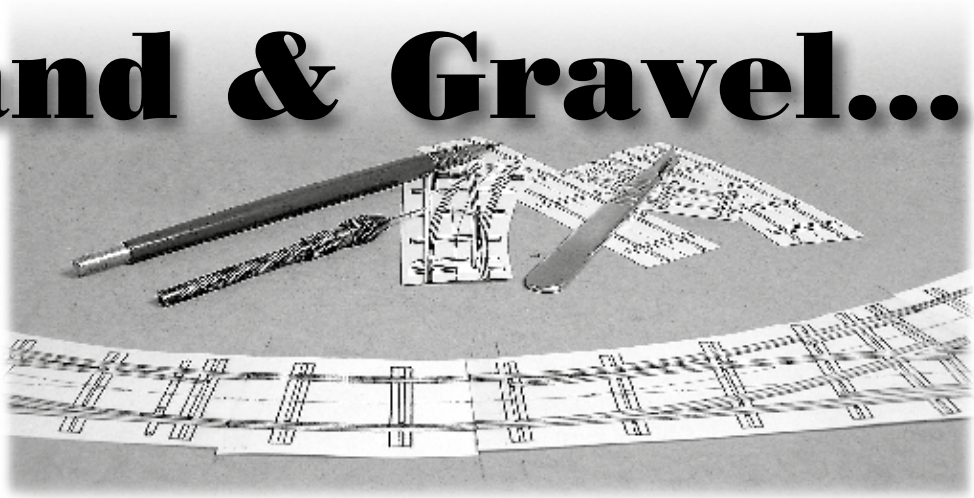
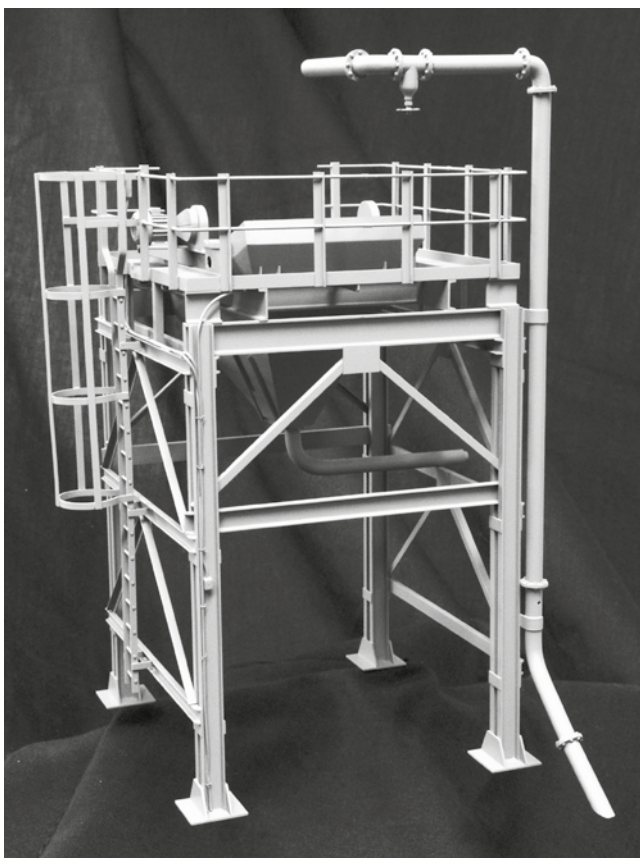
NG Sand & Gravel...

