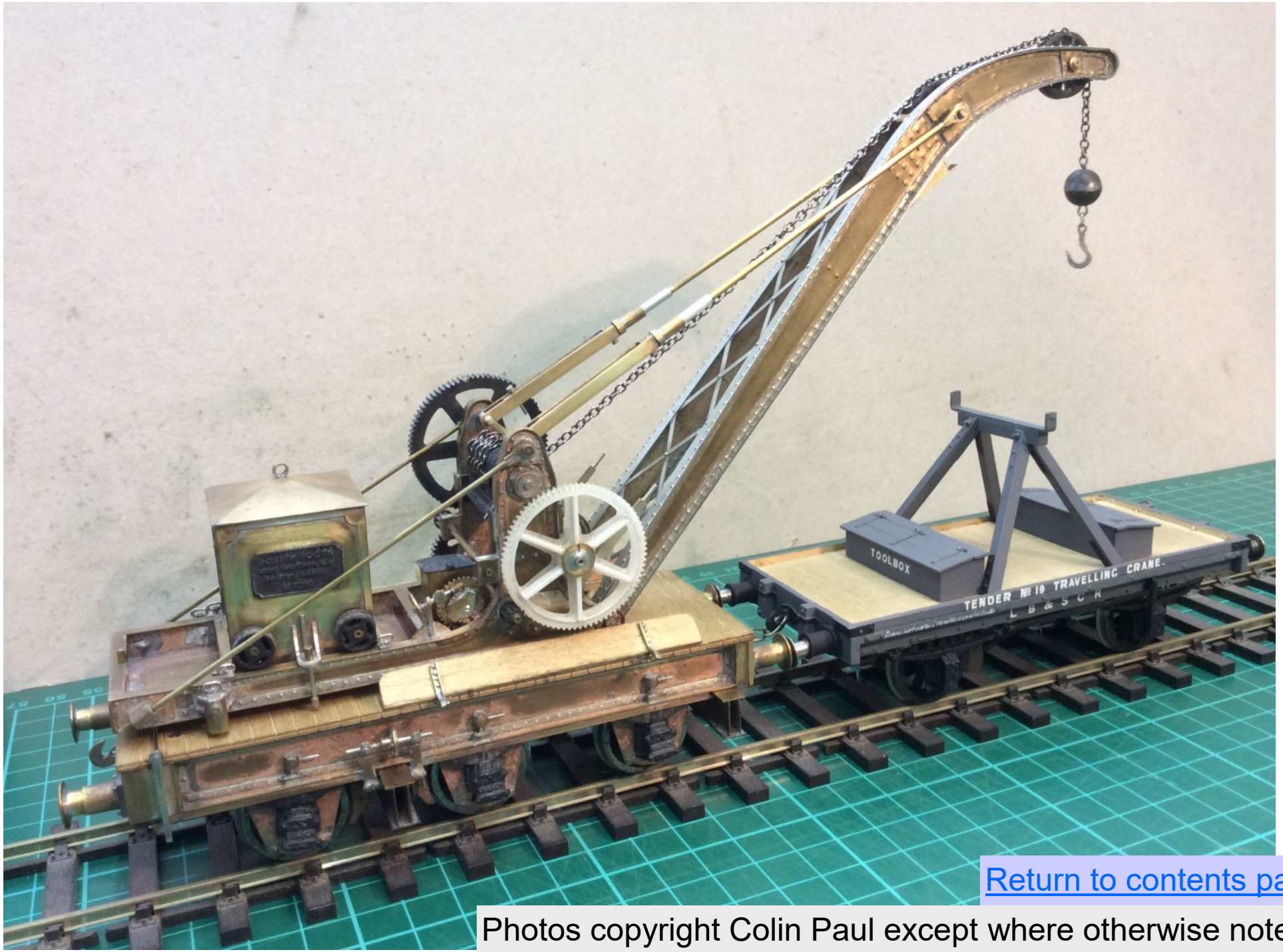


This last paragraph above finally completes the mammoth task of constructing the crane. It has been a labour of love getting to this stage. I cannot tell you how many hours have been spent on it (probably into four figures). Firstly though, I`d like to thank Francis Leach (www.3d-companions.com) for his technical know-how on all things mechanical, especially with the gearing. His knowledge on the size of the gearwheels by counting the individual teeth has made it almost 100% accurate. Also I would like to thank him for his superb 3d crane body drawings on which I relied, and lastly his 3d prints. If it was not for him, it would never have got off the paper. I would also like to thank Philip Elverd for his beautiful LB&SCR oiled filled axleboxes and leafsprings in lost-wax for the match truck (which was featured in LB&SCR Modellers Digest No.2) and John Ritter in Australia for his expertise and knowledge of certain areas, namely some of the technical names used for individual items etc. Lastly, thanks to my wife Shirley, who has allowed me to spend the time and best part of a few years away in my modelling room making it all possible. Thank you all.

