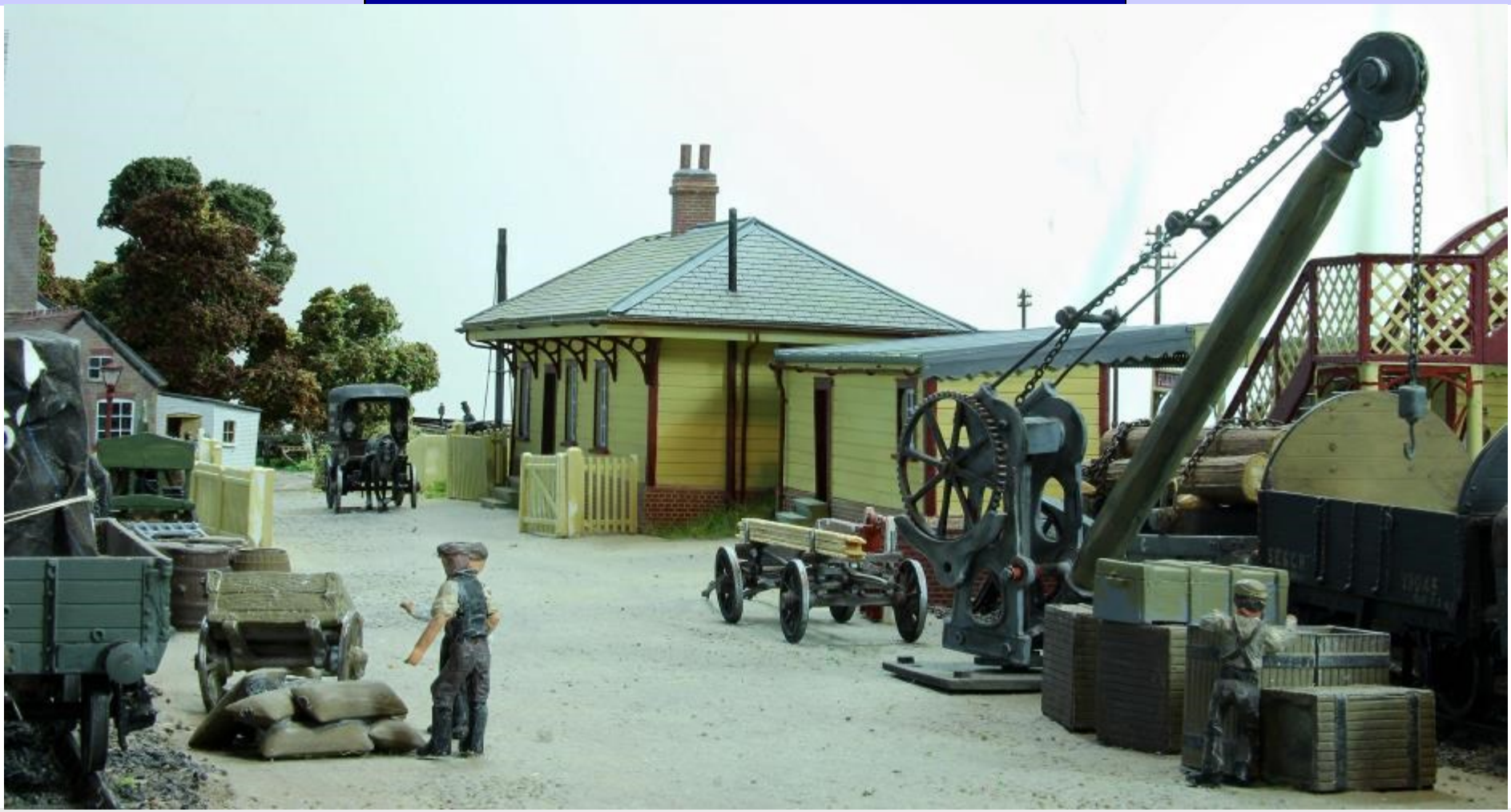
A journal of the Brighton Circle, for those modelling the “Brighton” in all scales and gauges.

The L.B.& S.C.R. Modellers’ Digest

Issue 17

Summer 2023

Contents on page 2



Contents

Editorial

Digest 17 contains more inspirational Brighton modelling!

Three authors have documented their thoughts on photographing layouts using the technique of photostacking. Happily, the examples come from some very fine models of the LB&SCR! I am particularly grateful to Phil Parker, editor of Garden Rail magazine and Features Writer for BRM magazine, for adding his thoughts on his use of the technique when he was photographing Hayling Island.

There is the first of a series of articles on some “might have been” Brighton locos. Like almost all pre-grouping companies, the Brighton considered - sometimes in considerable detail - possible new designs, which did not get built. The history behind the tank engine version of Colonel Lawson Billinton’s K class moguls will be documented in the Brighton Circular, but, for the Digest, we have a description of the construction in 7mm scale of a loco to run on Mike Cruttenden’s Ashcombe Down layout. Spoiler alert - there are more “might have beens” to come!

Welcome to Gary Smith and John Shaw, as new authors to the Digest, and I look forward to more of their articles.

Finally, I hope that there is some inspiration in this edition for those taking their first tentative steps into modelling the LB&SCR. The purpose of the Digest is to stimulate your curiosity to explore ways to model the Brighton and to find out more about the history through the Brighton Circle.

The cover photo is by Barry Luck, showing Plumpton Green goods yard - see following article.

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Return to contents page

Keeping the Layout in Focus

By Ian White and Barry Luck

In this article Ian outlines some special considerations and techniques that can be applied when photographing a model railway. Barry describes his experience of applying a technique called “focus stack” to his layouts by processing digital SLR photos through special software, and Ian experiments with cameras that have built-in focus stack software. A gallery of additional focus stack images follows this article.

Introduction

When we look at photos of model railways, we like to see a reasonably lifelike image, and there are three things to consider: viewpoint should be nearer ground-level than bird’s-eye; the amount of the view that is in focus covers the full depth of the subject of interest; we choose our lighting with care, e.g. to avoid conflicting shadows (Picture 1 on following page).

When taking ground-level photos, it can be difficult to get enough of the subject in focus. The closer the camera is to the subject, the less will be in focus (technically, this is a narrowing of the “depth of field”). Keeping to a “standard” length of lens, we could perhaps take the picture from further away; more of the image will be in focus but the object will be smaller, and hence the photo will need to be cropped to get the desired result, and cropping results in a loss of pixels and thus detail and sharpness (not so much of a problem with a high-resolution camera or if the photo is merely to be posted on the web). Using a telephoto lens from further away would distort the perspective and still give problems with depth of field. Similarly, using a wider-angle lens from closer would distort perspective. Sensor size also has an impact on depth of field (sensor size is the digital equivalent of film size).

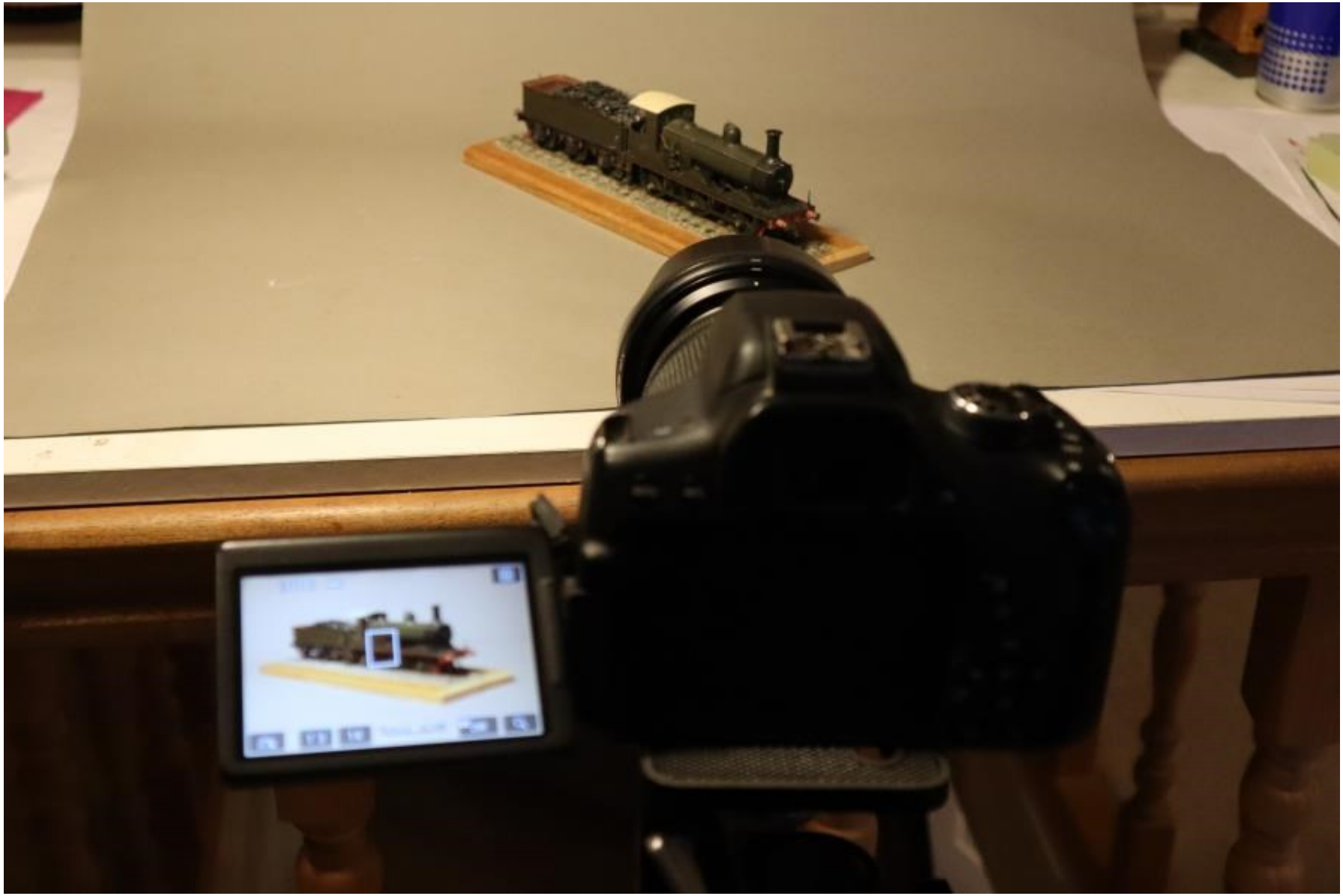


Photo 1. A very simple “stage” for taking the “portrait” of a Billinton C2 using a Canon 750D Digital SLR. The model is placed on a neutral (greyish) sheet of thin card which is curved up behind it. The camera is tripod mounted and lighting comes from a single lamp.

Model and photograph, Barry Luck.

The Technical Stuff!

Taking photographs of small objects close to the camera requires special attention to focus, and that applies equally to “portraits” of individual models such as locomotives, and photographs of layouts which might be thought of as “landscape” photography in miniature. For a portrait the photographer aims to keep the model, be it a 12-inch scale human or a 4mm scale locomotive, in sharp focus against an out of focus background. For that we need a camera that allows some degree of manual setting, in particular the ability to choose an aperture setting. Aperture settings are measured as f-stop numbers, typically in the range f2.8 to f22. The smallest value allows light through the entire lens diameter while the largest restricts the light to a tiny spot in the centre of the lens. Standard values follow an exponential series, namely f1.4, f2.8, f5.6, f11 and f22, and there may also be intermediate values such as f4, f8 and f16. The smaller the aperture (higher the f number) the greater the range that is in focus. That range of focus is called “depth of field” and to take a locomotive portrait we need to find the aperture setting that gets the whole of the locomotive in sharp focus, while leaving foreground and background out of focus. To do that we could simply take a series of photos at different aperture settings and select the one that is most in focus. However, even with a small aperture it may not be possible to achieve complete focus (Photo 2) and in that event we need to turn to a special technique called “focus stack” (Photo 3).

Photo 2. A single shot locomotive portrait (Billinton C2 No.522) with inadequate depth of field; the front and rear of the locomotive (see insets) are not in sharp focus. Aperture was f14; ISO 200; exposure 1 second.

Model and photograph, Barry Luck.

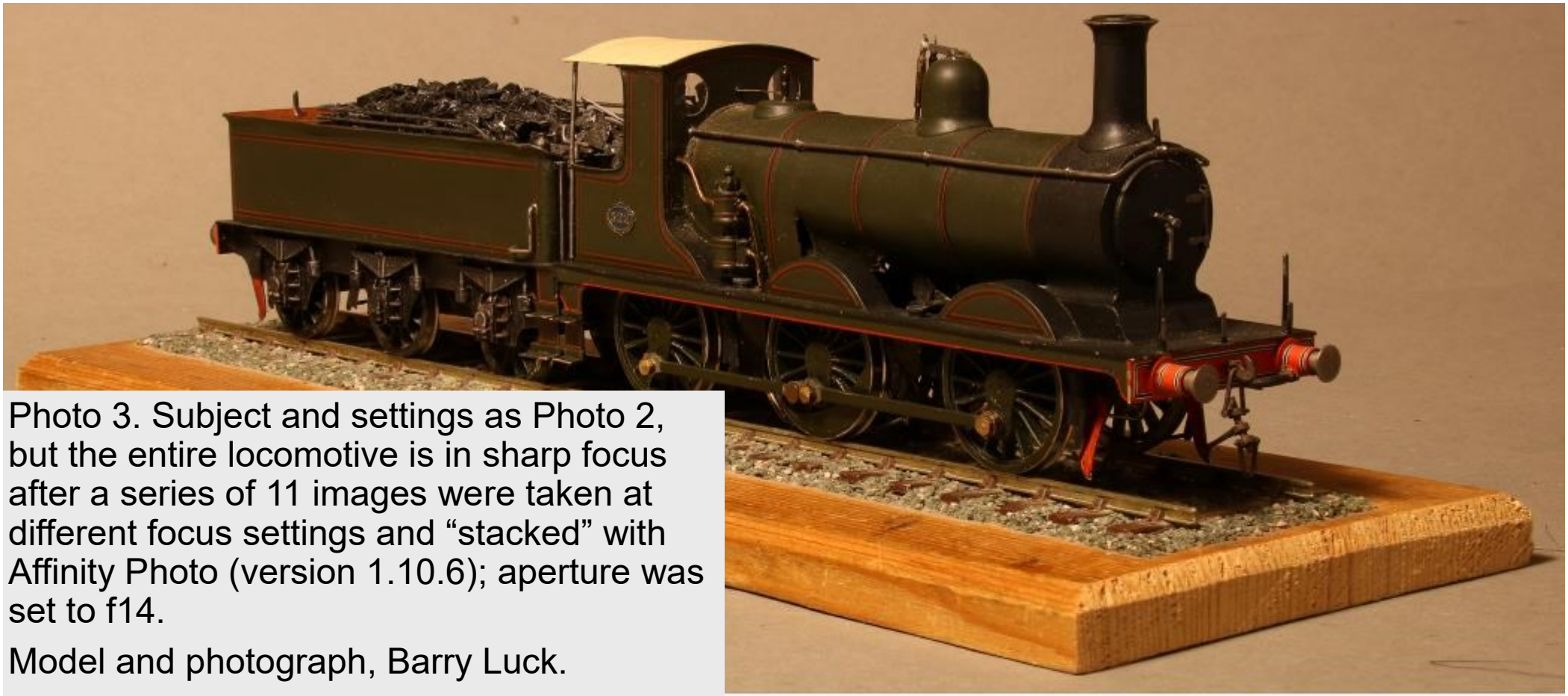


Photo 3. Subject and settings as Photo 2, but the entire locomotive is in sharp focus after a series of 11 images were taken at different focus settings and “stacked” with Affinity Photo (version 1.10.6); aperture was set to f14.

Model and photograph, Barry Luck.

Layout photography is more difficult than taking a portrait of a single model. If we want to create a plausible “landscape” we need to avoid a bird’s-eye view, so we need to keep the camera low, ideally no higher than the uppermost window levels of the buildings on the layout or some other plausible position for a scale sized observer. Creating an image in sharp focus from the nearest to the farthest point using a single click of a camera shutter is almost impossible, although ironically, the simpler the camera the nearer we can get to that ideal! Depth of field not only increases as we increase the f-stop setting, it also decreases as we increase the size of the image sensor, and as image sensor size is a major factor influencing the quality of a camera, the better the class of camera the less its depth of field. The following table shows the near and far points of acceptable focus when a camera lens is manually set to focus at 30, 60 and 90cm from the sensor (there are several web sites and mobile phone apps that allow these values to be calculated). Note that our hypothetical lens has been set to a focal length of 50mm on a “full frame” camera, i.e. a camera with a sensor the size of a 35mm transparency or negative (some cameras have sensors larger than so called “full frame”).

A fixed focal length lens with a focal length of about 40-50mm on a full-frame camera, or its equivalent on any other camera, is called a “standard” or “normal” lens; anything longer is telephoto and anything shorter is wide-angle. If we halve focal length, we double depth of field but note that wide-angle lenses can distort when used close-up. The table below shows the depth of field at distances likely to be appropriate to layout photography, for lenses set to f11 and “standard” focal length for each of the common sensor size categories. It is easy to calculate some other values from this table of f11 values; f22 would double the depth of field; f5.6 would halve it; f2.8 would quarter it. Lenses usually work best at mid values such as f8 or f11; large f-values can cause diffraction fringes and low f-values, which use the entire diameter of a lens, may soften focus at the edges of an image.

Table. Near and far focus values for cameras of equivalent focal length @ f11

Camera type[1]	Focal length[2]	Sensor mm[3]	30cm focus		60cm focus		90cm focus	
			near	far	near	far	near	far
Full-frame	50mm	36.0 x 24.0	29.1	31.0	56.1	64.5	81.2	101.0
Digital SLR	31mm	22.3 x 14.9	28.4	31.8	53.7	68.0	76.3	110.0
Micro 4/3	25mm	17.3 x 13.0	28.0	32.3	52.3	70.3	73.6	116.0
1-inch sensor	18.5mm	13.2 x 8.8	27.3	33.2	50.0	75.0	69.0	129.0
Most com-pact & bridge	9.0mm	6.2 x 4.6	24.9	37.7	42.3	103.0	55.3	242.0
Smart phone	3.1mm	2.5 x 1.8	17.7	98.1	25.0	infinity	29.1	infinity

1. Typical camera types with each of the main sensor sizes.

2. All the above focal lengths capture the same width of view at any given distance, so they are all the full-frame equivalent of 50mm.
Cameras with the so called 1-inch sensor or smaller, often describe focal length by its full-frame equivalent value rather than by the true values given here; lenses fitted to micro 4/3 and larger sensors are marked with their true focal length.

3. Most cameras with sensors in the top 3 sensor sizes above have interchangeable lenses, and most in the bottom 3 sizes have fixed lenses. There are variations in the size of sensors used in DSLR, compact and bridge cameras, and smartphones; full-frame, micro 4/3 and 1-inch are always as stated above.

The above table shows that with a full-frame camera depth of field is very limited, e.g. at 30cm we only get a depth of field of 1.9cm (in focus from 29.1cm to 31.0cm). To use a full-frame camera and those settings to capture the 60cm depth of a typical small layout we would have to combine the focussed portions of a large series of images, each with a near focus point that overlapped the far point of the previous. This problem of inadequate depth of field is especially acute in micro- and macro-photography, so when digital photography started to develop in the 1990s some microscope manufacturers developed systems that could capture a series of images and combine them into a single new image that was sharp through the full depth of the subject. Some model railway magazines were quick to realise that focus stack could also be applied to the specialist task of photographing model railways, and one of us (Ian) has written on the subject previously (*HMRS Journal* v.22, Oct.2016), but the available technology has moved on considerably since that publication.

The algorithms used for “focus stacking” are now available to the wider public through dedicated programs such as CombineZP, which is free, and Helicon Focus, both of which are very technical in use and designed for micro and macro photography. The stacking algorithms can also be found embodied into some general image editing packages like Adobe Lightroom, Paint Shop Pro (from version 2023) and Affinity Photo, and these tend to be more user friendly than the dedicated programs. All of these approaches to focus stack require the photographer to take a series of photographs at selected focus settings on a tripod mounted camera. There are a few rules to observe when using a tripod to ensure that it minimises camera shake: turn off image stabilisation; use a remote shutter release, e.g. a smartphone app; if using a Digital SLR use “live view”, i.e. use the viewing screen in preference to the viewfinder, or else lock the mirror up before taking each shot (live view automatically locks the mirror up); set the shutter type to electronic front curtain (usually the default in live view) or electronic (these are sometimes called by other terms such as anti-shock and silent, respectively). Regardless of what software you use, the focus stack process requires that you take a shot, re-focus, take the next and so forth, until the

required depth is covered by the series of images. Some cameras can be set to automatically take a series of shots at different focus settings, and that is called focus bracketing, although some limit the number and focal range of the shots. Some cameras may not order the shots sequentially from nearest to furthest (note that some dedicated stacking programs require the images to be arranged nearest to furthest). If the camera does not provide focus bracketing, then it must be set to manual focus. It does not need to be an expensive interchangeable lens camera, and the example given in Photos 4 and 5 was created several years ago using a compact camera with a tiny sensor. In the following section we provide further examples stacked using PC software. Some cameras can now stack in-camera and three examples are put to the test in the last section. A gallery of additional images follows.

Photo 4 - previous page.

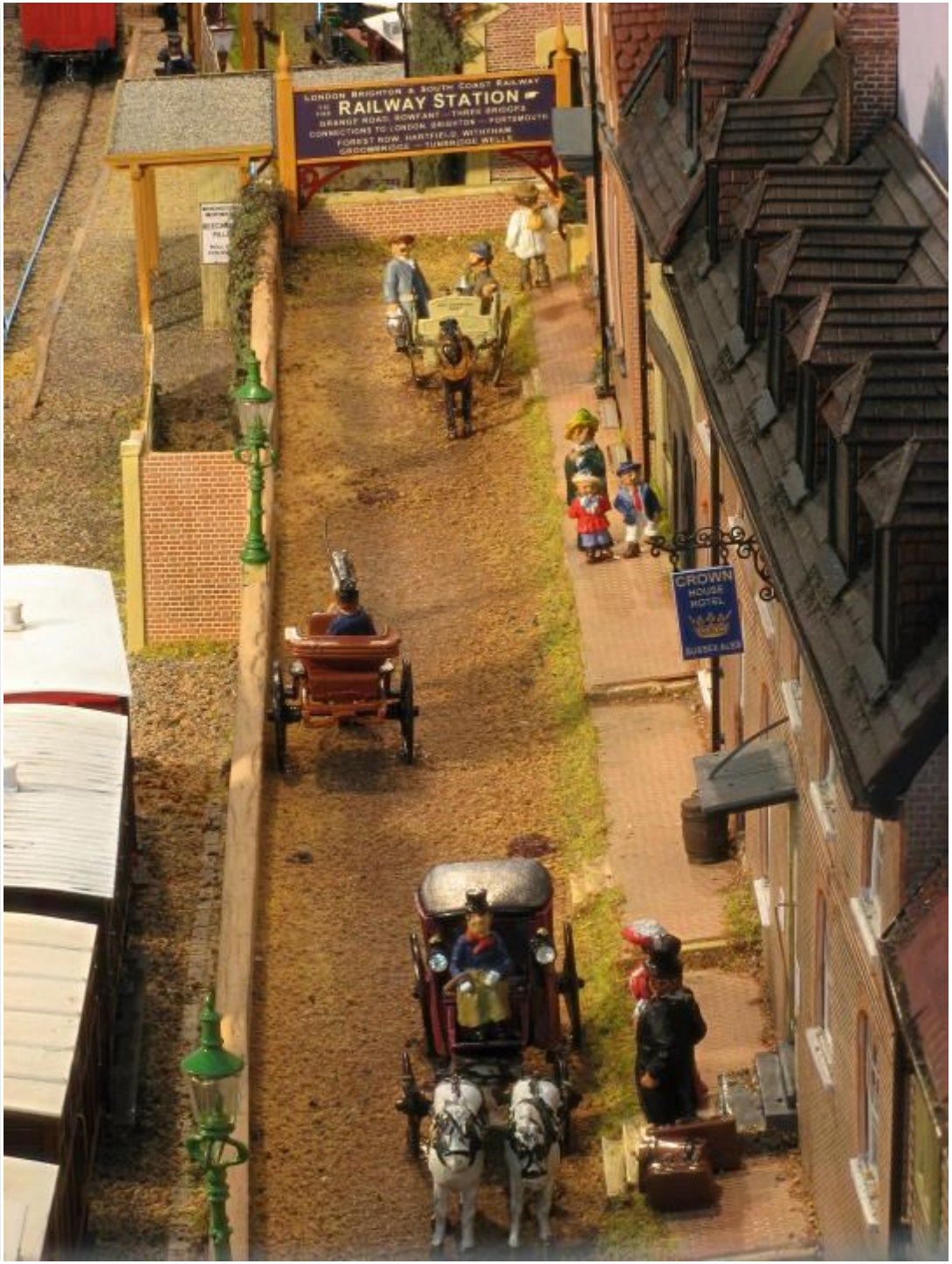
Three images from a series of 10 taken in 2011 using a 7MP compact camera (Canon PowerShot A710 IS; f8, ½ second exposures; focal length 23mm, which is a full-frame equivalent to 140mm; sensor size 5.76 x 4.29mm). Note that in the left-hand image the foreground is in focus, then in the centre image the middle area is in focus, and finally the right-hand image has the notice in the background in sharp focus. The layout is East Grinstead Town.

Model and photos by Ian White.

Photo 5 - right.

The result of stacking the 10 images using Paint Shop Pro 2023. Sometimes photo stack software can generate image artifacts such as blacked out or double imaged areas, and this software allows troublesome areas to be masked off in some of the images prior to stacking, but those facilities were not needed in this example.

Model and photos by Ian White.



Focus Stack using PC Software

There are a few fundamentals to be observed:

- A series of photos is required differing only in focusing distance, so they must all be taken from the same position, same focal length of lens, same aperture, and same light level. Between them all, every part of the subject (layout) must be in focus on at least one image.
- Software is required to convert the stack of images into a single composite photo.
- The camera must be operated in manual mode, so that aperture, shutter speed and ISO (the digital equivalent of film speed) are the same throughout the stack of images.
- To obtain identically posed images a tripod is essential.
- Good lighting is beneficial to give an even level of brightness across the whole image, preferably with no hard conflicting shadows.

Photos 1, 2, 7-10 and 25-33 were taken with a Canon 750D DSLR, which has a 24MP sensor measuring 22.3 x 14.9mm (0.62 times the size of full frame). A mid-range aperture was set (f14-f16), low ISO (100-200), and shutter speed at whatever was required to give adequate exposure. When taking photos using a tripod it's essential that you do not simply press the shutter button, but use either a remote trigger, e.g. a cable release, software control (called tethering), a smartphone app., or easiest of all, a 2 second time delay. The ISO is set low, as the higher the ISO value the greater the noise (the digital equivalent of film grain) in an image. The importance of good lighting has been mentioned already and there are great benefits from investing in photographic lighting. Photos 7 and 8 were illuminated using two tripod mounted 50 x 70 cm soft-box lights, each 3000 watts (sold for example by Wex, Essentialphoto, Ezylite). The soft-boxes are inexpensive (typically £30-50) but the bulbs (five for each soft-box) are not so cheap at £25-30 per bulb.

Photo 6.

The same setup as Photo 1, showing the image on the camera's touch sensitive viewing screen.

Model and photograph, Barry Luck.

There are various ways in which the necessary stack of images can be obtained. There are many webpages which can be used to calculate the number of images and focus points required for given camera settings, and the desired finished depth of field. A simpler alternative is to take a series of photos, starting at the foreground, and adjusting the focus by increments of, say, 25 or 50mm each time (smaller increments for the foreground). This is a bit hit and miss, and may occasionally result in some out-of-focus areas in the finished image. Twenty or more photos may be required for a depth of field on the finished image of anything up to 2m. An alternative, if you have a camera with a touch screen, is to use the screen to focus on particular points working from the foreground to the background (Photo 6). This ensures that the parts you want to be in focus, really are in focus.

When taking several stacks of multiple images, it's worthwhile adding a 'black' image (with the lens cap on) between each set; it helps identify where each set starts and ends when processing.

Having obtained the stack of images, all that remains is to load them into your chosen software, and let it do its magic. It can take a few minutes to process the stack, depending on the number of images, their size in pixels, and the processing power of your computer. The examples shown in Photos 7-10 were stacked using Affinity Photo.

The software typically takes the images through several stages, firstly aligning and resizing them, as the view changes very slightly with a change of focusing distance. Finally, it identifies the sharpest parts of each and combines those to produce the finished composite image. The original stack of images remains unchanged, so it's very straightforward to select only those images in the fore- and midground, leaving out the more distant images so that the background is left out of focus on the final product (Photo 9), and if needed the foreground could also be left out of focus (Photo 10).

Photo 7. This image looking along the length of a layout from roughly signal-top height, has “infinite” depth of field, achieved by stacking a large series of images. The layout is Plumpton Green. Models and photo by Barry Luck.

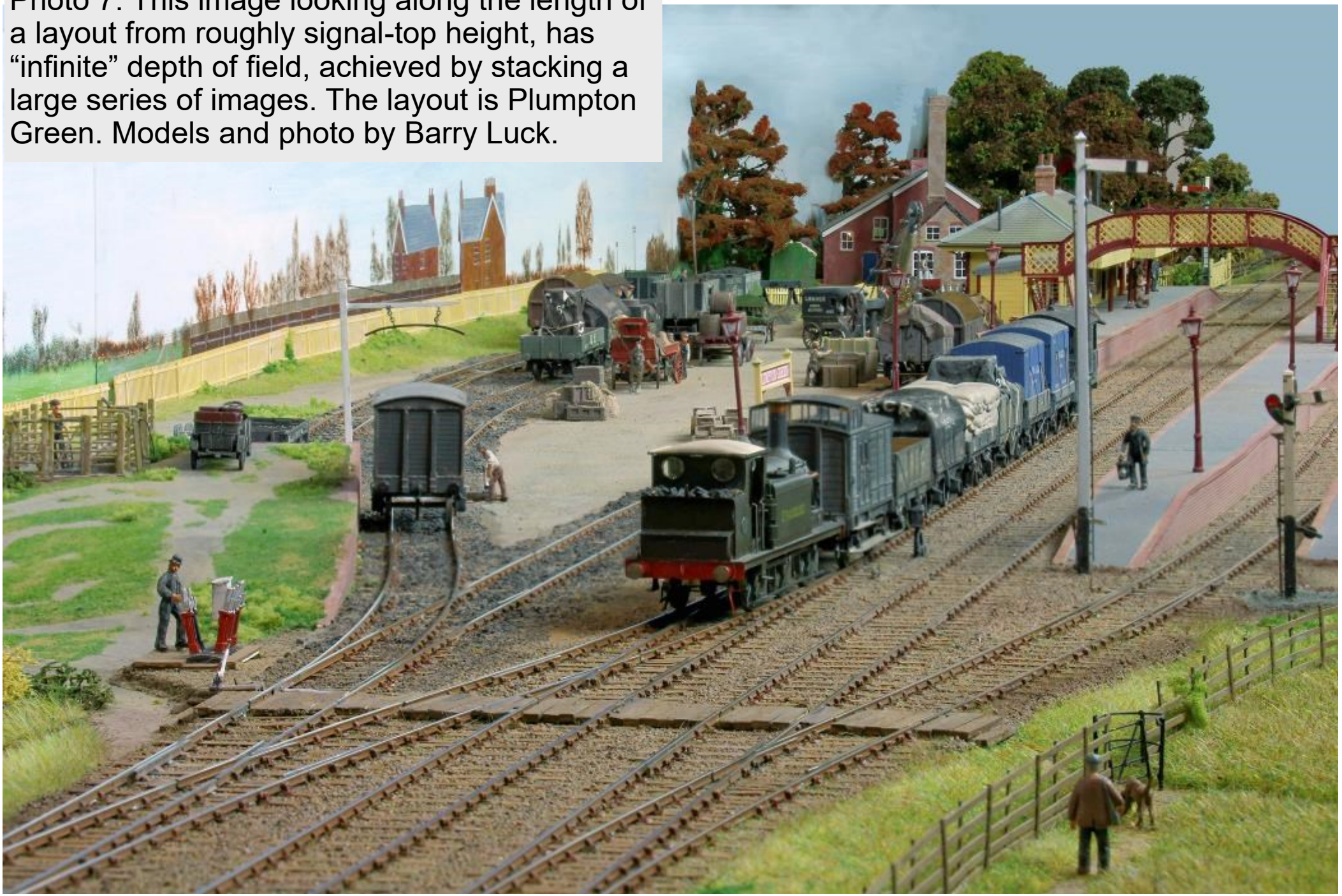


Photo 8. This example shows a detail from a viewpoint that roughly corresponds to carriage window height. The layout is Plumpton Green. Models and photo by Barry Luck.

Photo 9. This image shows that depth of field can be controlled, by omitting images from the stack that were focussed on more distant elements, so that the principal object of the photo stands out. The original images remain unchanged, so that stack can be repeatedly rerun selecting only the images required.The layout is Plumpton Green. Models and photo by Barry Luck.

Photo 10; How to get it wrong! Not enough images in the mid-ground, so that the foreground and loco are in focus, but not the middle track. Models and photo by Barry Luck.

Focus Stack in a Camera

Some cameras are now available that include built-in facilities for focus stacking, and most of them are made by Panasonic (branded as Lumix) and Olympus (now OM System). The Lumix cameras that have focus stack range from small compacts, through micro 4/3 and up to full-frame; Olympus include focus stacking in cameras from compact to micro 4/3. The cameras tested here were a 1-inch sensor Lumix (DMC-LX15), and two micro 4/3 cameras (Lumix DC-G9 and OM System OM-5; the similarly named Olympus OM-D E-M5 does not support in-camera focus stack). Lumix cameras capture the stack as frames of an MP4 video file which is then processed in-camera, with the option to exclude frames taken in front or behind chosen points of focus. The Olympus and OM System micro 4/3 cameras take a series of still images which can be combined in-camera provided they were taken on one of a limited set of Olympus lenses. The Lumix micro 4/3 cameras do not make that restriction, so in-camera stacking can be carried out with any micro 4/3 lens, including those made by Olympus. Most Lumix and Olympus cameras also allow focus bracketing, including those that do not include in-camera stacking, and some allow the number of sequentially focussed shots to be set between 3 and 999 for off-camera stacking; the camera stops firing when focus reaches infinity. The test subject was a 4ft long diorama called “Hailsham Mill”, which is still under construction.

Although the Lumix user-manuals recommend that a tripod is used for focus stack it is likely that owners of compact cameras would rather not do so, so the LX15 was hand-held, and lighting was limited to room lighting. The resulting images appear sharp when examined at screen or print resolution (Photo 11, 12), but close examination indicates that they are far from sharp, and it is likely that a single shot with a high-quality smartphone would have given similar or better results.

Photo 11

detail on following page.

Photos 11, 12. Two views of Hailsham Mill (under construction), captured using a Lumix LX15, using its built-in focus stack system. The camera was hand-held and no special lighting was supplied, thus testing the possibility of using the system at exhibitions, although to do so the ISO had to be set high (1600 ASA) and the aperture opened to f4. The focal lengths were kept close to “standard” length (the full-frame equivalent values were 41mm for Photo 4, and 51mm for Photo 5). Each MP4 video was comprised of about 45 frames (1.5 seconds @ 30 frames per second). The resulting JPG images were edited with Paint Shop Pro, to crop them and replace remaining non-layout areas with a uniform colour. As focus is our interest, they have not been given any sharpening or other adjustments to image quality, except for slight brightening and adjustment to white balance. Models and photos by Ian White.