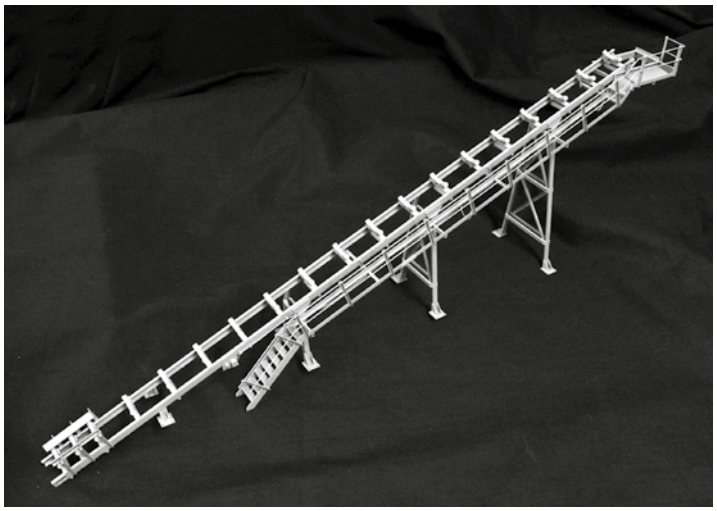
The First Instalment – Covering Concept, Planning and Track Construction in 0-14



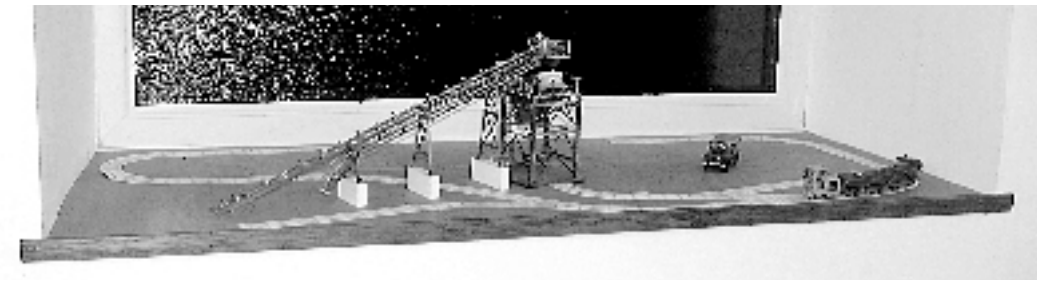
LIKE THE APOCRYPHAL COBBLER, who's children had no shoes, it is an observed truth that professional model makers seldom have a layout – or any models! This is probably a good sign however, at least it means their models sell. Your Editor, over the past thirty years, has built all sorts of models (not always of railway subjects) and layouts for a living. A small number were built for himself but he has retained none of those that reached completion. They all got sold, on the basis that '*you can always make another*' – which, of course, never happens. He does though, have a modest cupboard that contains a sufficiency of 'unfinished' projects. Having moved, four years ago, to more spacious accommodation, the desire to build another layout became overwhelming.



While in Norfolk, I had made up some components for a sand pit, namely a 'wet' washer, based on a prototype at BIS Leziate, near King's Lynn, plus an inclined conveyor to feed it. How these were constructed will be described in a later instalment. The idea was to make up a small, portable diorama, to take to exhibitions for the purpose of displaying my O-14 kit range to best advantage. I also became very interested in Otto Shouwstra's work with sound and, with his help, engineered the necessary 'gubbins' into one of my LBT kits. All was set fair – except for finding the space to build a layout. Fortunately the move to Wales solved this problem.



Photos: REVIEW Studio



The window sill layout at the early planning stage. Paper templates have been arranged (and re-arranged) to find a suitable track plan. On a small site this is actually easier and more accurate that sketching on paper. Positioning actual structures, some rolling stock etc., also helps.

I've always liked corner sites; the last 'Crowsnest Tramway' was one of my favourites in this respect. The triangular format gives a wide frontage and the backscene can be a near semi-circle, with no awkward corners. Lighting is also easier, with a long striplight (daylight corrected) along the front, to give even illumination. If you are interested in sound, as I am, the shape also acts as a crude 'speaker cabinet'. Even so, a false start was made, utilising a reasonably generous sized window sill.

I got as far as making the baseboard frame before coming to my senses, though, looking back, it was not too bad a concept. In fact, now that the current layout is nearing completion, I may well go back to the site as I have ambitions regarding a coal mining adit.

