

NG Sand & Gravel...

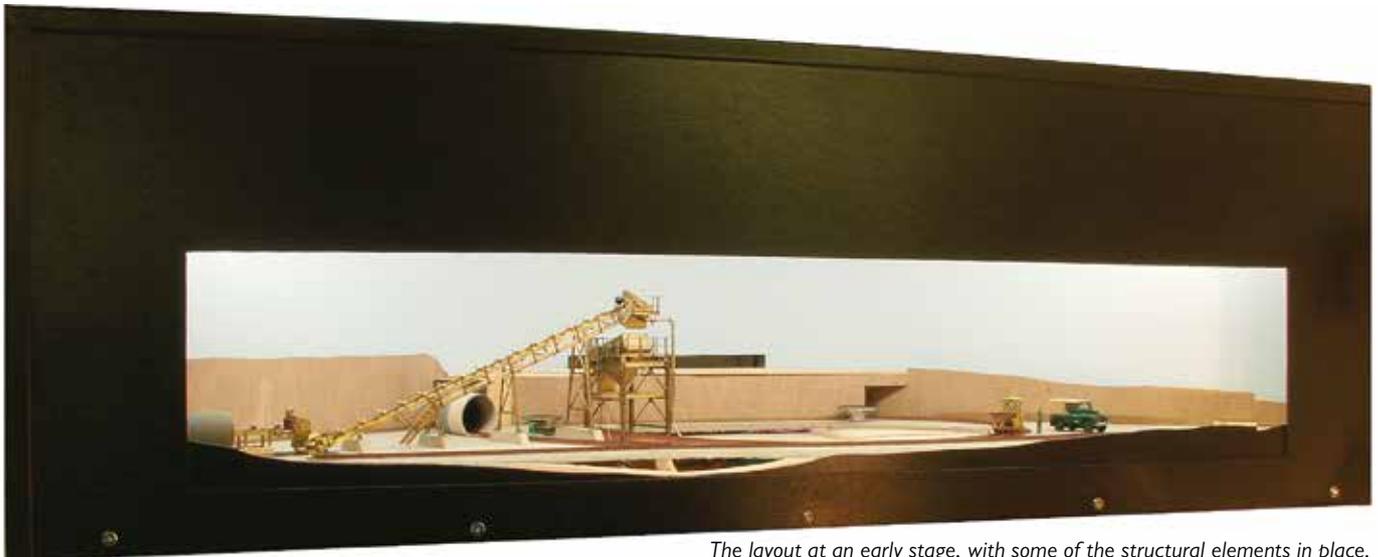
014 Industrial Layout Part 2 – Electrics, Tunnels, Etc.