The Lumix G9 was tripod mounted and as it uses a higher video standard than the LX15 (6K rather than 4K) and has a larger sensor it was expected to give better results. A pair of flood lights and a desk lamp were added to the normal room lighting to improve the illumination of the layout. The tests were carried out at apertures ranging from f1.7 to f11, but all the stacked images contained distortions, and none were useable (Photo 13). A manually focussed stack was created for comparison, using the same lens, viewing position and lighting, and processed with Paint Shop Pro 2023, with a good result (Photo 14). A likely explanation is that as the focus of the lens has changed, so the apparent position of some of the structures and stock on the layout has shifted, and while the alignment algorithm used by Paint Shop Pro has allowed for the shift, the in-camera software has not. Another possible problem is that the G9 captured too many shots and tried to create the stack from about 120 images, as opposed to the 40 images used when the process was carried out manually, or about 45 images used by the LX15. Even if the video capture and in-camera processing can be made to work well, it should be noted that it does not use the full resolution of the camera, both of which have 20MP sensors able to produce still photos over 5000 pixels wide (LX15 5472 x 3648; G9 5184 x 3888); video capture effectively reduces the LX15 to 8.2MP and the G9 to 18.6MP (LX15 3504 x 2336; G9 4992 x 3744).

Following pages photos 13, 14. Two identical views of Hailsham Mill (under construction) captured using a Lumix G9; both using a 40mm full-frame equivalent lens (Lumix 20mm f1.7) with an aperture of f5.6; the camera was tripod mounted and flood lighting was provided. The first was created in-camera from a 6K video capture of about 120 frames (4 seconds @ 30 frames per second), and the result is very poor. The second was based on 40 sequentially focussed images stacked using Paint Shop Pro 2023, with good results. The resulting JPG images were edited with Paint Shop Pro, to crop them and replace remaining non-layout areas with a uniform colour. As focus is our interest, they have not been given any sharpening or other adjustments to image quality, except for slight brightening and adjustment to white balance.

Models and photos by Ian White.

Photo 13

Photo 14

Some Olympus and OM System cameras provide a range of multi-shot facilities that can be used handheld thanks to sophisticated image stabilisers, and some include in-camera focus stacking. The number of images for an in-camera stack is limited; the OM System OM-5 used here takes a maximum of 8 shots and the Olympus E-M1X can take up to 15. The images are captured very rapidly using an electronic shutter, and provided the camera is held by a steady pair of hands, it can compensate for between-shot as well as within-shot movement. It does that using a clever combination of accelerometer readings, a servo stabilised sensor, and software to compensate for any measured movements between shots. The original images are also saved so they can be separately processed off-camera if it is decided to limit the focal span of the stacked image, although tripod mounting may be essential for that to work. The in-camera processing creates a JPEG image to the 20MP standard of the camera (5184 x 3888 pixels), although there is a slight crop relative to the area seen in the viewfinder. A major disadvantage of this system is that it only works with a limited range of Olympus lenses; the examples given here used a 30mm macro lens and a 12-45mm lens; the camera was the OM-5, and the layout was only illuminated using room lighting, thus mimicking exhibition use (Photos 15, 16 on following pages).

Photo 15. Hailsham Mill (under construction) captured using a handheld OM System OM-5 and its in-camera focus stack, with all stack settings left at the manufacturer's defaults (8 images, with focus differential set to 5). The lens used was a full-frame equivalent to 60mm (Olympus 30mm macro) with an aperture of f8; ISO 800 ASA; shutter speed 1/5th second. The slow shutter speed and lack of a tripod placed heavy reliance on the image stabiliser. The image has been slightly cropped but is otherwise as produced by the camera.

Photo 16. A more detailed view of Hailsham Mill captured using a handheld OM System OM-5 and its in-camera focus stack: 8 images were taken; focus differential set to 3. The lens used was a 12-45mm zoom set to 26mm, giving a full-frame equivalent to 52mm; aperture f11; ISO 1000 ASA; shutter speed 1/2 second, which places a very heavy demand on the image stabiliser. The image is exactly as created by the camera. Models and photos by Ian White.

Photo 15

Photo 16

The OM-5 documentation lacks detailed explanation of the settings, so a little experimenting was needed to get an idea of how they worked. The magnitude by which the camera changes focus between shots is adjusted by a special setting called the “focus differential”, and appears to be further adjusted according to the chosen aperture. Consequently, if a wide aperture such as f2.8 is set the overall stack will have a shallow range of focus, whereas a small aperture like f22 will create a stack with a very deep range of focus (the overall depth may also be increased with wider angled lenses). The “focus differential” can be set to any value between 1 and 10, with a manufacturer’s default value of 5; choosing a lower value increases the focal overlap of adjacent shots and thus reduces the overall depth of the stack; choosing a higher value reduces the focal overlap and deepens the stack.

As noted above, it is necessary to have an overlap between the in-focus zone of one shot and the next to avoid zones of soft focus. A series of test shots along a steel ruler exhibited soft focus zones at all focus differential values above 3. Before pressing the shutter, the camera needs to be focussed about one-third the way into the intended stack; if the camera is set to take 8 images, two will be taken in front of that point, one at that focus point, and five beyond it. When a 30mm macro lens was used the results were good (e.g. Photo 15) but when the OM-5 was fitted with a 12-45mm lens the quality dropped off markedly at the shorter focal lengths. With the latter lens, the best results were obtained when small areas of the model were photographed (e.g. Photo 16), which is to be expected of a technique largely designed for macro photography. Olympus produce 30, 60 and now 90mm macro lenses, and using any of those their in-camera stack process can produce stunning images of small natural history subjects, assuming you find one that stays still long enough for the stack to be captured!

Conclusions and Additional Focus Stack Images

For model railway photography, the Olympus in-camera approach has the potential to allow capture of focus stack images of layouts in an exhibition, but off-camera PC-based stacking has the potential to do a great deal more, allowing a level of control over the stack process that cannot be achieved with an in-camera “black box” approach.

In 2011 Ian had an article published in *British Railway Modeller*, describing his *East Grinstead Town* layout (BRM September 2011). A great many stacked images were created using a compact camera (Canon PowerShot A710 IS; sensor 5.76 x 4.29mm) and the stacks were processed using CombineZM (a forerunner of CombineZP). This is a selection of the images not used for that article. *East Grinstead Town* combined features of the real 1855 East Grinstead terminus and its 1866 through station on the Three Bridges to Tunbridge Wells line. The latter closed in 1883 when the new two-level station became fully operational on a site further to the west.

Photo 17. A general view of East Grinstead Town, with the through lines to the left passing under the 1866 station building, and the 1855 terminus on the right. The locomotives are a 2-2-2 Jenny Lind class (5 & 9 Models) and 0-6-0 Manning Wardle No.219 (scratch built).

Photo 18. The terminus area with No.219 forming-up a mixed goods train. The buildings in “London Row” are modelled on actual buildings in East Grinstead High Street and London Road. The creeper covered house in the background is modelled on the 1855 station building, which still stands.

Photo 19. Another view of “London Row” with the Jenny Lind in the headshunt.

Photo 20. Bird's-eye views should be avoided (a lower view went to BRM). This shows additional detail of "London Row".

Photo 21. “London Row” again, with the 1866 station building on the left. Although this building closed in 1866 it was not demolished until 1908, and given a little “licence”, it gives the layout a wider possible date span than the prototype had!

Photo 22. A detail of the 1855 platform in the foreground, and 1866 station in the background. The adverts were all based on examples found in a local newspaper from the period, although some of the surname choices were biased!

Photo 23. A view towards the left end of the layout, beyond which lies the main “Three Bridges” fiddle yard (a second small fiddle yard lies behind “London Row” to represent Tunbridge Wells). In reality, the old 1855 terminus was merely a goods yard from 1866 but on the model, it remains open as an active station and provides an excuse for some signals which date from an earlier period than those on the 1866 through lines. The locomotive standing in the doors of the one-road engine shed is a scratch built model of 0-4-2ST No.22, which was built in 1855 and allocated to this line at that date.

Photo 24. Another bird’s-eye view!

Plumpton Green layout has featured previously in the Digest (v.8 pp 67-70; v.12 pp 202-210) and Photos 25-33 are additional views of the layout prepared using focus stack. Copyright Barry Luck

Photo 25. Plumpton Green station viewed from the signal box steps.

Photo 26. The creamery.

Photo 27. Stroudley E1 class No.109 'Strasbourg' running round its train prior to shunting the yard.

Photo 28. The signal box, with a photo of real trees used as a background.

Photo 29. Stroudley G class single No.328 'Sutherland' on the level crossing.

Photo 30. Billinton E3 class No. 165 (ex 'Blatchington') crossing into the down layby prior to shunting the yard.

Photo 31. Neilson tank 'Orion' propelling wagons from the brickworks.

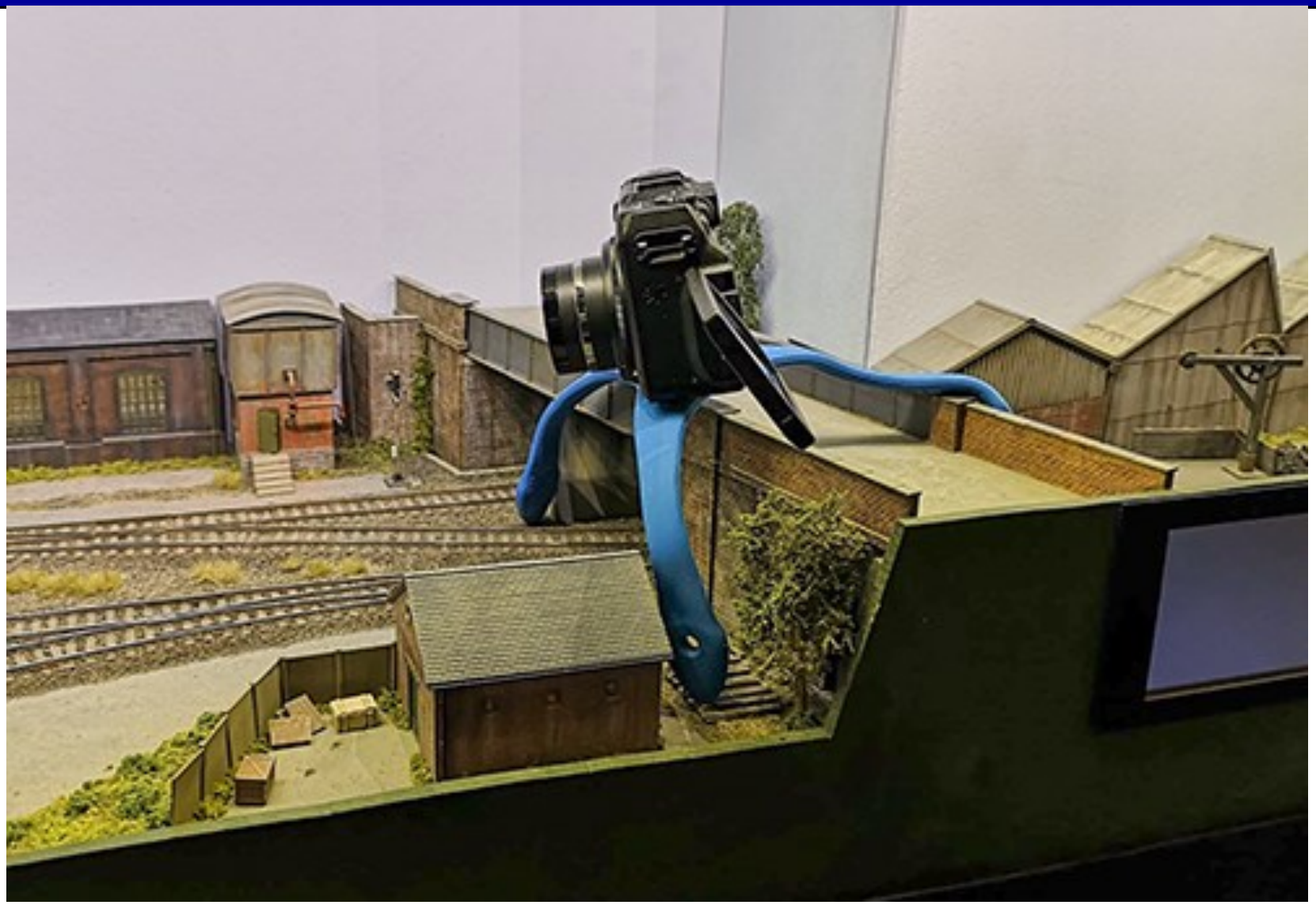
Photo 32. Billinton E4 class No. 566 (ex 'Durrington') with a down stopping passenger service, passing a ballast train in the down layby, headed by Billinton C2 No. 522.

Return to contents page

Photo 33. Stroudley D2 class No.308 'Como' and up passenger crossing the cattle creep.

Stacking Hayling Island

By Phil Parker



Accompanying this article is a selection of shots I took of Richard Barton's excellent layout “Hayling Island”. All make use of photo stacking, and I've been asked to explain how I, as a professional layout photographer, use this technique.

Perhaps I should start with a “why”. Photo stacking has been in use in model railway magazines for well over a decade. It was probably Chris Nevard who started the trend, but most of us followed pretty quickly.

When you look at an object, it's in focus. What you don't realise is that the thing you are looking at is, but everything else isn't. This is fine in real life, you can keep moving your eyes around, but on a page, it doesn't work. Some will argue that focusing on a single model and leaving the rest “soft” or out of focus adds atmosphere. Maybe, or maybe it's just wasting valuable page space with blur. The thing is, our eyes are very good at editing a scene. You rarely notice baseboard joints at a show for example, but on the page, they stand out like a sore thumb! Hence, the trend is for the entire image to be in focus.

My camera kit to achieve this is pretty basic, and I'm sure slightly disappointing to those I visit. My Canon G12 is a high-end compact that has been obsolete for years. I have a collection, and keep an eye on eBay for more. However, it delivers plenty of pixels, and most importantly, can be loaded with some software called CHDK (www.chdk.fandom.com). This clever stuff greatly adds to the features on the camera, there's even a snakes game if you want it. The main feature for me is that it can take a series of photos at different focal lengths with one touch of the button. All I do is wind the focus in to the closest thing I want to feature (The G12 will go down to 1cm), press the button and off we go.

I'll usually aim to take 30-50 different views of any layout, each with a stack of 10 images. Some will be slight variants of each other to give the page designer options when putting the magazine together. There's no real method to all this, I just wander around the model eyeing up shots. The skill isn't technical, it's artistic.

One benefit of the G12 is that it's small. I can, and do, put the camera into the layout to achieve the views I want. A fold-out view screen, something later versions don't have, makes this a lot easier. My style is to get down to model eye-level as much as possible, and make use of foreground detail to give a realistic view. If I can get below the train and shoot up, as I was with Richard's viaduct, I'm even happier.

A typical branch train leaving Langstone Bridge with four 4 wheeled oil lit coaches.

Terrier No 78 "Knowle" on Langstone Bridge. The Arun Barge was built by Peter Korrison.

Kitson 0-4-2T "Bognor" with an excursion of early LSWR coaches.

All this takes between 30 minutes and a couple of hours, depending on the size of the layout. I prefer to have more rather than less time as I really don't want to miss out on an angle, or an interesting item of rolling stock. The costs for a shoot are getting me to the model. Digital film is free, so I try to make the most of a session. Any images not used on the page will be available to digital readers as a gallery, and are also supplied to the layout owner for their use.

Back at the office, all the images are dropped into Helicon Focus, to turn each stack into a single shot. I'll admit, I have no idea how the software performs its magic. There are a few settings I fiddle with if the result isn't as good as I want, but generally, it's a case of dropping the required images in, pressing a button, and saving the result. After that, the sharp photos head into the office, where our main photographer, Andy York, will tweak light balances and shadows as well as removing backgrounds to replace them with sky. He does this to all the layouts so we see a consistent look through each issue.

This probably all sounds a bit simplistic, and it is. The skill is framing each image, which requires a selection of tripods and beanbags to get the camera where I want it, pressing the button, and letting the technology do the rest. Holding the camera steady is essential, I prefer to work with available light, so am not scared of multiple second long exposures. If the layout is good, and we don't photograph ones we know won't look right on the page, it's relatively easy to produce an interesting selection of photos.

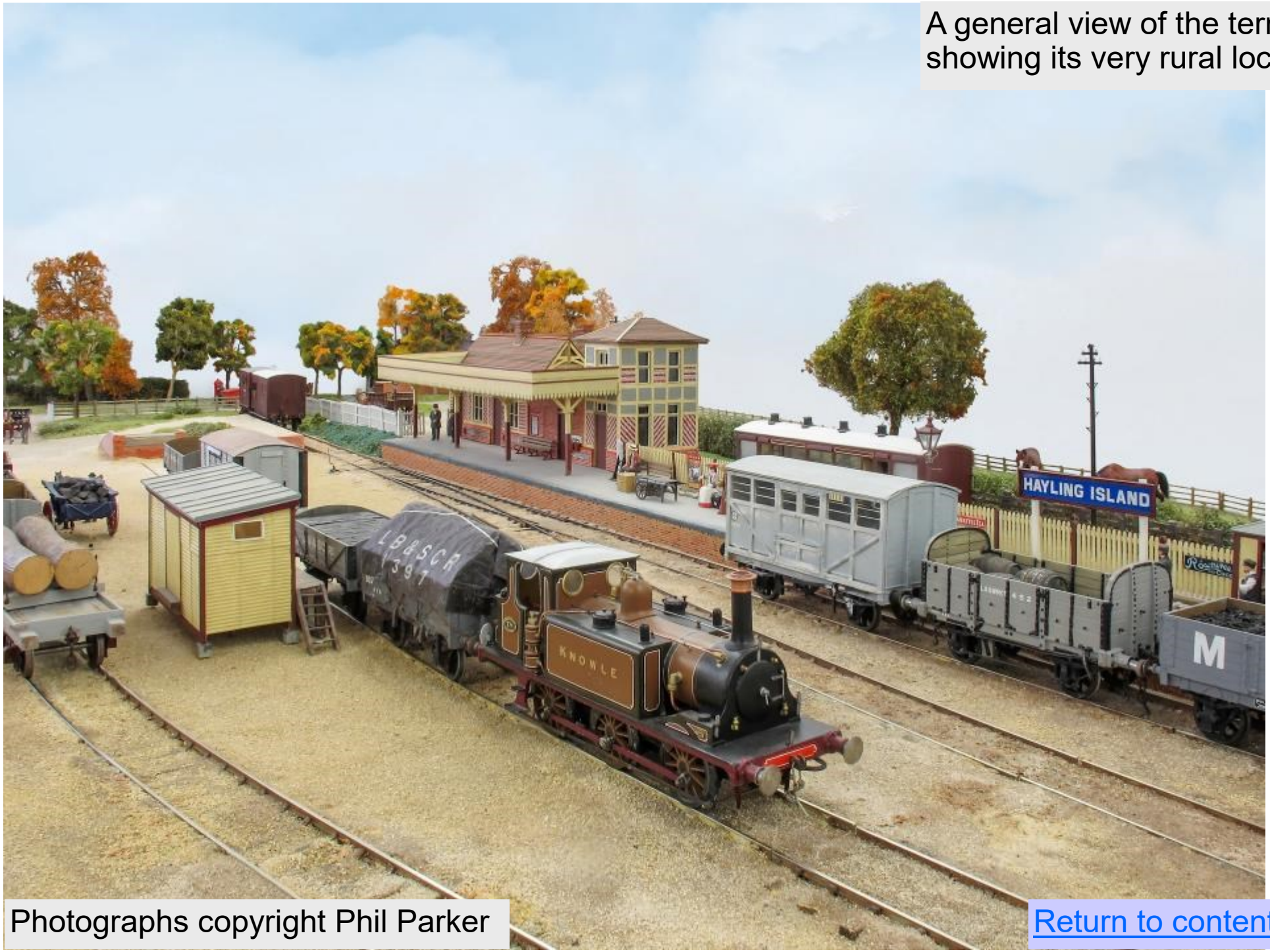
Phil Parker is Editor of Garden Rail magazine and Features Writer for BRM magazine.

"Knowle" shunting the Langstone coal wharf. "Knowle" was built from a Vulcan white metal kit and was lined using Guilplates transfers.

"Gipsyhill" No 43 was one of four Terriers that worked the branch in the 1890s. At the front of the branch coaches is a private working from the South Eastern Railway.

"Gipsyhill" awaiting departure from the terminus. The typical branch set consisted of a Brake Third, a Third, a Composite and a Passenger Brake Van, all still oil lit.

A view under the station canopy showing the surprisingly complex design of this small building.



A general view of the terminus showing its very rural location.

Return to contents page

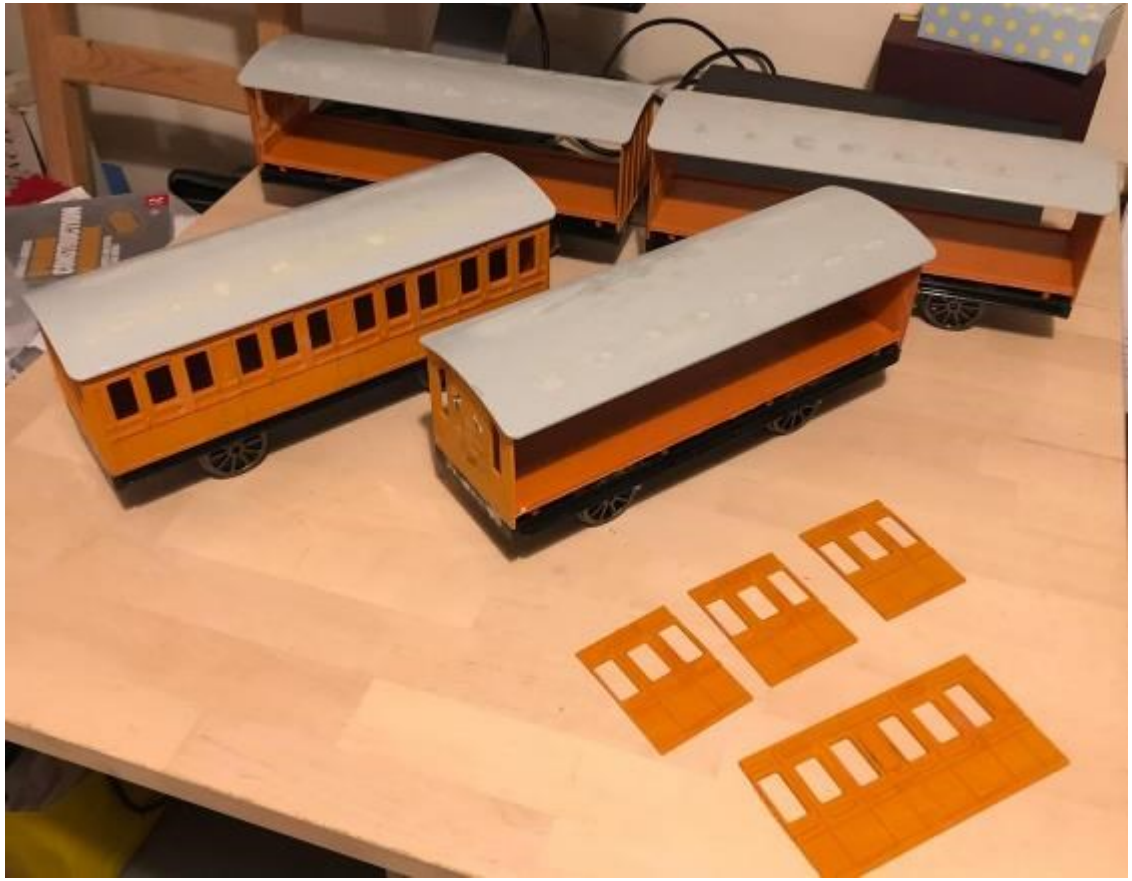
Stroudley Kit Bashed Coaches in Gauge 3

By Mark Pretious

A little while ago I built a gauge 3 Terrier and painted it into full LBSC Stroudley Improved Engine Green with the identity of No.77 Wonersh which was featured in the December 2022 issue of MR. The customer now has the loco and upon handing it over as a completed model he very promptly gave me a big carrier bag with four of the Bachmann large scale Annie and Clarabel coaches from their TTTE range.

These coaches are “kiddies toys” but they do lend themselves very easily to be kit bashed into authentic looking coaches. This is the fourth set of these that I have done to date. I did my own set in 2009 into SR olive as set 496 as used on the Isle of Wight.

The four coaches had to be converted from 45mm track gauge (LGB) to 63.5mm (Gauge 3). All the coaches come as 4 compartment coaches with a moulded nose at one end for the face of each coach. The first thing that I did was to pull each coach apart and start the regauging of the wheel sets to Gauge 3.



The dummy springs and axle boxes were carefully razor sawn off and put to one side to be re-attached later. All of the solid buffers and draw hooks were also removed and the holes filled with modelling filler. The noses on all four coaches were sawn off and finished off on a belt sander. The four coach ends were then reskinned with some 30thou plastikard. The chunky roof vents were also razor sawn off and then the holes were filled to give a smooth surface as the roofs were later re-skinned with a sheet of 30thou plastikard. All of the compartments had moulded grab handles and T door handles, so these were also removed using a razor saw, scalpel and sand paper. All of the moulded glazing was removed. The coaches as built have external bearings mounted through the floor and secured in place with some small self-tapping screws on the top side of the floor pan.

The location of the metal bearings is exactly where the wheels needed to go, so the floor pan was suitably modified on all the coaches and a section of the floor pan removed using a Dremel disc cutter to allow the wheels to rotate freely. The external bearings have now all become internal bearings. The two end brake coaches of the set had the holes redrilled with the correct centres for the buffers at 78mm as well as a hole for the screw coupling. Once the wheels and bearings had swapped places on all four of the floor pans and all of the back-to-back dimensions had been checked, I was then able to reattach the previously sawn off dummy axle boxes and springs. The brake ends had a set of buffers fitted as well as the draw hook which was test fitted with the screw coupling from GRS (Garden Railway Specialists). The buffers are from their own range of turned brass Southern coach buffers and are fully sprung. The four chassis later got a spray of Halfords grey plastic primer and then Halfords matt black. The stepping boards were also picked out in a wood colour for contrast. On three of the four coaches there was what I would refer to as major surgery involved. The fourth coach remains as a 4 compartment coach, so the only work on this coach body shell was the reskinning of the former face end of the coach, filler work and applying microstrip to replicate the beading as per the other end. I also fitted internal walls for the compartments.

On the three coaches to undergo the major surgery I removed the complete coach sides from the three body shells so that all I had was a floor and the two ends to support the roof.

The 5-compartment coach is probably the hardest of all the coaches, as all four coaches are the same length. The challenge is how to get a quart into a pint pot. On the 4-compartment coach as bought, there are panels between each compartment window and the extreme ends. The removal of all these three larger panels and the two smaller panels at each end allows just enough length to get the doors and two windows in the space 5 times on each side. It is a tight squeeze to say the least. I bought a new razor saw for this job to get an accurate clean cut. Once the 5 compartments were prepared, I laid them on a flat board and glued them together using some 2x4mm plastic strip to attach and align the compartment sides together. The two end compartment mouldings, where the compartment meets the end of the coach, had no rounded ends for the raised beading. So I had to graft parts very carefully from the removed panels that I had cut out to complete the effect. The sides were then applied to the now barren coach body skeleton and then lots of body filler on all the join lines. The 5-compartment coach also had the nose end re-skinned and detailed up with the beading as per the other end.

The two brake coaches are identical, so I did these simultaneously. I had an issue that I did not have enough doors for all 4 sets of double doors. So, I approached Marston Models to use two of the doors that I had saved from the cutting up process to make 3D printed double doors for the guard luggage vans. This kept the panelling and detailing uniform and less likely to be seen as different. The three passenger compartments take up 60% of the length of the coach and the remaining 40% of the space left is for the duckets, double doors and the panels for the luggage area. For the end of the coach I took an imprint of my own Stroudley coach and used this as a template for the distinct end windows of the LBSC coaches which was made up from 30thou plastic card. The duckets and the luggage panels are made up from 30 thou plastikard and microstrip as well as some body filler to hide any join lines. Both coaches had the internal walls added for the compartments. The end beading was added to complete the window frames and to give a good level of detail. The roofs were all reskinned with 30thou plastic card and 2mm x 1mm microstrip was added for the roof gutters. The roof fittings are in fact 3D printed, again by Marston Models, and applied to the roofs as per technical drawings. The brake ends also have the extra grab handles on the top of the roof.

Painting of the roofs was done by using Halfords white plastic primer and then appliance gloss white. The close coupling is done using a 90mm long plate of brass with one end secured to a

pre-existing hole in the floor of the coach and the next coach has a 6BA bolt down facing and the bolt drops through the corresponding hole and holds the coach at a set distance from the next vehicle. It is crude but effective and easy to handle and uncouple when visiting other garden railways.

The four coach bodies all received a spray of Halfords red plastic primer and Halfords Ford Radiant red for the brake ends only. The topcoat was brush painted. I was trying to replicate the “Painted Mahogany” that the LBSC used around 1899-1906 which is easier than doing a wood stain effect. The issue was what colour to use, eventually after chatting to some good people from the Brighton Circle someone suggested the Vallejo range of paint and a colour that they call red leather. It is excellent quality paint and brushed on smoothly. The coach body shells all received a spray of gloss varnish. The transfers for the coaches came from Mark Seward in Taunton who makes bespoke transfers and was able to create the LBSC roundel complete with the correct coach numbers inside each roundel. He also did all the door details such as FIRST, THIRD and GUARD as water slide transfers. Once they had been applied the body shells were gloss varnished again. The next stage was the application of the lining using a Bob Moore lining pen. I found this to be very rewarding and practice does definitely make perfect. There are also lots of panels too on each coach and I got to know the 4 coaches almost intimately in making sure I had not missed any sections of the lining on the numerous panels. Once all the lining and transfers were done I then gave each coach body a spray of Railmatch satin varnish to tone down the

shine to a more natural sheen. The bench seats have been provided by a friend Chris Smith who had already done some seats for another project. These were 3D printed to the exact size and are a perfect fit. I also cut and glued the new glazing on all four vehicles. The T handles are from GRS and the grab handles are made up from 1mm diameter brass rod formed to shape.

Return to contents page

Well Tanks for East Grinstead Town

By Ian White

In The L.B.& S.C.R Modellers' Digest 11, page 57, I described the building of two "well tanks", or more accurately, one side and well tank (2-4-0T/WT No.58) and one former well tank from the "West End Well Tanks" group (2-4-0T No.378). The original article stopped short of showing the completed models, which are now illustrated here.

No.378 on Hailsham Mill (focus stack shot taken with a handheld OM System OM5 – see article on page 4 of this issue).

No.58 posed on a photographic stage (Riddlesdown Quarry in the background).

Return to contents page

Newick at Newick!

By Phil Taylor

As some Brighton Circle members will know, I have been building a 4mm scale model of Newick & Chailey station for many years. During that time I have got to know local historian Tony Turk of the Newick Village Society, who is a mine of information and holder of many old photographs of the village including the station. Tony has often suggested that I should bring my model to the Newick Horticultural Society annual show, held on the village green in September, where he mounts a display of local history.

Unfortunately the whole station model is not portable or even readily transportable (as I recently found out when moving house!). However, before the buildings and other structures are permanently built into the re-erected railway, which is hopefully imminent, there was an opportunity to take some of them to the Show for display. This would hopefully be of interest to local people and maybe elicit further information, anecdotes and photographs.

Below and previous page, views of the model display in Tony Turk's gazebo

So a weekend away (from Shropshire) was planned around the event, which took place on the afternoon of Saturday 3rd September 2022. We were blessed with perfect weather and ideal conditions for mounting the display in Tony's gazebo. The show ran from 2 until 5, and was non-stop, with a large number of interested locals (many invited by Tony) viewing the display, sharing their anecdotes and even photographs. Many of them had direct connections with the railway or the station, including the last family to live in the station house. A lot of interesting information was gleaned, including the revelation that there had been a well house in the station garden. This is shown by a small rectangle on the historical maps which I had previously overlooked. There don't seem to be any photographs showing this building, but I was able to obtain a description which should enable the construction of a representative model. Two new (to me) photographs of particular interest came to light, one showing the south signal box from the steps end, and one showing Cinder Hill tunnel mouth complete with a metal name board with cut-out letters. I hope to obtain copies of both for possible future inclusion in the Circular.

The anecdotes included the following gems: Miss Bessemer, saviour of the Bluebell Line, lived adjacent to the station in a house called ‘Burchetts’, which had a gravel path to the station from its coach house; one lady performed the death-defying feat of walking the length of the A272 bridge parapet as a child, and another chap rode along it on his bike! (that story was corroborated otherwise it would seem impossible or at least utterly foolhardy…); one remembers the A272 bridge being filled in with rubbish from Brighton; another fell off the top of the tunnel mouth and remembers workmen digging out the cutting to cap the landfill in the station area; a 1938 350 Sunbeam motorbike which broke its crankshaft was thrown down the well!; the well house was used by the occupier of the station house as a man cave (in modern parlance) and had a cable from the kitchen to provide electricity, when his wife thought he had been out there long enough she used to turn off the power!

In all a thoroughly enjoyable and worthwhile event which I was very pleased to have gone to the effort of arranging while it was still feasible. It was a great example of the reward, satisfaction and enjoyment to be had as a by-product of researching a real location in depth.

The author and Tony with the display before the show opened.

Return to contents page

Class K2

By Mike Cruttenden

”Might have beens” – the Lawson Billinton K class 2-6-2 tank of 1919; a design rejected by the Railway Executive Committee.

The title “might have beens” was coined by the late Derek Brown (Circular Vol 31 No 1) to describe those engines proposed by the LB&SCR but, for various reasons, never built. Hence the title is dedicated to his memory.

I have always been fascinated by the Brighton's proposals, particularly the reasons for their necessity and final rejection. For many years, I have explored their historical background and collected every scrap of information that I could find. I regard this subject as a long neglected and possibly lost corner of the LB&SCR's locomotive history – yet to be explored.

I have wondered what these engines might have looked like, so, in 2020, I teamed up with Colin Paul to see whether we could re-engineer the proposals and reproduce them in model form, as accurately as available information would allow.

I have identified eight engines so far, from 1870 to 1919, for which there is enough evidence to produce a model, at the same time taking into account the period background, the need for such a design, the thoughts and processes in the mnds of the engineers, draughtsmen and designers of the day and, finally, the materials and facilities that were available. I freely admit that each design contains a greater or lesser degree of speculative guesswork. However, I believe that I have enough evidence to build a representative model and, as far as I am aware, these designs have never previously been reproduced in model form.

Model limitations and specifications.

All the models are fully working and not glass case specimens. They need to have the capability to haul a realistic period train over all parts of what I would describe as a challenging system. Therefore the underframes/motor combinations present the greatest threat to sanity! All wheels have to be sprung, compensated and with sufficient sideplay to allow this to happen. Achieving this has involved a good deal of ingenuity and a certain amount of visual trickery.