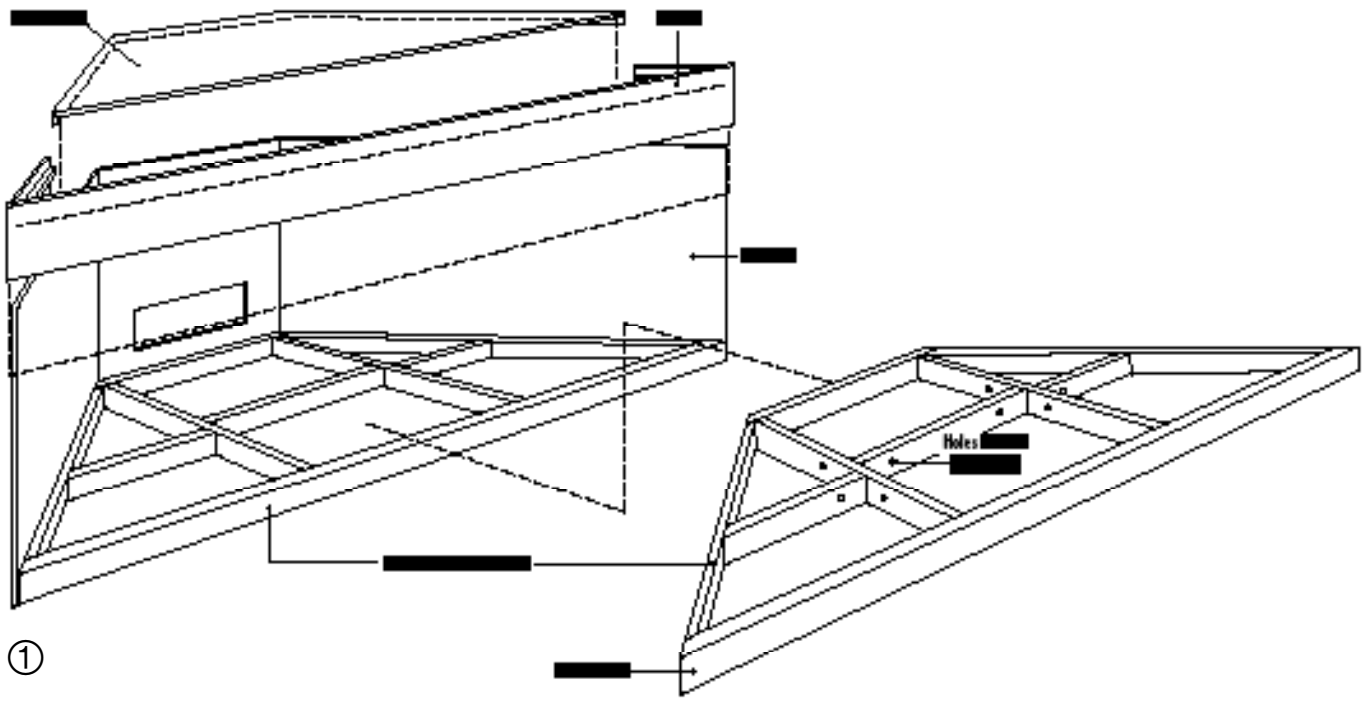
CABINET

Having benched out three walls at one end of my studio cum workshop a potential site was located in one corner – the other was occupied by shelves. I had fitted 'Spur' pattern shelving material to the walls and this was used to support the basic cabinet❶, which was built first. The base was framed out of planed 2in x 1in timber and the back and sides made from 6mm plywood. Yes, despite being a corner layout, there is a back. I did not repeat this mistake I made with an earlier layout of building the cabinet as a true triangle. It is a far too unwieldy shape. The cabinet is 68 inches across the front and 27 inches deep. The curved backscene was made from a single rectangle of hardboard, glued to the ply at either side using Evo-stik. A front 'lighting pelmet' was made from ply and stripwood to hold the 5ft fluorescent light fitting. This was designed to fit over the upper ends of the cabinet 'walls', preventing any tendency to splay. While in the studio, there is also a 'roof' of ply and stripwood to prevent too much dust from settling on the layout. This is left at home when exhibiting, as operation is from the rear – and I need to see what's going on!