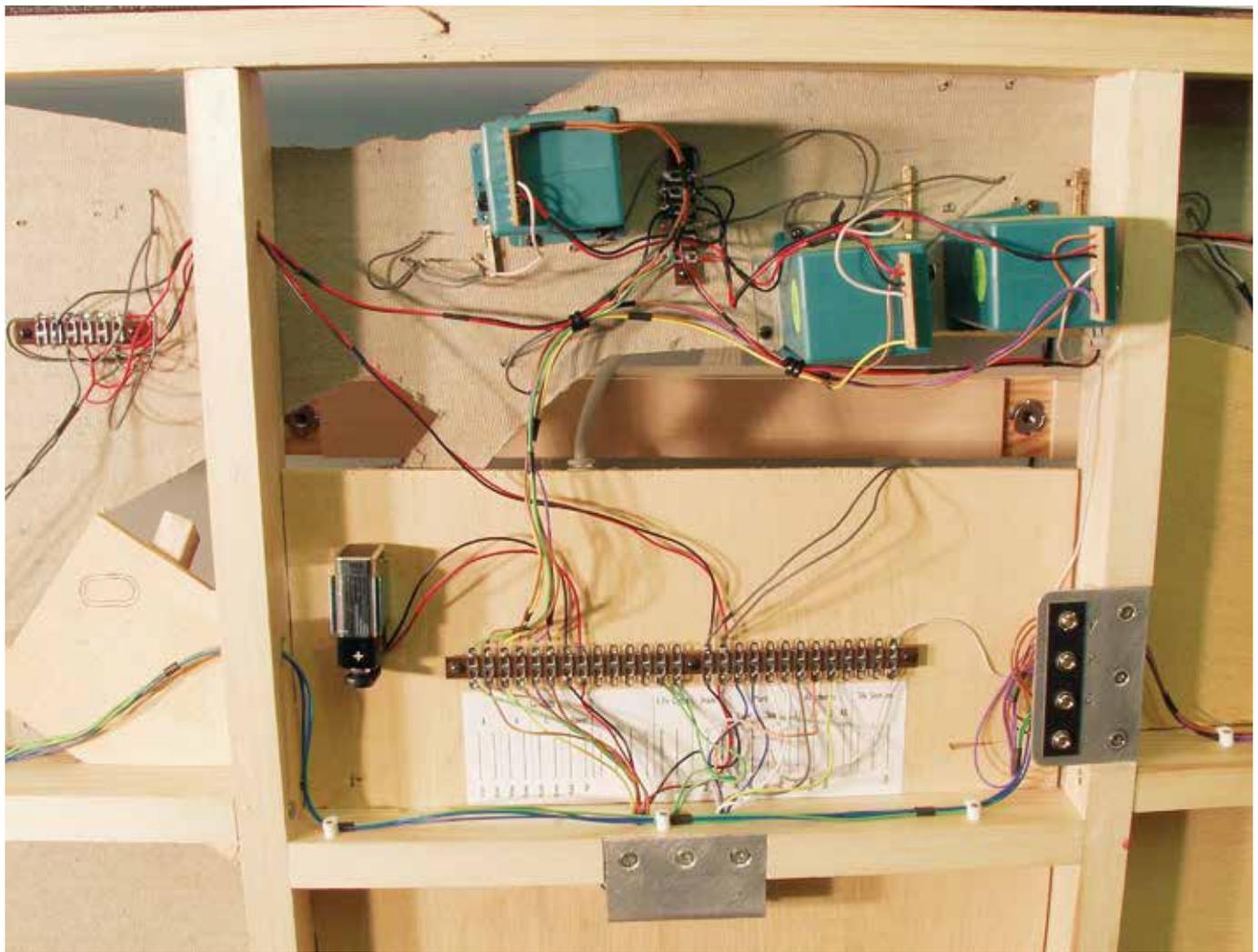
AS DESCRIBED IN ISSUE 59, the track was wired up and tested thoroughly before any attempt was made at scenery or ballasting. At this stage, the layout, in its custom case, looked like the photograph below. This was a crucial stage in that any problems with regard operation or performance needed to be dealt with before progressing on to either ballasting or scenic work.

A lot of time was spent fitting the under-baseboard wiring and various connectors to the sound system etc. I purchased some reels of 1mm section coloured stranded wire from Squire's in an attempt to colour code everything as I went along. For the most part this has worked quite well, though as someone who does not find

the electronic side of our hobby that easy, I was quite alarmed at how complicated the wiring of even this simple little layout actually looks. To help me, I made self adhesive labels to record the different feeds and connector wiring, placing these on the underside of the baseboard, as close to the actual wiring as possible.

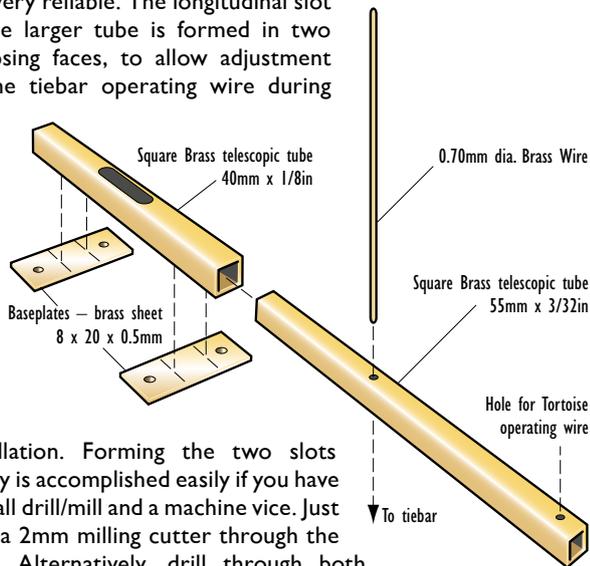


The layout at an early stage, with some of the structural elements in place.