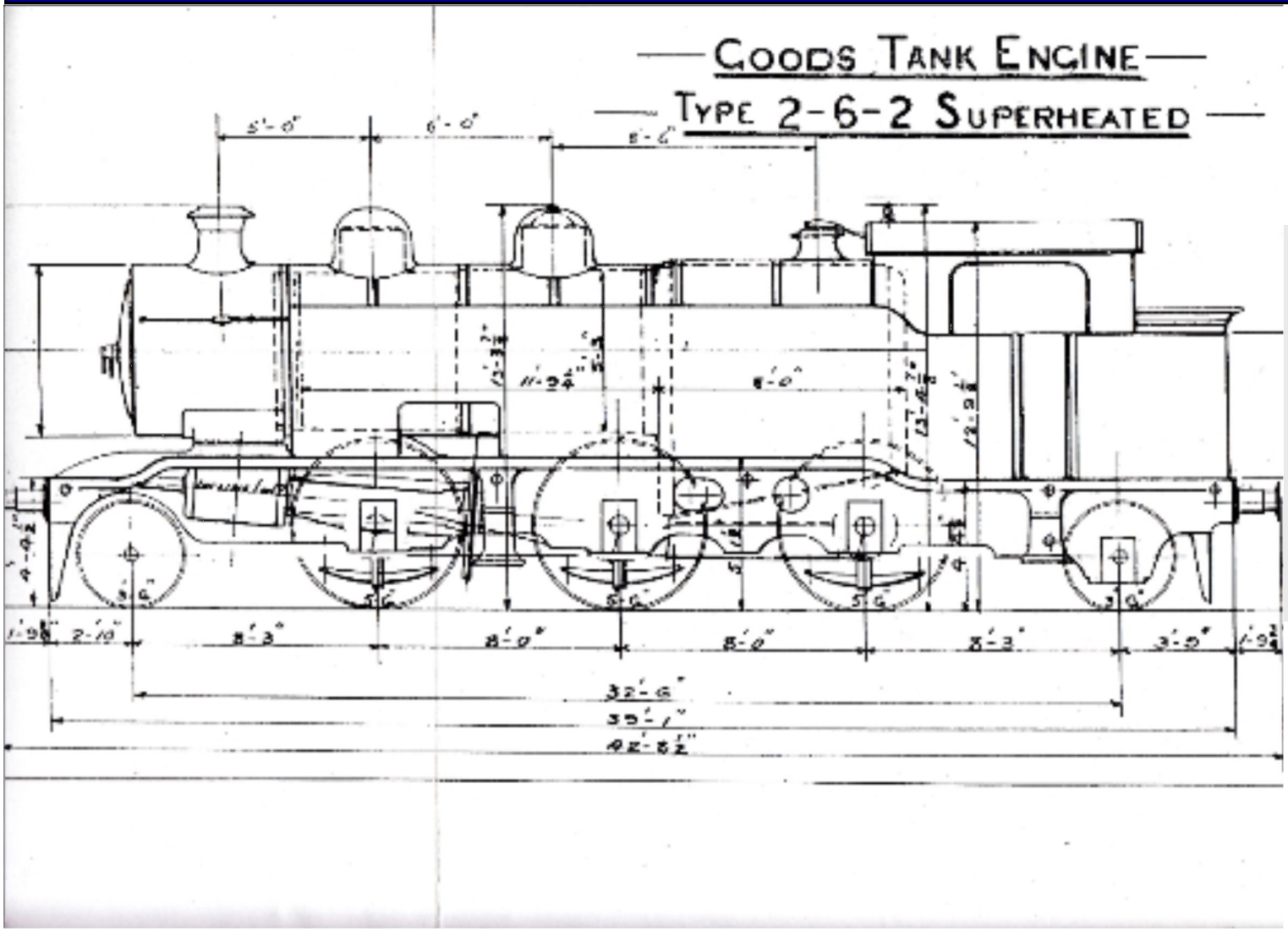
The following photos show the 2-6-2 tank version of the K class Mogul on trials on Ashcombe Down.


SMITH

Return to contents page

Class K2 - construction

By Colin Paul

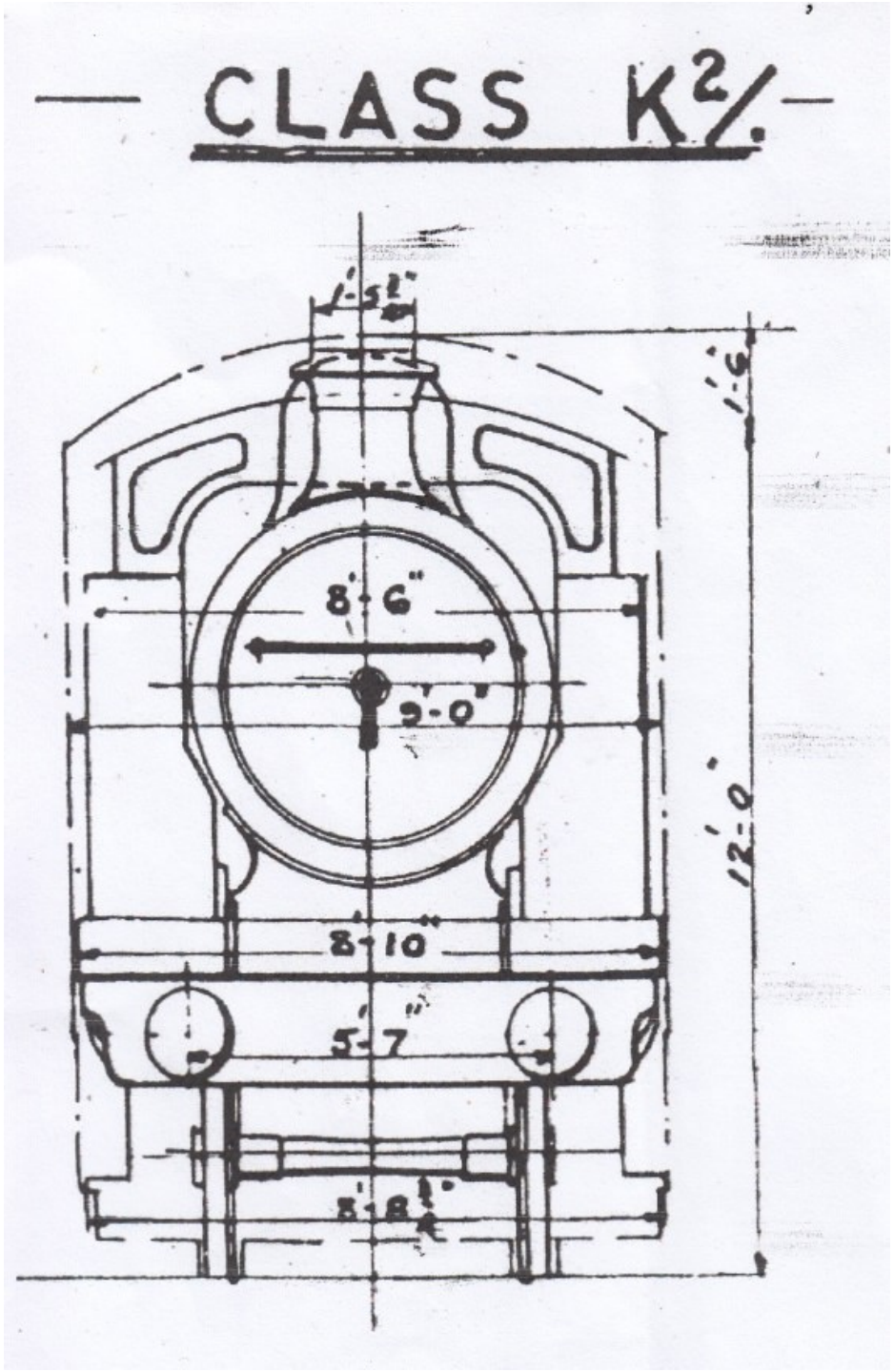


DRAWINGS 1 (to the left) & 2 (following page)

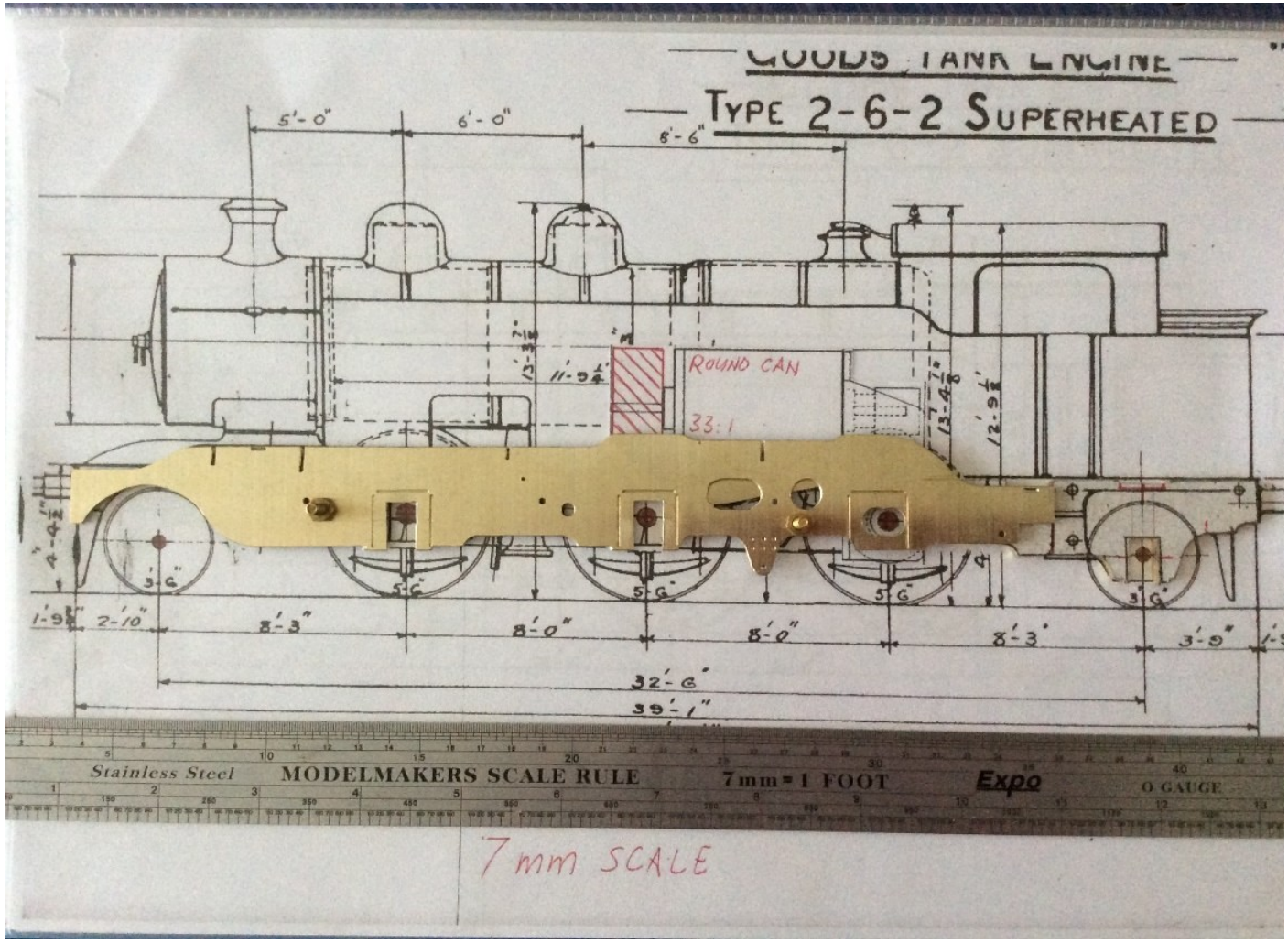
PROPOSED LB&SCR GOODS TANK ENGINE

TYPE 2-6-2

SUPERHEATED



The original line drawings Mike Cruttenden supplied me with. They were first scaled to 7mm – 1' scale then printed. The u/f at first glance is looks like a Brighton K Class 2-6-0 but it has an extra pair of wheels underneath the cab/coal bunker. It retains the same front pony, outside cylinders and slidebars etc, but the rear drivers wheelbase has been increased by 6" from 7' 6" to 8' 0". Also retained are the wheels 18 spoke 5' 6" drivers and 10 spoke 3' 6" pony wheels. Also different are the 'new' side tanks, cab/ coalbunker which is not too dissimilar to the LB&SCR I Class 4-4-2T`s. Also note the large rectangular hole above the front driver which clearly shows the bottom of the boiler. This design looks like the oval hole design on the SECR Class K 2-6-4T side tanks.

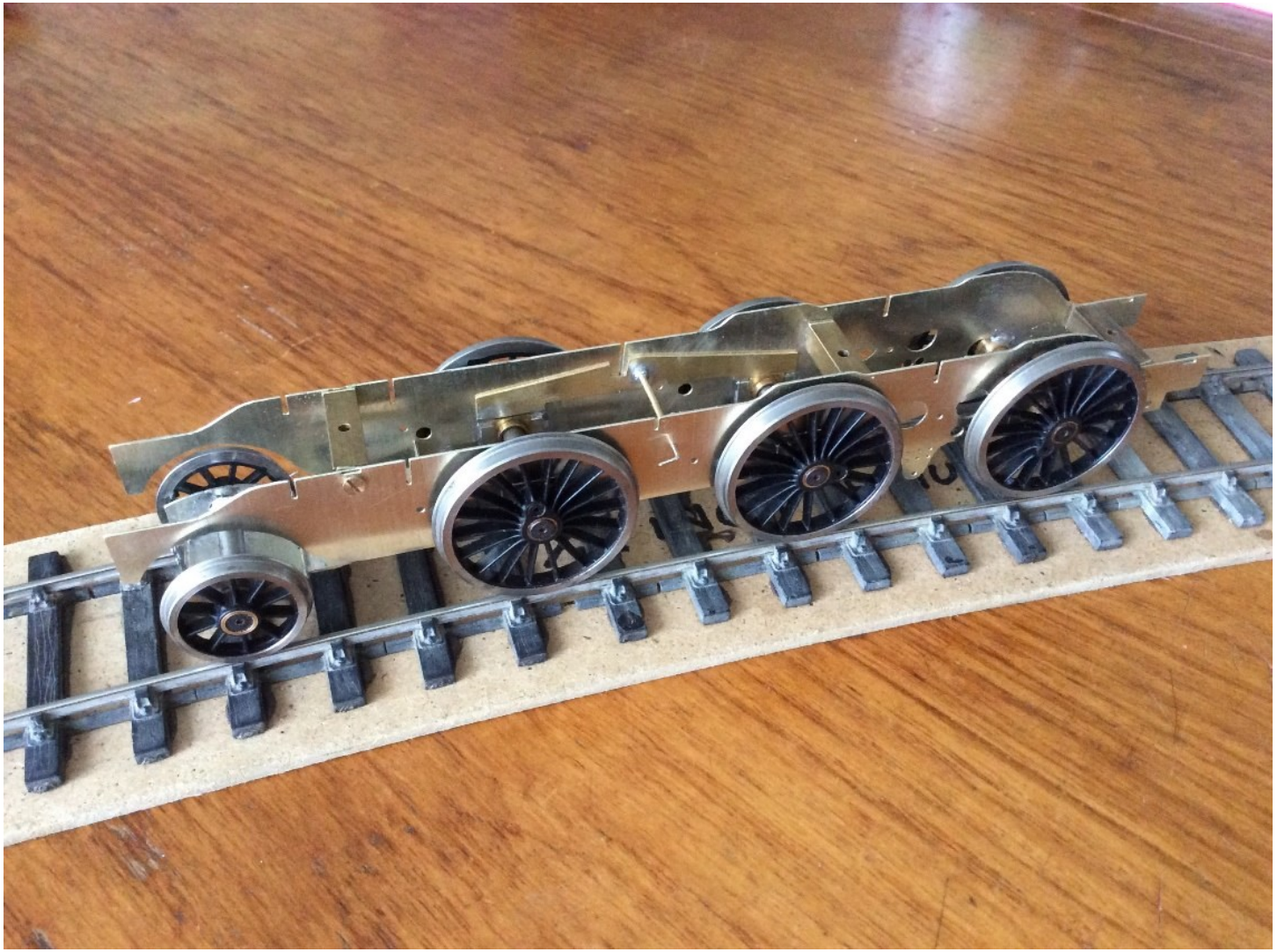


As a starting point, Mike gave me an ACE Products K Class 2-6-0 kit, of which the tender was part built. Going through the items, the only bits that could be incorporated in the rebuild were the nickel silver sideframes, footplate, headstocks, boiler, firebox and smokebox door. The rest would have to be scratch built.

First, the sideframes were overlaid onto the 7mm scale printed copy. Barring very few minor errors, it was pretty accurate, so it was utilised. The one major area that required attention (as mentioned) was increasing the ‘fixed’ rear axle driver hole further out by 3.5mm (6”) from 7’ 6” to 8’ 0”. With the two halves bolted together, the hornblock slots were cut out ready for the Slaters hornblocks. Not very clear to see (in an off white/dirty grey colour) are a pair of rear frame extensions pieces (underneath the coal bunker) which have already been cut out and placed in position. They too have had the hornblock slots cut out ready. Also overlaid is a print of the MSC Models (www.mscmodels.co.uk) JH large round can motor with a 33:1 double reduction gearbox that was chosen for this powerful locomotive.

The basic underframe still bolted together (for testing purposes only) using two solid square shaped brass frame spacers. Their positions had to be worked out to clear the compensation beam (scrap brass), of which one is clearly visible.

The bottom of the compensation beams sit on top of the Slaters bearings within the hornblock slots. To stop them rotating, homemade hornblock guides were made using 2mm wide x 8mm nickel silver (n/s) strip soldered either side of the hornblocks.



The rear extension piece has not yet been fitted which was not built prior the taking the photo.

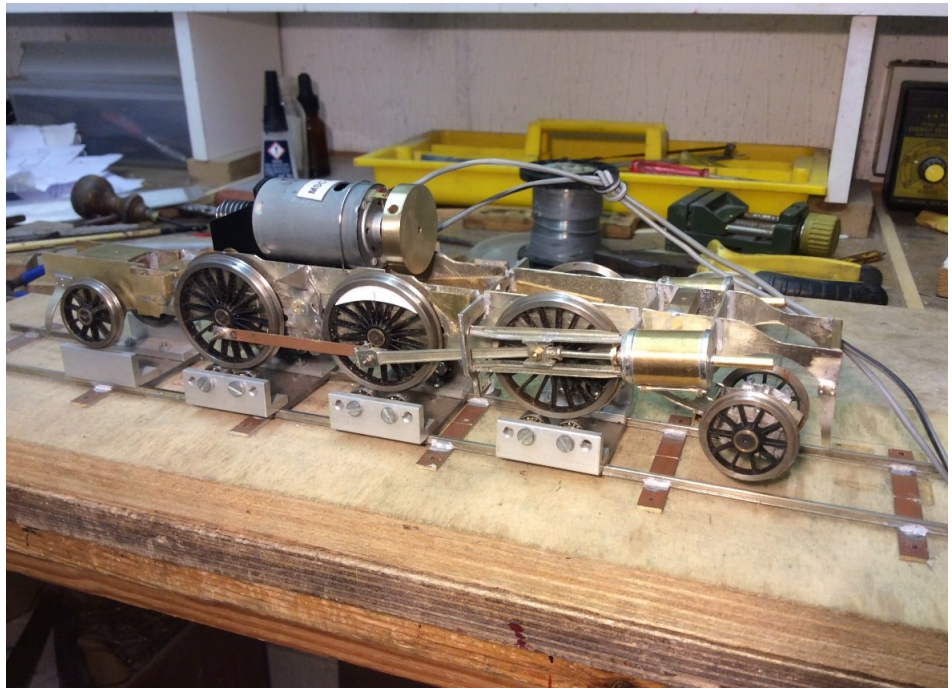
The front pony (as shown) was built from the kit, but it had to be modified considerably due to it being too rigid traversing my badly made test track with constant derailments. First it was narrowed to accept the four white metal (w/m) cast spring/axleboxes then pivoted via a pin to the swinging arm unit. It now flows beautifully through the test track.

Ready for testing. By the time this photo was taken, the rear extension piece was built and fitted. It took many designs to get it to negotiate a 6’ radius curve. Having a very long wheel-base frame, the extension piece had to be narrowed considerably so that the backs of the wheels did not foul the sides. The rear axle has also been fitted with springing to stop the wheels jumping off the rail. Also fitted is the excellent MSC Models JH motor with 33:1 double reduction gearbox (www.mscmodels.co.uk).

The n/s crosshead etch was used from the kit, but had to be widened out slightly either side by a few millimetres for clearance of the crank pin nut/bolts on the front drivers. The slide bars and piston rods could not be used as they were made from w/m. The slide bars were also slightly too short compared to the drawing and had to be scratch built using scrap n/s strip. The piston and connecting rods were lost wax from Laurie Griffin (www.lgminiatures.co.uk), slightly modified.

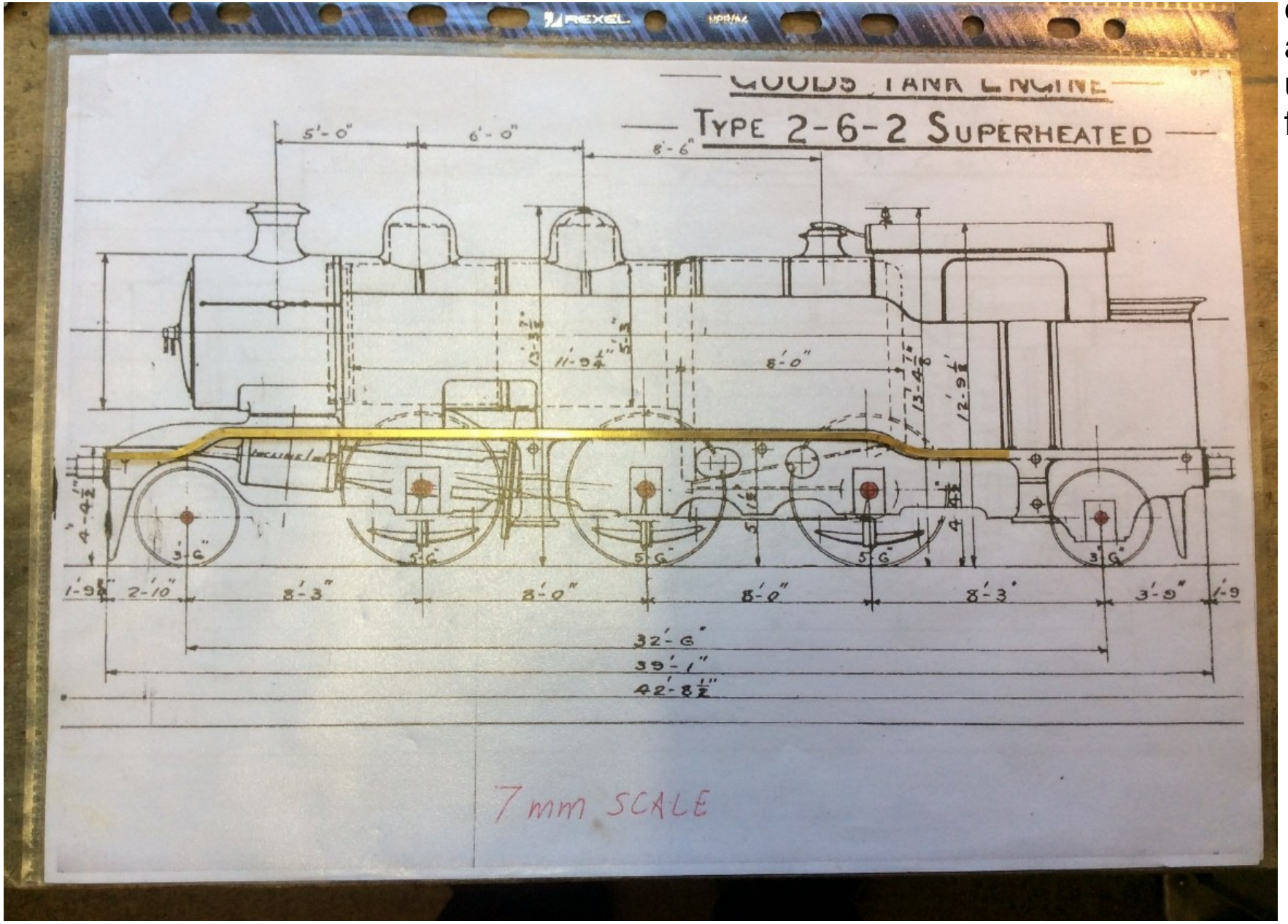
The cylinders were also scratch built to my own design from brass tubing.

Lastly, you might notice an odd-looking coupling rod fitted. A pair were made from brass strip in readiness for bespoke articulated milled n/s rods from JPL Models in Manchester (*). These were used to get the frame running on the test bed and they will be replaced and retested once the milled rods arrived.

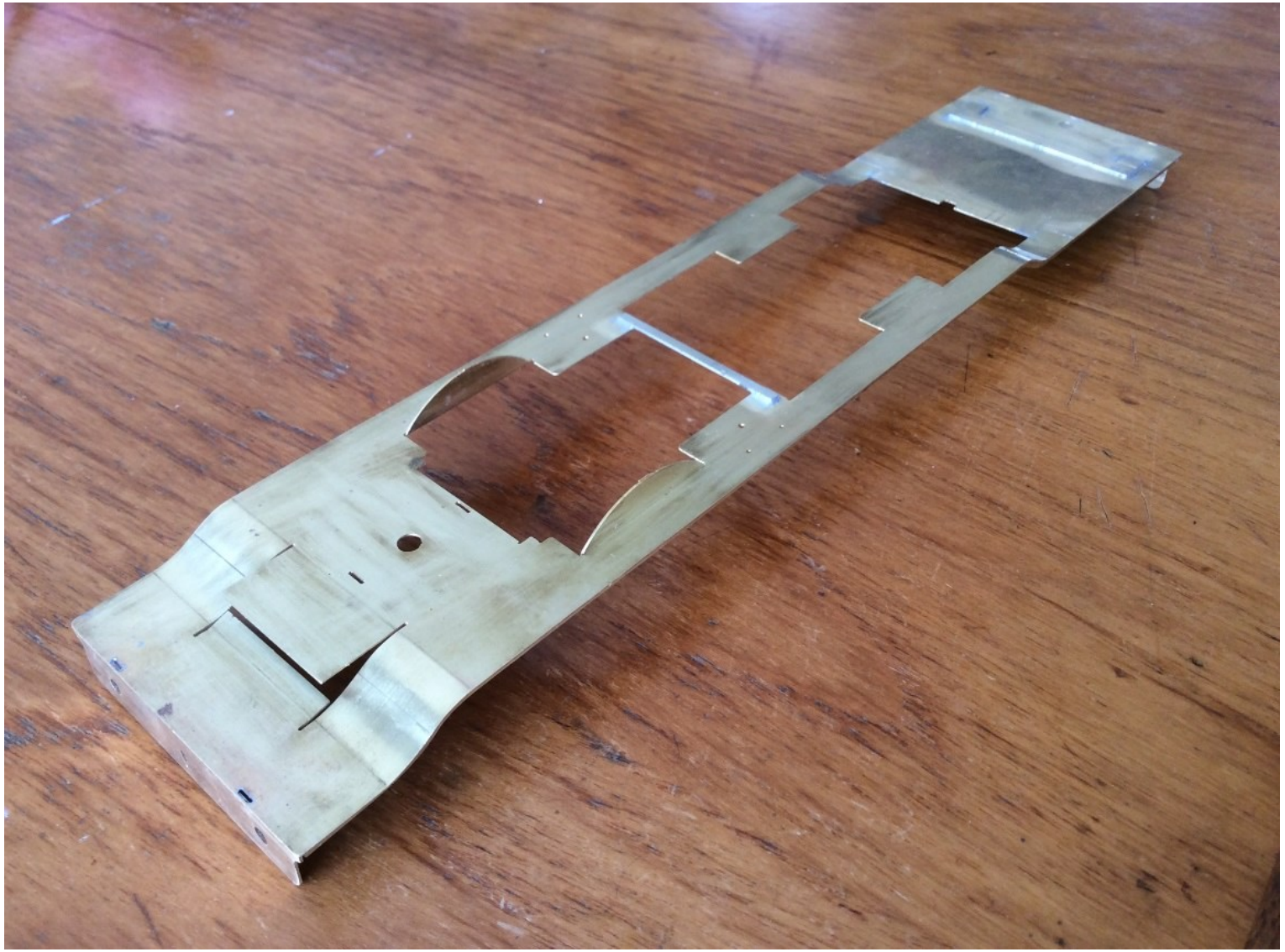


(*) Recently I have heard of the sad loss of Dave Brooks who worked for JPL Models and milled the rods in their catalogue. Speaking to him on numerous occasions, he went that extra mile in helping me get this locomotive off the drawing board and making the original bespoke patterns. RIP Dave.

The depth of the valancing strips on the drawing measured 2.5mm. Again, having supplies in stock, each side was first annealed around the bend areas, then, with very careful and delicate bending, each curve was done matching the drawing. The extra missing length will eventually be cut to length and fitted underneath the footplate.

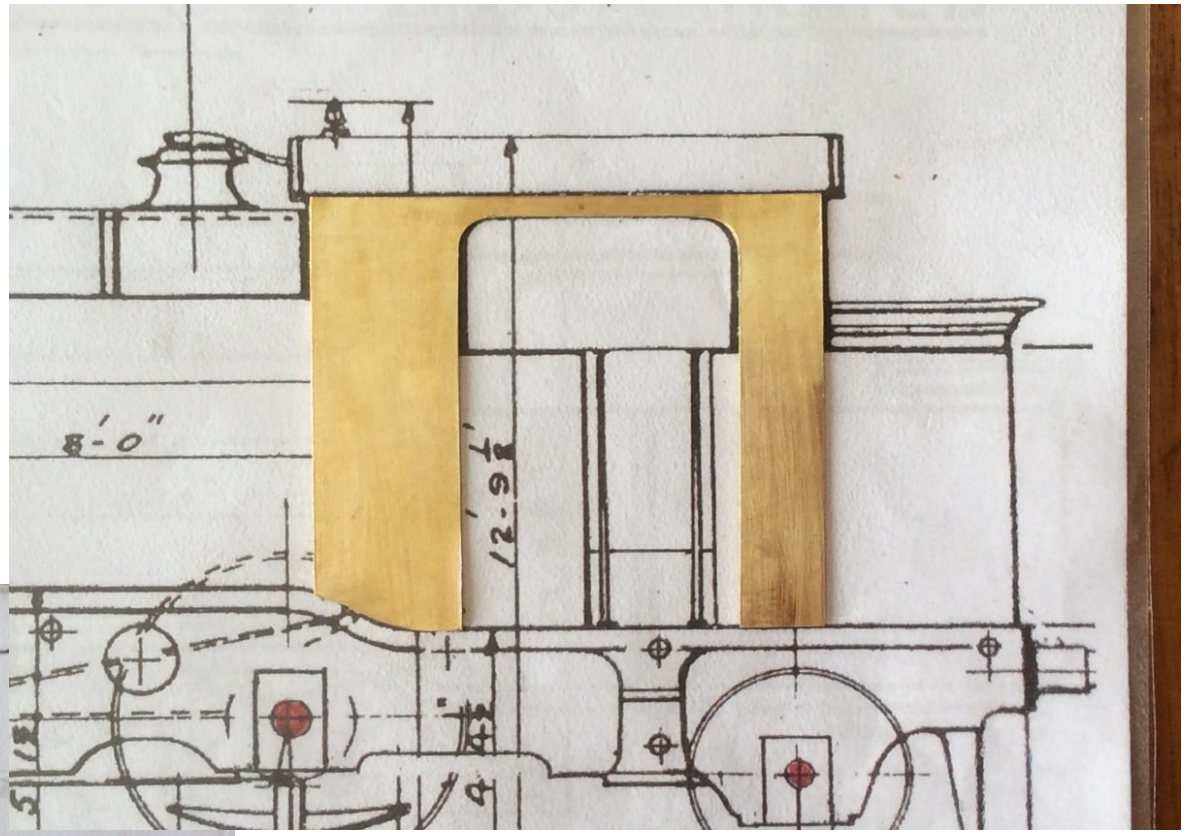


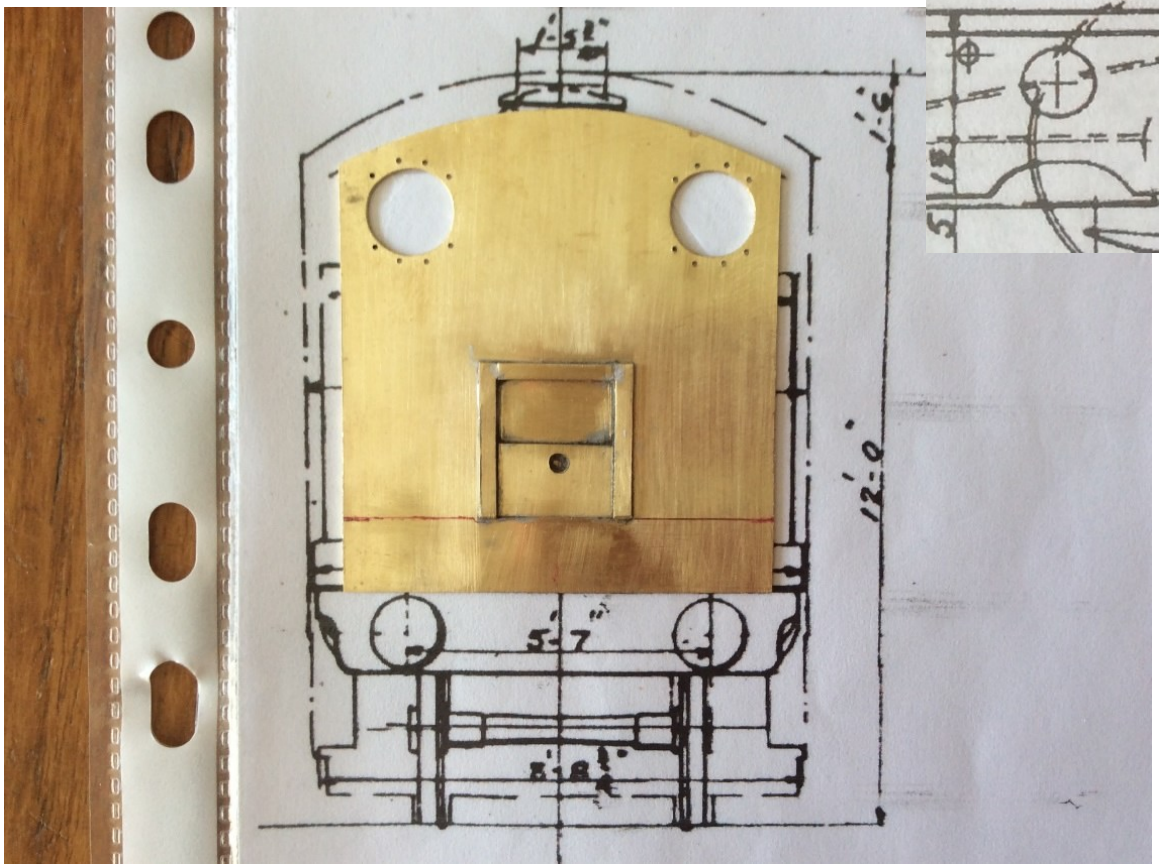
The headstocks and footplate were utilised from the kit and bent to match the drawing. Being too short underneath the cab area, a small rectangular plate had to be spliced in as noted by the raised n/s strip in the far distance. The hole for the rear driver/gearbox area had to be increased slightly for clearance of the gearbox. To keep the large void in the frame more rigid, I soldered on a narrow strip across the central area.



After rolling the boiler from the kit, it was placed in position on the curved saddle and tested for levelness as noted by the wooden strips. The two furthermost etched holes for the grab rail knobs were in the correct position and retained. The others would eventually be hidden by the sidetanks. The separate firebox (also from the kit) was built up then soldered to the scratch built front spectacle plate. The firebox had to be raised slightly by 3mm to match the drawing.

Two views showing a cabside and rear spectacle plate cut out ready which have been overlaid onto the drawing. To achieve them, a printout was stuck onto brass sheet, then cut out. Wanting a pair of cabsides, two pieces of brass were soldered together then cut out as one.





Only one spectacle plate was required, so one piece of brass was used. The red line depicts the floor height, whilst the coal door is my own interpretation in height and width but closely resembles ones fitted in other kits I have constructed.

In this photo, the underframe is 90% completed. Four sand boxes were made along with the brake stems, brake shoes, brake pull rods, guard irons (n/s) etc. Still to make is the sanding pipework.

