331

The 2mm Magazine

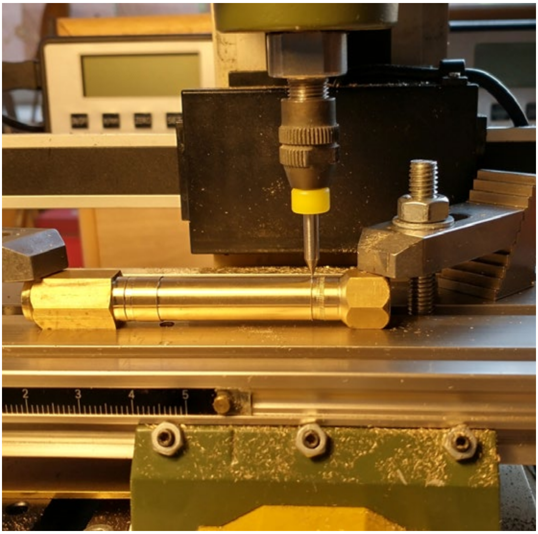
www.2mm.org.uk

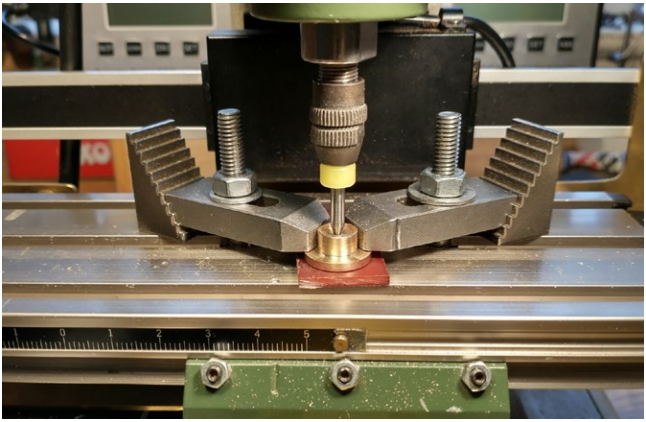
Oct - Nov 2023

Left. *This is a useful little "pointy tool" made by David Eveleigh from a broken drill. He simply ground the end to a cone by running it in the lathe and holding a cut-off disc against it spinning in his Dremel (taking care to protect the lathe from the carborundum particles and wearing eye protection). He wasn't sure how well it would work out – drill bits are sometimes hardened only on the fluted cutting portion and it might have been too brittle or soft to use as a punch. But it seemed to work.*

Here the tool is being used to line up exactly against the groove whose left hand edge will form the rear of the boiler of a locomotive where it interfaces the spectacle plate. The pointy tool can now be replaced with a drill bit and the table traversed to give the correct locations for drilling the holes for safety valve, dome and chimney, and also mill the sides for the boiler away for the correct length where the firebox sides meet their vertical sections (which on David's kits are done as separate etched parts on which the rear of the boiler is supported).

The tool can also be used to scribe lines whilst held in the milling machine.





This photo shows it being used to centre one of a pair of anvils which David had turned for his quartering jig, before clamping the part down, ready to traverse the correct distances in x and y for the various holes.

If someone has about a dozen other ideas for things you can do with broken drill bits, David (and the Editor!) would be interested to hear...

Oct - Nov 2023

EDITORIAL – Iterating to perfection

Like any worthwhile craft, 2mm modelling is not something that you usually get right first time (beginner's luck notwithstanding). Rather it is a case of practice makes perfect. This is what I'm hoping in the case of wagon weathering, where I have some way to go before reaching results akin to those of Jim Tinnion (over the page).

I've often thought upon completion of a project that I should build another one taking into account all of the lessons learnt the first time, and fixing everything that went wrong. So I'm glad to see that I'm not alone; witness Bob Jones' second build of the same locomotive on page 110.

Ian Smith's article also fits into this theme of improvement, this time on an already clever idea for coach couplings masquerading as vacuum pipes.

I hope everyone will find something both of interest and practical use in this issue. (And please share your drill bit ideas...)

Anthony Yeates

Front and rear covers. *Jerry Clifford's Foxcote New Pit made its final exhibition appearance at Railwells in August, where the Editor took these two photos. The colliery forms part of Jerry's home layout based on the Somerset & Dorset, complete with glorious Prussian blue passenger stock. Hiding in the background on the front cover is a Fox Walker saddle tank, which Jerry completed after the basic loco was built by John Greenwood. An innovation is Jerry's first stay alive installation (Zimo 616 and Youchoos circuit with a pair of 470µF Tantalums). He is sold on the benefits of this, and says that the loco never misses a beat.*

Quick 16T mineral wagons

Jim Tinnion explains how he has achieved some impressive weathering results.
Photographs by the author.

After several years working flat out on HS2 for Align designing the Chiltern Tunnels and Colne Valley Viaduct, I'm finally finding some time to start working on 2mm rolling stock in the evenings. A house move is looming which should result in a permanent railway room. Eventually – if I get as far as building the layout I've been planning for the last few years – I'll need a really significant number of wagons, particularly BR diagram 1/108 16T minerals. There are a variety of sources for these in 1:150ish – in 2mm scale the Association plastic kit plus one of the three chassis kits offered; or the Stephen Harris etched kit; and in N gauge the Peco kit and Graham Farish RTR products.

The railway will showcase a landscape featuring the civil engineering of the railway as much as the trains running through it, so individual vehicles will not be viewed particularly close up. My aim is more to have a parade of trains of the late 1970s viewed almost as if through the lens of the picture books so I can sit and enjoy the sights and sounds of my childhood trips north. This needs to carry through into my approach to modelling the trains themselves: with 70 or so mineral wagons to build, the colours and general impression seem to me more important than the minute details which are so carefully and beautifully modelled by many of the contributors to this magazine. Hence I have used the ready to run Farish models and the easily assembled Peco kit to date: the precise scale is not too important to me and my locos will all be modified RTR so my approach to 2mm FS is not a pure one, much more akin to EM than P4.

The pictures show three unfitted 16 ton minerals in their final days. (The heading picture of four wagons includes a vacuum-braked interloper.) I'm currently working on a batch with Morton style vacuum brakes and then thinking about how to quickly do the clasp brake version further down the line...

The Peco wagon (Figure 1) is the most lightly weathered and was cleaned once assembled, and brush painted in a warm light grey mixed from Dark Grey, Deck Tan and White Tamiya acrylic. I tend to mix wagon colours from non-railway paint as there was a lot of prototype variation and pre-mixed railway colours often seem too dark to me. The panels which would receive markings were then gloss varnished, again applied by brush as I was working on these away from home – one of the great advantages of 2mm for me being that you can put a couple of projects and some basic tools in a lunchbox and take them with you to wherever you need to be. Transfers were then applied – all from the excellent Railtec range in this case.