A conventional 2in x 1in baseboard was made to fit into the cabinet. I did this because I wanted to be able to take the whole layout out of the cabinet. This is essential, not just during the construction phase but, later, for maintenance etc. At this stage, the whole surface was covered with Sundeala board.

PLANNING

With the baseboard out of the cabinet, on the work bench, it was easy to play around with paper track templates (see the RCL Handbook) and get an idea of how the various elements might fit together. I did not want anything complicated as regards track and also wanted to use the 'plant' I had already constructed. In the end, the track layout was largely dictated by how the conveyor and screen could be accommodated. In 7mm scale I did not think that the sand could be conveyed loose, so I needed a convincing arrangement that allowed continuously running conveyors without the need to have the feed visible. I had seen a suitable arrangement at Leziate, one conveyor, in a corrugated



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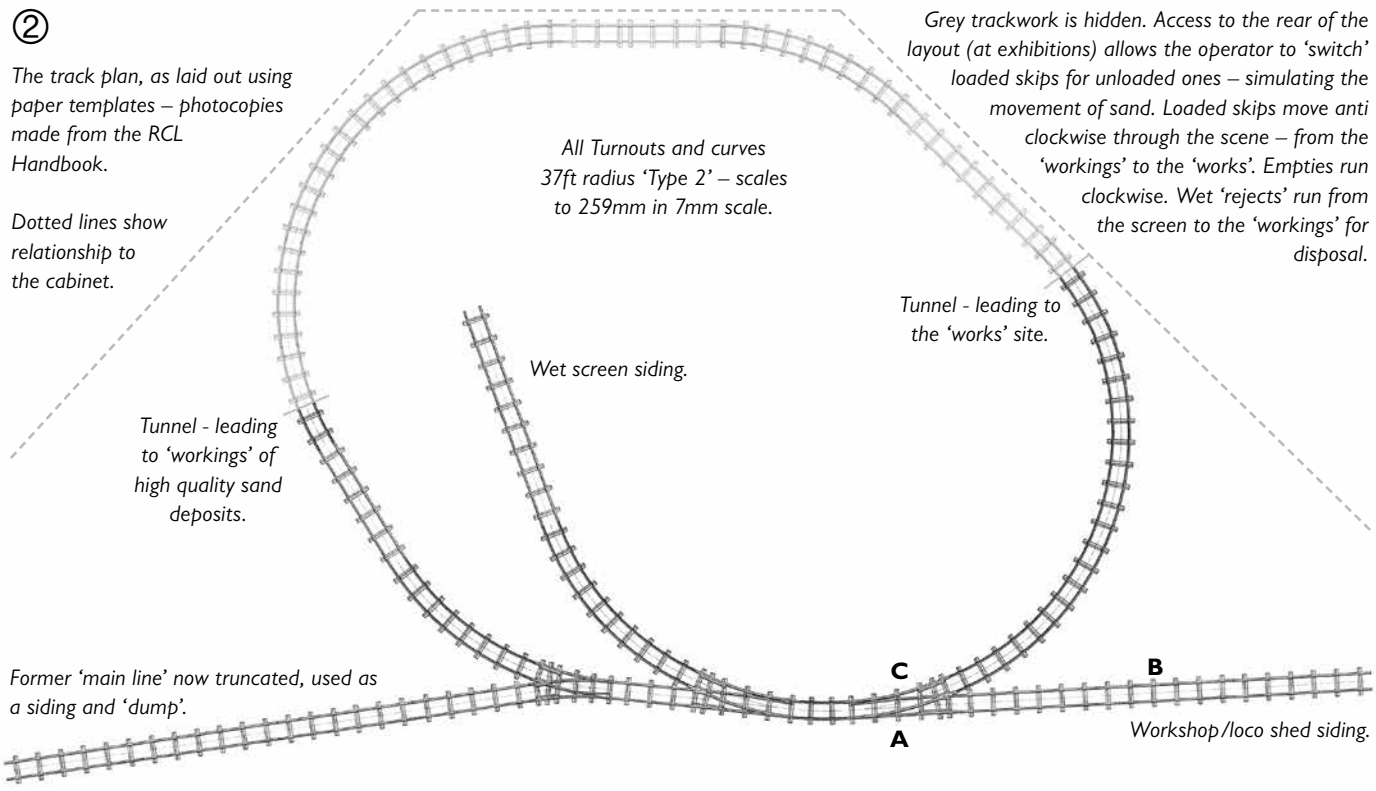