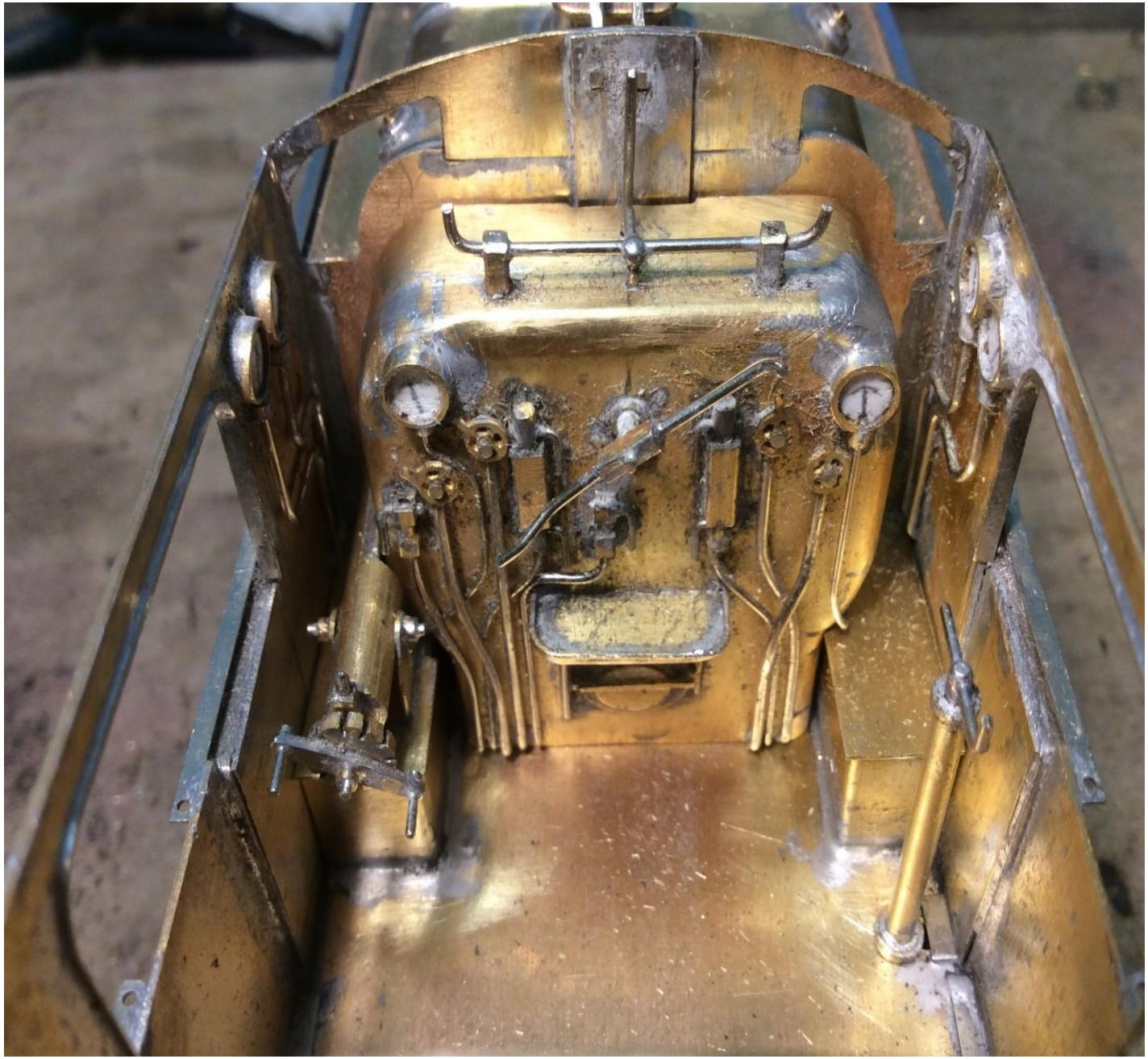
The main structures of the body are also nearly complete. In the end, only the boiler and firebox were items from the kit with the rest being scratch built from brass sheet. The two side tanks, along with the coal bunker were not the easiest of items to make. The hardest part was getting then perfectly vertical and parallel to the footplate.

The wrap round coal bunker was made in two halves with the seam down the centre.

The rivets were punched in using an old Cherry Scale punch.

The two domes (Laurie Griffin lost wax castings) and w/m chimney (to be replaced) are placed in position for the photo.

A view of the interior of the cab with every item on show being scratch built. After the cab was finished, the raised floor was made first and fitted. The backhead has been designed as a ‘slot-in unit’ for ease of painting. The design and layout closely resembles (not 100%) limited views of the LB&SCR K Class 2-6-0 locomotives. The reverser (on the left) is mounted on top of the left-hand rectangular splasher box with a rotating handle. Its dimensions were kindly given to me by Cliff Pester from his K Class model. Thinking the plain cabsides required something on them, I made four high up pressure gauges (two each side) from brass tubing with 0.6mm brass rodding for the piping. Lastly, the brake pedestal was calculated from the drawing and turned from brass tubing with a slight taper. The handle can be rotated.



After the arrival of the milled coupling rods, they were duly fitted and look splendid. Although the 8’ 0” x 8’ 0” wheelbase matched my brass coupling rod mock-ups, there was some slight tweaking required for a lovely running underframe. I am really impressed with my sliding bars. Not having ever constructed an outside cylinder locomotive before, I am pretty chuffed (excuse the pun) with my results.

Also clear to see are the sanding gear pipes on all drivers, plus the brake stems, brake shoes. Note the addition of the footsteps.

A final group of photos showing the completed loco prior to delivery to Mike.

It is very powerful and can pull the maximum LB&SCR wagon load in model form.

All of the fittings have now been added and mostly came from from the Laurie Griffin range (www.lgminiatures.co.uk). They include the chimney, dome, safety valves, LB&SCR Westinghouse pump, vac pipes, LB&SCR lamp irons and GW screw couplings. Not all were suitable for the LB&SCR with the majority modified to suit the drawing.

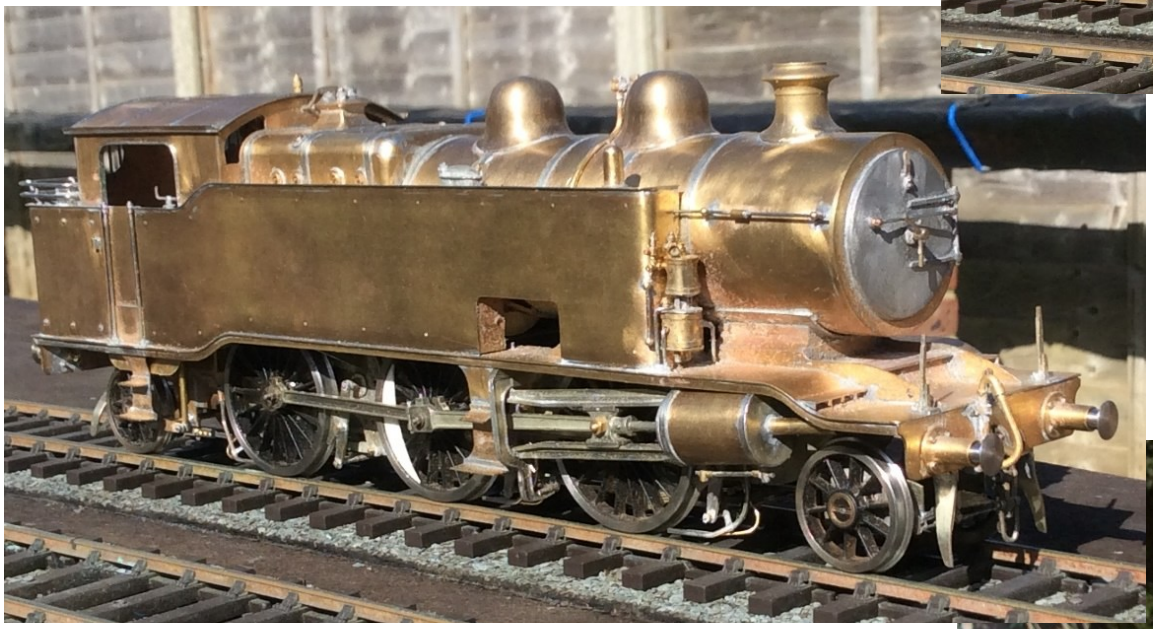
The smokebox door came from the ACE kit along with the water filler castings on the tank tops (www.ascproducts.org).

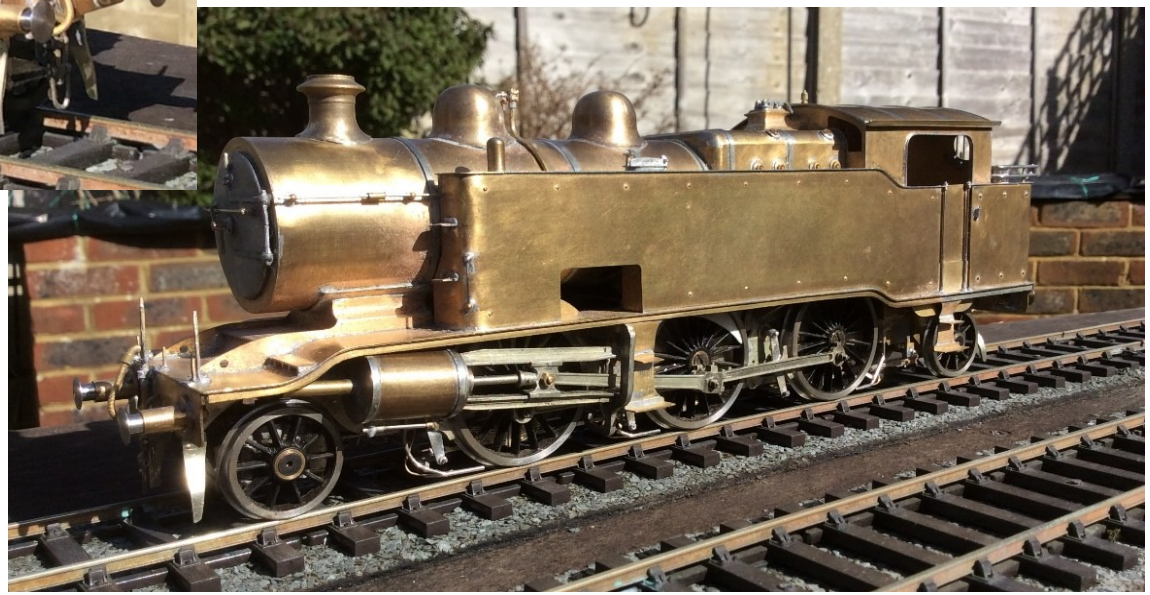
The long LB&SCR buffers came from the Markits range (www.markits.com).

Washout plugs and grab handle knobs are from Roxey Mouldings (www.roxeymouldings.co.uk).

The roof is detachable and has an LB&SCR whistle on top which came from CSP Models (www.cspmodels.com). Also from CSP is a smokebox dart.

The LB&SCR Wheels are from Slaters Plastikard (www.slatersplastikard.com).





Return to contents page

Nucast Bolster Wagon

By Hywel Rees

A photo of a 4mm scale LBSCR bolster wagon I recently built from a Nucast kit. The livery is taken from the photo in the OPC book Southern Wagons vol 2. I used Humbrol 27 grey paint for the body and Precision Paints weathered wood shade for the running gear. The previously owned kit came to me with the W iron and axlebox assemblies Araldited to the side frames so I fitted a MJT internal rocking axle unit to one end to achieve a compensated chassis. The brake lever I got with the kit was too short and the brake gear was too long for the 10' 6" wheelbase. Consequently I cut down the brake block unit from a Slaters MR cattle wagon (11' wheelbase) and used a lever of the right length supplied by Chris Cox. The buffer shanks are drilled out ABS Models castings fitted with Kean Maygib heads and springs. Now I need a suitable wood load for this wagon.
The 6 wheel full brake (Branchlines kit) and 6 wheel Grand Vitesse van (Microrail kit) in the background are waiting for a trip to the paint shop.

Return to contents page

A Scratch Built 20 ton LBSCR Road Van

By Ian Metcalfe

For a long, long time, I have liked the LBSCR 20 ton six wheel ‘Road Vans’ and have at last plucked up the courage to scratch build one.

A good friend gave me the 7mm scale drawings that were published in Model Railway News dated April 1953 so there was no excuse.

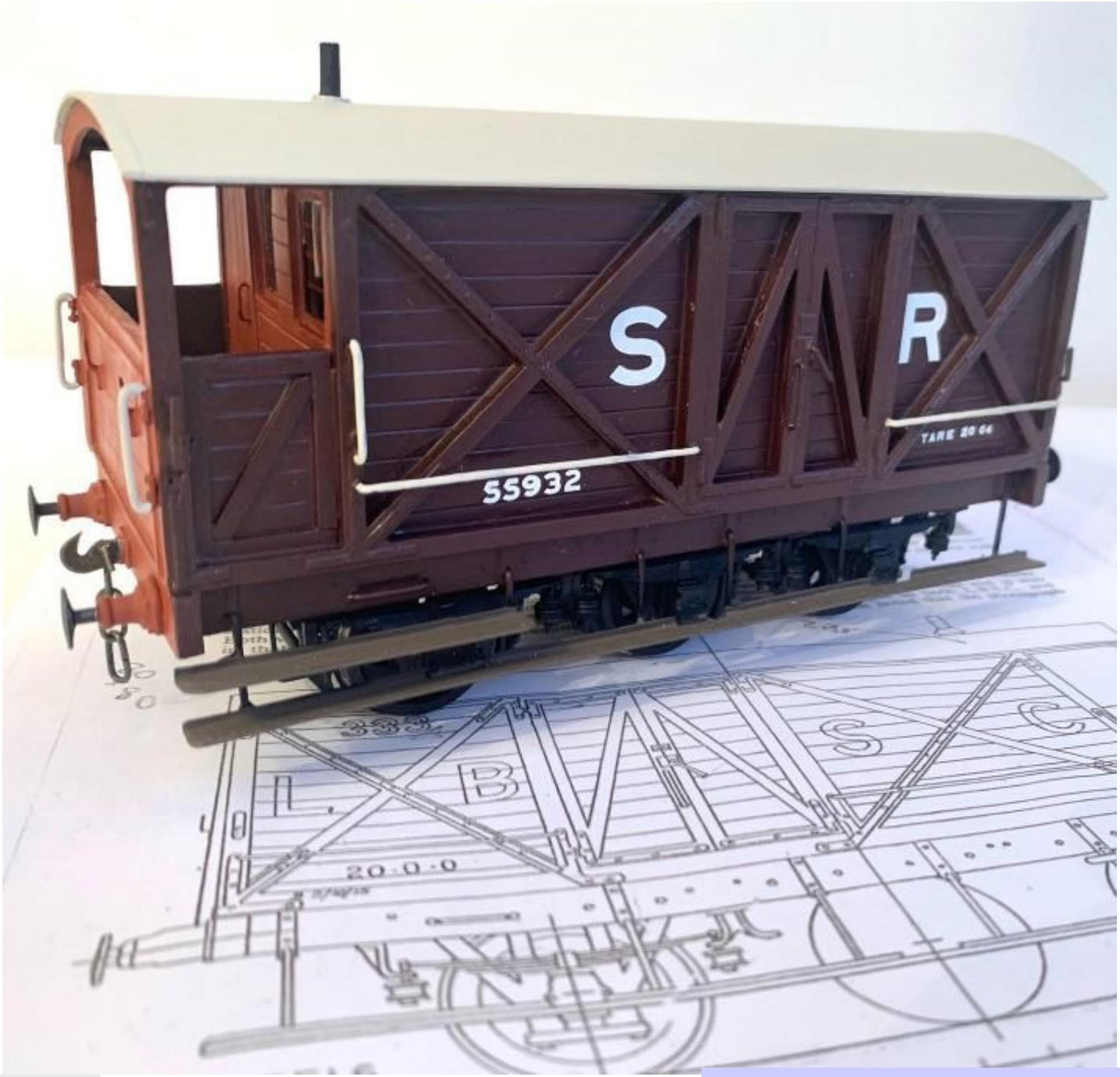
They are solid looking vehicles emphasised by the heavy exterior framing. For this, I used Evergreen styrene of a suitable size and progressed from there.

The planks were hand scribed using a scrawker, as the top three planks are wider than the rest and this was quite a feature. The footboards were scratch built from brass strip I had in the scrap box.

The fittings are what I had in my spares box: W irons from ABS, grab rails from Laurie Griffin and buffers - not quite correct but they are Billinton buffers. Next up was the application of a multitude of rivets transfers from the 7mm Scale Narrow Gauge Association.

At last my 7mm scale 20 ton Panter Road Van is mostly complete - all but for weathering.

What's the betting a kit will be announced next week or even a Dapol ready to run version?



Return to contents page

LBSCR 8 ton van in 7mm scale

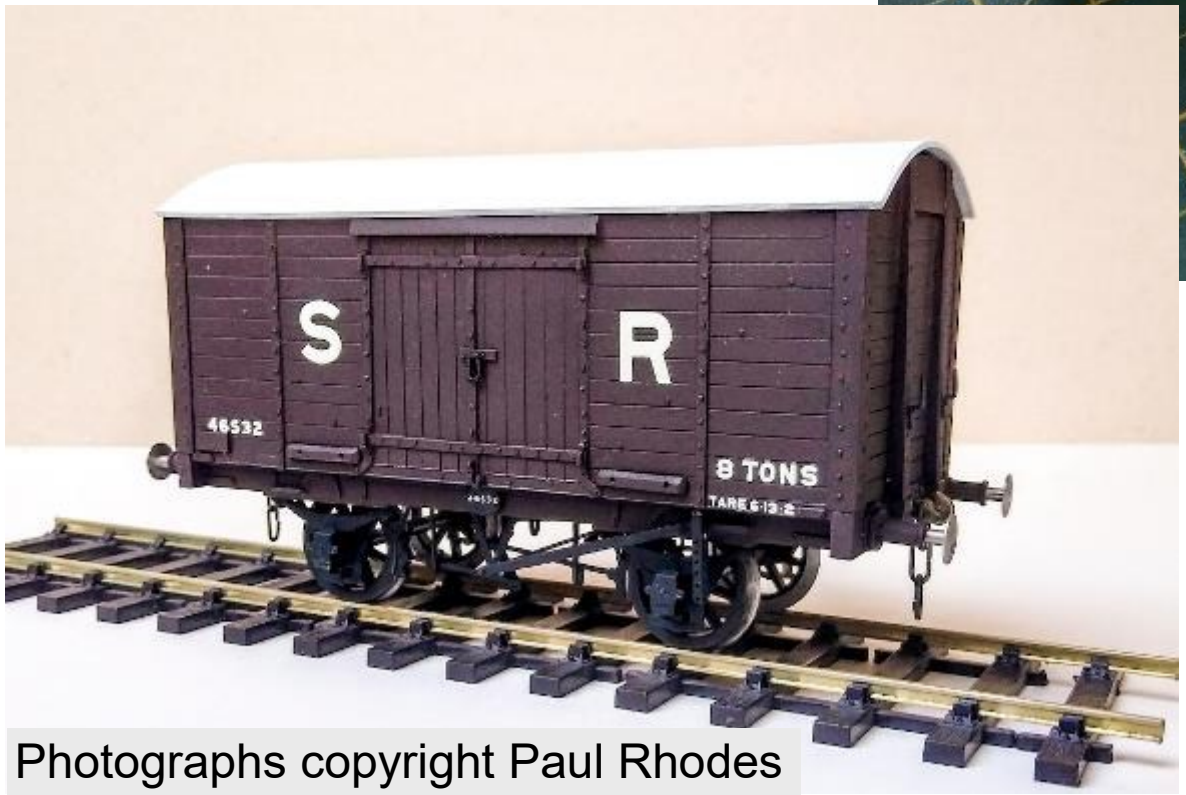
By Paul Rhodes

Following on from my 4mm cameo layout, Old Parrock, I have decided to return to modelling in O Gauge. I have stock stored away which I built nearly twenty years ago. This includes four locos, two coaches and a number of freight vehicles, all in Southern Railway livery.

Shed space is limited to 7'0" so I am planning a small London wharf. Because of its diminutive size (less than 300 feet at full size) I feel that I can spend more time on individual aspects of the scene and I have made a start by scratchbuilding a Brighton 8 ton van. Some of you may baulk at the livery but I rather like it, and I certainly think that my E4 looks splendid in olive green although the modelling is of its time and needs upgrading.

The van is built from plastic card. The main sides are 3 pieces laminated, mainly because when I started I only had limited stocks. Rivets were made the old way by floating bits of plastikard on with liquid glue. The W-Irons are EB Models and Ian MacCormac 3D printed the axlebox/springs for me. Buffers are Markits and the couplings are Slaters.

The biggest challenge was the braking. I scrabbled around in my scrapbox and it was made from nickel silver bits and pieces. I fashioned the brake blocks from plastic card. My next project is a three-plank wagon from a different (far northern) company, so will not be for display here!



Return to contents page

Budget Brighton Coaches

By Gary Smith

I have always been interested in the LB&SCR - even from a young age, I remember driving past Clapham Junction station where even to this day, the name ‘London, Brighton & South Coast Railway’ is affixed to the stonework outside the parcels office on St John’s Hill, a century after the company ceased to exist.

For a long time I have admired what I have seen others do in the modellers digest, I was enchanted with the series of videos on the Plumpton Green model railway during lock-down. But I was a little afraid and lacked confidence in my own modelling; I was afraid that if I attempted something and got it wrong, I would be letting myself and the ‘LBSCR side’ down as it were. So I collected research materials and just admired from afar. Eventually however, I came to realise that by not trying - I’d never be able to bring to life my ideas in model form if I didn’t try. Everyone has to start somewhere, so I adopted a ‘good enough’ attitude where if it looks okay from 2 or 3 feet away its good enough for now; and by building my skills up I can progress with more finescale modelling improving as I go.

So after this rather lengthy introduction I present to you my Budget Brighton Coaches; there is a photo of A1 Terrier #70 “Poplar” at Selsdon Road with a short 3-set of Stroudley Coaches. (Its on page 162, of LB&SCR Coaches volume 1). It consists of two D45 Brake Thirds sandwiching a D41 Composite.

My attempt to re-create the photo of Poplar and its coaches in OO gauge model form.

During the November 2022 Black Friday sale I managed to acquire three of the Bachmann Thomas the Tank Engine ‘Red Coaches’ for a very reasonable price under ten pounds each - plus postage on top.

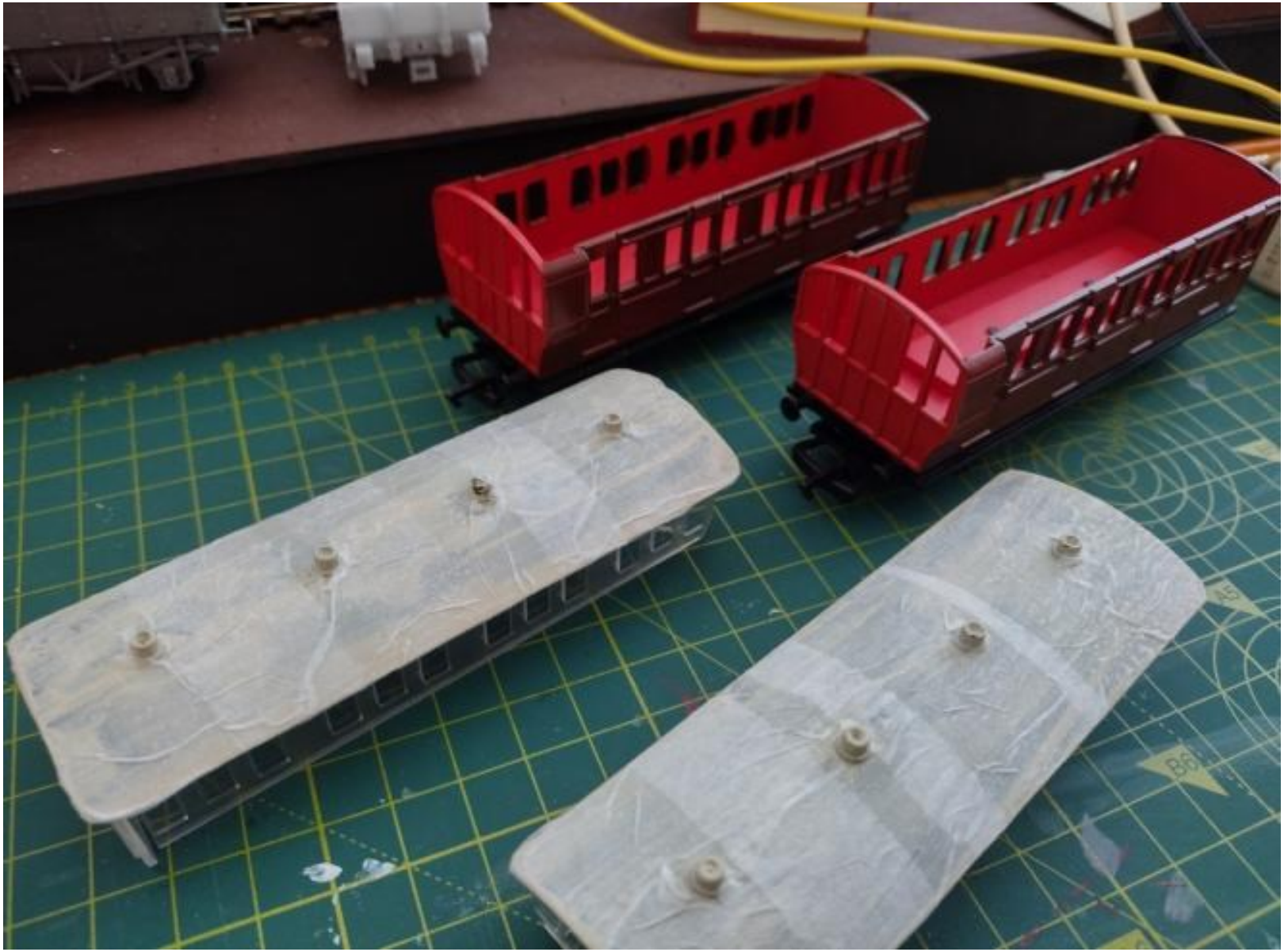
There are a number of things wrong with the coaches, firstly the colour scheme - garish buffer beam red with gloss black roofs, the hideous tension lock couplers and the incorrect layout for the gas lamp vents.

Starting with the centre Composite coach I separated it out into its component pieces. The bodywork separates from the chassis with two screws, revealing a small body weight concealed within - and the roof and glazing are a single piece - attached with moulded clips in the clear glazing section that click into the bodysides.

Whilst separated, I painted the roof with a cream colour acrylic from the Citadel paints range to mask the horrid black gloss plastic. While that was drying I turned my attention to the bodywork which was painted in Phoenix Precision Dull Mahogany with a satin finish (Code P.988).

I remember an article in either Railway Modeller or Model Rail in the 1990's about detailing a van roof by using tissue paper stuck to the roof to represent a canvas finish - by looking at photos of Stroudley First 661 at the Bluebell Railway as a 'real-life' example I overpainted the roof of the composite with PVA glue and stuck down a single ply of unscented, unpatterned tissue and daubed more glue on to secure it.
I later adapted this technique. The Composite had a single sheet of tissue applied in one go and then daubed down with more glue as I said before. However the Brake Thirds had the single ply applied in overlapping sections to represent sheets of canvas - I personally feel that this gives a much better finish.

The previous page shows Brake coaches with paper being applied in sections. The photo on this page shows the sections applied and more PVA overpainted. The ends of the tissue are then trimmed and glued to the underside of the roof overhangs with more neat PVA glue this time.



Lastly, when the PVA has set and everything has dried off, I overpainted the roofs with white poster paint with two coats to represent the colour of white lead paint in which these coaches were finished at the time. This also allows me to remove the tissue paper and re-do the roofs if I wish to, as it will all come off in warm water.

Overall I am quite happy with the finish, I still need to apply some lining with a gold paint pen and some class transfers and numbers for the coaches.

I am going to replace the inner couplings with Hunt Magnetic couplings to bring the coaches closer together; I am tempted to have a go at the end steps on the brake ends which are still in their uncoloured plastic form intentionally. Things like brake pipes, and replacing the lamp covers are also on the cards - I did consider making an interior for the coaches as well but have not decided yet.

So that is my set of budget Stroudley coaches, I have three coaches here that between them cost less than a single Hornby coach and I have enjoyed the cosmetic changes and can see by the neatness of the roofs that I have improved when adding the canvas effect. They are not accurate scale models of LBSCR coaches but from my 2/3 foot eye distance, they are most certainly ‘good enough’ for now.

Return to contents

Rediscovering the Brighton

By John Shaw

One summer's day in about 1957, my parents took my twin brother and me by train for a day's outing to York, including a visit to the old Queen Street Museum. One of the exhibits there was, of course, ‘Gladstone’! It created quite an impression: it still does.

Some twenty-five years ago my daughter went up to Sussex University at Falmer to read for her first degree. Therefore, to show some solidarity, and having just completed my first finescale O gauge engine, I decided to try a second building venture, an LB&SCR D1, named ‘Falmer’.

I took four years to build, paint, line out and letter this model in Stroudley's passenger engine livery. Just as I was finishing, my daughter came home with both a BA from Sussex and an MSc from Brighton universities, with results at the highest levels, and started professional work.

Whilst I have been the North Eastern Railway Company Steward for the HMRS for getting on towards 50 years, 'Brightonry' was revived last November/December when, of all things, a somewhat sorry, battered and bedraggled LB&SCR Stroudley G Class 2-2-2 appeared for sale on e-Bay for several weeks, with 24 people watching (they watch no more). Following discussions with the domestic ‘Chancellor of the Exchequer’ and my good comrade Andrew in the O gauge scene, who knows how e-Bay works, it was paid for and delivered very quickly from ‘The North Country’. This was far too good and too rare an engine to go to waste, so I am about 35-40% of the way through the work to restore it to working condition; this, I am thoroughly enjoying. The finished engine should look a real treat, just like ‘Falmer’.

Once unpacked, you needed some large intake of breath and a big sheet of paper to write down all the problems to be cured, all the items missing that needed sourcing, all the livery details required, some still unanswered like “What was the paint colour of the inside tyre surfaces in Stroudley's era?” Whoever started building ‘Imberhorne’, as she will be, was very good at body construction, especially the engine unit, plus equally good at laying paint, the main body paint being the ‘Phoenix’ brand, and applying transfers.

The loco has the fireman’s side nearly fully renovated with the copper work and sand pipes added and the second version of the speed recorder built and fitted following some detailed photograph analysis. The cast brass front buffer beam Westinghouse brake pipe has also been fitted, as have the later cast brass LB&SCR lamps.

Work will now turn to the cab details, as the inner walls now have the correct tan colour as resolved at the recent Brighton Circle meeting at Patcham.

All being well the traction problems are now virtually resolved.

The class D1 tank engine, which I built 25 years ago, has been rebalanced, has had its livery modified to come into line with the new information in Peter Wisdom's HMRS book, plus having a general spruce up too. A full suite of moveable Brighton lamps have now been fitted.

Return to contents page

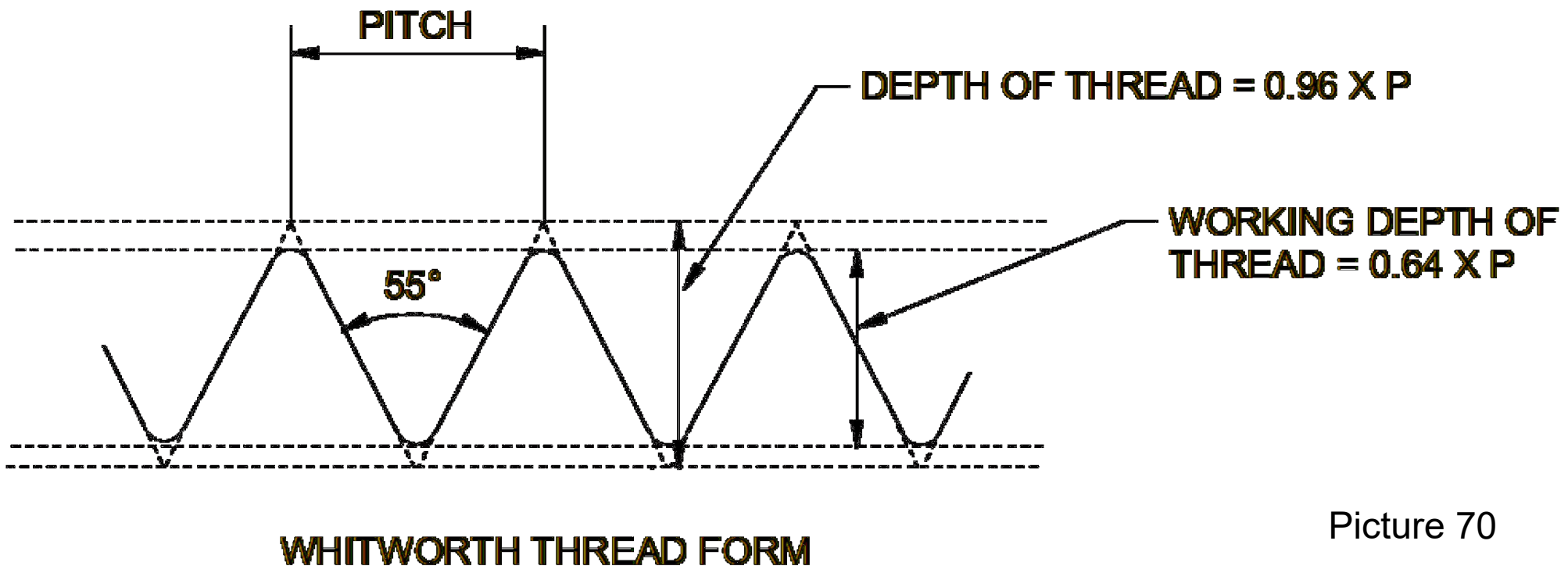
Starting from Scratch - Part 3

Screw threads and threaded fastenings

By Terry Bendall

Sooner or later most railways modellers will need to make a screw thread. This part of the series will outline some of the terminology associated with screw threads since that helps to explain some of the processes of making a thread and will cover types of threaded fastenings. Even if there is no need to actually make a screw thread, knowing the terminology is useful when buying threaded fastenings or when drilling holes to accept a fastening.

Prior to 1840 there was no standardised system for screw threads with each manufacturer devising their own system. In 1841 Sir Joseph Whitworth, an eminent Victorian engineer, devised the system of threads that bears his name – the British Standard Whitworth thread (BSW). At that time the main engineering materials in use were cast iron and wrought iron so in consequence the Whitworth thread is rather coarse. The British Standard Fine thread (BSF) overcame this problem with a finer pitch of threads.



Picture 70

Picture 70 shows a drawing of the Whitworth thread form and will help to explain some of the terms that follow. It can be seen that the thread is vee shaped with an angle of 55 degrees between the slopes. The actual thread is not totally vee shaped since the top and bottom of the vee is rounded off. The reason for this is to avoid sharp crests to the vee that may be weak. The pitch of a thread is the distance from the top of one vee to the next but an alternative way of describing the pitch is that it is the distance that a nut moves along the screw when turned round once. The pitch of BSW and BSF threads is designated by the number of threads per inch (TPI).

Many people will make use of the British Association (BA) thread although there is an increasing tendency for this thread form to be superseded by metric threads. The BA system has a finer range of pitches than the BSF system and has a thread angle of 47.5 degrees.

The ISO metric thread system is now in use in many countries and has a 60 degree thread angle with the pitch expressed in millimetres and decimal fractions of a millimetre. In the USA and Canada the Unified Thread Standard is used. This has a 60 degree thread angle with dimensions in fractions of an inch. There are many other forms of screw thread available but they need not concern us.

BSW, BSF and American threads are designated by the nominal outside diameter of the thread expressed as a fraction of an inch (if less than one inch in diameter). BA threads are designated by a number from 0 to 16 although some screw thread tables give sizes down to 22BA which has a nominal diameter of 0.37mm. In practice the odd numbered BA threads are not often used except in some model engineering applications. A 0BA thread has a nominal diameter of 6mm and a 16BA has a nominal diameter of 0.79mm. Metric threads are designated by the nominal outside diameter expressed in millimetres and the pitch of the thread e.g. M6 x 1.0 or M8 x 1.25. It should be noted that there two ranges of metric threads – coarse and fine although metric coarse threads are the type in common use.

As a comparison, picture 71 shows three set screws with a ¼ inch BSW at the top left, ¼ inch BSF in the centre and an M6 at the bottom right. The ¼ inch BSW thread has 20 TPI, the BSF one 26 TPI whilst the metric one has a pitch of 1mm which is roughly equal to 25 TPI. Not a lot of difference but a nut from one system will not fit the bolt of another!