The next and final stage is the painting and lettering which will be covered in Part 6 (Modeller Digest No.7 Summer 2018). Though it will be nice to see it finally painted, I am not looking forward to stripping down. My wife has mentioned to me on numerous occasions “the paint will hide and cover up my hard work along with all the different materials used”, which is true. Sad, but it has to be done. I could always make another one and leave that one unpainted. I don`t think so.

Plate 121, Page 72, An Illustrated History of Southern Wagons. Vol.2.
Plate 123/4, Page 73, ditto .
Plate 122, Page 72, ditto
Plate 125/6, Page 73, ditto .


TENDER Nº 19 TRAVELLING CRANE.
L B & S C R



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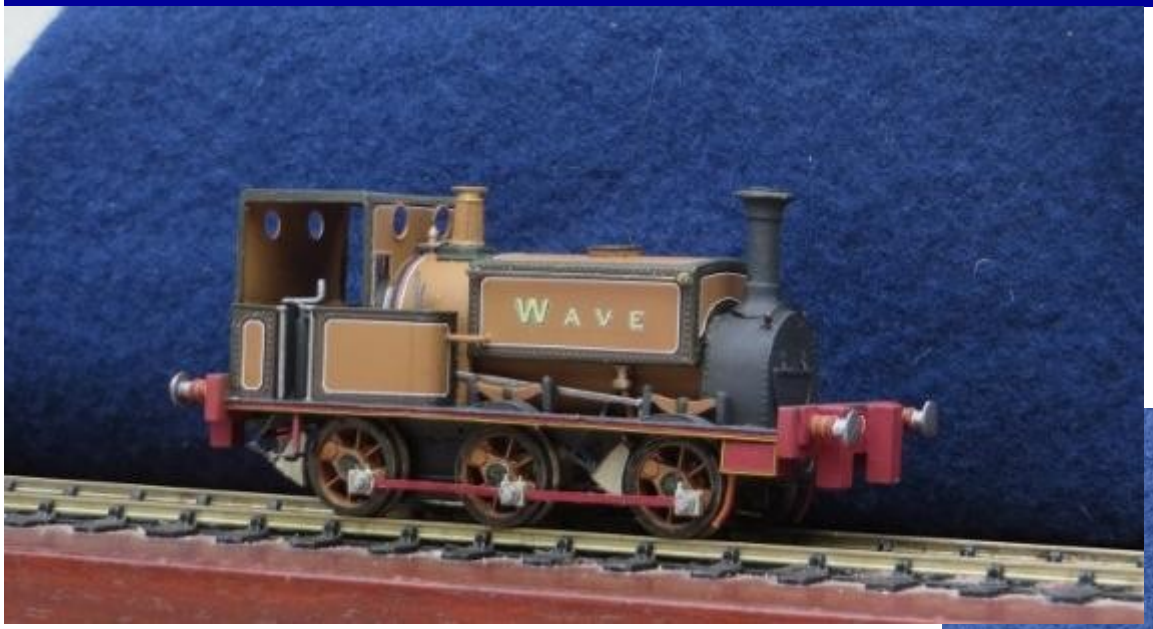
Wave, Newhaven Harbour Company

By Eric Gates



Wave, built from a kit by RT Models and awarded winner of the EMGS prize for best scratch or kitbuilt loco at the 2018 AGM.