LEGEND

Gradually, as the design developed, a 'legend' was created. Ernst Novak, an emigrant from troubled Europe in the early 1930s, started to operate a small sand pit, supplying local builders. Wanting to expand, he joined forces with Victor Goode, who owned a nearby sand and gravel concern. After the Second World War, Victor retired and Ernst bought his share, but carried on with the name 'Novak & Goode'. Later, in 1957, Ernst sold out to a much larger aggregate producer, who operated the collection of pits as 'NG Sand & Gravel'.

What the viewer sees in the diorama is but part of a once extensive system linking more than one extraction site. The time is the early 1960s, when most of the rail system is still extant but being replaced by a system of conveyors. There are two concrete tube 'tunnels' that, on the right, leads to the main processing plant, while the central tunnel takes a line through to an old working of high quality sand which is nearly worked out. In earlier years, this latter tunnel did not exist and the line ran through to the left, and is now replaced by a horizontal conveyor. Set in a corrugated iron tube, the conveyor feeds onto another, which lifts the sand up to a 'wet' washer. Here the sand is cleaned by a spray of water and any debris, in the form of sticks, stones etc., screened out. The waste falls down a chute into a waiting skip below. The washed sand and water mix falls into the hopper and is then pumped up to a separator mounted on top of a pair of sand hoppers. The waste water is pumped back to a lagoon, while the sand in the hoppers awaits taking away in lorries. A very steep access road has had to be made to allow these down into what is a very cramped site. Later, they will have more room when the railway is scrapped, sometime in the late 1960s. The old track, now replaced by the horizontal conveyor, has been left as a stub siding and is used as a 'dump' for out-of-use equipment not yet deemed far gone enough for the scrapman. On the right a turnout leads to a small engine shed and workshop. One of the older locos is kept here and used on the 'rubbish' run – taking the waste from the 'wet' washer through to the old workings to be used as fill.

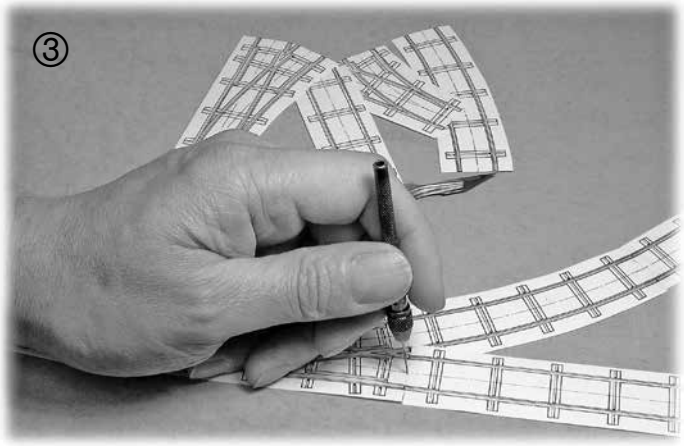
This (just about) explains the scene in a logical manner and the tunnels are not *that* unusual. I know of a number of prototype sand and gravel lines which had at least one and a clay pit line that had two* – very nearly as close together as those on my model.