Picture 71

Making a screw thread in a hole

For most people, the first introduction to the need to create a screw thread will be when making an internal thread in a hole. This is done by making use of a tool called a tap, or more usually at least two taps which are held in a tap holder or tap wrench. Picture 72 shows a set of three M10 x 1.5 taps with two types of tap wrench at the top although both are too small to hold this particular size of tap. The chuck type tap holder is useful in confined spaces or with smaller sizes of tap since it reduced the risk of breakages. At the bottom is a taper tap, in the middle is a second tap and at the top is a plug tap.

The size of the hole needed to make an internal thread is something that can cause confusion. The nominal size of a thread is the full diameter so a 6mm bar needs a 6mm thread. The thread is cut into the bar. If a thread is needed in a hole, the size of hole needed is measured at the bottom of the vee, so is smaller than the nominal diameter and the term used is the core diameter. In practice the size of hole may be slightly larger than the core diameter to give a bit of clearance. The size of drill needed is smaller than the nominal diameter and is known as the tapping size. There is no easy mathematical progression of tapping sizes of drills and the easy way is to make use of a simple table to find the size. Such tables are available in engineering reference books but for convenience the charts below give the tapping sizes for some of the BA and metric threads that the railway modeller is likely to use.

Picture 72

Another term that needs to be understood is the clearance size. Whilst a 6mm bolt will fit into a 6mm hole, it is likely to be a fairly tight fit so for ease, the clearance hole is made a little larger and again a table will give the recommended clearance size drills. How much larger a hole is needed may depend on the material and the degree of accuracy needed. For bolts under 3mm diameter a clearance hole that is 0.1mm larger will usually be sufficient. Above that I often make the hole 0.2mm larger. For an application such as bolts used to join baseboards together the clearance hole might be 0.5mm larger or even a bit more. If the recommended size of tapping or clearance drill is not available then one which is a little larger will usually suffice, although there is not a lot of leeway for the smaller sizes.

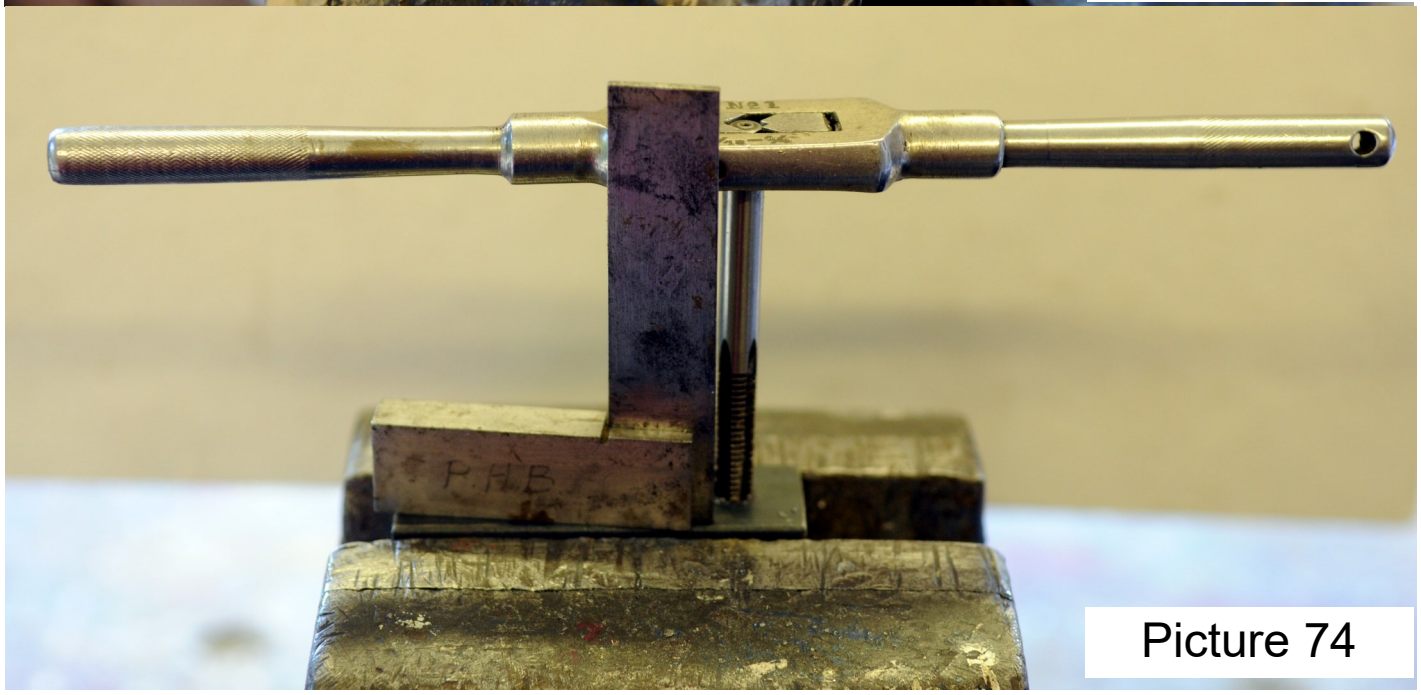
BA TAPPING AND CLEARANCE DRILL		
SIZE	TAPPING DRILL	CLEARANCE DRILL SIZE
4 BA	3.0MM	3.7MM
6 BA	2.3MM	2.9MM
8 BA	1.8MM	2.3MM
10 BA	1.4MM	1.8MM
12 BA	1.05MM	1.4MM
14 BA	0.8MM	1.1MM
16 BA	0.6MM	0.86MM

METRIC TAPPING AND CLEARANCE DRILL SIZES		
SIZE	TAPPING DRILL SIZE	CLEARANCE DRILL SIZE
M 4.0	3.3MM	4.1MM
M 3.5	2.9MM	3.6MM
M 3.0	2.5MM	3.1MM
M 2.5	2.05MM	2.6MM
M 2.0	1.6MM	2.05MM
M 1.8	1.45MM	1.85MM
M 1.4	1.1MM	1.45MM
M 1.2	0.95MM	1.25MM
M 1.1	0.85MM	1.15MM
M 1.0	0.75MM	1.05MM

The first step is to drill a hole in the required position using the tapping size drill. Select the taper tap and fit it into the tap wrench. Fit the tap into the hole making sure that it is at 90 degrees or “square” to the surface of the metal. Turn the tap clockwise twice to get it started. Then check that the tap is still square to the top surface and ideally check from the front and the side. It is easy to get the tap out of vertical resulting in what is known as a drunken thread.

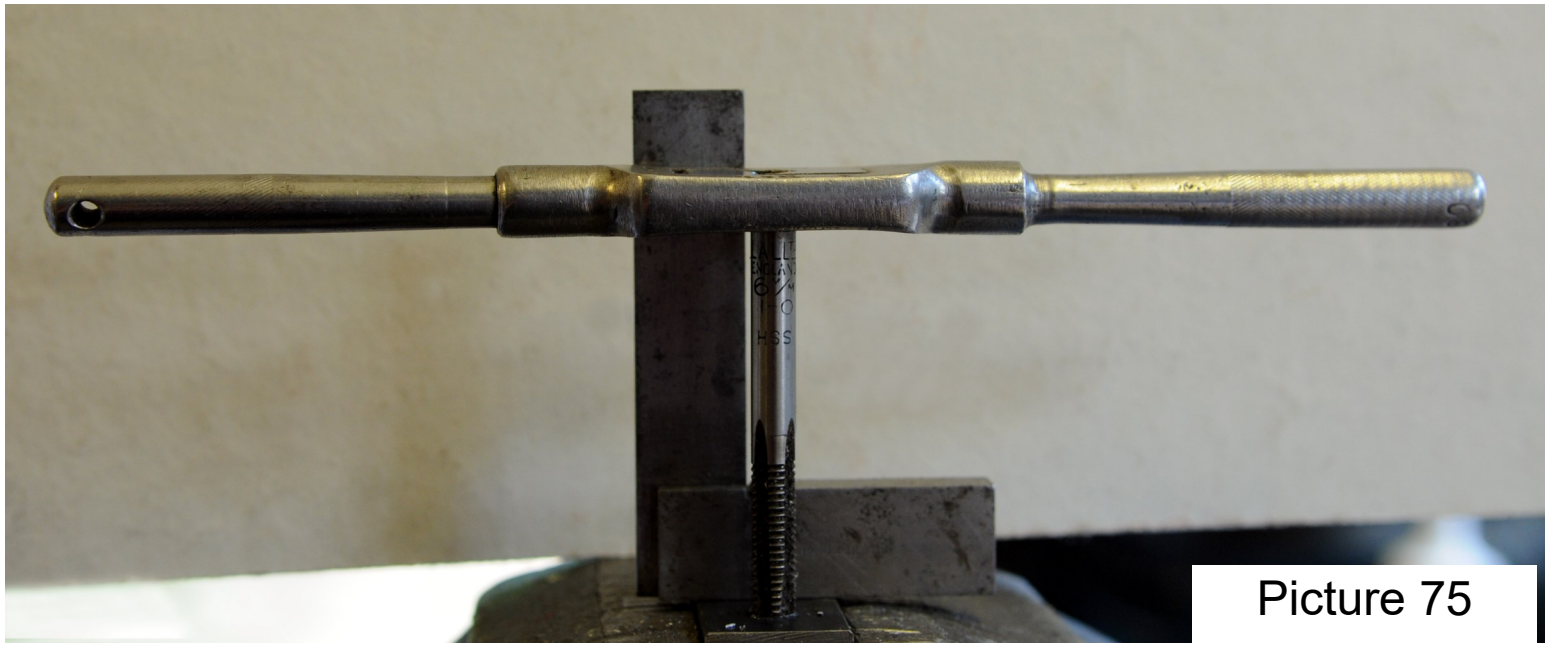
Picture 73 shows the tap being started in the hole and pictures 73 and 74 show how a check for squareness is done using a small engineers’ try square.

Picture 73



Picture 74

Once the tap has been started in the hole and the squareness checked, the action is to turn the tap half a turn in the clockwise direction and then turn it back about a quarter of a turn. The reason for turning back is to break of the chips of metal that will form as the thread is cut. If the tap is not turned backwards, the chips will build up in the flutes (grooves) of the tap and it may break, especially when working on steel. Brass and other non ferrous metal can be tapped without any lubrication but steel will always need lubrication. It is possible to buy a special compound that can be used when tapping but I tend to use water soluble cutting oil. Ordinary lubricating oil will do as a substitute.

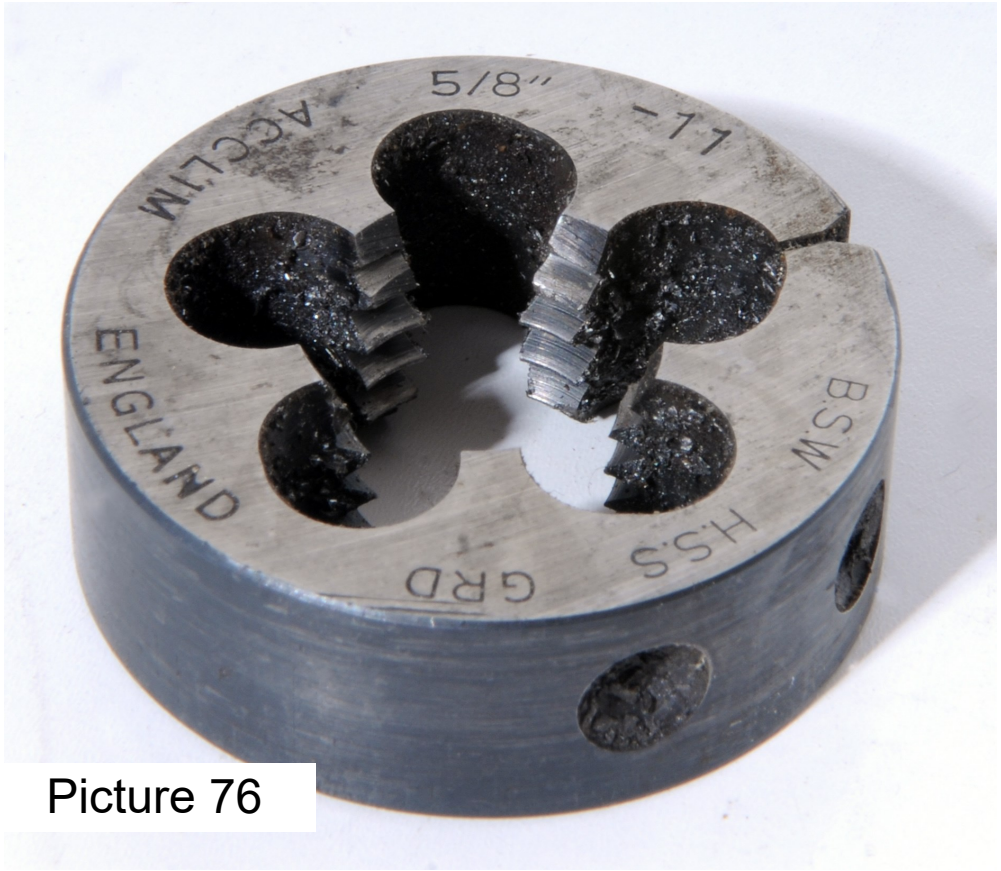


Picture 75

Even with care, taps will break, especially the smaller sizes. Taps are made of two different types of steel. Carbon steel taps are cheaper but will wear out more quickly. High speed steel taps are more expensive, but will last longer. They have the disadvantage of being more brittle than carbon steel taps. I tend to use high speed steel taps for the larger sizes where breakages are less common. If a tap does break off in a hole it is very difficult to remove and about the only way is to heat the tap to a bright red heat using a blow torch and then leave the metal to cool slowly. This will remove the hardness from the metal and you may be able to drill out the broken tap. Doing all this is not easy and often the only way to solve the problem is to make a new component.

If the threaded hole goes all the way through a piece of metal, then working the tap through the metal so the full depth of thread is cut will often be sufficient. For a thicker piece of metal, the plug tap should be used after the taper tap has been withdrawn to ensure that the full depth is made throughout the hole. Sometimes it is necessary to make a screw thread in a hole that does not go all the way through the metal – this being known as a blind hole. It may be that the taper tap will not go into the hole far enough to get the thread started sufficiently. In this case the second tap is used to get the tread started off and then the plug tap is used to finish it off. It is very easy to break the tap when threading a blind hole. The way to avoid breakages is to go very cautiously and try to develop a “feel” for how the tap is cutting – something that only comes with experience!

The use of the chuck type tap wrench will reduce the risk of breakages, especially in the smaller sizes. This type of holder has a hole for a round bar, known as a tommy bar, to be passed through to give additional leverage but it is not needed in the smaller sizes. For very small sizes, M1.2 or 12BA and smaller I hold the tap in a pin chuck. In the sizes that we will usually use, a tommy bar is not often needed.



Picture 76

Making a screw thread on a rod.

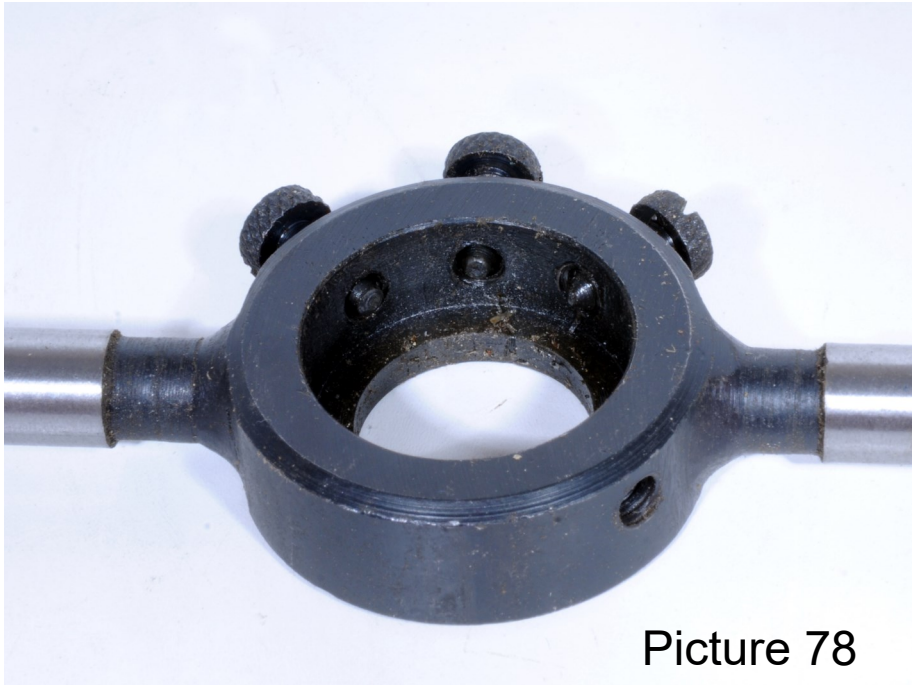
The tool that makes the screw thread on a round bar is a die, or more correctly a circular split die, and one is shown in picture 76. It is possible to get rectangular split dies although they are not common these days hence the full name of the circular type.

A die is held in a die stock and an example is shown in picture 77. Note that the die stock has a stepped hole which gives a firm surface for the die to fit against. This is shown in close up in picture 78. This is necessary since considerable downward force is needed when starting the thread.

Picture 77

The die has two round depressions each side of the split although the one in the picture has a third one, and the two outer screws of the die stock are designed to fit into these depressions. The central screw of the die stock has a pointed end to fit into the split. This allows a small degree of adjustment of the die to make it larger or smaller. For this reason if the bar is to be fitted into a tapped hole, the hole should be tapped first since the size of the tap is always fixed. If it is found that the thread on the rod is too tight, then the middle screw can be undone slightly and the outer screws tightened to make the thread slightly smaller. In practice this is rarely needed and I find that if the die is put in the stock and the screws tightened to just grip, that is normally sufficient.

When buying a die it is necessary to state the outside diameter and these are still expressed in inches even for a metric die. The common sizes are 13/16", 1", 1 5/16", 1½" and 2". The die stock obviously needs to fit the die being used.



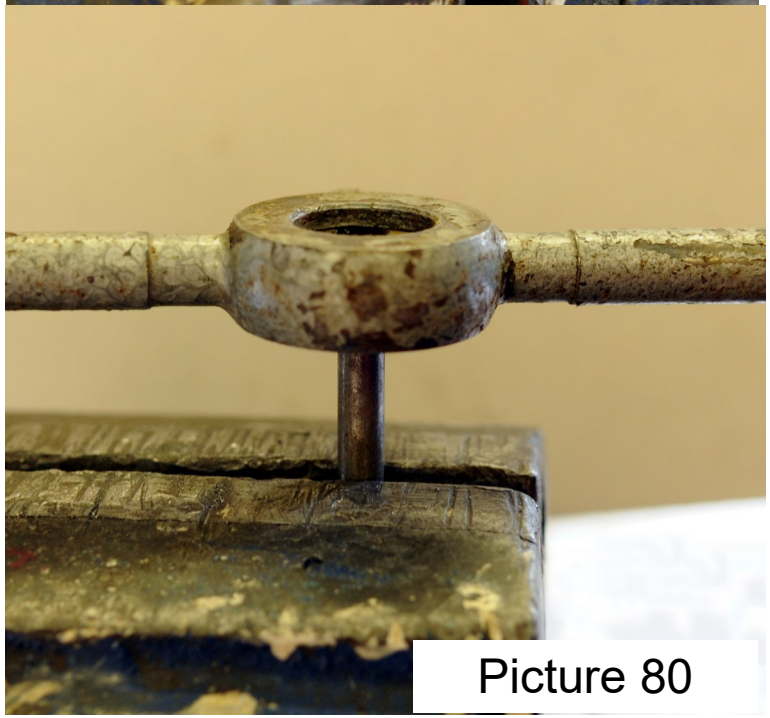
Picture 78

Picture 76 is a close up shot of the die showing the cutting edges. Note that these taper towards the outside surface of the die. This is done to enable the die to be easily started on the rod. A disadvantage of this is that the full depth of tread is not cut right to the end but this can be overcome and we will come to that later.

The first job is to round off the end of the rod on which the thread is to be cut. This can be done with careful filing which is quite adequate but for those with a lathe a chamfer can be made using the machine. Picture 79 shows the rod in the vice ready for the thread to be cut.

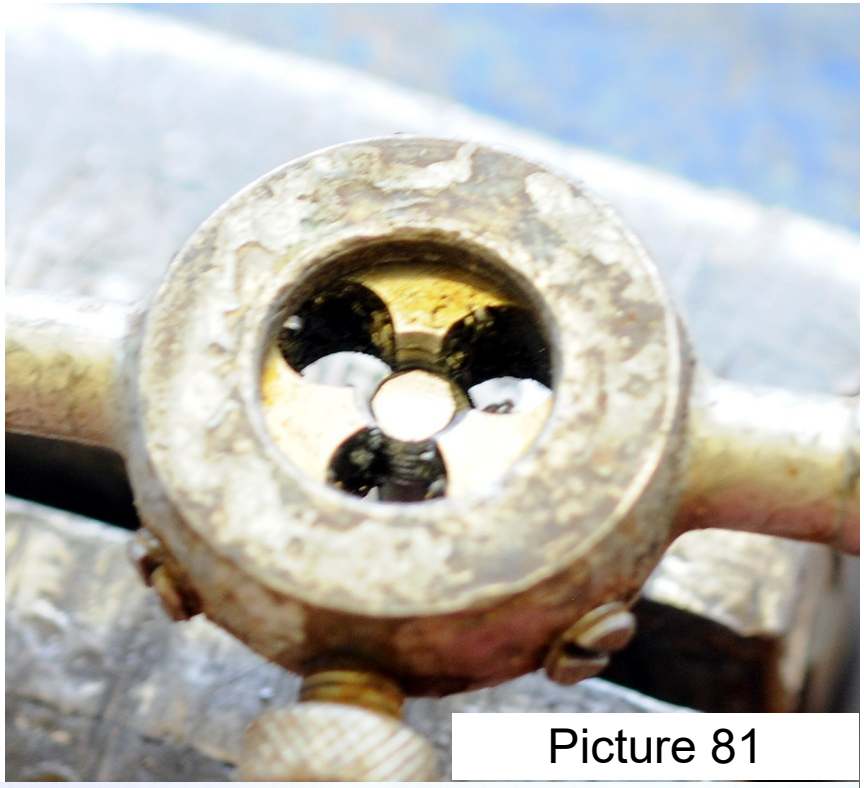
Fit the die into the stock making sure it is the correct way round with the tapered cutting edges facing downwards. Normally the size of the die is marked on this side. Place the stock on the end of the rod making sure that it is at square to the rod. Turn the stock clockwise two or three times to get it started. You need to press down quite hard to get the die started. Then check that the stock is still square to the rod and doing this from the front and the side to avoid a drunken thread. Picture 80 shows the die on the rod.

Picture 79



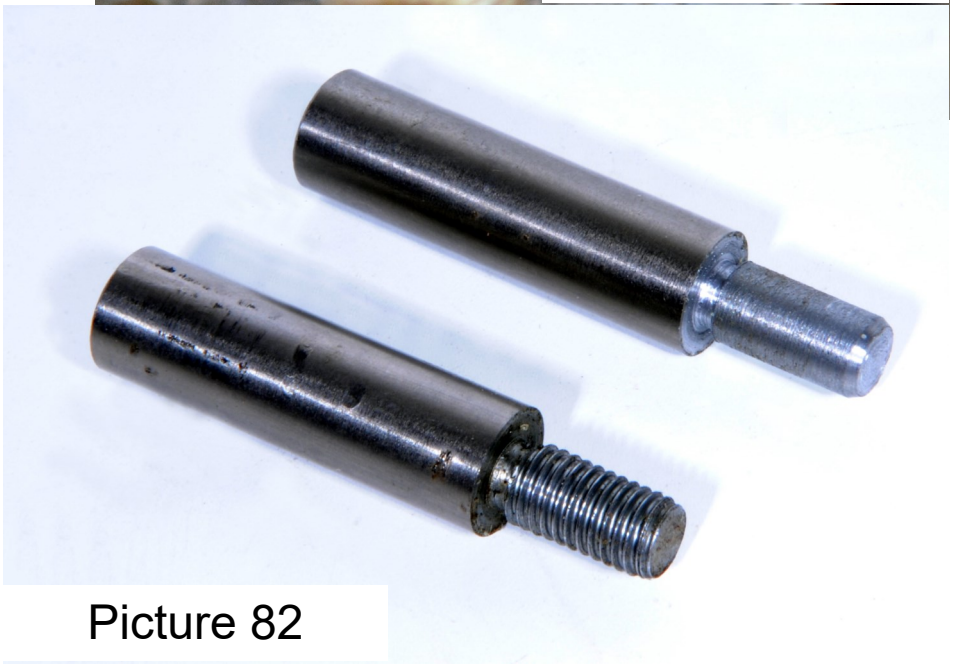
Picture 80

The process is then very similar to making a thread in a hole. Turn the stock round a full turn, then turn it back one quarter of a turn to break off the chips. As with a tap, use lubrication if working with steel. Picture 81 will hopefully show how the chips are formed when cutting a large size of thread. It is important to keep the pressure on each handle of the die stock even as the thread is cut otherwise a twisted or drunken thread will be produced.



Picture 81

Picture 82 shows at the bottom a bar that had been reduced in diameter on a lathe with a screw thread cut on it. Above is another bar that has not yet had the thread cut. Notice that the end of the smaller diameter has a groove or undercut. This is the way in which the taper at the end of the die is dealt with in this sort of application to give a full depth of thread along its whole length. A further useful tip is once the thread is cut, take the die out of the stock, turn it round so the full depth side is facing outwards and then run the die down again. This is not as good an engineering solution as making an undercut but it will serve for some applications.



Picture 82

Types of threaded fastenings

There are a vast range of threaded fastenings available in different styles and materials and with different types of head. There are advantages in understanding the terminology, especially when ordering by phone or via the internet. When buying threaded fastenings it is usually necessary to state the diameter and type of thread, the length, the type of head and the material from which the fastening is made. Looking back at picture 70 we have at the top left a ¼” BSW set screw 2 inches long with a hexagon head made from high tensile steel. Quite a mouthful!

Picture 83 shows two examples of fastenings which look similar. At the top is a hexagon head set screw which has the thread running the whole length of the screw. At the bottom is hexagon head bolt where the thread is only part way along so this is the difference between the two terms. Usually any fastening that is 25mm long or less will have the thread along its whole length but generally longer fastenings will only have the thread for a short length. If you have a bolt where the thread is too short for an application a die and die stock can be used to extend it. However it is not advisable to do this with fastenings made of high tensile steel since these will rapidly blunt the die.

Picture 83

Machine screws are those which have a head which is not hexagonal and picture 84 shows a selection of different types of head. From the top left we have a round head, pan head, cheese head (made of brass), and countersunk head machine screws.

Picture 84

Picture 85 shows some hexagon socket screws, sometimes called Allan screws although this is not strictly correct since that is a trade name. These need a hexagon key to tighten. The cap head screw on the right normally needs a counterbored hole for the head to fit flush with the surface of the metal. A counterbore is a larger hole made to fit the cap head. To be strictly correct the counterbore needs to be made with a special cutter to give a flat bottom to the hole but a drill of the correct size will usually suffice. The short grub screw is used to hold a wheel or gear onto a shaft. Grub screws are also available with a screwdriver slot.

Picture 85

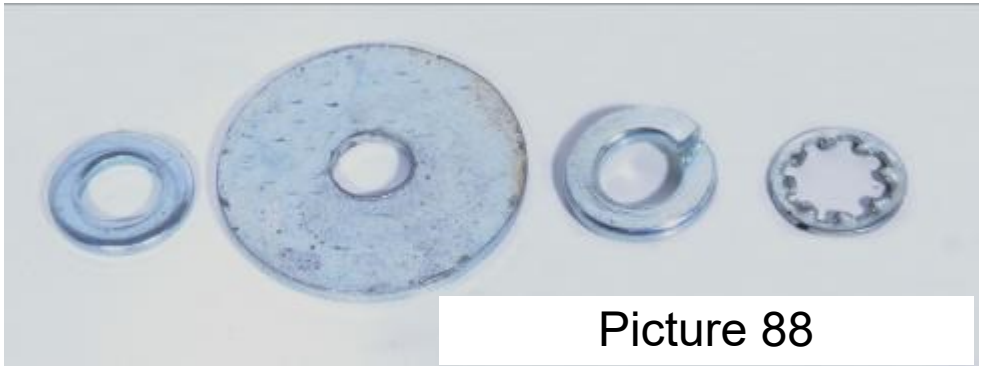
Picture 86 shows a hexagon head set screw and nut made of nylon and a coach bolt which is normally used to fix metal items to timber. The other item in picture 86 is a stud which will not have many applications in railway modelling but is included for the sake of completeness.

Picture 87 shows a range of nuts and washers. Hexagon nuts are used with bolts, set screws and machine screws. Square nuts are usually used with coach bolts. The third from the right is a hank nut which has a round portion designed to be passed through a hole in thin metal and then riveted over. Next to that on the right is a locking nut which has an insert, in this case of fibre but may be a material such as nylon. No thread is made in the insert but when tightened with a spanner the bolt will make a thread which will resist being loosened when the part being held is moved. An application of this type of nut is for things like integral legs of a baseboard or struts for legs which have to be moved to the working position. Finally picture 87 shows a wing nut designed to be tightened with the fingers.

Picture 86 above

Picture 87 below

In picture 88 a range of washers are shown. The smaller plain washer may be used under a nut to avoid damage to the component when the nut is tightened but will also distribute the load that is applied when the nut is done up. The large “penny” washer does the same thing but spreads the load even more. It is a good idea to use washers under the nuts used for joining baseboards together so then the nut does not dig into the wood. Two types of spring washer are shown and these are designed to stop a nut working loose especially on machines where vibration caused by moving parts may cause nuts to loosen.



Picture 88

Joining parts using threaded fastenings

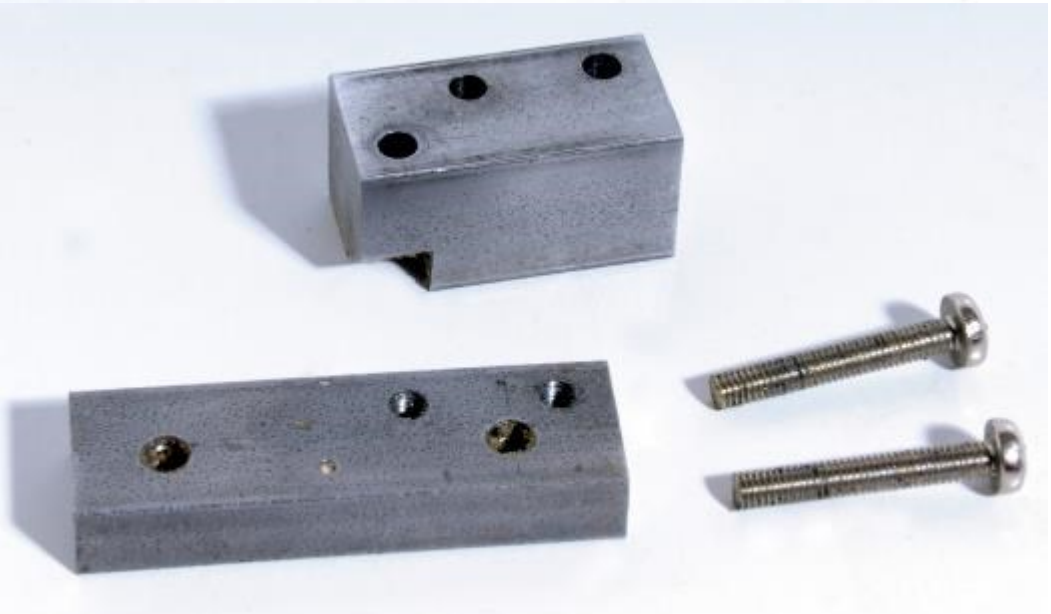
When parts need to be joined using threaded fastenings usually two or more holes are needed and obviously the holes need to line up accurately, to allow the fastening to be passed through. Picture 89 shows two pieces of steel joined at 90 degrees using nuts and machine screws through clearance holes. The procedure is to mark out and drill both the holes on one of the parts, and then carefully mark out and drill one of the holes on the other part. Assemble the joint and tighten the nut. The empty hole in the top component can then be used as a guide for the drill which will ensure that the holes line up. An alternative to marking the hole in the lower part is to clamp the two pieces together and the best type of clamp to use for this application is a toolmaker’s clamp as shown in the picture. This type of clamp will grip parts firmly due to the locking action of the two screws.

Picture 89

A similar process is used if parts are to be joined with threaded holes. Pictures 90 and 91 show such a situation – the two parts of a punch tool used for making holes in sleepers. In picture 90 we have the two parts joined with M3 round head set screws that have a Pozidrive slot whilst in picture 91 the two components are separated.

The procedure is to mark out and drill the clearance holes in the top part, then carefully mark the position of the first hole in the bottom part and drill with the tapping size drill. Make the screw thread and assemble the parts using one screw. Use the clearance size drill through the hole in the top part and just make a small dimple in the bottom section. Separate the two parts and using the dimple as a guide, drill the tapping size hole. Make the screw thread and then assemble the two parts. With care everything should line up and fit together correctly. If one hole is not quite correct then enlarging the clearance hole slightly should give sufficient room to ensure the parts line up.

Picture 90



Picture 91

Return to contents page

Hangleton Station Building - Part 3

By Colin Paul

INTERIOR

Now that the main construction of the building is complete (minus the painting), my thoughts have turned to the detailing the inside. This is an area I have been really looking forward to. Having got the British Railway Journal drawings for Fittleworth to go by and some interior photos I took in the 1980's it gave me a head start as to the style and layout of the rooms. Thanks also to Richard Barton who supplied a photo showing the interior of the general waiting room from Grange Road which is near enough the same as Fittleworth's. It also shows part of a wooden seat with a curved section of wood below, which I will copy. Also thanks to Andrew Garrood for supplying photos inside one of Pulborough's waiting rooms. The photos I took clearly show the vertical panelling still in situ along with the doors which I personally think are all original.

SUB FLOOR(s)

Right from the start of the project, I knew the height of the internal floor was too low by a good 2-3mm. I thought this wouldn't be an issue because all of the external doors would be closed. When the drawings were done though, I did notice the floor was indeed too low. Every room in the building barring the Ladies' WC and lamp room (totally hidden) would require a sub floor. 1/8th plywood was the correct thickness throughout, which raised the floor level up to door threshold height. By pure chance, the only photo I have showing the floorboard orientation was in the ticket office waiting room view, where they are at right angles out from the skirting board. A base

measuring 99mm x 72mm was cut making sure the grain of the wood was in the correct direction. As for plank widths, they appear wider than the 6” vertical planks, so I chose 9” (5.5mm) in the end. Placing this single sub floor in position it looked fine. The other rooms were done in the same way before finally gluing them in place throughout.

INTERNAL DIMENSIONS

Taking the BRJ chimney breast drawing as an example, the height of the panelling (from floor level) is 3’ 9” (26.5mm) with a 7” (4.5mm) skirting board. There is a thin dado rail butting onto the top of the panelling with what appears to be another one slightly above. Placing this extra rail on my original mock-up, it did look strange. This rail is also missing on the photos I took so I have omitted it altogether.

The widths of the three internal door openings on the birds eye plan view measure at around 3’ 2” (22mm) wide. Having already made the external doors, I chose their widths which are slightly wider at 3’ 4” (23mm).

Chimney breast widths are all 4’ 9” (33.5mm) wide and protrude out by 1’ 0” (7mm) each. All will be made matching the BRJ drawing.

There are thin narrow architraves around each window, door, and ticket office windows. Having some left over external 3mm wide strips already made, I have decided to use them throughout.

The height of the ticket counter (when made) is guesstimated at 2’ 9” from ground level judged by the green and unpainted line on the side of the panelling.

I am not going to add the cornice (not drawn but shown on the photos) below the ceiling level because it is so high up and won't be seen.