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New PO Wagon lettering from POW Sides in 7mm

http://www.powsides.co.uk/

Powsides
Robert Tivendale
Poplars Farm
Aythorpe Roding
Dunmow
Essex
CM6 1RY

Tel: 01279 876402
Fax: 01279 876402

Email: sales@powsides.co.uk

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EBM - change of ownership

Production of LBSCR kits under the EM Models label has been taken over by Ian MacCormac and David Lowe following Mike Waldron's decision to retire. The phototools and documentation are in the process of being assimilated by the new owners, and transfer of the EBM website is in hand. The range will be extended to include all former EBM items over the coming months.

All orders should be sent to Ian MacCormac, either by: -

- Email ianmaccormac@hotmail.com
- Post E B Models,

1 Arundel Avenue,
Bispham,
BLACKPOOL,
Lancs FY2 9HJ

Kits will be produced to order on a 3 monthly cycle beginning in January 2018, unless there is a bulk order which will be dealt with immediately.

4mm Locomotive Kits	Price £
G Class 2-2-2, including Abergavenny	60.00
Grosvenor 2-2-2	60.00
Sussex 2-2-2	60.00
Drayton/Dieppe 2-2-2	60.00
Belgravia Class 2-4-0	60.00
Richmond Class 0-4-2	60.00
18/21 0-4-2T	75.00
E3 Class 0-6-2T	110.00
D2 Class 0-4-2	60.00
C Class 0-6-0	60.00
C1 Class 0-6-0	60.00
E1 Class 0-6-0T Chassis	15.00
D1 Class 0-4-2T Chassis	15.00

4mm Tender Kits	
Stroudley Inside Frame Tender	50.00
Stroudley Outside Frame Tender	50.00
Small Craven Tender	50.00
Large Craven Tender	50.00

4mm Coaching & NPCS Kits	**£**
Diagram 39 Stroudley slip 6 wheel 1st Brake	48.00
Diagram 40 Stroudley 4 wheel 1 compt 1st Brake	42.00
Diagram 40 Stroudley 4 wheel 2 compt 1st Brake	42.00
Diagram 42 Stroudley 6 wheel 1/2 lav compo	48.00
Diagram 47 Stroudley 22' Brake	32.00
Diagram 72 Billinton 6W Tricomposite	48.00
Billinton/Stroudley 6W Brake Van conversion kit	10.00

4mm W Irons	
R.C.H. W Irons	6.00
SSWI - Straight W irons	6.00
BCWI Braked Carriage W irons	6.00
P.O. W Irons	6.00
2CBWI	6.00
UBWI - Unbraked Carriage W Irons	6.00
CCWI-1 Craven design	6.00
CCWI-3 Craven Carriage W Irons	6.00
GV BWWI W Irons	6.00
CCWI - Curved W Irons	6.00
CCWI-2 Craven Design W Irons	6.00

4mm Miscellaneous	**£**
Clasp brake 5' wheel etch	5.00
Wooden & Cast brakes especially E1	5.00
Terrier wooden brakes	5.00
Station Seats	6.00

7mm Locomotives - Etches Only	
Drayton/Dieppe 2-2-2	90.00
Belgravia Class 2-4-0	90.00
Richmond Class 0-4-2	90.00
18/21 0-4-2T	90.00
D2 Class 0-4-2	90.00
C Class 0-6-0	90.00

7mm Tenders - Etches Only	
Stroudley Inside Frame Tender	50.00
Stroudley Outside Frame Tender	50.00
Large Craven Tender	50.00

7mm W Irons	**£**
7-CCWI - 3 Craven Carriage W Irons	8.00
7-CCWI - 1 Craven carriage W Irons	8.00
7BCWI W Irons	14.00
CBW7 Billinton Carriage W Irons	8.00
SWW7 - Straight Wagon Individual W Irons	8.00
CWW7 - 7MM Curved Wagon Individual W Irons	8.00

The provision of lettering will remain with Mike Waldron, who will act as agent for the suppliers of loco name and wagon transfers. It is possible that the range will be extended to include carriage lettering, garters and numbers.

All contact with Mike should be via the e mail address

mike.mjwsjw@gmail.com

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And with EBM in safe hands, Mike Waldron’s work bench looks like this .....

We look forward to seeing lots of interesting locomotives on a future layout!

Brighton Layouts that you may see at Exhibitions

Ferring

East Grinstead see linked website

Plumpton Green see linked website

Hailsham see linked website

Saltdean see linked website

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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

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

South Coast Railway. This new book is the second of two volumes intended to complete the

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.**

LV

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