Figure 1. *COAL 16 B212113 - made from a Peco kit but a close match to the Farish wagons, showing light pockmarks of rust and some very light streaking.*

Figure 2. *MCO B121830 - made from a Farish wagon, showing heavy rust to replacement panels on the lower bodysides and to the doors.*

Figure 3. *MCO B258683 - another Farish wagon, this time with medium rusting, done by trying to copy a prototype photo.*

All three wagons were then varnished with VMS matt varnish. This is weird gloopy stuff when you fill the airbrush from the shaken bottle but goes on nicely and gives a superb finish with lots of "key" for weathering. The weathering of all three was done as a trial of methods suggested by Bryn Davies and demonstrated to great effect on YouTube by military modeller Mike Rinaldi. Look at some of Bryn's stunning work for inspiration, then search for "Rinaldi Studio Press" and watch a couple of his recent short videos on oil paint rendering as a starting point.

I used Winsor and Newton oils and odourless thinner, starting by mixing and applying a pin wash of Burnt Umber to the body framing and the door openings, hinges, etc. A quick flick with a clean brush loaded with thinner and then wiped nearly dry on a piece of kitchen roll removes any tell tales where the wash has spilled onto the panels where you might not want it. Rust patches are then built up using slightly thinned Raw Sienna which is then allowed to dry thoroughly before applying a second layer of Raw Umber, trying to leave some of the Raw Sienna visible around the outer edges of larger patches. The most lightly weathered wagon, the Peco kit, just had a few minor rust pits and scratches added, all in Raw Umber. The beauty of the oils is that they stay workable for days, meaning mistakes can be removed and effects very easily blended with a brush just slightly dampened in thinner. Rust can be streaked very realistically by gently dragging a clean solvent dampened brush across the rust mark and down the wagon.

I worked from pictures from Paul Bartlett's website – I buy the ones I use for a nominal fee, download them and print them on photo paper so I can easily refer to them as I go. The more heavily weathered mineral wagons seem to fall into two groups: one with heavy patches of rust

Figure 4. *Shows the simple hook and loop coupling I have used on these wagons which gives very close coupling.*

spread around the body but also plenty of grey paint remaining; and the other with almost the whole side, or replacement panels, covered in rust. I find the former much trickier to do well – it's hard not to end up with something that looks like a bad leopard print!

When I'd finished adding the rust, the wagon with replacement panels, B121830, seemed quite patchy. After some thought, I used a new product from Mig AMMO: Engine Grime, which is a semi transparent grimy grey enamel. This was easily blended in and brought the panels together nicely, giving them a colder, more grey tint which better matched my prototype picture.

Wheels, underframes and insides were done more traditionally with mixes of Tamiya red/brown and black or Mig AMMO Railcenter grimy brown and engine black. Brake lever handles were touched in with a Mig AMMO Oilbrusher – with the brush integrated into the bottle this is thinned oil paint and can be applied as simply as Tipp-Ex but covers beautifully and is really quick. The couplings are very simple hook and loop affairs, as my trains will generally run in fixed formations. I still need to add false floors of thin lead sheet as all three wagons seem too light.

VIX Ferryvan finescaling

Alan Whitehouse finds that conversion of this new model is straightforward.

Photograph by the author.

The British Railways VIX ferry van is one of those niche products that you either want or you do not. To date none of the mainstream manufacturers have released it – possibly because the long wheelbase would make running around train set curves difficult – and there has been one kit of laser cut card which took a lot of care to produce an acceptable result.

So the N Gauge Society's latest RTR offering of the VIX has been eagerly awaited by those of us who wish to model this comparatively little known area of BR operations.

The model itself is well packaged and emerges from the box really looking the part. Dimensionally accurate and with a lot of finely executed detail it also incorporates all the 'state of the art' stuff such as NEM coupler pockets on sprung arms.

But, the various modelling forums quickly filled with comments about its running qualities with squeaking and binding issues being repeatedly mentioned. I found with my own two VIXs that there is play in the axles and at one end there is a small 'click' or step as the axle is moved between the two axleboxes. It did not bind, but was not particularly free-running either.

What to do? The axles supplied are about 14.4 mm and the play suggested there was about 15 mm of available space between the extremities of the plastic bearings. Also, the bearing holes seemed to be of a generous size and I began wondering whether this was a model that could be easily finescaled using Association top-hat bearings and standard 12.25 mm axles.

Happily, it can! The holes need no drilling or reaming to accept a top-hat bearing. On both my models three just dropped in, secured with a tiny blob of cyano (Powerbond is my preferred one) while the fourth needed a gentle squeeze with a pair of flat-faced pliers to get the rim to sit flush with the inner face of axlebox/W iron moulding.

A pair of three-hole wagon wheels on 12.25 mm axles fits as though made for the job. The wagon runs freely and with no wobble. The whole job takes about 15 minutes. I completed the job by using Dapol non-automatic knuckle couplers between the two wagons. One long and one short coupler keeps the buffers almost touching but still allows passage over a B9 crossover.

A peek underneath

David Eveleigh invites you on a trip to the dark side (of his layouts!).

Photographs by the author.

There is no doubt about it: there is one aspect where 2mm model railways are more difficult than those in the larger scales. We have the same amount of pointwork and numbers of magnets, etc. as the larger scales, but have to fit all the 'gubbins' into a quarter the area underneath. It can end up looking a mess and, more importantly, be difficult to maintain/fault find.

From the horrible birds' nests of my youth, I have gradually refined my technique as I have built more layouts and I thought you might find it useful to see the results. Even now, they are not as neat as some people's work, but there are aspects which I think are useful and make things easier.

It helps to install the mechanisms and wiring in a sensible order – wires can be rerouted easily, but turnout operating mechanisms and – even more importantly – uncoupling magnets, pretty much have to go in certain positions.

Figure 1 shows a general view of Framsden. Those of a critical disposition will note that there are one or two wires which could have been better tied down.

Another thing to observe is the bespoke brass bell-cranks. There are but three turnouts on the layout and the fascia mounted lever frame is located top left. I kept the rodding runs as straight as possible and each turnout required three bell-cranks including that which formed the lever. I make the bell-cranks a reasonable size because then, for any given lengthways movement of the rods, the angle turned and sideways movement of the end of the rod is reduced.

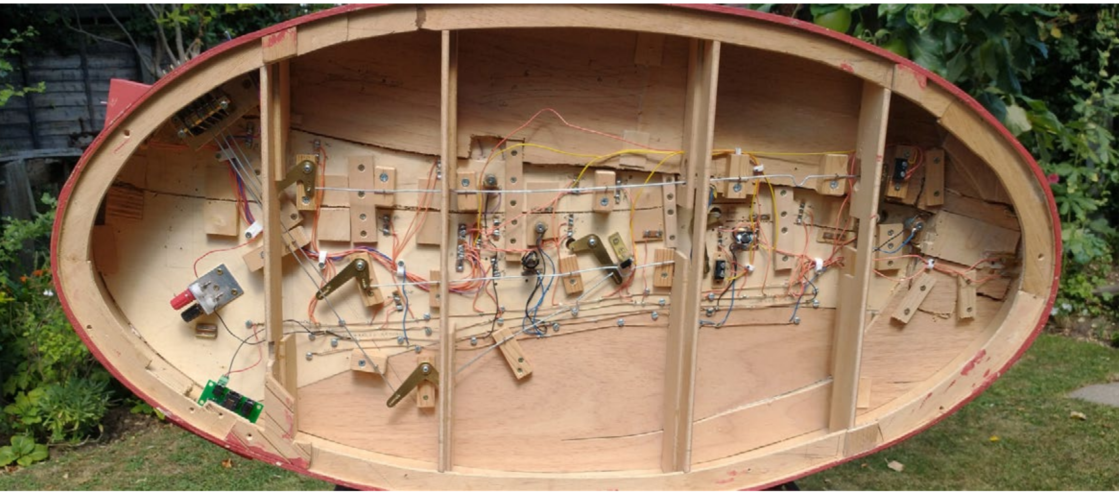


Figure 1.