Taking a leaf out of Richard Barton’s book with his 7mm LB&SCR Hayling Island Station building, he made his interiors as sub-assemblies, which were painted before fitting which makes perfect

Photo 48

A bird's eye view looking down into the Ticket Office showing the floor in position. The floorboards can clearly be seen. A sub floor has been temporarily fitted in the Booking Office Waiting Room but awaits scribing with planking. Its height is now just below the threshold (1mm down). The gully of the guttering is also clearly seen.

sense. Painting the recessed door panels a two tone colour, along with the architraves, seating etc would be near impossible in situ. Any extra detailing such as tables, chairs, cupboards, and benches etc could be made, painted, and glued in place later. I am not sure about posters/mirrors etc at this stage.

Scale drawings of the rooms were prepared before cutting out any Plastikard. Paper templates were printed off and placed in their respective locations just to see if there were any problems. I only drew one ticket office window/door drawing, drawn from the booking office and waiting room side. Being 'mirror imaged' on the other side (barring a few differences), I just reversed the drawing on the printer.

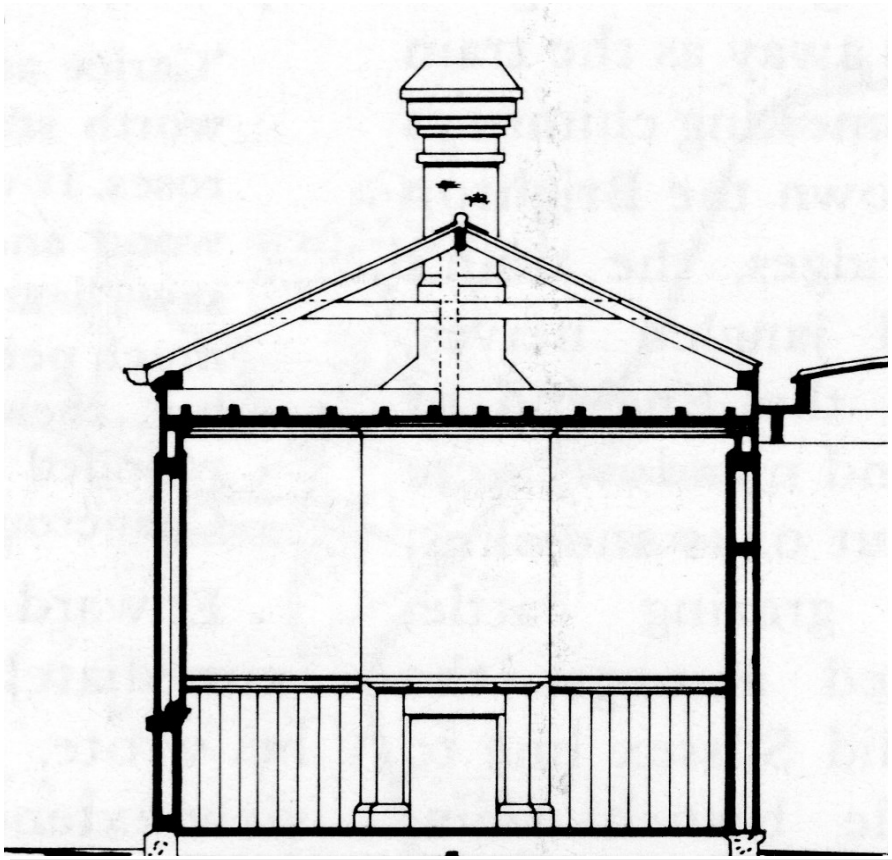
TICKET OFFICE

The two window walls were tackled first. Not wanting the appearance of a too thick internal wall (when viewed from the outside), I chose 1mm (40thou) Plastikard. Both measuring 72mm (w) x 79mm (h), after a bit of filing here and there, they fitted like a glove with no slop from side-to-side. The window openings were cut out matching the openings on the actual building. When fitted in place, the window sashes could be glued in from behind.

First the architraves (3mm wide) were glued on around the window openings. Followed by pre-scribed 6” (3.5mm) vertical panelling strips 26mm (h) onto 20thou Plastikard. The skirting boards are 4.5mm (w) x 40thou with a 1mm wide chamfer on the top edge Mek’d directly over the top the front of the panelling. The last items to make are the window sills (20thou) and 30thou square strips for the dado rail.

The next wall was the chimney breast which was made up as I went along and very hard to explain which proved to be the hardest item to make. 40thou was used again for the wall. For strength, the inside of the chimney breast was braced with more 40thou to stop bowing etc. An opening simulating the grate was cut out. The fireplace and mantelpiece were made from a variety of thicknesses of scrap Plastikard. The same (Stroudley) standardised thicknesses and measurements of Plastikard were used again for the architraves, panelling, and window sills etc.

Lastly the ticket office window wall. The wall was cut out and fitted as for the others. Not wanting to make a separate door, I cheated slightly. The four recessed panels on the door itself were cut out first, then 20thou used for the recessed areas. The architrave was then Mek'd around the outline of the door. Door knobs will be turned brass rod and added later after painting. The tiny ticket window was cut out and the same architrave applied around it. Panelling, skirting board, window sill were done as per the others.



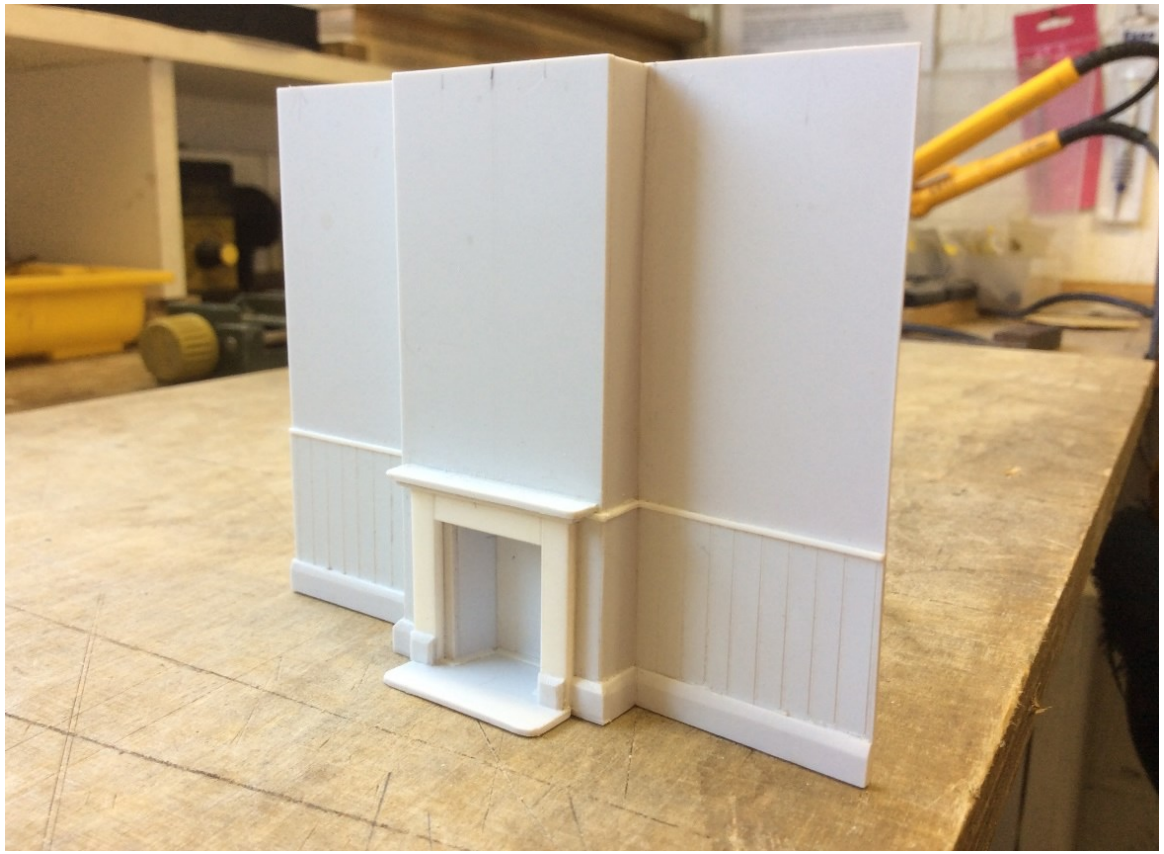
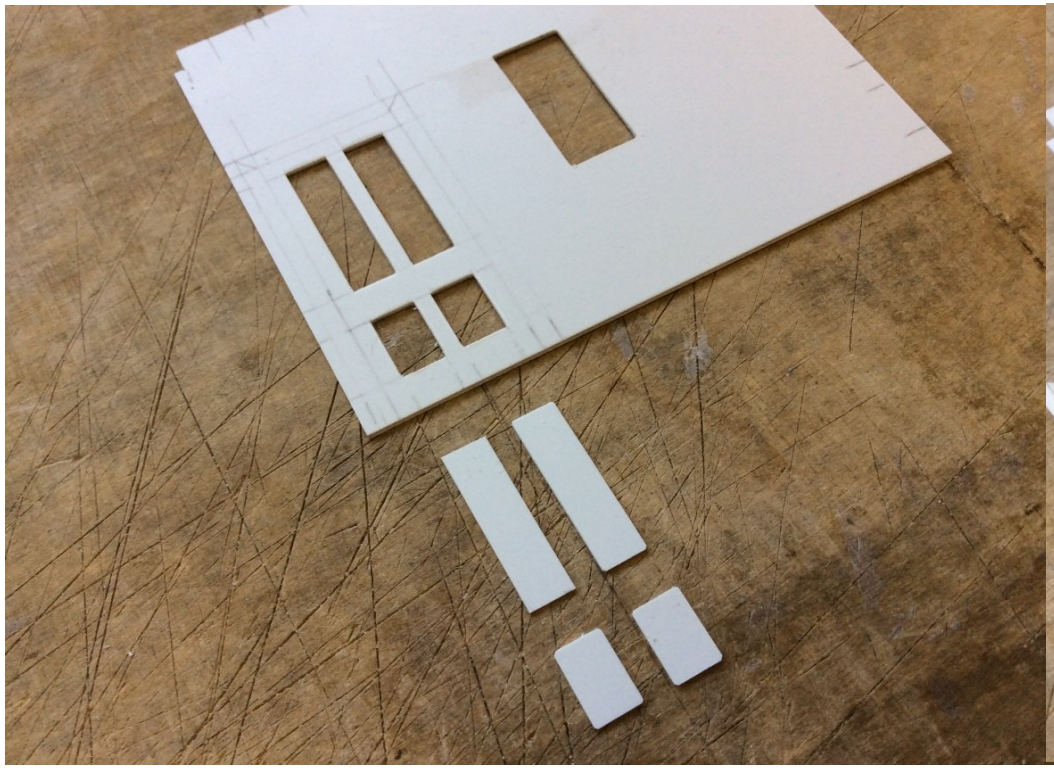


Photo 49

The drawing in BRJ was scanned then printed off to 7mm (15’ 0” wide over sides) scale. The dimensions of it were good enough to model from and pretty much matched my photos. It looked slightly odd though as there were no skirting board lines drawn either side of the chimney breast which I subsequently added. Each of the 16 ‘slot-in’ inner wall panels throughout were calculated from this drawing. The door heights and widths were guesstimated.

The ticket office ‘slot-in’ chimney breast panel was built first. A flat 40thou (1mm) piece of Pastikard was cut out for a snug fit within its location. From various thicknesses of Plastikard (too numerous to mention), the detailing was built up as shown.



Photos 50 and 51

The ticket office door and window panel was cut out from a single piece of 40thou. The door height and widths were estimated, along with the ticket office window, from my photos. After marking out the door in pencil, the four recessed panels were first cut out. The edges were then bevelled off. 20thou inserts were then cut out and Mek'd in place. The external window and door architraves, being near enough the same pattern as for the insides, were utilised. With the aid of a 'T' square, the architraves are perfectly vertical. The remaining panelling was built up as for the chimney breast panel in Photo 49.

Photo 52

The completed ticket office panel finished. Barring some very minor discrepancies, it matches the photographs pretty well. The window design (temporarily fitted at this stage) is my own interpretation of a typical Brighton one. Eventually it will be glazed with a speak hole cut into it. Also at this stage, I did not know which way around the door would hang (to the left or right), hence no doorknob.

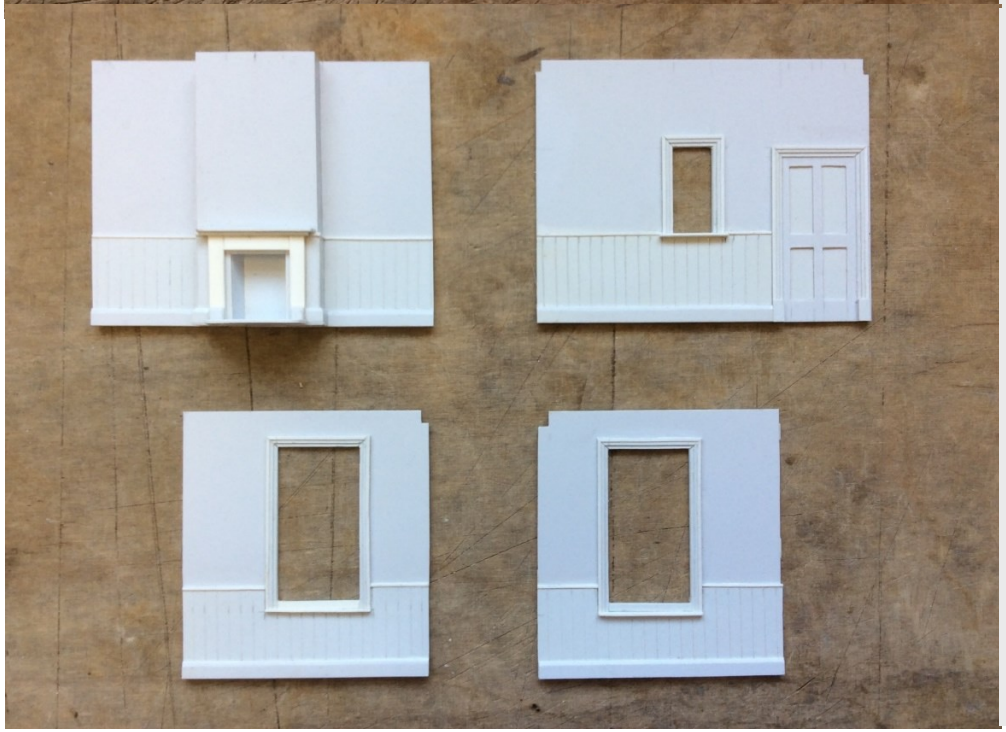


Photo 53

The group of four completed panels for the ticket office and ready for inserting in place. The height of the counter will eventually butt up to the bottom of the windowsills, hiding all or most of the panelling.

Photos 54 and 55

Not the best views taken in a very confined space, but should give you a glimpse of all of the ticket office panels temporarily fitted. Each piece is tailor-made to fit into its specific location for a snug fit. All will be removed for painting. Note, the ticket office window has now been cut out.

BOOKING OFFICE & WAITING ROOM INTERIOR WALLS

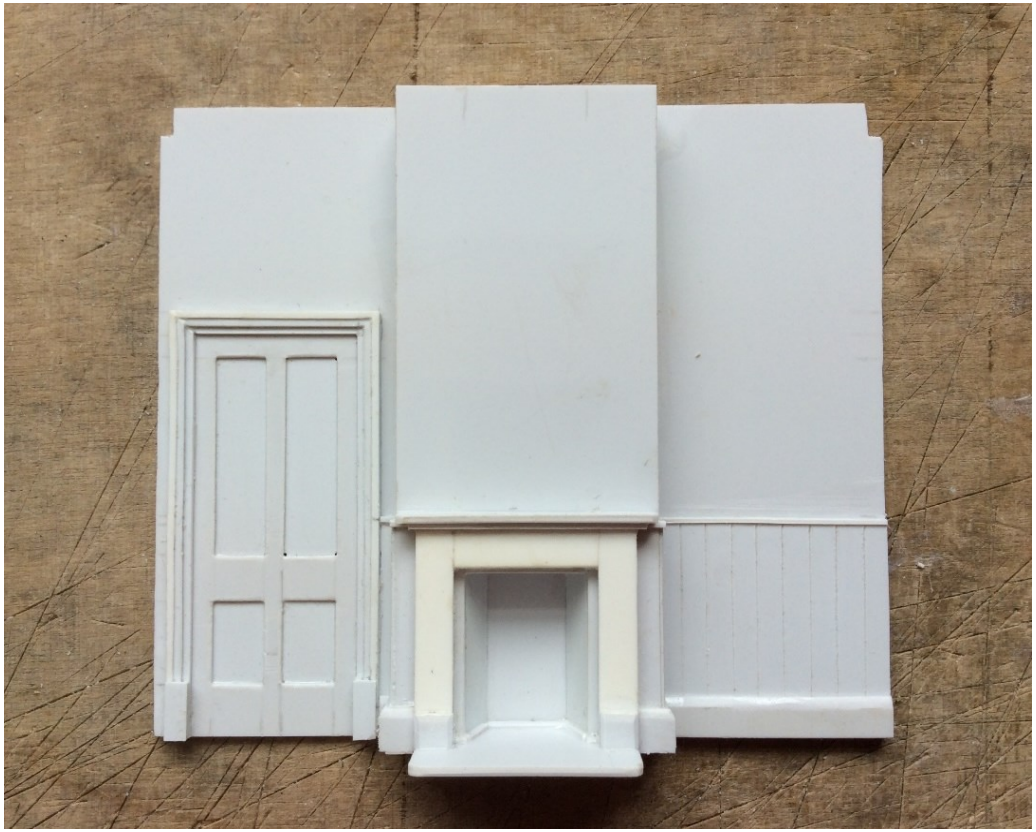
With the ticket office panelling out of the way, the next room along is the booking office and waiting room which is the largest room in the building.

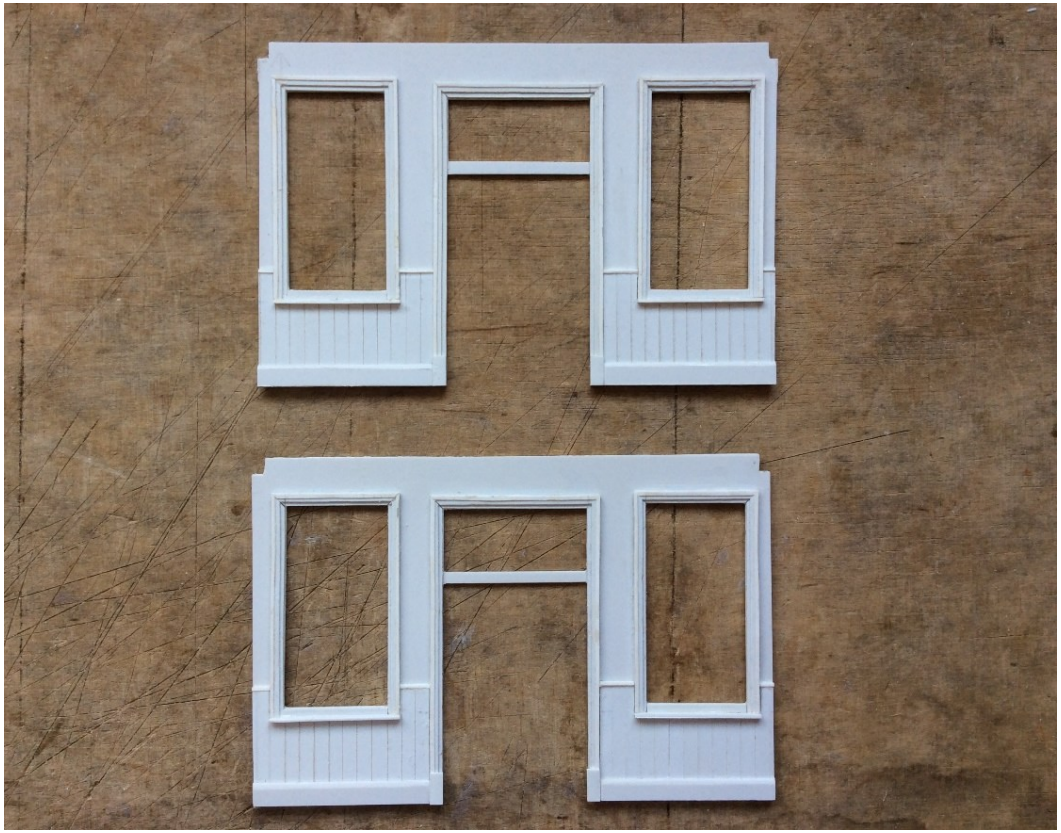
The walls were done in the same way as for the ticket office by first cutting out the blank rectangles for a snug fit within. It was imperative the walls did not move from side to side. The window and door apertures were marked out in pencil (from the outside) then cut and filed out. The window apertures were no problem, but the door apertures required some thought. The door openings had to be cut out slightly more by 0.5mm all around so the door(s) could fit loosely within the hole. I then had to cut out the small ‘borrowed light’ windows above the doors leaving the 3mm wide transoms (or crosspiece) intact. Architraves, skirting boards etc were made and Mek’d in place as for the ticket office.

TICKET OFFICE WINDOW

When I took my photos, I had no idea as to the original design of the ticket office window, as it had been removed long ago and boarded up. Thinking about the LB&SCR’s standardisation, the internet offered a solution. On the Bluebell Railway site, I found several lovely photos showing the ticket office windows from Sheffield Park, Horsted Keynes, and Kingscote. All of them were to the same basic design having a curved top opening set within a wooden panel. The bottom was glass with speak hole and a security gatefold ironwork behind. I thought this would be appropriate for my Fittleworth/Hangleton.

The window openings on both internal walls are 12mm (w) x 26mm (h) which match the one cut out in the main wall itself. On paper, it was trial and error getting the correct curvature of the window and the position of the middle bar. When happy, it was carefully cut out of 30thou Plastikard. To me, it looks and matches the Bluebell ones.





Photos 56 and 57

Two views of the booking office & waiting room panels. Photo 55 shows the chimney breast with the door, that gains access to the ladies' waiting room. The door has yet to have a doorknob fitted. Whilst Photo 56 shows two mirror imaged double door panels. One from the entrance, the other leading to the platform.

The last item to make in this room was the combined chimney breast wall with door (on the left). The door, by the way, gains access to the Ladies' waiting room. Because the door/architraves are very slightly wider than they should be, the chimney breast has had to be moved off centre (to the right) by 3mm. It is not noticeable at all when even with the roof removed.

Photos 58 and 59

Two views showing the booking office & waiting room’s panels temporarily fitted. For the camera, I placed the (non-opening) double doors in position to check clearances etc. Note the planked floor which has already been glued in along with the guttering on the left. The gully is very noticeable as noted by the shadow. There will not be any guttering on the right hand i.e. canopy side.

Photos 60 and 61

The Ladies' waiting room window panels and Ladies' WC door panel. Not shown is the chimney breast panel for this room which is an obvious mirror image to the one in the booking office & waiting room shown in Photo 55. Note the use of different coloured scrap Plastikard used in the recessed panels on the door.

LADIES' WAITING ROOM

The first wall to make was the chimney breast with door, which is mirror imaged to the one in the general waiting room the other side. Again, the chimney was moved off centre (to the left this time) by 3mm which again is not noticeable. Two window walls were then made which are exactly the same. The last item to make was the wall with a door that gains entry into the Ladies' WC.

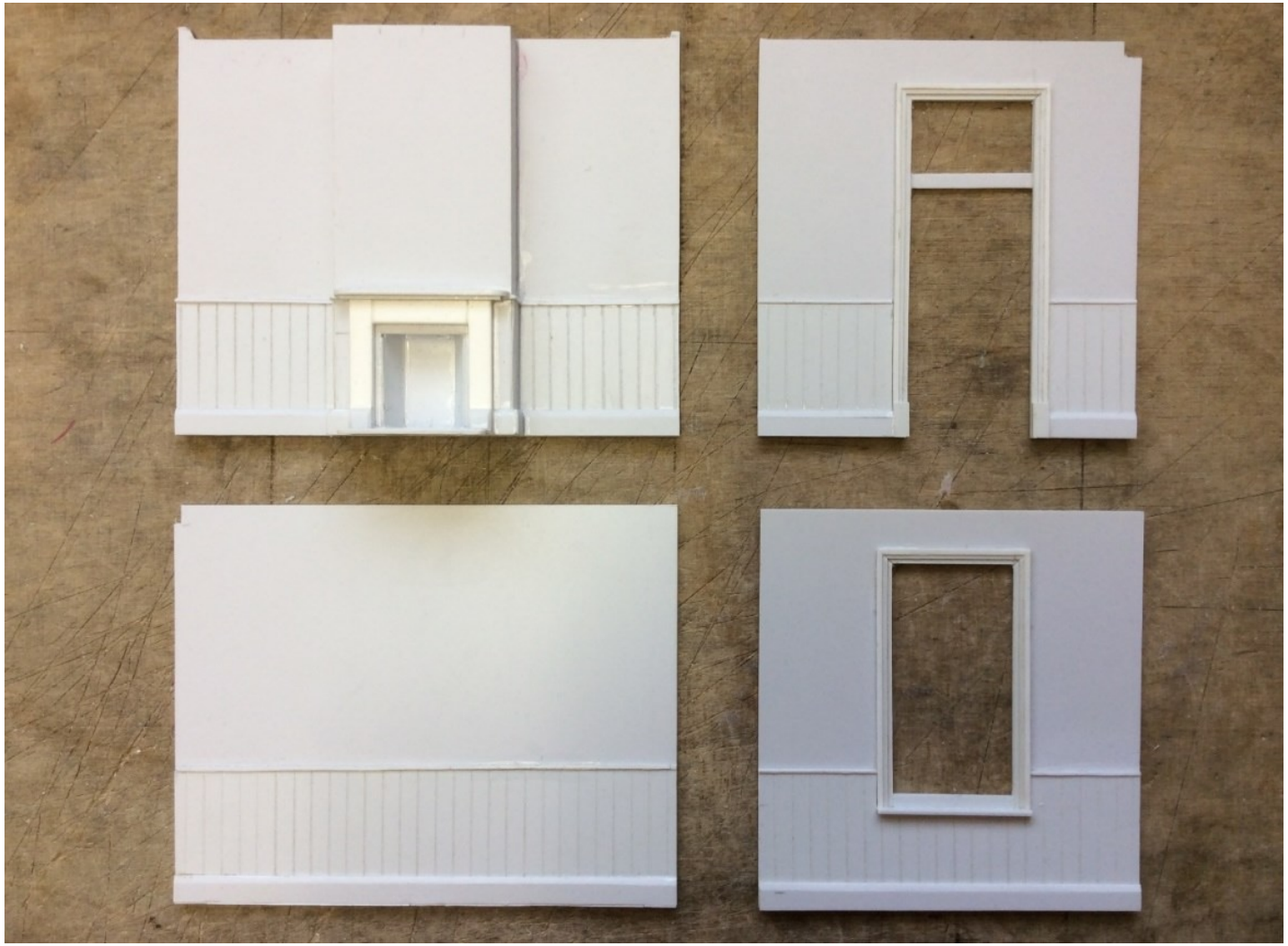


Photo 62

The last group of four panels for the porters' & lamp room.

LADIES' WC and COAL STORE

These two rooms will not be fitted out and left plain inside. The WC has a frosted window on the approach roadside and would be totally hidden anyway. The coal store door (underneath the platform canopy) is fully panelled ex-cept for the tiny 9mm x19mm borrowed light window above. I thought the inside of this tiny room would also not be visible so it will be left plain inside.

PORTERS & LAMP ROOM

The chimney breast wall, which mirrors the one in the ticket office, was made first. Also made was the window, door, and plain wall (x1 of each). The latter is behind the Ladies' WC and coal store walls.

INTERNAL FIXTURES & FITTINGS

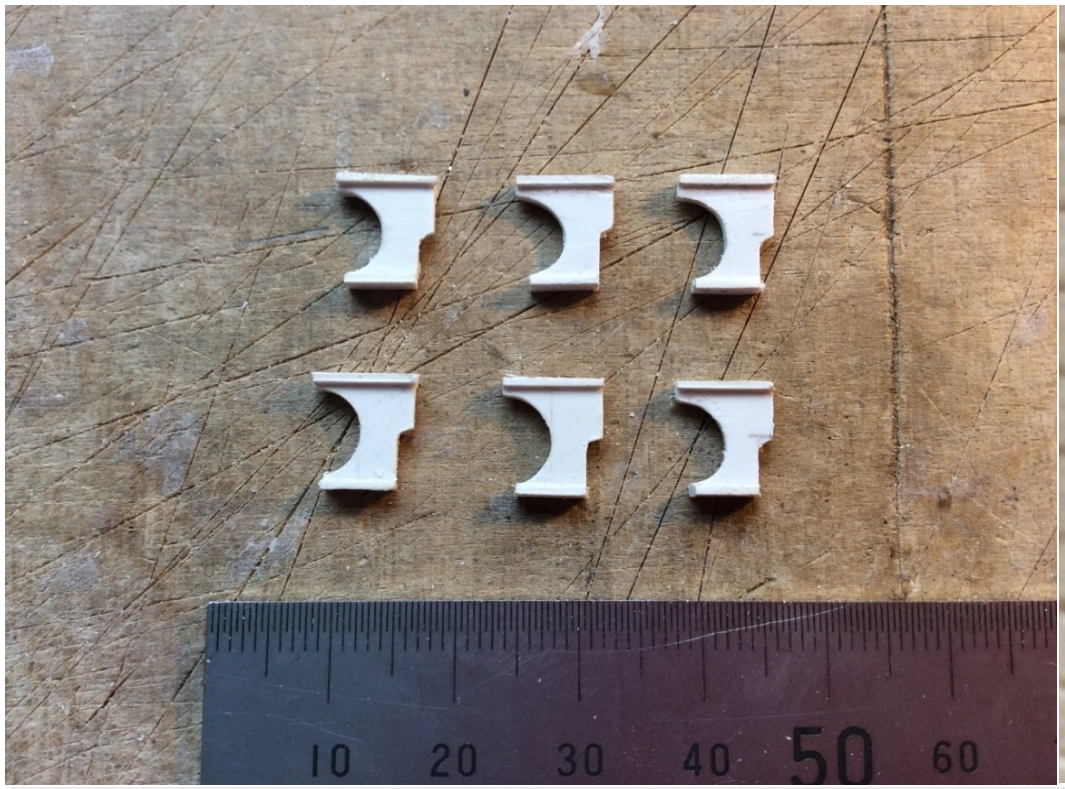
Now that all of the inside walls have finally been made (as yet none of them have been painted), several rooms require counters, seating, cupboards and shelves etc. The interior photos I took of the real Fittleworth Station were completely bare and stripped out barring a small safe. I looked on the internet for inspiration of ticket offices, but nothing tangible jumped out to help me. Then by pure chance whilst I was watching a railway related programme on the TV, the programme's narrator was inside a derelict (M&GNJR) railway goods office. Inside was a long counter with cupboards, drawers underneath with several open voids for legs etc. This, I thought, would be an ideal starting point. So several scale drawings were made. As for the number of cupboards and drawers that existed, this is pure guess work on my part and could be totally wrong. To me they seemed to match the design as seen on screen.

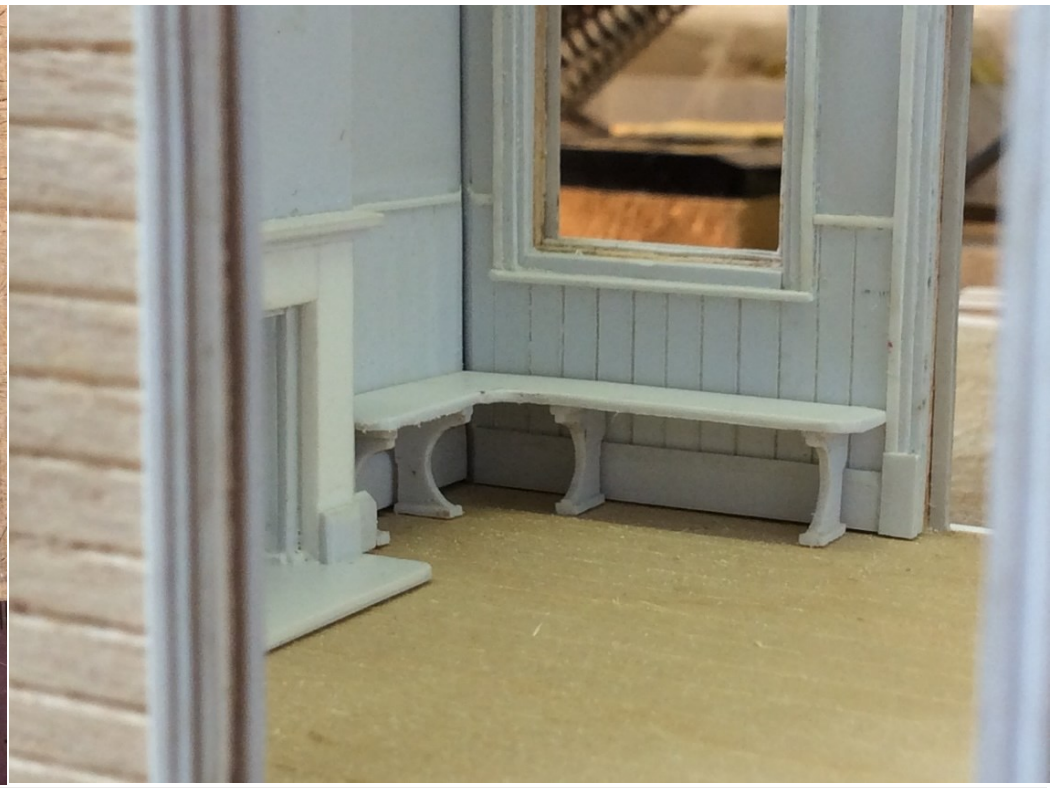
TICKET OFFICE

The bird's eye view drawing revealed it had a large, one piece 'L' shaped counter. The area where the clerk dispensed tickets etc has a small circular cut out space which is a nice feature. It was cut out from 40thou Plastikard and positioned for a snug fit (N.B. unless otherwise stated, all of the internal fixtures are made from 40thou Plastikard). The cut out required some tweaking so that it was in-line with the small window. The height of the counter would not have protruded over the bottom of the window sill, so the overall height throughout the building was set at 2' 9" (19mm). The cupboards, drawers, and side panels were cut to 18mm high with 10thou drawers and doors Mek'd on. They should be flush but I wanted some relief/shadow showing they are there.

Photo 63

Internal fittings. From the bird’s eye drawing, it clearly shows the ‘L’ shaped ticket office work area which was copied and cut from a piece of 40thou Plastikard. The overall height from my photos taken of the real Fittleworth suggest the tops almost touch the bottom of the windowsill. The design of the drawers are purely speculative and not at all accurate, but I hope I’ve captured what they may have looked like. Again, they were built up from scrap Plastikard with 10thou drawer and cupboard door overlays. Note the gap underneath the curved cut out for the legs of the ticket office staff.





Photos 64 and 65

From photos and information given to me via Andrew Garrood (inside of Pulborough waiting room) and Richard Barton (inside Grange Road booking office & waiting room) both clearly showed what the seat benches looked like. The vertical supports from both have a curved front area with top and bottom side strips on both sides. Thinking standardisation, I thought the real Fittleworth/Hangleton station would be the same. The overall height was guesstimated. Each were built up from various thicknesses and scraps of Plastikard.

PORTERS & LAMP ROOM

The drawing shows this room had a long slate shelf and two lockers. Thinking the smaller of the two lockers would be a bit overpowering, I decided to omit it altogether and make the slate shelf ‘L’ shaped. The shelf could then butt up against the chimney breast. After making the cupboards and drawers, it looked fine to me.

The fitted locker caused me problems in deciding what it looked like and what height it was. The curved area on the end was also bugging me. I decided on an overall height of 6’ 9” (47mm) with two doors. Again, it was trial and error getting a snug fit within the space available in between the chimney breast, door, panelling and skirting boards. When I fitted on the top of the locker, I realised the curve on the drawing was the top itself.