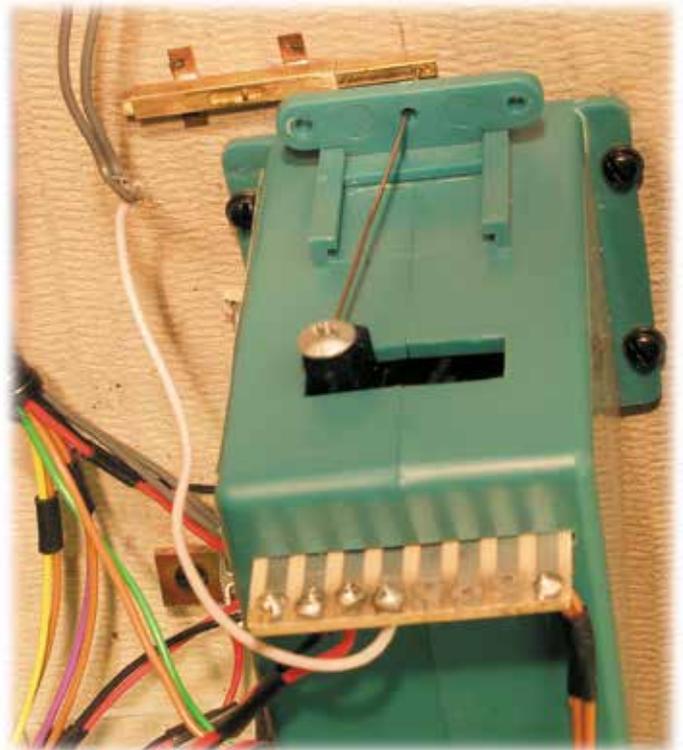


TURNOUT OPERATION

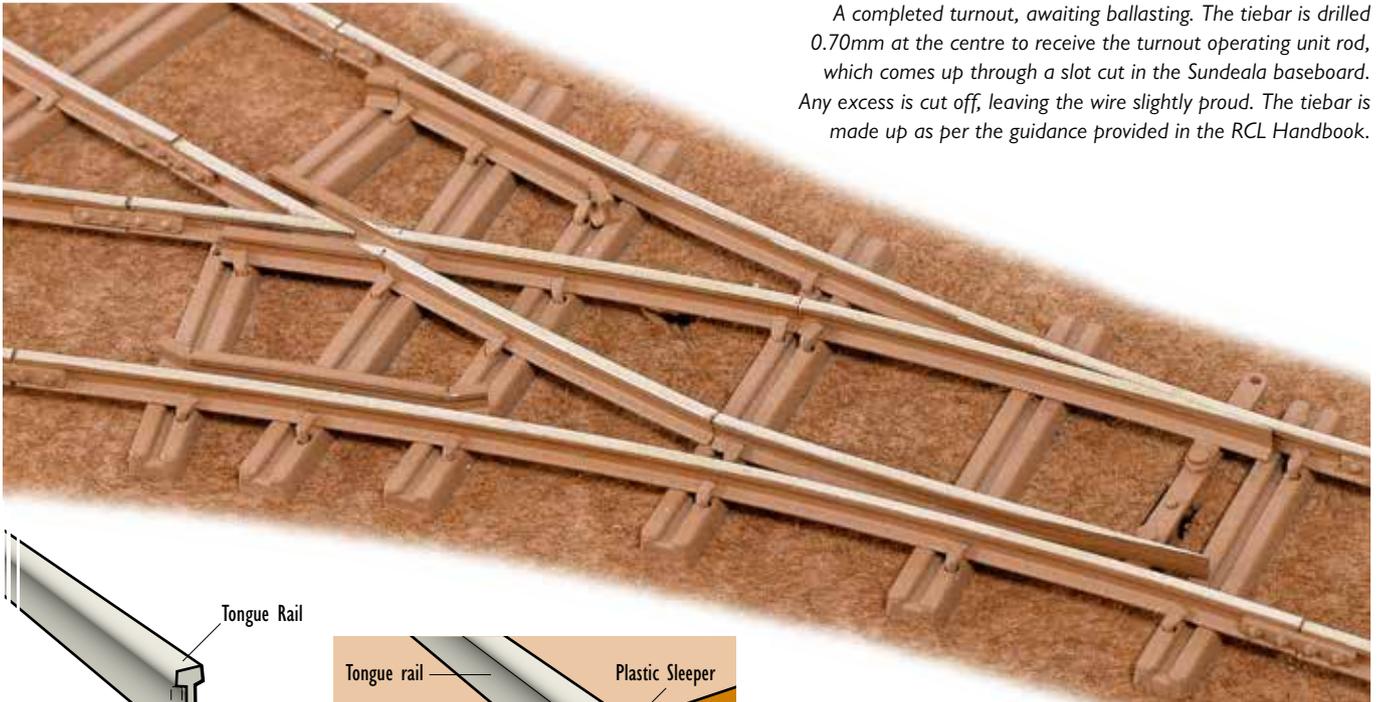
I was keen to try out the 'Tortoise' slow motion turnout motors and developed an under-baseboard 'turnout operating unit' to allow easy connection to the turnout tiebars. This is a simple device, made largely from KS telescopic brass tubing. Mine uses $\frac{3}{32}$ in. inside $\frac{1}{8}$ in. – but it is easy to vary the sizes according to scale. The device is very simple and easy to make but robust and very reliable. The longitudinal slot in the larger tube is formed in two opposing faces, to allow adjustment of the tiebar operating wire during