The row of several holes on the cranks allows me to adjust the 'throw' – the length of movement. I started by having loose screws through the pivot hole in the bell-cranks, but that wasted a lot of movement. Now I make proper bearings with steps to support the washers so I can do the fixing screw up tight and the crank still moves easily.

The rods are made from 1.6 mm diameter galvanised garden wire (though I think it was described as 16 swg when I bought it; one reel does a lot of layouts!). It is available from 1 mm to 2.5 mm at least. The diameter of 1.6 mm seems a good compromise between not needing to have too many friction-inducing guides to prevent it bending, and ease of shaping by bending at the ends. I use either fencing staples (for which I drill pilot holes) or small screw eyes as the guides. On this layout, as the rodding runs started from the lever frame a bit down from the undersurface, I supported the guides on blocks of softwood glued and held with a single screw.

The enlargement in Figure 2 shows :-

• Top Left – one of the uncoupling magnets made from the coil of a small relay, with the top section of a 2.5 inch nail as the core. Brian Tilbury, who knows about these things, told me you can concentrate the magnetic field if you get the core to follow around where the flow lines would go (remember iron filings in school science lessons?) – well, leaving the head on assists a little in this.

• Bottom – the four 'bus-bars'. Certain electrical connections need to be made multiple times along quite a length of the boards, for instance, common returns (to the left hand rail) or long track section feeds (to the right hand rail). It is convenient to make these long runs of large cross section (low voltage loss). I make them from stripped copper wire from a local

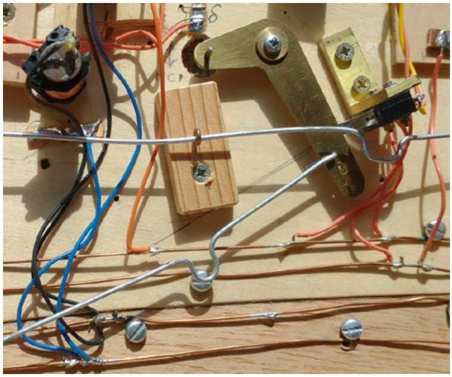


Figure 2.

scrap metal merchant which I stretch straight (the wire – not the merchant!) You can see these better in Figure 1.

• Bottom Centre – an omega loop. You used to be able to buy these for soldering into rodding runs. I simply bend them into the wire I am using for the run. Sometimes I get them a better shape than others – see top right! In this case they are not to provide springiness – we don't want to apply that much force. They are simply there to give length adjustment.

Set the turnout blades to the middle of their travel; adjust the bend in the omega loop until this matches the lever being in the middle of its travel; then adjust which slots you use in the bell cranks to give the right amount of travel.

• Top Right – an end on view of a micro-switch mounted on a bracket made from a bit of brass angle. You get a better view (of one mounted flat) in Fig 3 (overleaf). The movement of the bell-crank arm presses on the lever of the switch causing it to swap its common connection from one terminal to the other. The common connection provides the power for the crossing of the turnout, connecting it either to the left or right rails as required by the setting of the turnout blades.

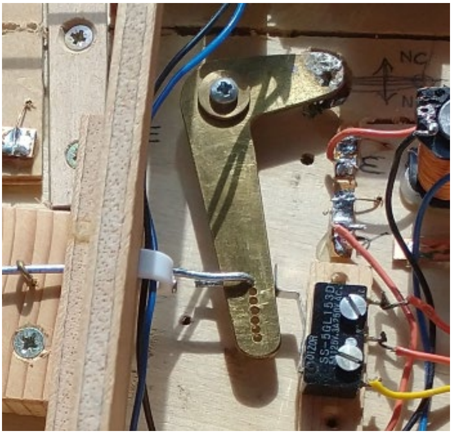


Figure 3.

I bought about 30 micro-switches one time from Rapid Electronics and they only cost a few pounds. You can get them with buttons or various lengths of levers – I find the latter more convenient as I can shorten the levers or bend them as required to cause the switching action to take place part way through the travel of the bell-crank.

Turning now to a view of the underside of Yuen Long St., Figure 4 shows how I arrange the connections to the individual rails. I like to provide two wired connections (risers) to each rail section, ideally one at either end. For these, where the wires have to appear above the boards, it is good to use some fairly small diameter solid copper wire. However, for the wiring runs it is good to use larger cross-section multistrand wire. I add these little pads from offcuts of pcb (I have used sections of O gauge sleepers in the past), glued to the bottom of the board next to each pair of risers, and then the risers and the running wires can both be soldered to the pads. For short common connections I use sections of the solid copper wire with insulation slid over them as necessary.

You can see that I label each of the connections, and these match the labelling on a wiring diagram for the individual rails. I have to be very careful at this stage because, having only a very little brain, it is easy for me to get confused,

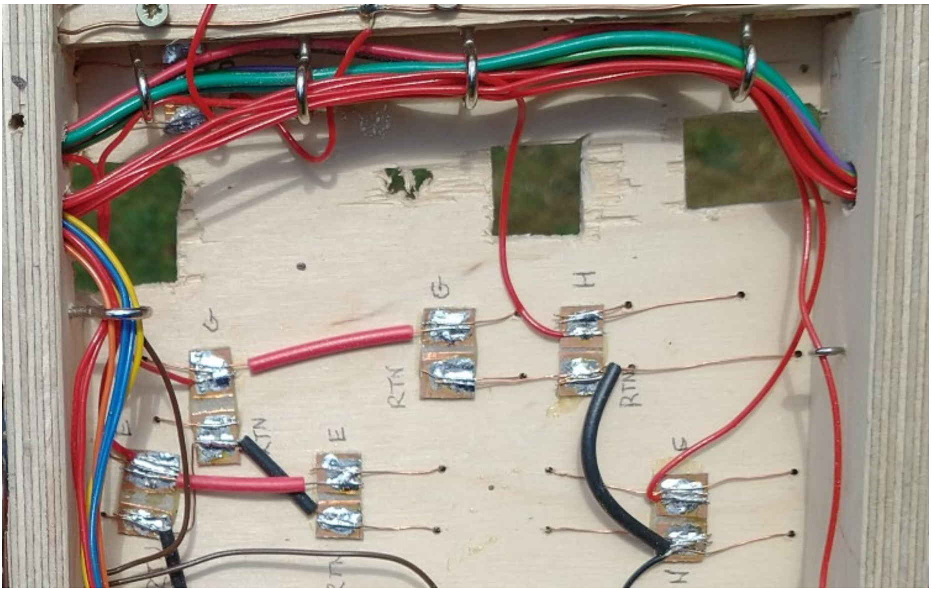


Figure 4.

as I turn the board upside down and the right way up, as to which is up and which is down.