BOOKING OFFICE & WAITING ROOM

There are two seats (benches) in this room. One rectangular and one ‘L’ shaped. The tops had to be cut for a precise fit in their respective locations. The overall height of both I guesstimated at 1’ 6” (10.5mm). It was thanks to Richard Barton who kindly sent me a lovely photo of inside of Grange Road station (LB&SCR). Clearly shown was a glimpse of an original seat. It revealed a supporting leg cut from a single piece of wood with a (transitional) curved front. Either side it had battening strips (30thou) which would have secured the seat proper and to the floor. After preparing another drawing, I cut out loads of supports of various curvatures which took me ages. Choosing the best one, battens were Mek’d on the sides. When completed, they were strategically spaced out on the bottom of the seats and Mek’d in place.

Photos 66

The interior of the porters' & lamps room.

On the bird's eye drawing, a locker is clearly marked butting up to the chimney breast and sidewall. This was made first. Again, I did not know what it looked like, so I improvised again. I envisaged it just had a pair of long doors.

A long slate shelf (again clearly marked on the drawing) ran underneath the window. A separate standalone locker was sandwiched in which butted up to the chimney breast. Modelling the locker (not photographed) it did look very tall and thin and slightly too narrow which did not look quite right. In the end I omitted it completely and plumped for a continuous 'L' shaped shelf with drawers and a cupboard below.

Just visible in the foreground are the Ladies' WC (on the left) and coal store (on the right) rooms which are devoid of panelling. This is because they are completely hidden from view.

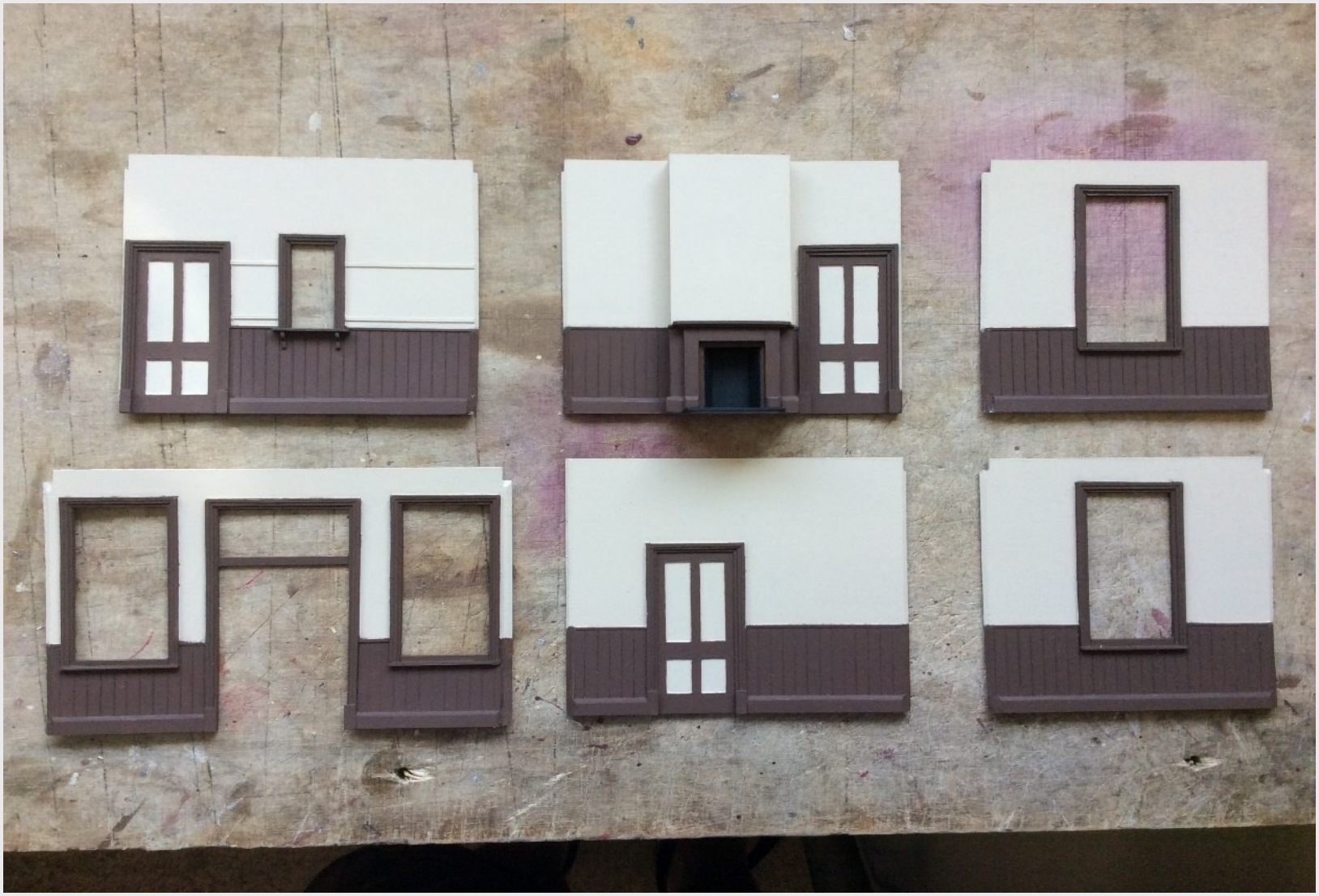


Photo 67

A selected group of pre painted panels ready for gluing in position. Each one was first lightly spayed with Halford's grey primer. Having no idea as to the interior colour scheme, I took a leaf out of Richard Barton`s book (see his Hayling Island article in LB&SCR Modellers Digest Issue No.11, pages 107-115) of light beige/cream for the upper walls and a dark brown for the panelling and architraves etc. Experimenting with different colour combinations on scraps of Plastikard, I plumped for Humbrol 121 – matt pale stone and Revel No.84 – matt leather brown. The grate area of each chimney were painted Humbrol No.33 – matt black.

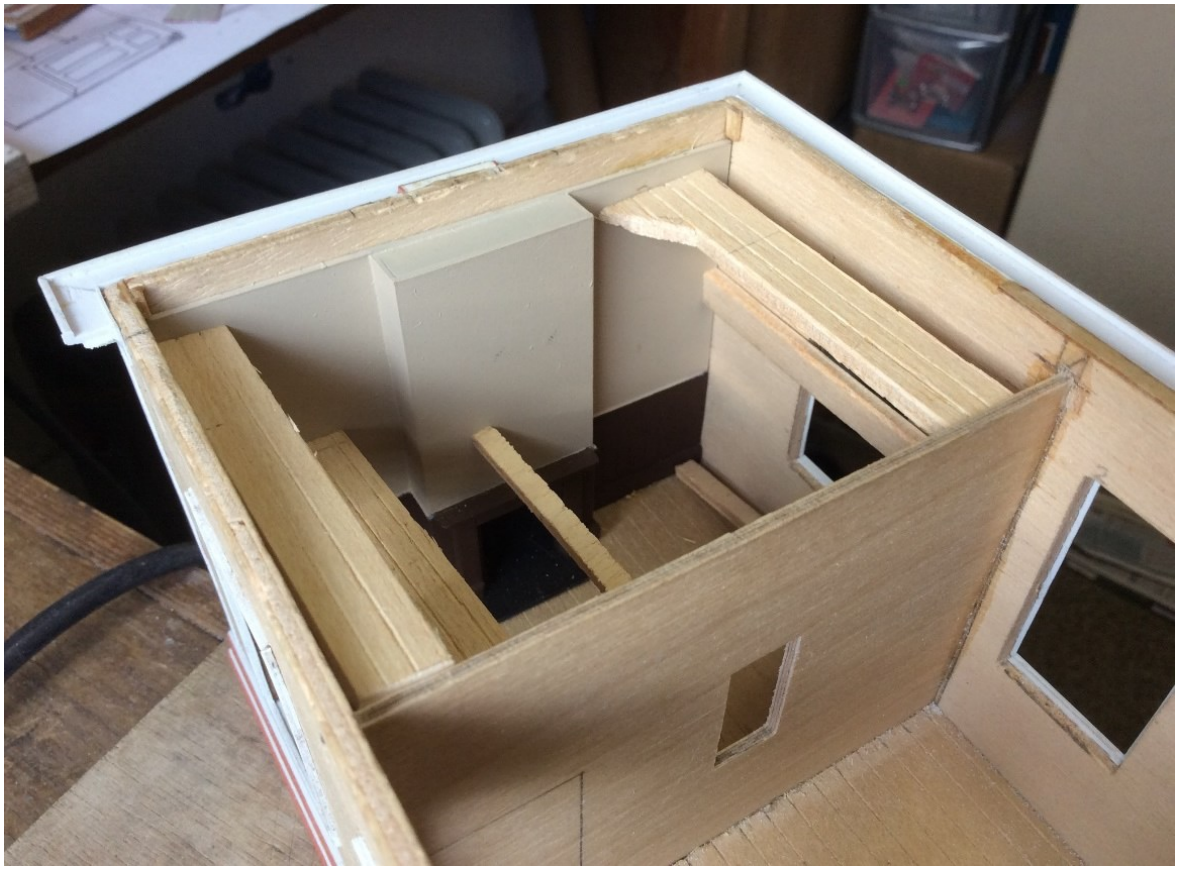


Photo 68

Evo-Stick contact adhesive was used to secure the panels to the wooden carcass. To hold each one in place whilst drying, wooden off cut ‘props’ were used, keeping each one perfectly flat. It was a slow process taking many days securing each one in place one at a time. The following photos will show the end result.

LADIES’ WAITING ROOM

There are no seats drawn in this room. Presumably there would have been a large table with small movable chairs around it? Making these would not be a problem, but placing two finished benches from the booking office inside the room, they seemed plausible, so two more ‘L’ shaped ones were made to fit up to the WC door.

BOOKING OFFICE & WAITING ROOM

On either side of the ticket office window and the chimney breast wall, there are two horizontal battens positioned roughly 2’ 6” (17.5mm) apart. These battens are for the location of timetables, general noticeboards, mirrors, and posters etc. Small ‘L’ shaped brackets would be used to secure them directly onto the battens and not the walls themselves. These have since been added with 1mm (w) x 20thou Plastikard strips.

Photos 69 & 70

As mentioned in the main text, the doorknobs were turned from 3/16th (1.19mm) diameter brass rod. Each knob was turned down to a 1mm diameter shaft rounding off the handle. Having previously predrilled where the knobs would be located, each hole was drilled again all the way through the door to the other side. The door shown leads into the Ladies' waiting room from the booking office and waiting room.

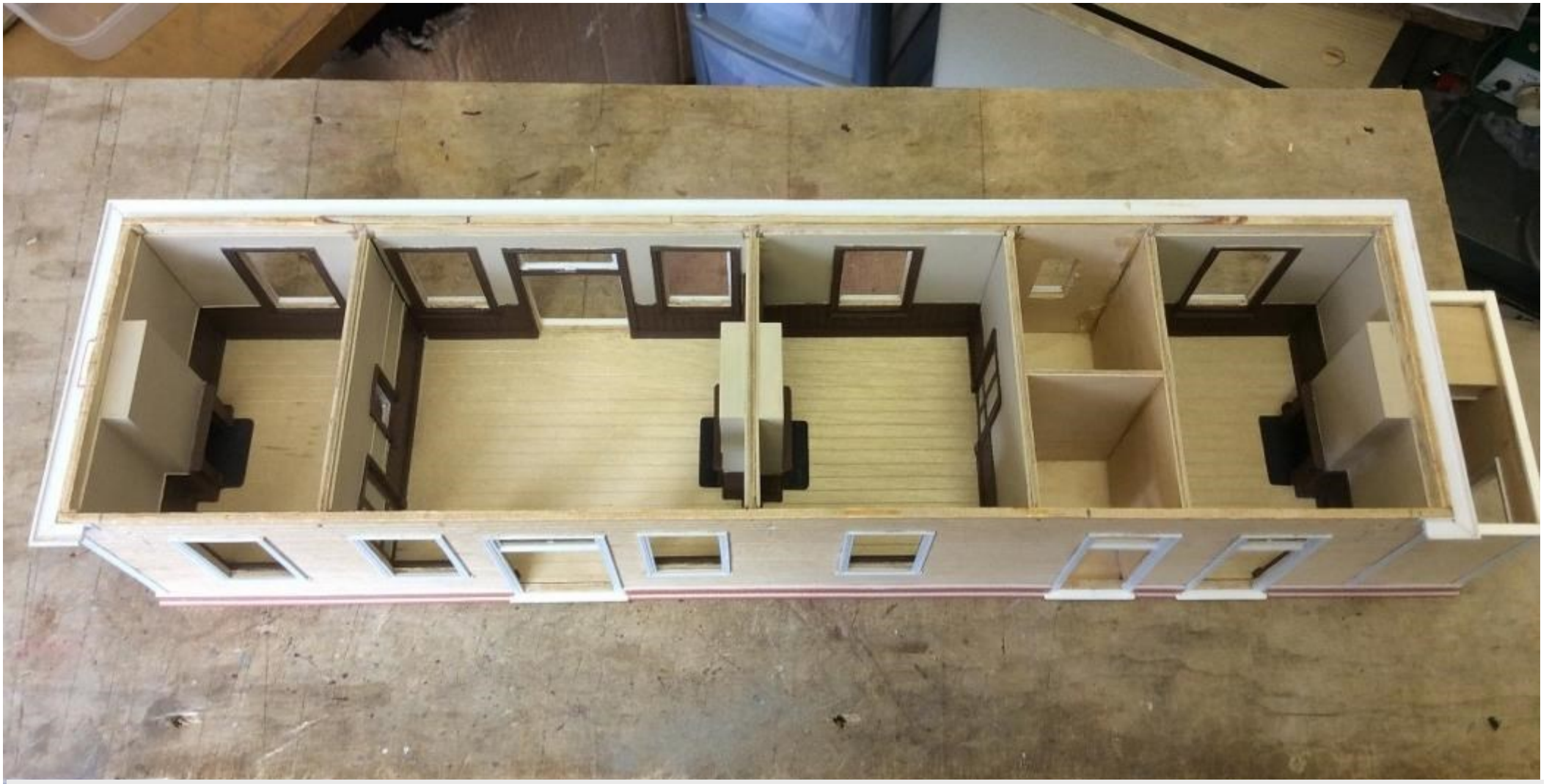


Photo 71

All of the inner panels have now been successfully glued in place. Some of the panels required slight filing of the edges for a snug fit. At this early stage the seating, desks and cupboards etc have yet to be fitted. Notice the two rooms devoid of detailing. The top one is the Ladies' WC, whilst the bottom is the lamp room. As both are completely hidden, I did not see the point in making the panels for them.

Photo 72

After masking (low tack masking tape) around all of the doors, windows and guttering etc, a start was made on painting the first coats of the LB&SCR Maroon colour (Railmatch 650 – Midland Railway red). Deciding not to prime the white Plastikard fearing a loss of detailing in the architraves, it took three/four thin coats of paint before the white disappeared. In hindsight, I should have used Halfords' red oxide primer.

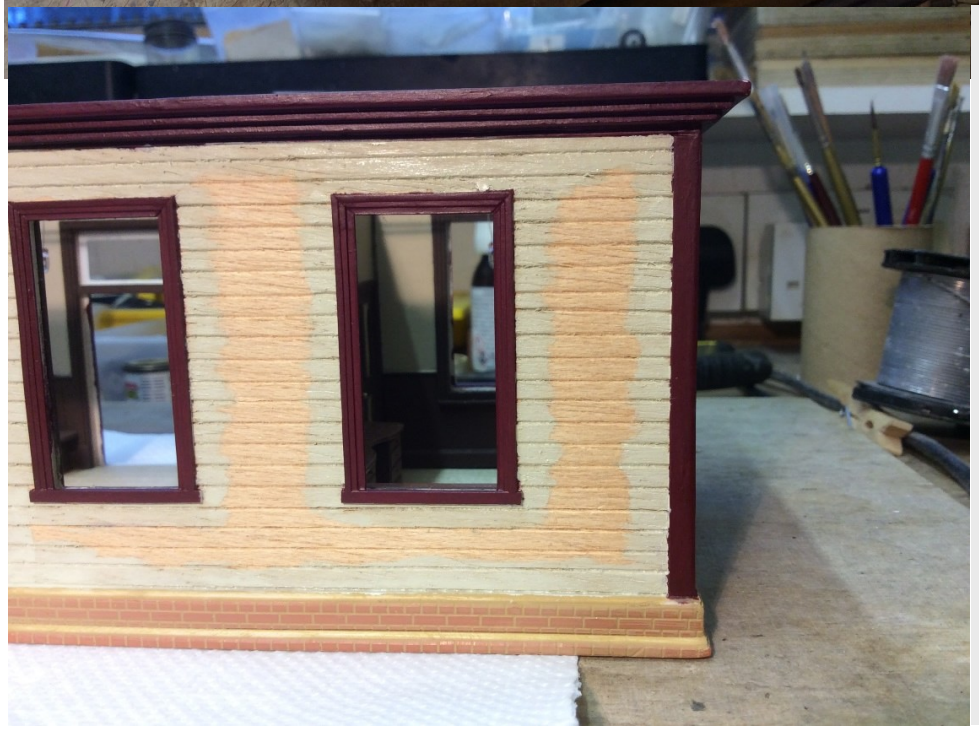
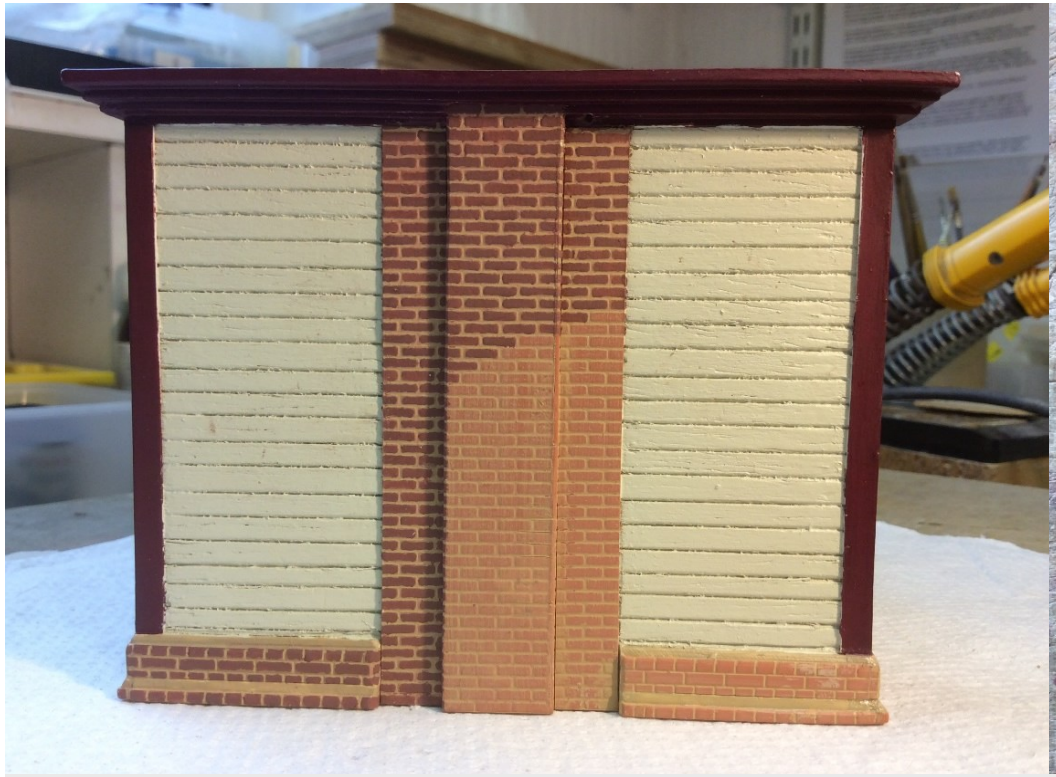


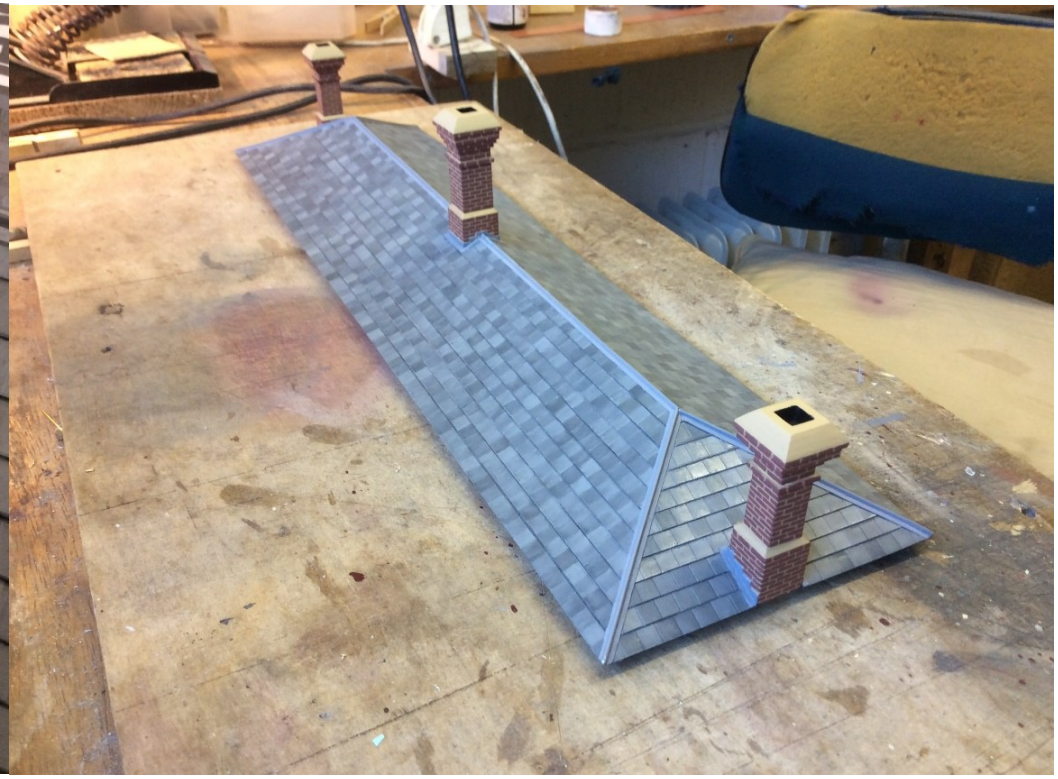
Photo 73

Satisfied with the red paintwork, all of the masking tape was removed. Any seepage would be covered by the main body colour of Off White (Railmatch No.203 Rail White) which I have just started to apply. Being wood the paint penetrates straight into the grain so it will take many coverings again. A thin wash a mortar colour (Humbrol 94 - Brown/Yellow) was applied over the brickwork and wiped off before it dried.



Photos 74 & 75

After consecutive coats of Buildings Off White, the brickwork has been started. Using my very finest 000 brush and under a lens, Humbrol No.113 Rust was applied directly onto the bricks. With each brick raised beyond the mortar indentation lines, it was relatively easy to accomplish. Any seepage of the brick colour was touched up later with the mortar coloured paint. The chimneys were done in the same way before final fitting onto the roof. The two photos were taken in different light conditions giving the appearance they are completely different colours which they are not.



Photos 76 & 77

The roof was first given a coat of Halfords Grey Primer. To highlight the front edges of the slates, a thin wash of No.33 (Matt Black) was first applied. As mentioned in the main text, six Humbrol coloured greys were used No.27 (Light Grey), 64 (Sea Grey), 79 (Blue Grey), 106 (Matt Ocean Grey), 145 (Medium Grey), and 224 (Dark Slate Grey) giving many shades and variations in greys. Although taking me many days to accomplish, it was a very therapeutic exercise in patience. The three chimneys have also been glued in place using contact wood adhesive. The lead flashing was the original Halford Grey Primer colour.

CANOPY

The other area of the canopy concerns the underside which has a flat wooden base, which up until now had been left bare and devoid of any detailing. Thinking a coat of light grey paint would suffice, deep down it was screaming out for a latticework of timber beams as on the old canopy. Because the base is very slightly lower down on the new canopy (by 3mm), any battens or beams had to be quite shallow in profile. Square 1/8” (3mm) wood strips seemed ideal. As a bonus, they matched the dimensions of the columns. Not wanting to make a complete howler if they did not look correct, as an experiment the ends of the strips were ‘spot glued’ with small dabs of Superglue. If they looked bad or totally wrong, they could easily be removed. The beams either side of each column were done first. To my surprise they looked perfectly fine and prototypical. I decided the right angle beams should be located adjacent to each column. One was done first followed by another. Again, to me they looked fine, so the rest were all done.

DOWNPIPES

Looking again at the various photos of the platform side of the building, there are three visible downpipes coming down from the rear of canopy via a long (hidden) trough. One is positioned to the left of the ticket office window, one mid-way in between the booking office and Ladies’ waiting room windows, and one to the right of the porters/lamp room door. There is single downpipe on the station approach roadside in between the porters/lamp room and Ladies’ WC windows. The pipes have been made using 1/16” (1.57mm) diameter solid brass rod (KS162) bent accordingly. To secure the pipes to the walls homemade brackets were formed from 1.5mm x 0.3mm n/s strips.

Photo 78

A view of the finished canopy using the same colours as use on the main building. The only difference being the obvious lead roof which was painted in Humbrol No.106 (Matt Ocean Grey). Again, using a 000 brush, the very thin beading strip took a very steady hand. Not shown is the underside which has been left unpainted for now. I seem to prefer the natural wood colour from which the canopy was constructed. The columns have been painted as shown in a couple of rare photos I have found which look quite a nice feature. Note also the two small downpipes from the guttering which have been highlighted.

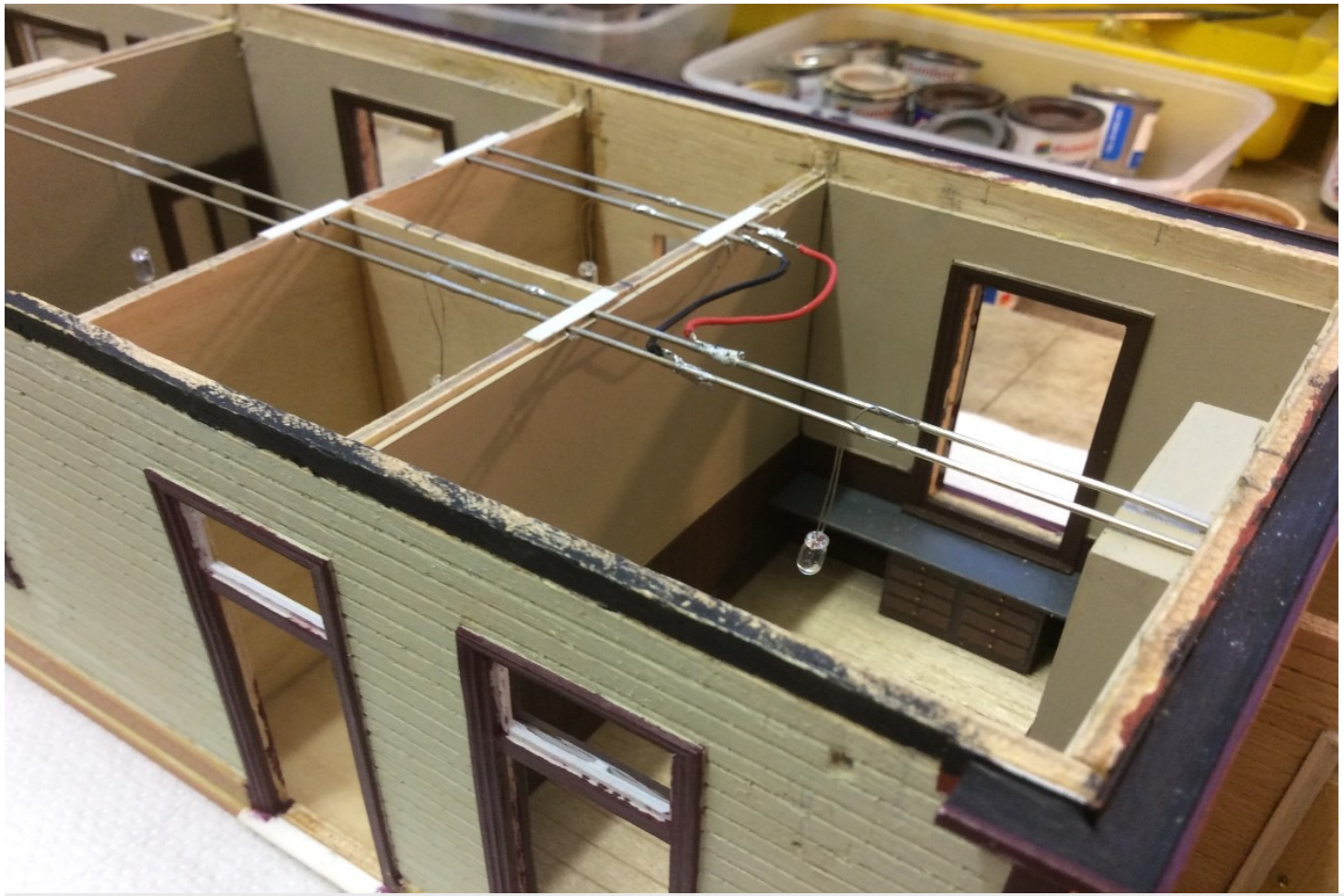


Photo 79 & 80

Thinking ahead if the building was installed on an indoor layout, I thought about lighting the rooms. In a successful trial, a single bulb gave the room an authentic orange glow. Two 0.6mm n/s rods were installed through the whole length of the building. Each was secured by a narrow strip of Plastikard. The bare wired bulbs could then soldered onto them in any position within a room for best results. The feed wires from the rods are concealed in the coal store (behind the left-hand door in the foreground) and pass through a hole in the base to the transformer.

Photo 81

On the real Fittleworth station, there were just two hang down gas lanterns underneath the canopy which must have been very dark and dingy on a cold foggy night. Having plenty of Dave Suttons (www.sanddmodels.co.uk) LB&SCR platform lamps (GL18), I used them. The lanterns were constructed as per the instructions and those who have made them before will confirm that they are very difficult and fiddly. When painted, the only way to get the bulbs in was to drill a hole in the bottom of the square base. Two holes were then drilled out on the top for the bare feed wires to pass through. To stop shorting, one hole had a small diameter insulating plastic tube glued in position. With the bulb inserted, the live wire was soldered to the top. If the bulb were ever to blow, it can be easily removed and replaced.

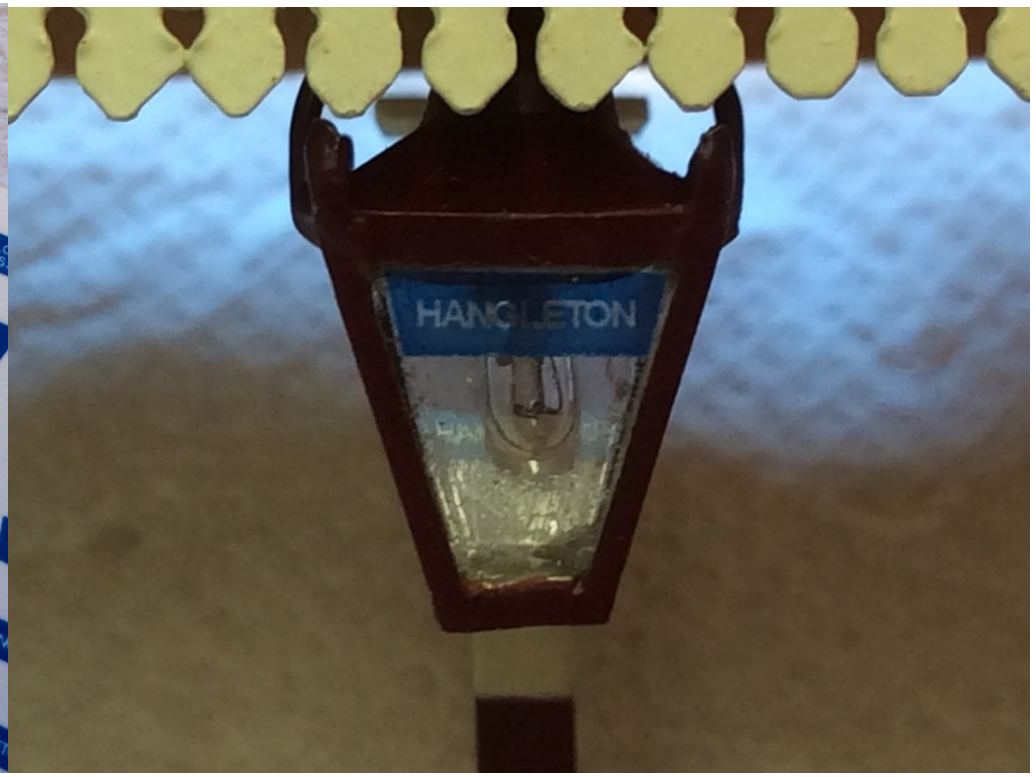


Photo 82 & 83

John Ritter in Australia mentioned getting some bespoke station lantern transfers made. He wanted some for his Scale 7 LB&SCR Hadlow Cross layout (based on the buildings on the Cuckoo line) and I thought it would be a good idea for Hangleton. Ian MacCormac was contacted and agreed. From my initial artwork, he produced a set of waterslide transfers which look great. After some teething troubles with reprints, the ones shown were applied. Being susceptible to scratches and lifting of the edges etc, I covered them with a thin clear varnish.

Return to contents page

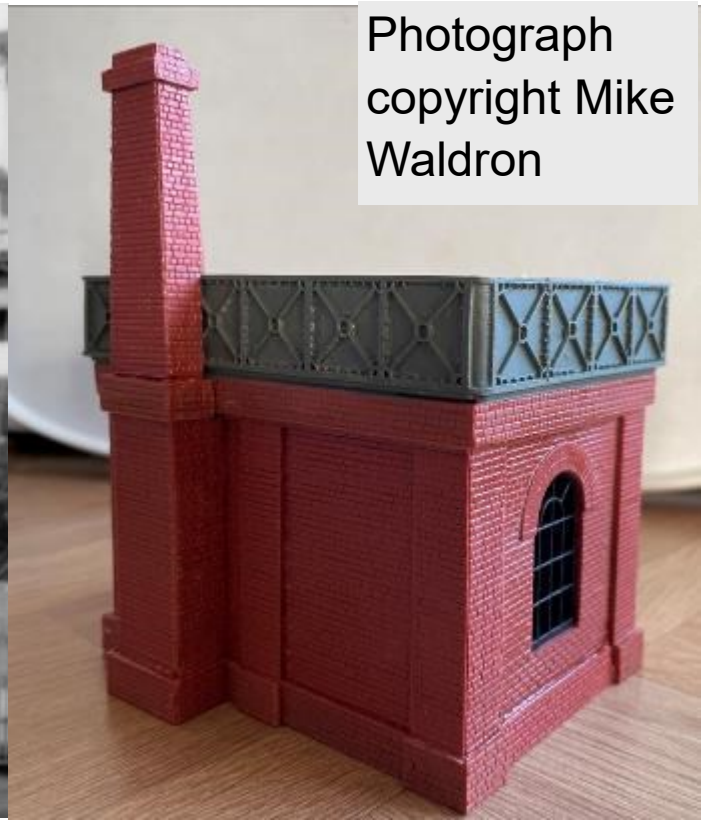
Brighton Circle Events

VB 10 on line and Patcham Meeting

The tenth in the series of Brighton Circle on-line meetings took place on 30th March. Zoom meetings were introduced during lockdown and were nicknamed “Virtual Blatchingtons”, in deference to the venue of our traditional South Coast meeting. The sessions have developed a useful role of their own and, since Covid, continue as occasional events.