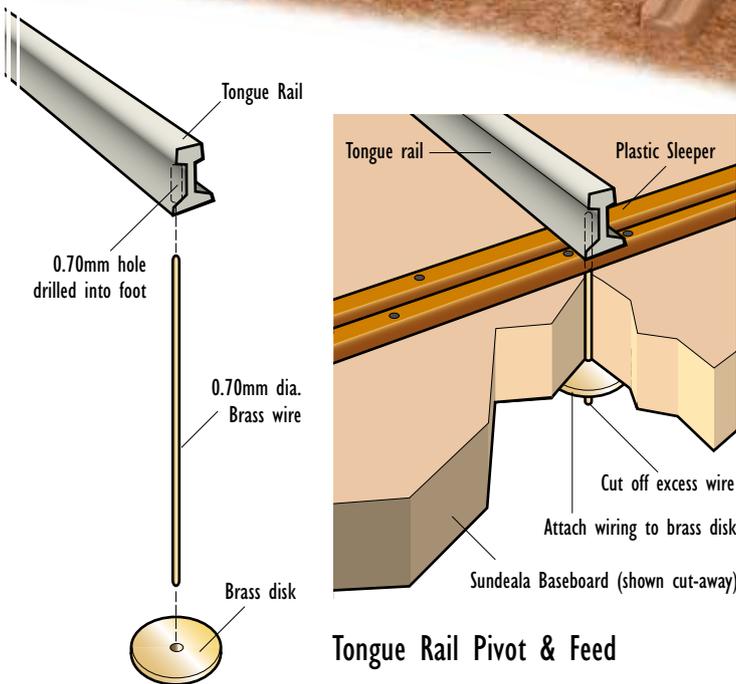
installation. Forming the two slots neatly is accomplished easily if you have a small drill/mill and a machine vice. Just pass a 2mm milling cutter through the tube. Alternatively, drill through both



Diagrams & Photos: REVIEW Studio



A completed turnout, awaiting ballasting. The tiebar is drilled 0.70mm at the centre to receive the turnout operating unit rod, which comes up through a slot cut in the Sundeala baseboard. Any excess is cut off, leaving the wire slightly proud. The tiebar is made up as per the guidance provided in the RCL Handbook.



'lifetime' joint. An 0.75mm dia. hole is then drilled through the plastic sleeper and baseboard to accept the wire, acting as a fixed pivot for the tongue rail. On the baseboard underside a 10mm dia. brass disc, about 1mm thick, is soldered over the protruding length of brass wire and the excess removed. This serves two purposes; it stops the tongue rail lifting and provides an easy place to solder the feeds from the tortoise switch.

Rather than operate the tortoise units as intended, by applying current continually, I used miniature 'biased centre off' SPDT switches to supply current to them. In use you just hold over the toggle until the motor has moved the tongue rails in the desired direction and has stopped. Then simply release the toggle which springs back to the centre off position. The motor thus does not have to endure long periods in a 'stalled' condition.

faces in two places and open up between the holes with a round swiss file. I used square tube because it cannot rotate, ensuring that, once correctly aligned, the tiebar operating pin remains upright. I applied a dry lubricant (graphite) on the inner tube – this prevents any solder spreading during assembly and provides smooth operation afterwards.