Doing it this way, if I get a short circuit as I am doing the wiring, it is easy to unsolder all the running wires from a rail section to find out where the fault is, rather than having to try to unsolder connections top-side.

You can also see in Figure 4 a couple of the wiring runs. I fit larger diameter screw eyes for routing the wires through and try not to cram too many wires through one set of eyes. (Camels would be even more difficult – Matt. 19v24.) In this case, I had to double up, installing a second run of screw eyes. In the past, I admired and tried to imitate the tight-laced wiring looms I had seen in commercial circuitry, but this was inappropriate – you need to be able to trace along wires and replace individual ones sometimes so fairly loose runs through screw eyes (and holes in the ribs of the baseboard) are appropriate.

It is also good to leave a little slack at the end of each connection in case it needs to be unsoldered and reconnected.

Figure 5 is a wider shot, giving a better view of the wiring runs.

You can also see the base of the turntable:

• The high quality motor with a geared head (bought cheaply at one time) drives a worm and gear (from Proops, I believe, when they had a shop in the West End, but still trading online and a useful source of bits).

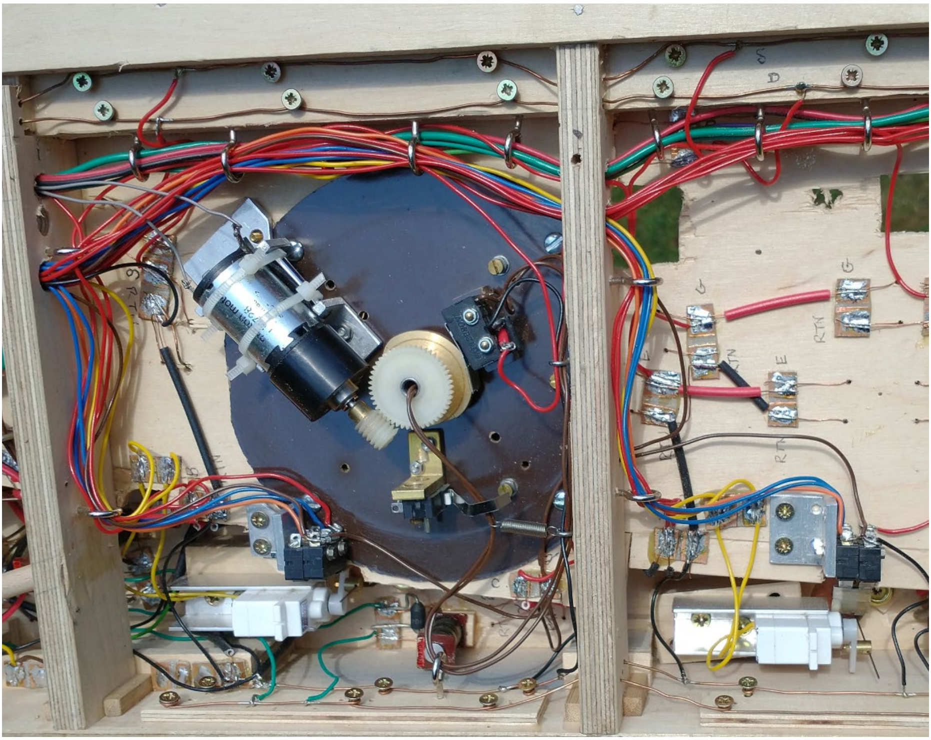


Figure 5.

The motor is mounted on a couple of brackets made from Aluminium angle with rods from inside an old printer providing the connection to hold the motor down with a couple of cable ties.

• Below the gear you can just see a brass cam which is there to change the micro-switch next to it, swapping the power supply to the rails each half revolution.

• The brown wires are the power supply for the turntable rails. I was concerned that, if I accidentally ran the turntable round and round too many times the same way, the wires would twist up, shorten and pull away from their connections. You can see that I have routed them through a tension spring, and if they tighten up and pull straight this will actuate the micro-switch, cutting the power. I have since decided that a simpler solution would be to model a bucket on the wooden deck of the turntable and make it a rule that the bucket never goes under the viaduct! Choose rotation direction accordingly.

• At the bottom you can see two white blocks with rotating arms at the right hand ends. These are servos which operate the turnouts on the viaduct. (Viaduct on the top of the layout board translates to 'narrow trench' on the bottom of the board and there is little room for my preferred mechanical rodding.) These follow the system described by Mick Simpson in his articles about his layout, Callaton. The electronics are stripped out from the servos and the motor leads are connected to a power supply using a double-pole-double-throw switch in the normal way that reversing switches are wired. A biased switch is used and when you hear the motor has run to the end of its travel, you let go the switch, allowing it to return to the centre.

This does not provide the switching of the crossing polarity, or give any indication of how the turnout is set. I got round this problem by mounting the micro-switches in pairs that you can see just above the servos in Figure 5, with the levers connected by strips of etch waste bent around. These are actuated by the arm of the servo, and one alters the crossing polarity; the other swaps another power supply between one or other of a pair of LEDs mounted either side of the switch on the control panel. Whichever LED is lit up, that is the way the point is set. (I have to make sure that people remember to let go the switch when they hear the motor stop, not when they see the lights change – so not perfect.)

• Even though the control panel is mounted on the end of the layout board on Yuen Long St., it is convenient to be able to disconnect it. I used one of the IDC connectors – Insulation Displacement Connectors – shown in Figure 6. The board mounted connector is fixed to a piece of pcb stripboard (used to be called Veroboard) and from there I could make the connections to the layout. You lay the ribbon cable in the opened connector, close the snap-top and the jaws cut through the insulation on all the wires at once and make the connections. All very clever and convenient, except that the

Figure 6.

spacing of the terminals does not match the spacing of the tracks on any of the variations on pcb strip-board.

I solved the problem with Trigonometry: the cosine of the angle you need to turn the long axis of the connector from being at right angles to the tracks is given by the ratio of the track spacing to the connector pin spacing.

I mounted the stripboard on the table of my milling machine at the appropriate angle and drilled holes as I traversed along by the correct spacing. Sometimes these coincided with existing holes and mostly they didn't, but I was able to solder the terminals of the connector to the copper strips somehow.

Both of the layouts shown so far have single baseboards. With the editor's permission, I would like to show a view of the underside of a narrow gauge layout I have started for my Pπ models.

Figure 7 shows a pair of the connectors I use between boards. I initially tried 3.5 mm jack plugs and sockets as used for speakers for mobile phones. These were a disaster. The connection was so poor that by waggling the plug and its socket whilst connected you could generate morse code. Our late member, Paul Martin, who had a background in the electronics industry, recommended XLR connectors and that is what I used – they are pretty much bomb-proof. There are many different patterns available – search Ebay. I mounted a spring clip on the board with the lead connected, to retain the plug whilst the boards are not connected.