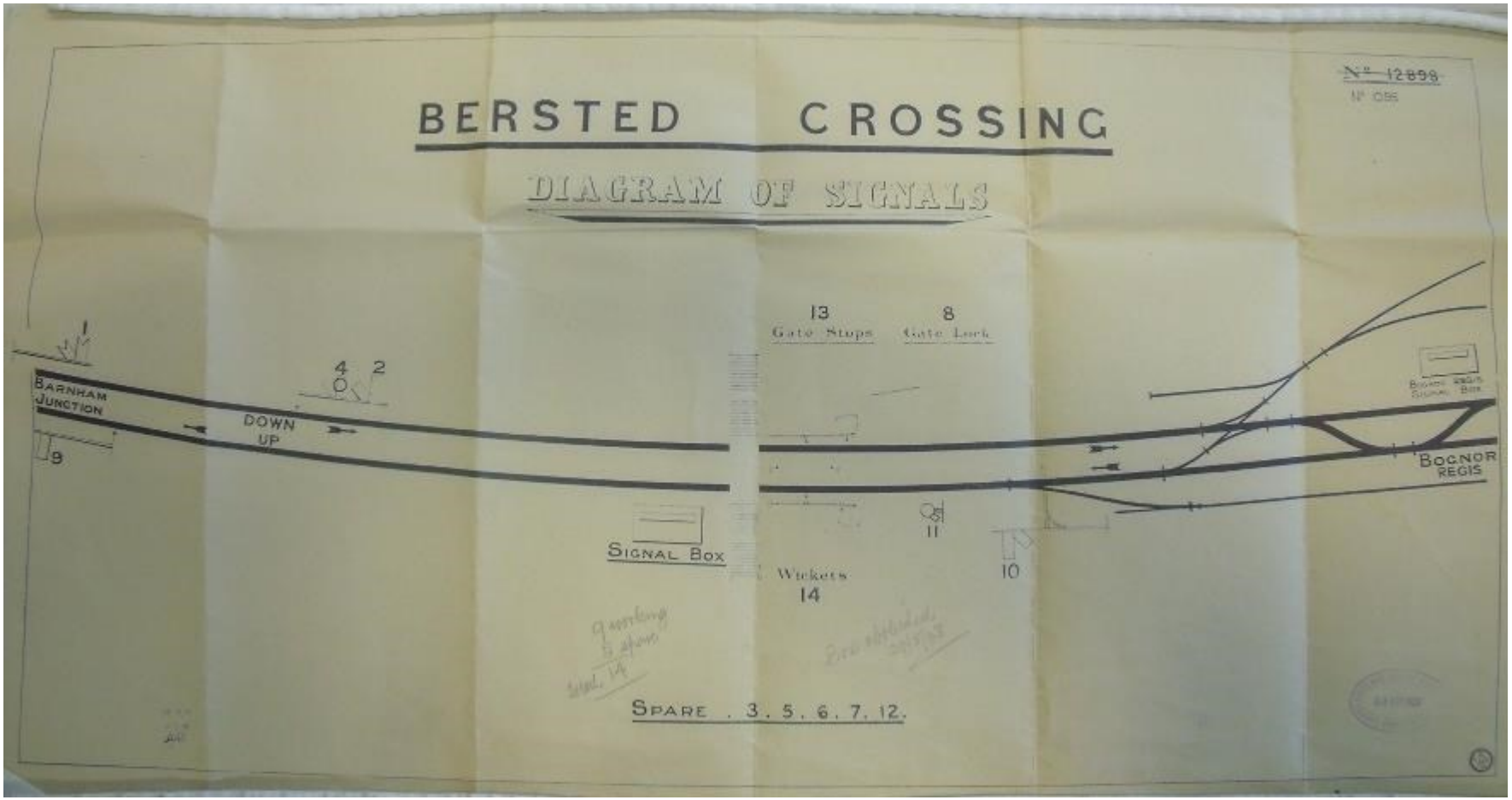
Mike Waldron presented progress on his layout based on Littlehampton. The current work focussed on the water tower for which he has been researching typical Brighton structures.

Three Bridges water tank, as prototype inspiration, with Mike’s model under construction.

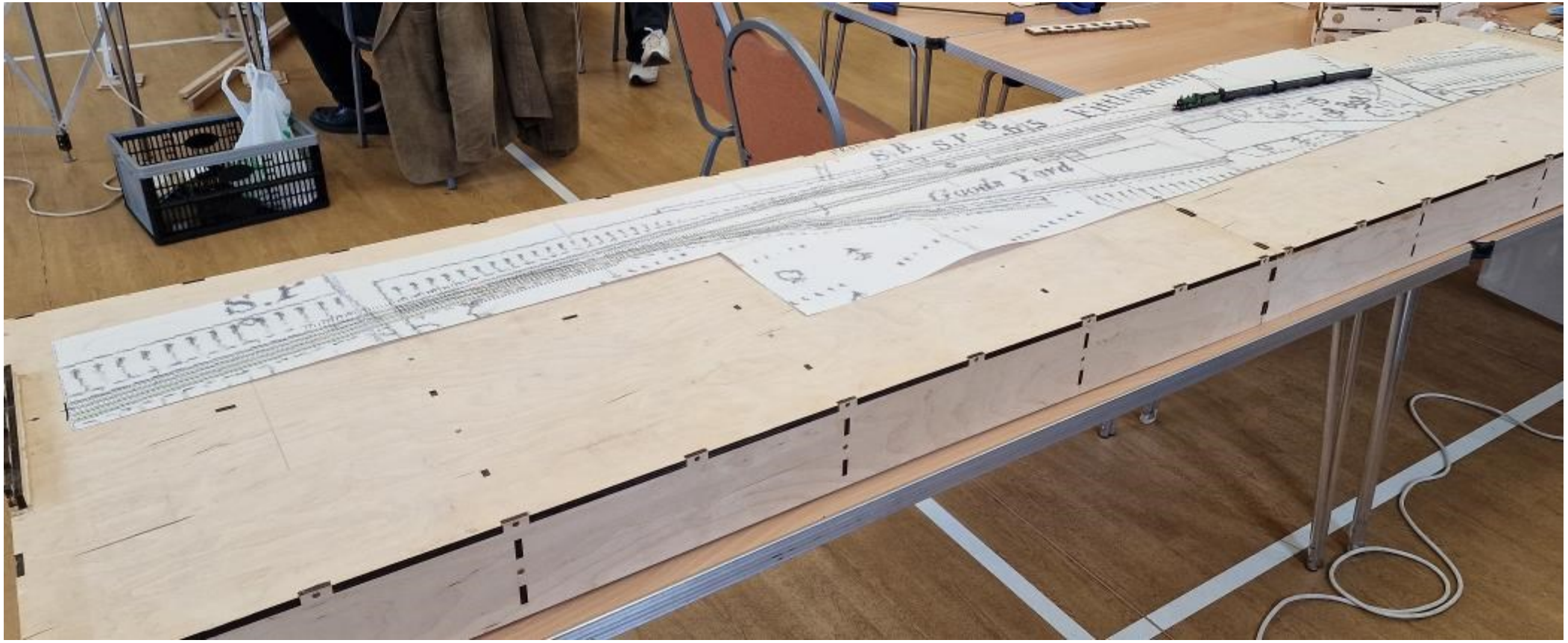


Photograph copyright Mike Waldron

Graham Bowring described a large collection of signal box diagrams for Southern lines called the "Croydon Collection" held by the NRM. The documents held for each signal box vary (and usually you have to book out and look at the documents to find out what there is), but some are pre-BR and many are of interest to researchers and modellers. A short presentation was given showing seven locations around the LBSC network and describing the features shown. This example, of Bersted Crossing box at Bognor, shows that all its signals except no 9 were slotted with the main Station box. That is, the arm was controlled by both signal boxes and both had to reverse his lever before the signal would lower to all-clear. The diagram is date stamped 26/11/1938 with some hand written notes including one stating that it was abolished on 29/5/1938.



Dave Searle gave a talk about the history of Fittleworth and the beginnings of the Epsom & Ewell MRC's new 2mmFS layout of it.



To complement David Searle's account of Fittleworth, and his current project to create a 2mm model of the station, Nick Holliday presented an account of the construction of his 4mm version. This was built, with his daughter Phyllida's assistance, for the Scalefour Society's 1883 Challenge, which culminated in the layout being exhibited at the 2005 Scaleforum. The constraints of the competition (a total area of 18.83 square feet) meant that some compression in length was was required, but otherwise everything, apart from the track, was scratch-built to scale.

Photo copyright Chris Nevard, taken at the Guildford Astolat show in 2007.

The meeting at Patcham took place on 22 April 2023. In addition to the usual display of artefacts and models of various scales, Dave Hammersley of Roxey Mouldings showed the progress on reintroducing the former Albion range of loco kits and Gary Kemp of Eastbourne Models and Collectors Centre showed some of the 3D printed rolling stock that he is developing.

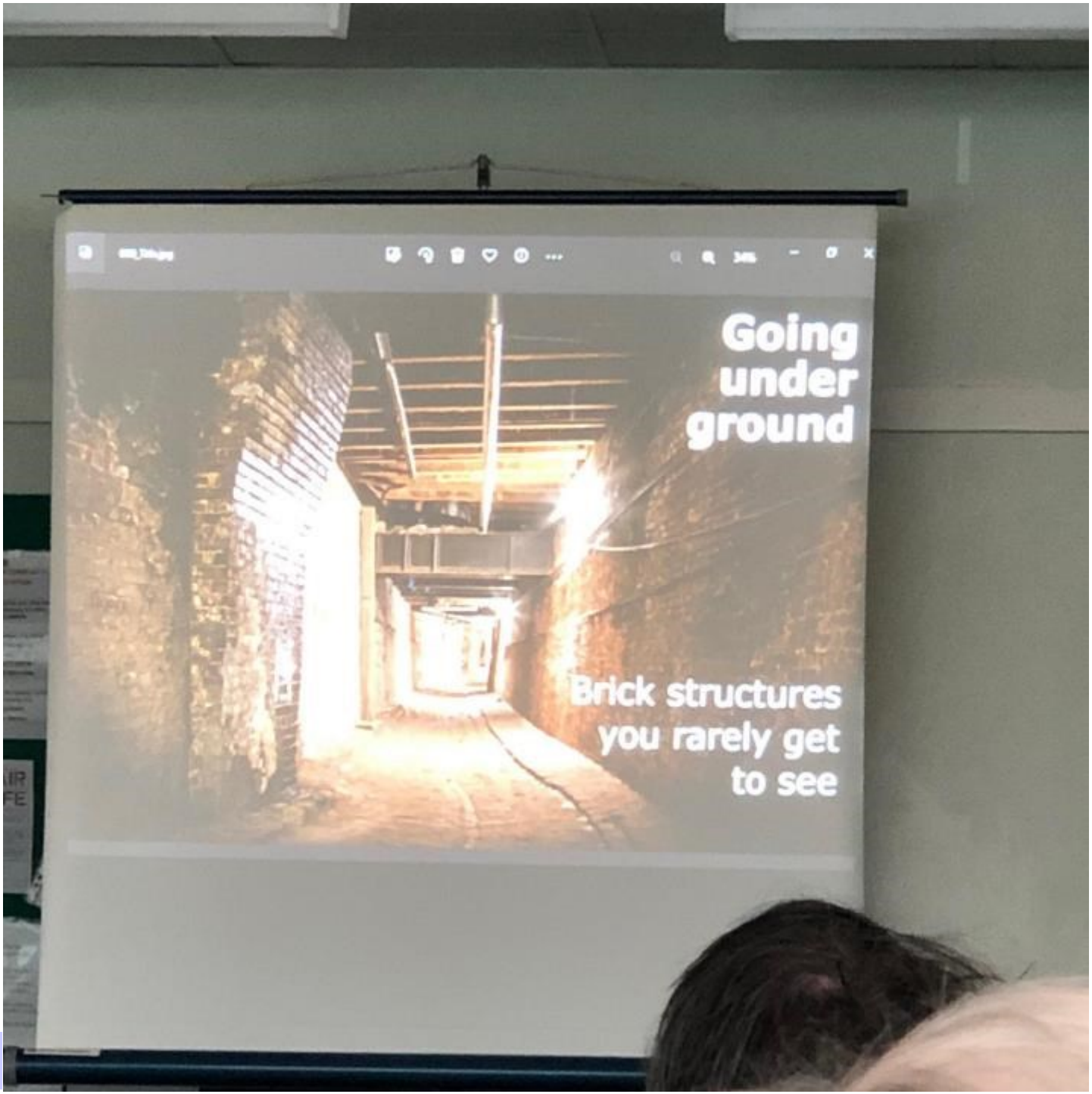
Ian MacCormac was also showing progress in 3D printing the 1881 Pullman train in 7mm scale.

Colin Paul's 7mm scale stock.

7mm stock by Colin Hayward

Colin Hayward (on the left) and Colin Paul (on the right) in discussion over an engineers' survey drawing (1" = 40') of Brighton station from the sixties. It shows the Works, Lower goods, Carriage Sheds and Pullman works. The plan stops just short of Preston Park.

Highlight of the day, other than the catering of course, was the slide show by Adrian Backshall, whose work enabled him to visit many parts of the railway infrastructure that are inaccessible to the ordinary traveller. Photographs of the inside of many of the brick structures, that we take for granted, were both fascinating and a tribute to the original builders.



Return to contents page.

Dapol

7mm Scale Stroudley 4 Wheeled Carriages

by David Lowe with photos by Ian White

At what was the final Guildex to be held at Telford in 2019, Ian MacCormac and I got into conversation with Dapol's Product Development Director about their plan to produce Stroudley 4 wheeled coaches, intended to accompany their RTR Terrier. Dapol had begun the initial design work, but it became apparent that they had not appreciated the scope and complexity of the prototype's versions. Thus began the collaborative working between the Circle and Dapol which has culminated in the release of a superb set of coaches in 7mm scale. The Circle's participants were Ian MacCormac, Sheina Foulkes and the authors. The series of books on the LBSCR's carriage history were an invaluable source of information, supplemented by photographs, drawings and other material from personal collections.

The project was well under way when Covid brought everything to a standstill, but release of the initial range of coaches finally took place in March of this year. This series covers the oil-lit stock to be found on both suburban and main-line services, and caters for the associated differences in buffing, brake gear and couplings. The range is wide enough to allow representative trains to be assembled from Brake Thirds, Thirds, Seconds, Firsts (Suburban only) and First/Second Composites.

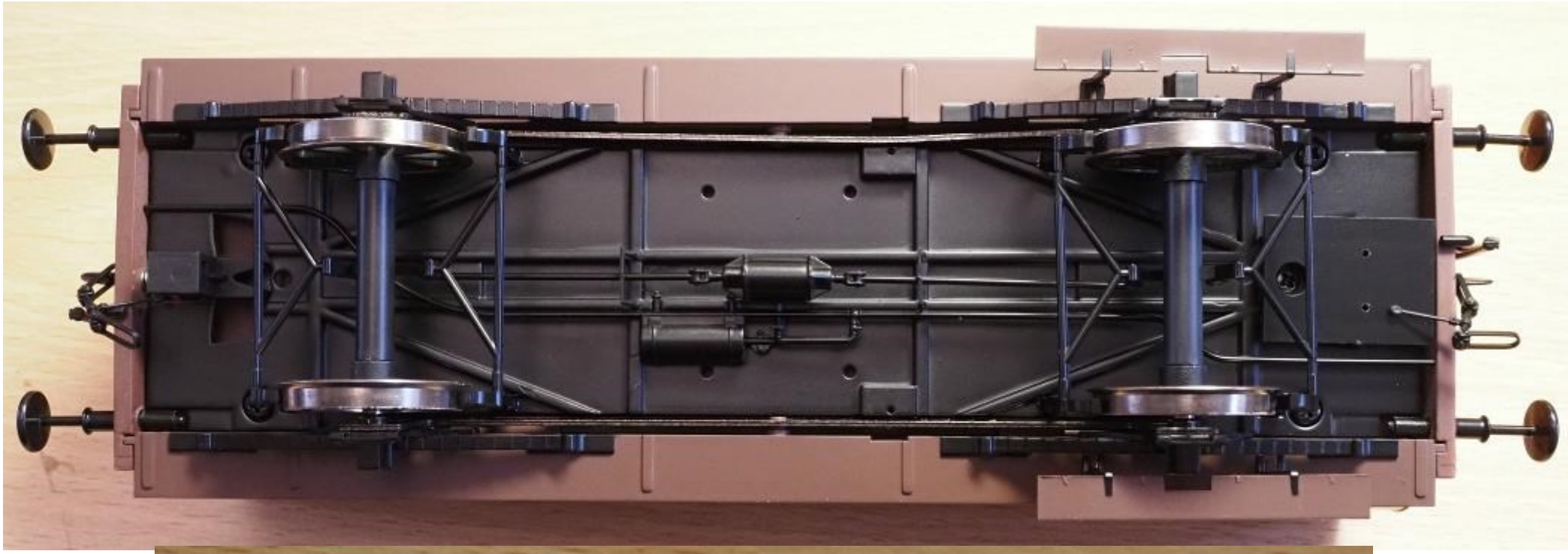
The quality of the mahogany finish is outstanding. The pattern of the wood grain varies within each coach and across coaches, while the colour representation is completely convincing. The livery is then brought to life by lining and lettering to the same standard.

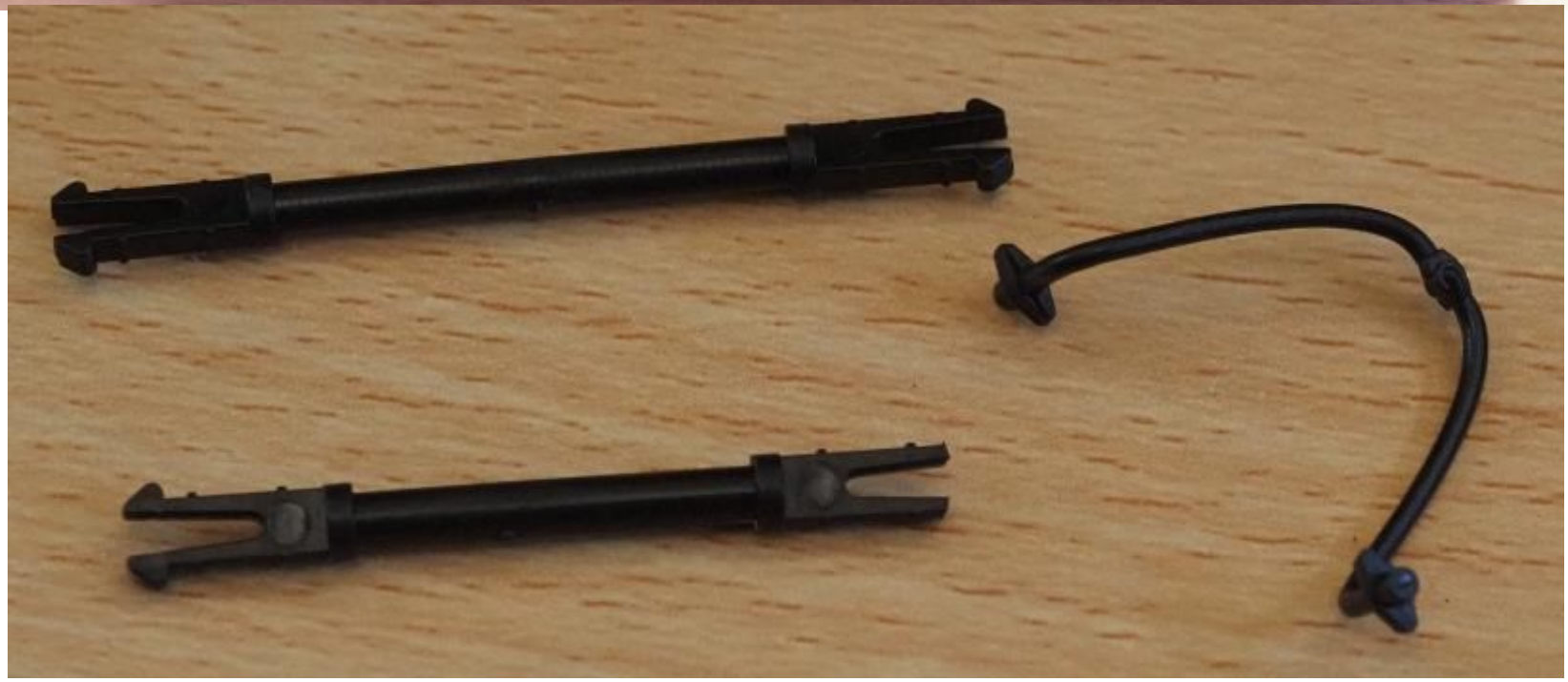
All stock evidences great attention to detail: by way of examples, the door handles follow the prototype dimensions, the interiors are correctly reproduced for each class, and the oil lamps are accompanied by their bungs.


GUARD


THIRD
LONDON BRIGHTON & SOUTH COAST
1032


THIRD





These coaches are not just meant for display purposes - they run equally well on indoor and garden railways. Their die-cast chassis provides sufficient adhesive weight, and the three-point suspension accommodates track variations smoothly. The suspension uses the same design that Dapol employ successfully on their wagons, with a centre pivot inside one solebar.

In common with other manufacturers' practice, Dapol have painted the roofs white, and the prototype would soon have darkened down to grey. The roof is held onto the body sides by small lugs, and with care can be separated. Weathering to choice and population of the interiors is then possible. Although the body is strong, with the footboards moulded integrally, the supports for the lower boards on the Brake Third are, inevitably, vulnerable and care is needed.

Dapol have said that these are the most complex coaches they have ever produced. Discussions with fellow 7mm modellers have all come to the consensus that for a RTR coach they are unequalled, and Brighton modellers have been very well served indeed. Dapol have the necessary information to produce gas and electrically lit variants, and it is to be hoped that sales of the current version make the latter commercially attractive. Dapol are to be congratulated on their achievement.

Return to contents page

Billinton K class Mogul - 4mm scale

Nucast Partners

The Brighton K is now in stock, priced at £135.00 plus postage. Wheel packs and motor/gearbox packs to suit are also available.

We have upgraded the kit with a new etched nickel silver chassis for both loco and tender. The chassis can be sprung using the High Level Models' system (parts not included). Both loco and tender chassis now include brakes and pull rods. The loco now has the very distinctive slide-bars and motion bracket rather than square section N/S rod and some very basic castings for the brackets.

The chassis includes spacers for 00, EM and P4. We have only built the 00 version and the clearances are very tight behind the crossheads. So EM and P4 modellers will have to use some ingenuity to build the chassis, as is often the case.

We have also added a number of new castings to the kit which will allow you to build both batches of the loco and covers all periods from as-built to their final days on BR in 1962.

These include:-

The original Brighton cab and the SR 'SECR style' cab, used when they were modified to suit the composite loading gauge by the Southern.

Cab details, back-head, regulator, cab splashers ("seats"), floor and reverser.

Boiler fittings include the original Brighton top feed and the manhole cover for the first series, and a second dome (similar to the C2x's) for the 2nd series to attach the top feed.

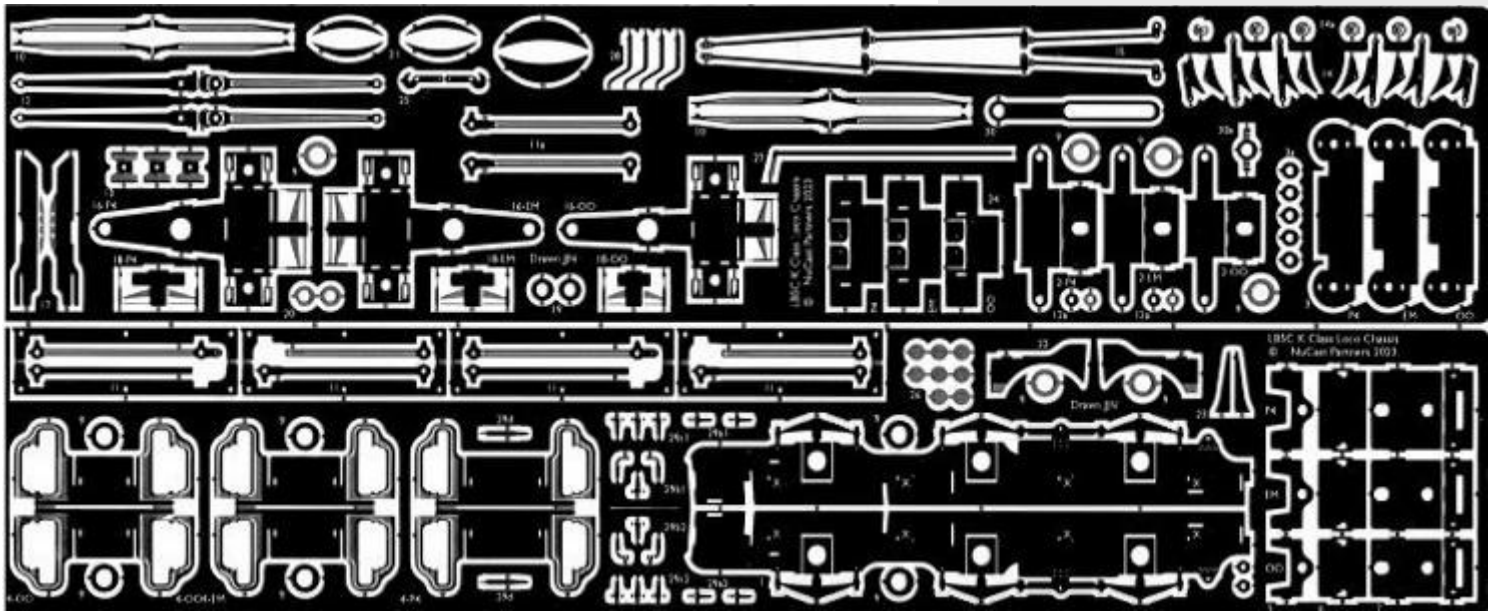
Vacuum ejector pipe.

The reduced height chimney and dome for the SR composite loading gauge, along with SR boiler mounted clack valves.

Choice of Ramsbottom safety valve or the later Ross pop changes.

The etch also includes Brighton and SR/BR style lamp irons.

The etch for loco parts



The tender etch includes the original open style coal rails and the later plated SR style and cab doors which can be modelled closed or open.

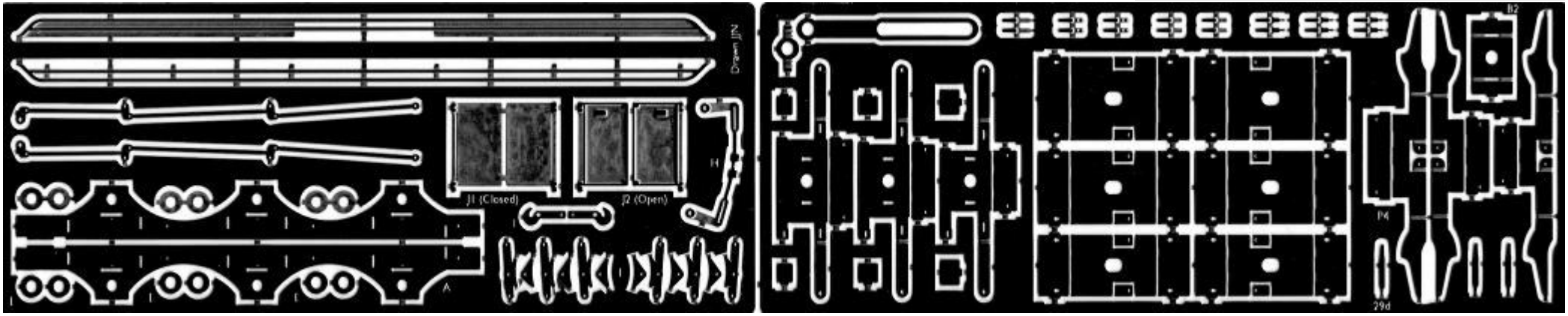
Our test build (see attached picture) depicts a typical example of the 2nd series, as built and running through to circa 1930.

Images of the new etches are shown below. The sheets also contain parts to detail the body:-

LBSC & SR BR style lamp irons, tender coal rails for the open and later plated back styles and doors which can be modelled open or closed.

They are designed to be built rigid or using the High Level Models' parts to produce a sprung chassis for both loco and tender.

The etch for tender parts.



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Kernow Model Rail Centre

T Meakins - 1902 RCH Private Owner Wagon

1902 RCH seven plank open wagon in the livery of Dorking coal and coke merchants T Meakins & Son.

The KMRC exclusive model is based on Dapol's RCH 1887 specification wagon and features a 9ft die-cast chassis.

The Kernow Model Rail Centre Exclusive highly detailed model in 0 Gauge is being produced for KMRC by Dapol Ltd. The model is based on their RCH 1887 specification seven Plank open wagon and features a 9ft die-cast chassis with a compensation beam and fitted with open spoke wheels, the body is injection moulded with separately applied parts, sprung metal buffers and sprung coupling hooks with three link couplings. Price £56-95, see

K7073 Dapol 7 Plank Open

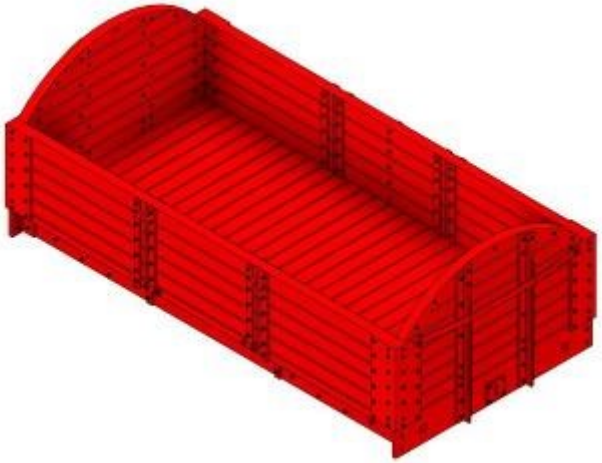
Return to contents page

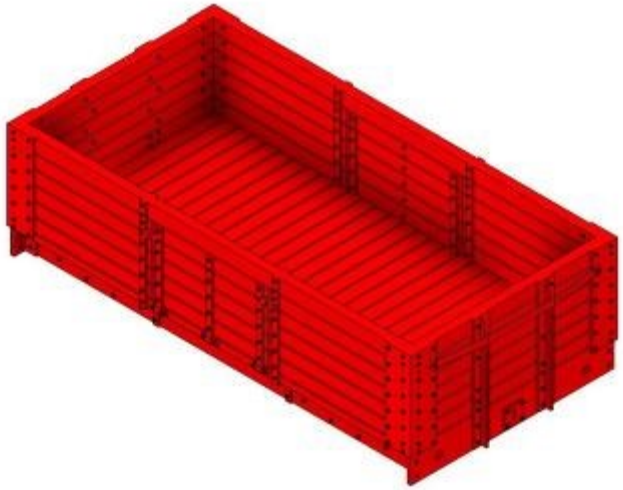
Pre-Grouping Railways

Retooled Brighton vehicles

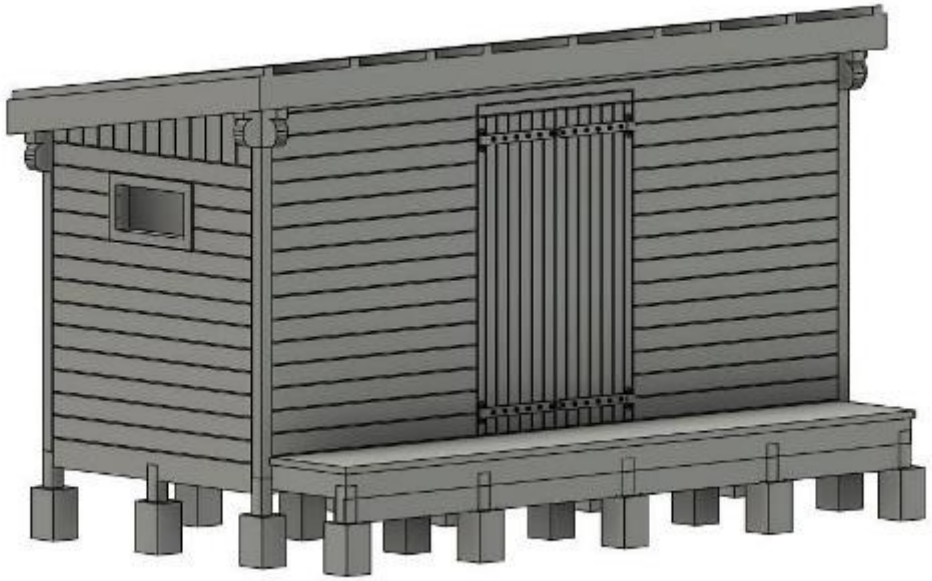
The 3 plank, 5plank and 6plank open wagons in the Pre-Grouping Wagons range have been retooled so that they can be produced in 4mm, S, 7mm and G1 (1:32).

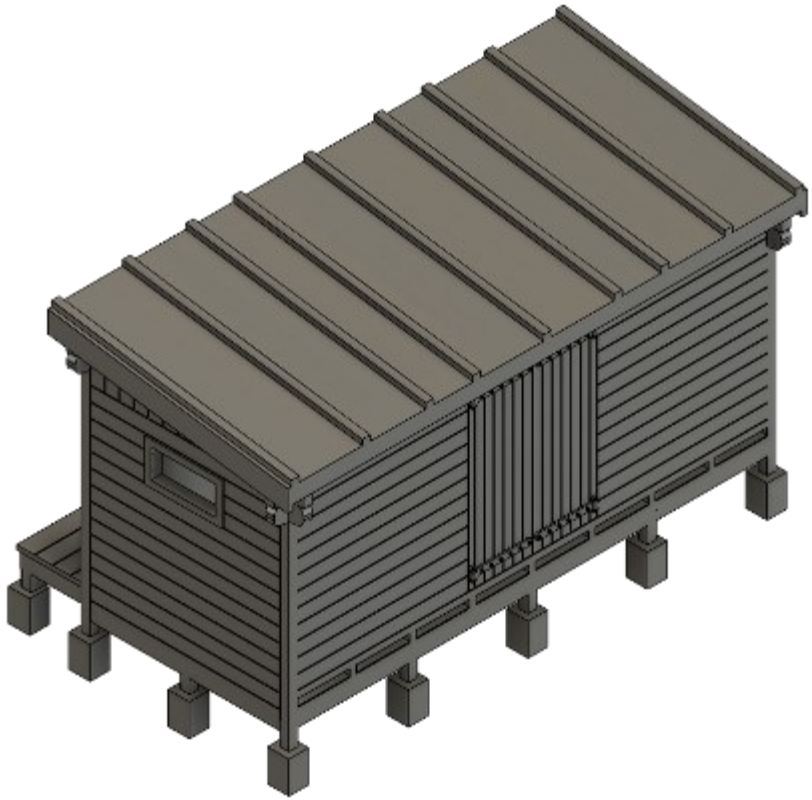
By Christmas, it is the intention to have the 7plank open, the brake van and a box van retooled.





Pre-Grouping Railways is also producing an LBSCR small goods/coal office in HO, 4mm, S, 7mm and G1(1:32).





Phone: 01229 219875 (NEW NUMBER)

E-mail: furnessrailway@hotmail.com

Facebook: @furnessrailway

Post: 10 Duke Street, Dalton-in-Furness, Cumbria, LA15 8HH

The Brighton Circle Facebook Group

There is a Facebook page (search for @LB&SCRBrightonCircle) and a lively and growing associated group, which currently numbers over 350 members.

See https://www.facebook.com/groups/249226986001750/

These are aimed at giving a presence on social media for the Circle. It is a place for people, including non-members of the Circle, to post material, find out about the Circle, see some local history and to ask questions.

Please do visit the page if you are on Facebook.

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 newsletter and a historical journal entitled the Brighton Circular, which is published three times a year.

While the Circle is primarily focussed on railway historical research, there has been an important interaction with preservationists, particularly on the Bluebell Railway, 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, kits, paint and lettering on a limited run basis, which are made available among other members.

Membership of the Brighton Circle for 2023 is

£20.00 for full membership

Applications should be sent to

secretary@lbscr.org

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

LV

Return to contents page