TRACK LAYING

Turning the track plan into reality was quite straightforward. Using the full size paper templates the centre lines, turnout locations and sleeper positions were transposed onto the Sundeala surface. With the templates held in place with masking tape, the centre line was pricked through using a needle in a pin vice ❸. Before lifting the templates a pencil was used to mark the ends of each track panel. You might ask at this point – *"why not just stick down the templates and build direct on to them?"* Well, as an enthusiastic user of the 'bonded ballast' system, I was worried the trapped paper might swell or come loose during the 'wetting' process. Probably I was worrying about nothing but I wasn't prepared to find out the hard way.

Once marked up, all the sleeper positions were pencilled in, using clear plastic templates ❹. These were made by photocopying the track drawings onto clear overhead projection film. The sleeper positions were cut out with a scalpel, making clear stencils.

*… *See RCL Handbook, part PH07, 'Brick & Tile Works Railways' by Sydney Leleux, pages P91-P100 covering Wheatley & Co. Ltd.*



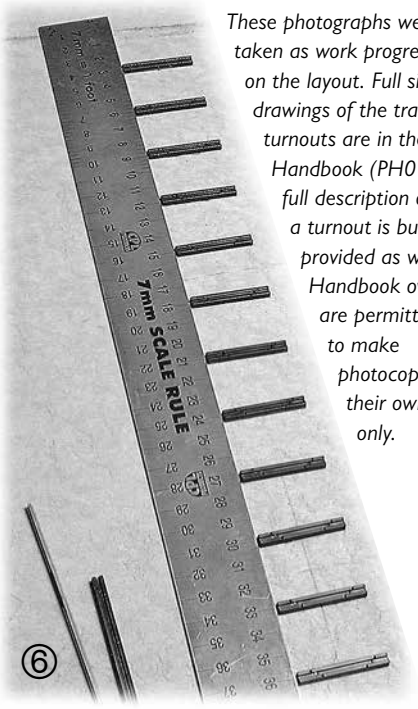
With everything marked up in pencil on the baseboard, the slots beneath the turnout tiebars, for the operating rods, were cut through ❺. Next, all the sleepering was stuck down, from stocks cut beforehand. Although I usually find no use for the viscous form of polystyrene cement sold in tubes, this was one time it proved ideal. It's 'stickier' nature and longer setting time allowed each sleeper to be firmly glued in place but with a short time for re-positioning. A steel rule was used to keep straight track sleepering aligned ❻.

Before laying any rails, the top surface of all the sleepering was made absolutely level by sanding ❼ with a long block made from scrap timber. This ensured that all the rails would be level. Remember, it might end up looking like rough industrial narrow gauge track but it needs laying with just as much care as any other if good performance is to be obtained.

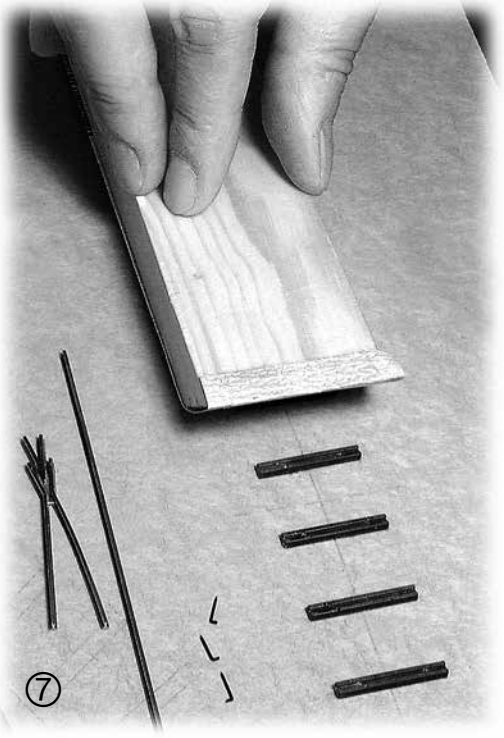
All three turnout crossings were made up on the workbench first. I silver soldered the 'vees', so as to avoid soft solder on the running surface. Once cleaned and polished there was no visible join. These were put into an aluminium jig and soft soldered to the other rail parts, including an 'X' shaped crossing support. This not only made the assemblies stronger – it provides support for the wheel flanges, preventing 'drop' as the wheel passes over the crossing.