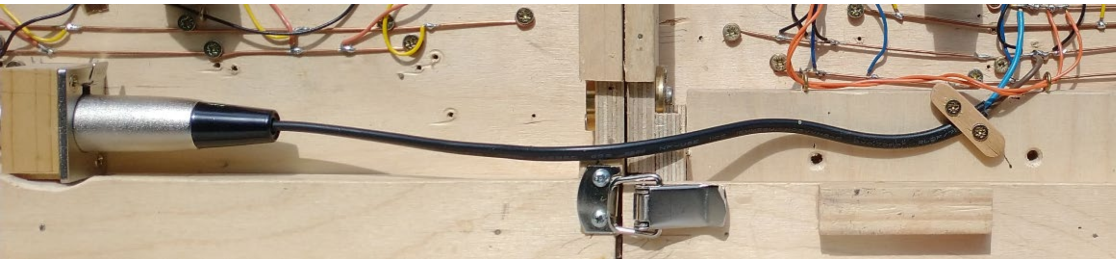


Figure 7.

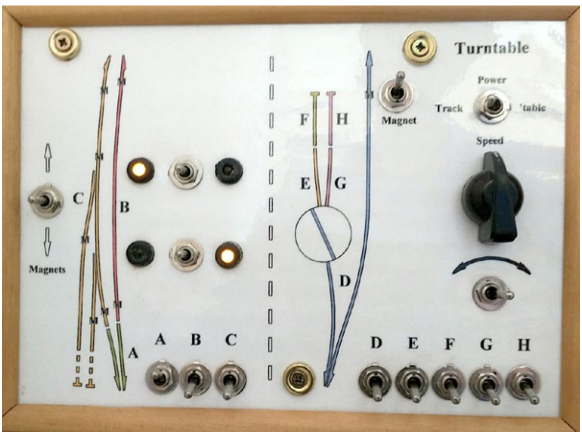


Figure 8. *The control panel for Yuen Long St., showing the indicator LEDs for the two turnouts. The top turnout is set to the diverging road on the left, the other to the road on the right.*

A second Lambton Railway No. 29

Bob Jones builds the same locomotive for a second time.

Model photographs by the author, prototype photo as credited.

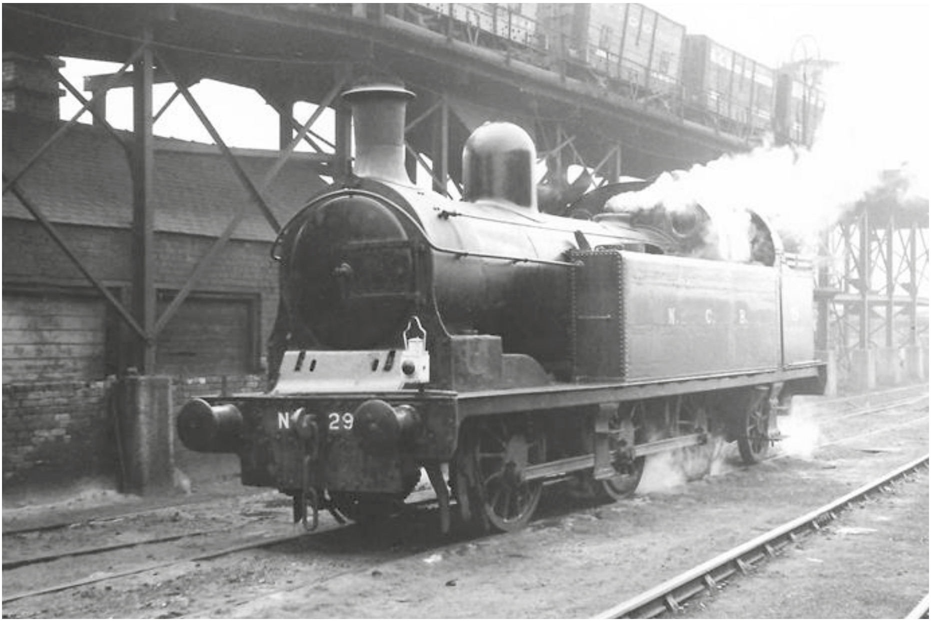


Figure 1. *The prototype, Kitson 0-6-2 tank No. 29 (now preserved) stands at the coaling stage at NCB Philadelphia Shed, on 4 February 1969. This was the remaining part of the Lambton, Hetton and Joicey collieries railway system, which had been nationalised in 1947. Two weeks later the system was dieselised. (Photo: John Freeth, reproduced by kind permission. https://flic.kr/s/aHsmLq5KqL)*

Fence Houses now has two Lambton Railway 0-6-2T No. 29s on the roster Why? Well I had a new etch produced which incorporated a more prototypical cab roof profile than the original I made, after Mick Simpson pointed out my error in getting this wrong at the design stage. It was a bit pointy at the apex – my own fault for religiously copying a drawing without thinking it through properly!

This was quite some time ago but I've recently got around to (nearly) finishing this second attempt. Figures 2 and 3 show the original (body painted black), while Figures 5 and 6 show the new one, still awaiting a visit to the paint shop.

Two different motors have been used along with differing methods of securing these to the frame spacers. The larger 10 mm diameter on the original No. 29 uses a purchased brass ring

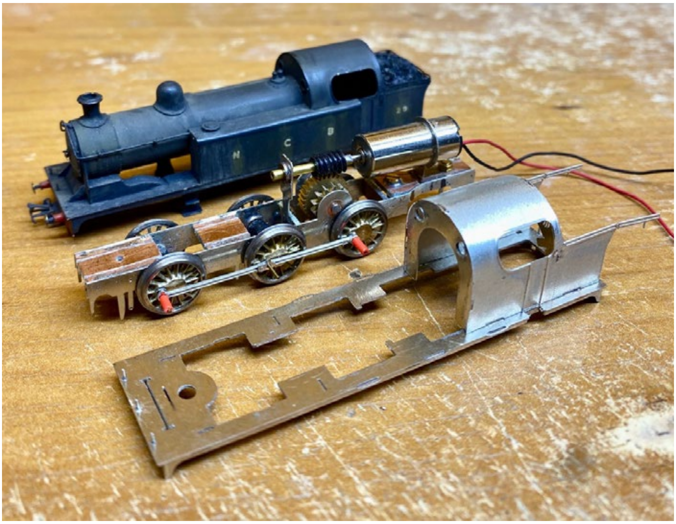


Figure 2. *The original body (painted) alongside the new chassis and partly completed body. Compare the shape of the two cabs.*