One useful feature of the Tortoise turnout motor is the provision of a comprehensive set of switches, ideal, not only for changing crossing polarity as the motor operates but, also, providing panel lights to indicate position if required. I used the 'changeover' switches for controlling current supply to the crossing and tongue rails. The feed to the crossing is simple, just a dropper wire, soldered to the crossing as it is laid. The tongue rail feeds are a bit more complicated. Once the tongue rails are formed to the correct shape and length they have a 0.70mm hole drilled through the foot at the crossing end, into the web, stopping short of the railhead. The drill will break through the web, but don't worry. Into this a length of brass wire is soldered. I use silver solder to guarantee a

TUNNELS

Before getting on with the scenery I had to make the various tunnels, two for the railway and one for the conveyor. The railway tunnels were the easiest, being formed from 60mm o/d Perspex tubing with a 3mm wall thickness. This gave just enough clearance for the little Ruston 'LA' series loco I had built. In fact, the hardest part was cutting the angled segments, necessitated because the track they hide is nearly all curved. The segments were glued to one another using cyanoacrylate adhesive. As the tubing was clear, I gave the finished tunnels a good coat of aerosol grey primer. The interior and exposed end faces were painted with Humbrol 'concrete' paint. More than one coat was applied, each liberally sprinkled with talc powder to give a fine texture.

The conveyor tunnel had the additional complexity of requiring a speaker system for the 'conveyor sound'. A box was built up in the left hand corner of the layout to hold the speaker and cover the mechanism that drives the conveyor itself. Forming the 'corrugated



The first layer of poly-foam sheet being fitted in place. Slots fit around the supports for the inclined conveyor.

iron' tunnel caused some head scratching so I actually began forming the scenic base before a solution presented itself. The only material big enough to roll the tunnel from was 'corrugated' (vacuum formed) plastic sheet. Trying to roll this by conventional means was a disaster. Success came when it was realised that the internal diameter of some PVC piping I had was about right for the diameter of tunnel (7 scale feet) I required. I cut a rectangle of plastic sheet and rolled it up, inserting it into a slightly longer length of the PVC tube. This was placed in a pan of boiling water on the kitchen stove. Very quickly, the thermoplastic sheet relaxed and formed a perfect cylinder, constrained by the PVA tube which remained resistant to the heat. I quickly took the pan off the stove and dumped the contents into a bowl of cold water in the sink. More cold water was run over the PVA tube, which was now cool enough to handle. Once quite cold, I was able to slide out the corrugated cylinder - perfectly formed. Some cutting and shaping was required to fit it in place but it has held its shape with no distortion at all.



SCENERY

With all that out of the way and with everything running smoothly, I turned to the scenery. A 4mm plywood 'scenic board' was erected around the rear of the baseboard, profiled to taste (see photo, bottom page 163). I had tried out styrene foam as a scenic base on my last 'Crowsnest Tramway' and been pleased with it. This time I went further and adopted the Woodland Scenics 'SubTerrain' system. The range of varying thicknesses of foam sheet greatly aided the formation of the desired landscape. Cutting was accomplished with one of their hot wire cutters and a long bladed 'foam knife'. Rather than resort to any plaster based fillers, I used 'foam putty' which dries with the same characteristics as the foam itself.

The scenery was built up in layers of foam, cut roughly to shape with the hot wire cutter, then fixed in place with rapid setting PVA adhesive. Further shaping was made with the hot wire cutter and

knife once all the layers were in place. Finally, before texturing began, the white foam was painted liberally with 'dirt' brown acrylic paint. The resulting scenic base is both lightweight and strong.

TEXTURING

I really did want to experiment with modern 'fibre' based grass systems with this layout. To begin with, I tried 'SILFLOR' grass mat but found this, while realistic, rather difficult to stick down over complex shapes. The mat base is quite stiff and inflexible. Fortunately, I discovered the 'HEKI' range of grass mats, which are far more flexible and, if anything, more realistic. You can see the effect attained in the photo on page 163.

To be continued...