The first rail to be laid was rail A, the straight stock rail to the first turnout. With the crossing in place, rails B and C were laid. I progressed in a clockwise direction, laying the other two turnouts, then the respective sidings followed by the running track.

Each rail was cut to span a number of portable track panels, starting and ending on a prototype joint position. There is little point in laying separate rails for each scale 'track panel'. The intermediate 'joints' were simulated by cutting through the head and foot of the rail only, using a fine piercing saw, leaving the web intact. Where part of the rail being laid was a turnout stock rail,



These photographs were taken as work progressed on the layout. Full size drawings of the track and turnouts are in the RCL Handbook (PH01). A full description of how a turnout is built is provided as well. Handbook owners are permitted to make photocopies for their own use only.



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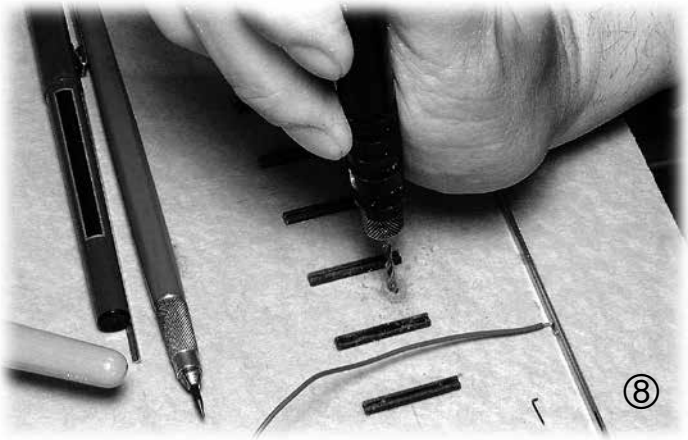