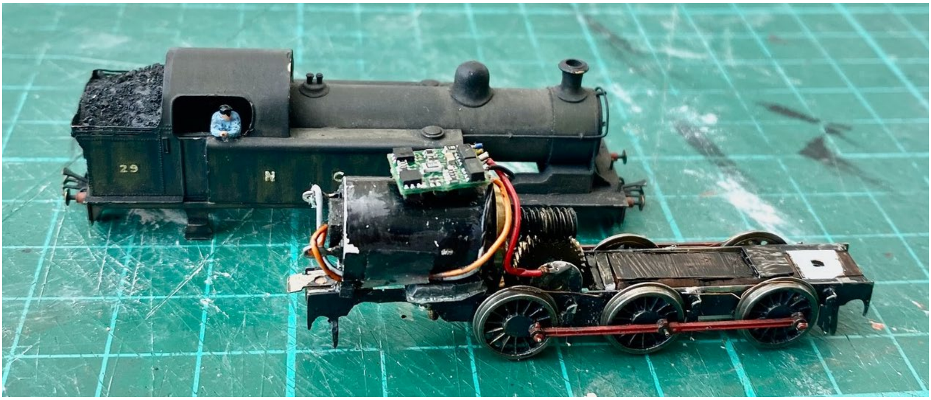


Figure 3. *The original Number 29 with chassis, minus rear pony truck.*

(Branchlines 'Motor Mounting Bush' for 08/16, 10/16, 12/19) threaded on to the coreless motor at the front end, and with an etched fold up extension soldered to the ring and twice bolted to a frame spacer below the motor. See Figure 4.

A nut and bolt fix the front end of body and chassis together, but as shown in Figure 3 there is a small 'tongue' protruding rearwards from the rear gapped frame spacer and this fits into a slot in the loco buffer beam.

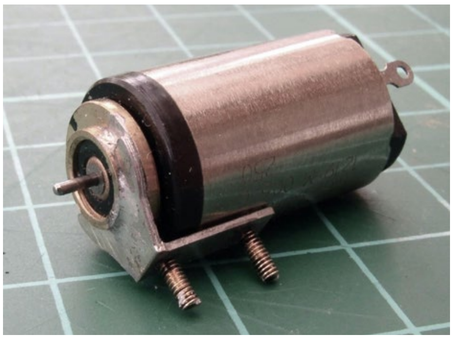


Figure 4. *The motor and its mount.*

This rear end method of fixing the chassis to the body is common on my tank locos where space is limited and there is no room to get a nut and bolt fixing.

You can see this tongue also on the rear end photo of unpainted 29/2 in Figure 6, just below the central tail lamp bracket and above the coupling.

Number 29/2 has a 7 mm diam. motor with an etched circular collar carefully tack soldered on top, holding the motor in place via a bent up bottom extension to the collar, again bolted to the rear frame spacer. This collar can be seen in Figure 2.

On the original Lambton tank model, the DCC decoder lives in the cab roof space. On the new version, the decoder is housed in the rear coal bunker area due to available space created by use of the smaller motor.

Another plus with using the smaller motor compared to the original is that now you can see through the cab sides without seeing the motor.

The front end of this motor shaft has been extended using brass tube and this runs in a phosphor bronze bush set in the etched vertical plate which is soldered to a spacer as shown in Figure 2. A little time spent setting this up for correct free running worm/gear meshing clearances has resulted in a nice addition to the loco list.

I say addition, which it is, but 29/2 is also a stand in waiting for the day the original fails, or maybe just needs a rest for a while.

Needless to say, both will not be seen running at the same time.

Not many people will notice the differing roof profiles, but thanks to Mick I now have it correct this time!

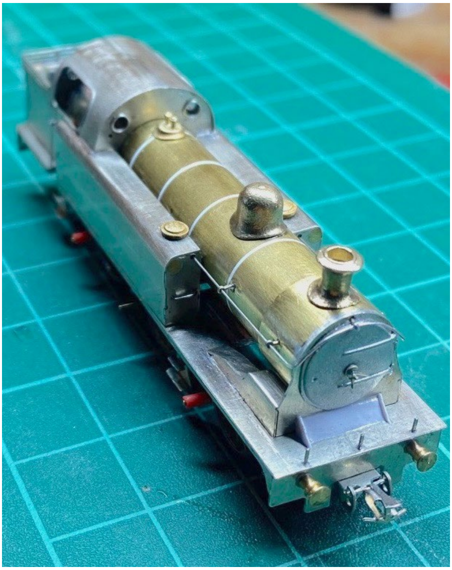


Figure 5. *Front view of No. 29/2.*

Figure 6. *Rear view.*

Semi-permanent coupling variations

An elegant solution from **Ian Smith**.

Photographs by the author.

When I started building coaches for Modbury I decided that I wanted them to be semi-permanently coupled together, and to achieve that aim I elected to use a bit of bent wire to represent the vacuum pipe as the mechanism of that coupling. All of the coaches are of etched brass or nickel silver and their headstocks are simply pieces of 0.010" material with holes for the buffers and coupling hook.

The original design of coupling was simply a bit of suitably sized brass or phosphor bronze wire bent to a sort of loose M shape, one leg of the M being soldered centrally (where the coupling hook would be) to one headstock, and the other leg of the M having a little hook bent up to engage around the headstock of the next vehicle. Photo 1 shows the arrangement on one of my four-wheeled coaches.

Photo 1.

Whilst this arrangement seems to work very well for my rakes of four- and six-wheeled coaches, I have now begun constructing a train of bogie vehicles. With the extra lateral movement of the ends of these longer coaches as they traverse through bends and crossovers, I felt that my original design might not work, so I therefore modified the design to hopefully mitigate the problem that I could foresee.

The revised design still uses a length of 0.45 mm brass wire to represent the vacuum pipe bent to a sort of M shape, but I have done away with the little hook on one leg of the M and instead leave that leg a little longer. Rather than soldering the vacuum pipe in place on the headstock of one vehicle, another modification of the original design is the formation of a little loop to allow the coupling to be bolted in place behind the headstock (all of my coaches have a hole centrally behind the headstock to allow the underframe and body to be bolted together, so the coupling uses that bolt as a fixing point).

When making the coupling, I start off by forming the loop around a round-nosed set of pliers of a size to fit a 12BA bolt; a 90° bend down is made a short distance from the loop (distance depends on where the fixing bolt is behind the headstock). A 180° bend is then made back up so that the wire will hook under or around the headstock and run up the end of the coach. The next sequence of bends forms the loose M shape of a pair of connected vacuum pipes, and is formed a few millimetres from the hook under the headstock (depending how tall you want the vacuum pipes). The final leg of the M is left over long for now, and is trimmed back once you realize how uneven your track is – it needs to be long enough such that it doesn't disengage from its socket!

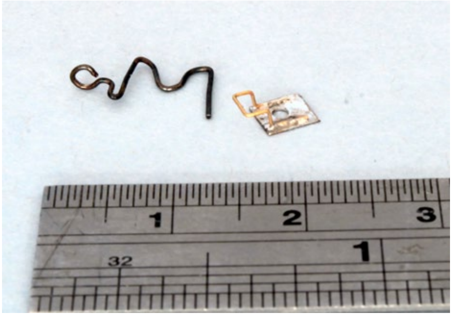


Photo 2.

A new element of the design is a wire "socket" into which the longer leg of the M engages – this "socket" is simply a piece of 0.3 mm brass wire bent into a square U shape, the legs of which are bent through 2 opposing 90° bends and soldered to a little pad of scrap 0.010" nickel silver which has a hole drilled in it to accommodate a fixing bolt. The distances of the bends from the bottom of the U are such that the U protrudes far enough from the headstock to allow the tail of the M coupling to slide freely from side to side, and is also close to the bottom of the headstock. Photo 2 shows the two parts of the coupling. Photo 3 shows the two elements bolted in place on the two coaches.

The way that the coupling engages in the socket on the next coach can be seen in Photo 4. Also evident is the way that the coupling can be bent to better follow the turnunder of the coach end. Hopefully, it will be apparent that the gap between the coaches can be opened or closed up simply by varying the width of the M of the coupling (I have yet to optimise the coupling on these coaches).

One further enhancement that could be done would be to add little twists of fuse wire to represent the joints of the two vacuum pipes, and where the flexible hose connects to the fixed upright part of the vacuum pipe.

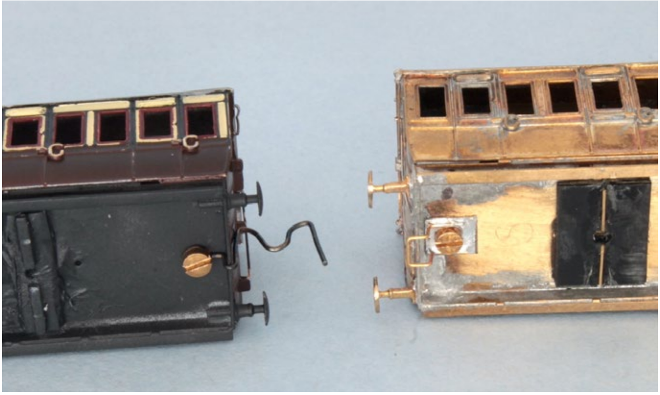


Photo 3.

Photo 4.

Using the crossing nose etch

Chris Bentley explains how to use his etch which is now available from Shop 1.

Photographs by the author.

Having had an enforced embargo put on 2mil'ing indoors after our house move in 1997 (the wife took exception to standing on bits of sleeper, track and the like – the suggestion that the problem was more to do with her walking around barefoot wasn't well received), when I came back to track making in 2016 everything had changed! Gone was the Bill Blackburn system that I had perfected in the early 1990s; everything was now plastic. I purchased a couple of the crossing nose assembly jigs and set about relearning point making. I found that I struggled soldering the crossing nose assemblies together due to the then aluminium jigs acting as massive heat sinks, so abandoned them to the bottom of my toolbox.

In one of those idle moments you find yourself having, I was scrolling about in RMweb, where I came across a series of posts by an N Gauger who was using offcuts of nickel silver to make a visual gap between point timbers and rail. This seemed a rather tedious process, so I set about the design of an etch that would repeatedly position plates under the crossing nose and secure the crossing nose components together. What follows is a step-by-step description of how to use what I created. I hope members find both the items I have designed and these instructions useful.

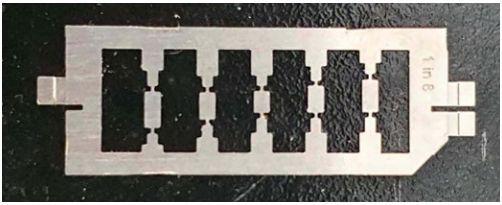


Figure 1. *The basic etch (1-110) – this photo is of one of my original production etches when I thought I would need different etches for the different crossing angles, hence it being labelled "1 in 8". The actual design is usable on angles from 1 in 7 to 1 in 10.*

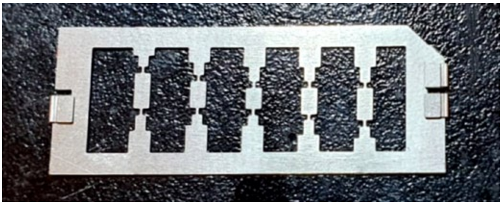


Figure 2. *With the text on the underside, fold back the three location tabs making sure they do not obstruct the alignment slots.*

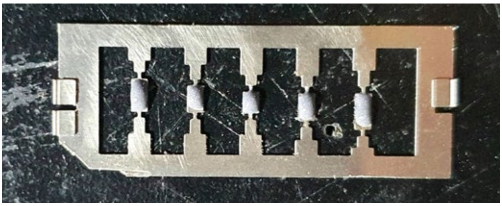


Figure 3. *Whilst perfecting the process for the use of these etches, I struggled again with the heat sink issue related to the aluminium jigs. In the end I found that applying solder paint to the pads was the way forward.*

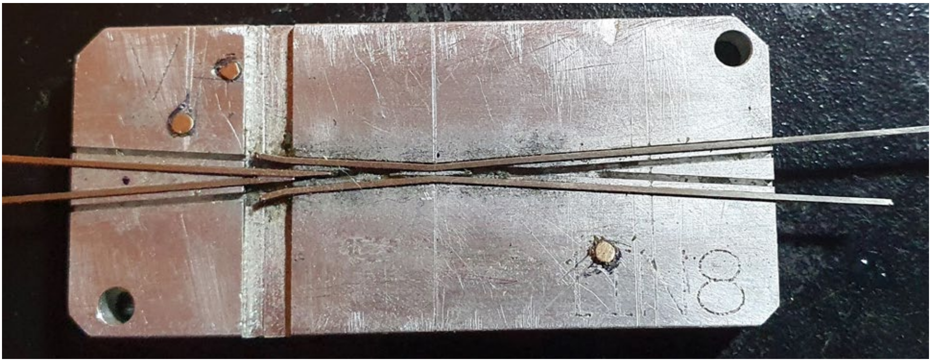


Figure 4. *Whilst most of you will be familiar with the way that the bits of rail sit in the jig, here you can see the modifications I have made to the jig to fix the position of the etch. The alignment slots line the etch up with the rail but there can still be some movement along the length of the jig, so the three brass pins I've added allow repeatable location. I have subsequently added a scribed line to mark the position the V nose needs to be in order that it is supported by one of the pads.*