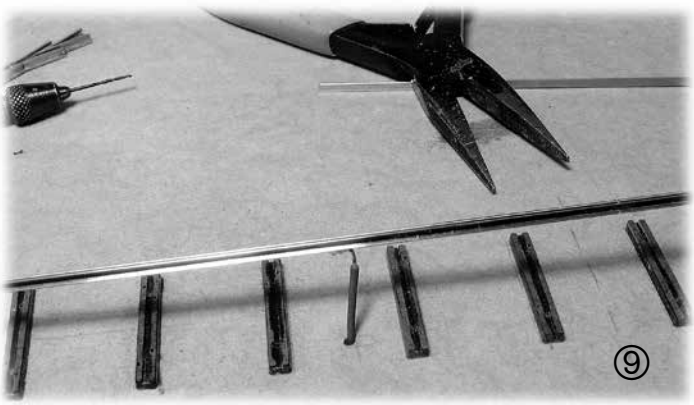

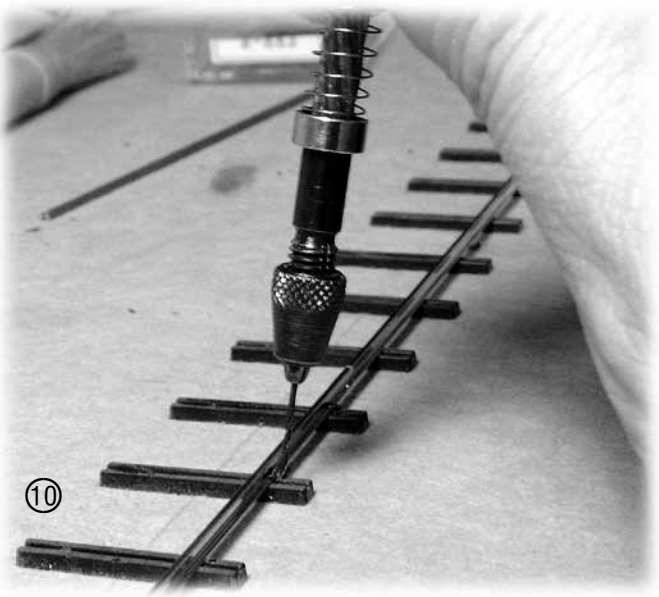

Photos: REVIEW Studio

it was carefully shaped to receive the turnout tongue rail before laying. Holes were drilled ❽ in strategic places for electrical feeds. Each rail had a wire dropper soldered to the underside of its foot ❾ so current could be supplied direct from a 'ring main' beneath the baseboard. Having the wires soldered to the underside of the rail foot makes them invisible after ballasting. A further advantage is the ease with which track sections can be provided or altered. No metal 'push-on' fishplates were used at all.

Once a length of rail was in place, complete with its feed wire, it was spiked down. The rail spikes need to be driven it at an angle of around 10-12 degrees to the vertical, inclined away from the rail head. This ensures that the spike head just misses the rail head and lies firmly against the web, gripping the foot tightly. As the holes in the sleepers are, of necessity, moulded vertically, they were run through quickly with a 0.70mm drill in a archimedean drill ❿, held at an appropriate angle. Plain track sleepers have four holes and are largely self gauging. Only drill through the sleeper, try to leave the Sundeala untouched if possible to ensure the spike is fully gripped when driven home.

All the curved rails were pre-shaped using a RR01 rail roller. The reason for this is to ensure the foot of the rail lies flat. If you curve flatbottom rail (as is common) between finger and thumb, it curves in two planes, being, basically, an invert 'T' section. Using the roller prevents this, as it holds the rail flat and allows the curve, however tight, to take shape in one plane only.

Provided care is taken when spiking the rails into place and it is pre-curved, there is no requirement for fishplates, other than of the cosmetic kind. These latter were only added once all the track was complete, prior to ballasting with fine sand.

TURNOUTS

Turnout sleepers have two rows of spike holes on one side only. Lay these along one stock rail position (usually the straight one). All other spike holes need to be drilled to suit. I cut and shape the rails in the order shown in the Handbook, fitting the spikes as I go. As noted above, drill the sleeper only.

I will not dwell on turnout construction over much, as the subject is amply covered in the 'Handbook'. Provided the instructions are followed carefully, perfect running should be easily obtained. Constant use of a TG02 track gauge is essential and a made up PK04 wagon chassis is useful for checking progress – though it is important to ensure that the wheelsets are set within the correct 14mm gauge back-to-back tolerance (12.50mm max. – 2.40mm min.). This is crucial when fitting the check rails.

FINISHING

Once all the track was spiked in place and the cosmetic fishplates added to the visible track joints, it was wired up and thoroughly tested with a loco and some wagons. Because the rail moves about a bit, do not use a 'brittle' adhesive, for fixing the cosmetic fishplates in place. I used Evo-stik. Any alterations or corrections were made at this stage. I took the whole baseboard and, holding it vertically, sprayed the whole track area, rails, sleepers etc., with a decent wet coat of Humbrol 'rust', their tinlet No. 113. Before the paint had dried out, the railheads were wiped clean of paint using paper pads dampened with thinners. After three days, when judged really dry, the railheads were cleaned properly using 'crocus' paper. This is basically, rouge coated paper. It has a polishing, rather than an abrasive action. The more you use it the better the shine. I never use any abrasive product or tool on the railhead. Experience has taught me that abrasive rail cleaners only offer a short term cure. In fact, they make matters worse as the small scratches they leave encourage arcing and the accumulation of grime.

I left the track in this state for many months while repeatedly running trains and trying to find where the weak points (if any) were. In the interim I got on with building the horizontal conveyor.

More information in the next instalment…