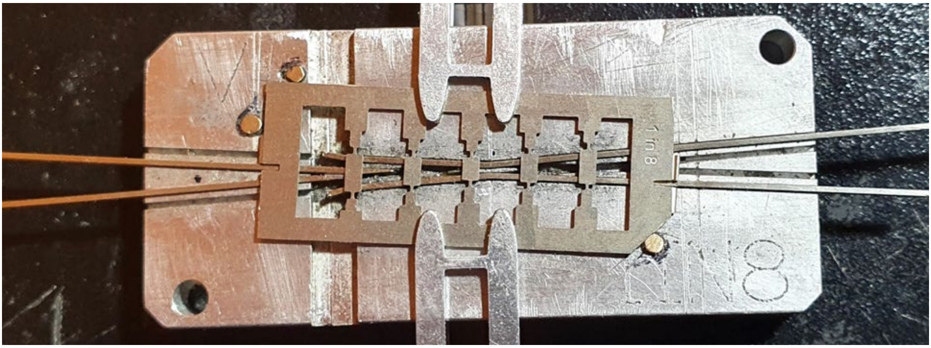


Figure 5. *The etch is now placed on top of the rail, and once happy that is located correctly it can be held in place with clips while soldering. I find a 3mm tip on my 50W iron sufficient to sweat the pads in place. In a second stage of soldering, I apply a small amount of flux into the edge formed where the plates sit on the rail and apply a couple of solder balls. Because the solder paint has formed a connection between the rails and plates there is no heat sink issue. (Don't ask me why – there just isn't.) You could ignore this second stage, but I'd rather do the extra work than risk relying on the solder paint alone as the prospect of a crossing nose coming adrift when the points are in place doesn't bear thinking about!*

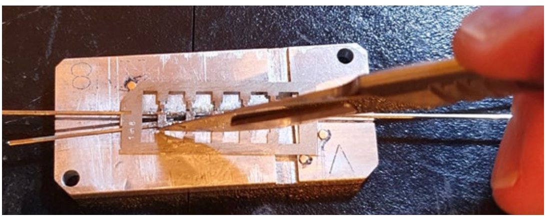


Figure 6. *The next stage is to release the now completed crossing nose assembly from the etch frame. This is easily achieved with a sharp knife applied to the 0.25mm tabs immediately adjacent to the pads.*

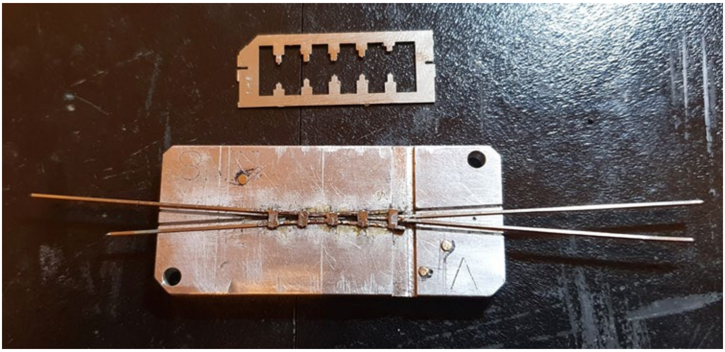


Figure 7. *The etch frame removed.*

Figure 8. *Completed assembly removed from jig – you can see the second stage soldering. Care should be taken here as the assembly can be tightly held and if you're not careful it can be damaged. At some point I suppose I could drill some release holes in the rail beds to allow pins to push out the assembly, but so far I have a 100% success rate at getting them out without damage.*

Figure 9. *Completed assembly the right way up – all that needs to be done is cut the rails to length and lightly file back the bits of pad protruding out from under the rail.*

Figure 10. *This is how I cut back the assemblies. The logic is that the four plastic chairs can be used to hold the assembly in place while the pads are soldered to copper clad sleepers. By the way, it is easier to thread the plastic chairs on before cutting back the rail – I found that out the hard way!*

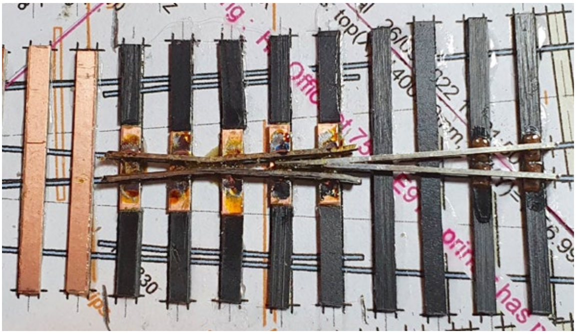


Figure 11. *This should make more sense of Figure 10. You will note that I now no longer use full copper clad sleepers under the crossing nose as this arrangement allows me to use the Easitrac check rail chairs, which I find gives me a constant check rail/wing rail geometry. This picture shows the use of a crossing nose on a single slip.*

Figure 12. *Two assemblies used back to back in a crossover – note how I have repositioned the break for the isolation of the crossing nose to allow the check rail chairs to be used for the initial fixing.*

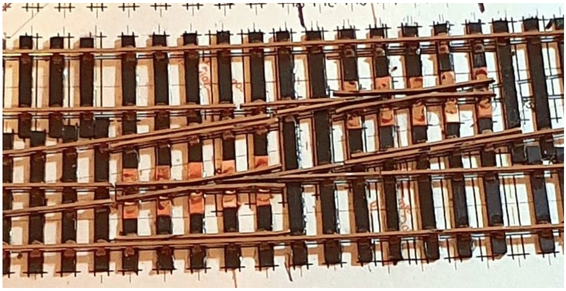


Figure 13. *A K crossing made using the diamond crossing nose etch (I-111) – the process is the same as described in Figures 1 to 9 except that the gaps need to be left. I find it better to get them under size and open the up with a 0.5 mm file if necessary.*

Figure 14. *Two K crossings in position.*

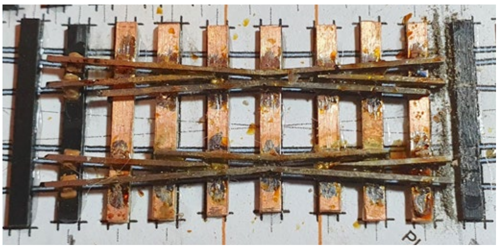
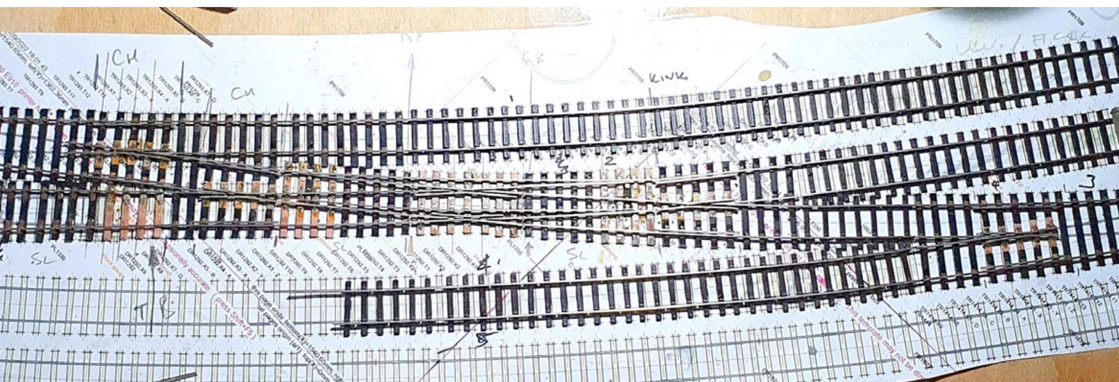


Figure 15. *The crossing nose and two K crossings used on a three-track crossover.*




READ & SON
SALISBURY
MELLS
RENWICK, WILTON
TORQUAY AND DARTMOUTH
CHIPPENHAM