

Railway of the month

Northchurch

Sid Stubbs describes his 4mm fine-scale 18mm-gauge Midland layout

Photos by Brian Monaghan

THERE can surely be no finer proof of the old adage that a model railway is never finished than that afforded by the Northchurch Branch for it is becoming increasingly clear that this one never will be.

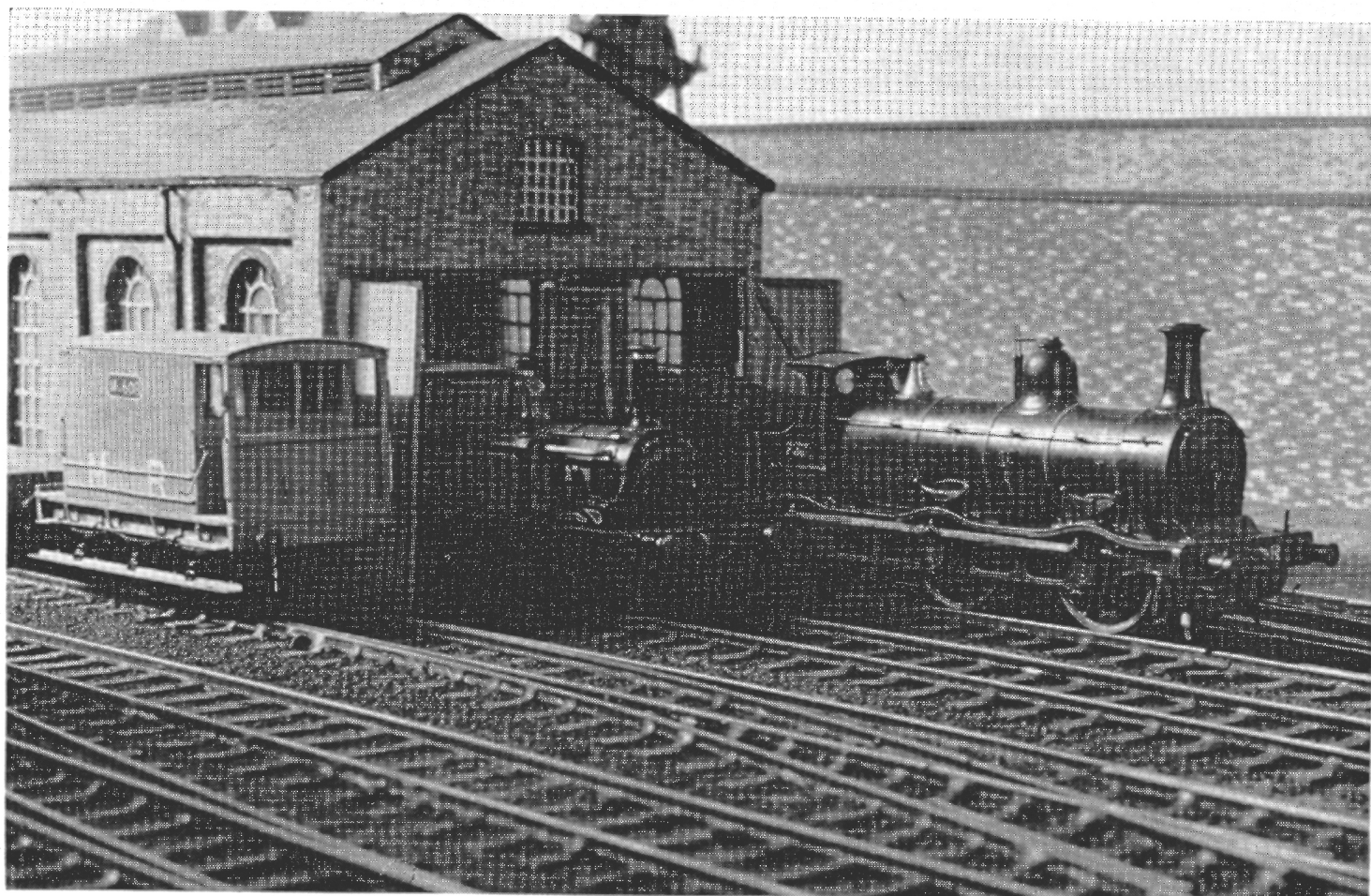
Its history might conceivably be said to date from 1939 when the frames were laid down for the Stanier 0-4-0 saddle tank No. 7002, then 16.5mm., 3-rail, 12V but since converted. Not exactly a Midland engine but then the line only boasts one to date, a "Kirtley" 0-6-0 goods. Apart from a natural tendency to tardiness on the part of the builder, some measure of explanation may lie in the fact that absolutely nothing save magnet alloy, copper wire for the motor windings, screws and steel balls for the worm thrust bearings has been purchased for any of the engines. The remainder has been produced from scratch in the true model-engineer tradition, but, with the best will in the world, spoked wheels from solid bar, armature laminations, gears and the like, to say nothing of cab fittings, are not made overnight. On the credit side, such methods do permit really accurate models of any prototype one pleases without restrictions as to what is commercially available, and, of course, nothing can equal the satisfaction to be obtained from scratch building.

The layout itself dates from 1950 when, fired with admiration

for the wonderful EM layout exhibited at the 1949 Manchester Exhibition by the late Alex. F. Jackson and Norman Whitnall, the terminal station, "Northchurch", was built bearing no relation to any real location but planned to give passenger, goods and loco facilities on a 12ft. x 2ft. baseboard made in two 6ft. x 2ft. nesting halves for transportation. This station appeared at many exhibitions in Manchester and elsewhere in conjunction with other layouts built at various times by several members of the Manchester Model Railway Society, and, being strongly built, it survived its travels well. Half-inch thick Celotex on 2in. x 1in. framing provides the baseboard, the track being secured by Casco glue. Unfortunately, the baseboard proves somewhat noisy in its present, rather quiet location.

Upon marriage and the acquisition of a house, work commenced upon the cock loft in the roof. The ceiling joists were pulled up to hangers from the roof purlins to level and strengthen the area, a tongued-and-grooved floor laid in and the roof timbers lined with Sisalation, a craft paper with aluminium foil backing fastened foil side out to combat excessive heat in summer. This foil, earthed, makes an ideal screen against TV interference from the track. The final space is 20ft. x 9ft. all with full headroom.

A subframe of 2in. x 1in. timber was then built out from the



RIGHT: *The author at the Northchurch controls.*

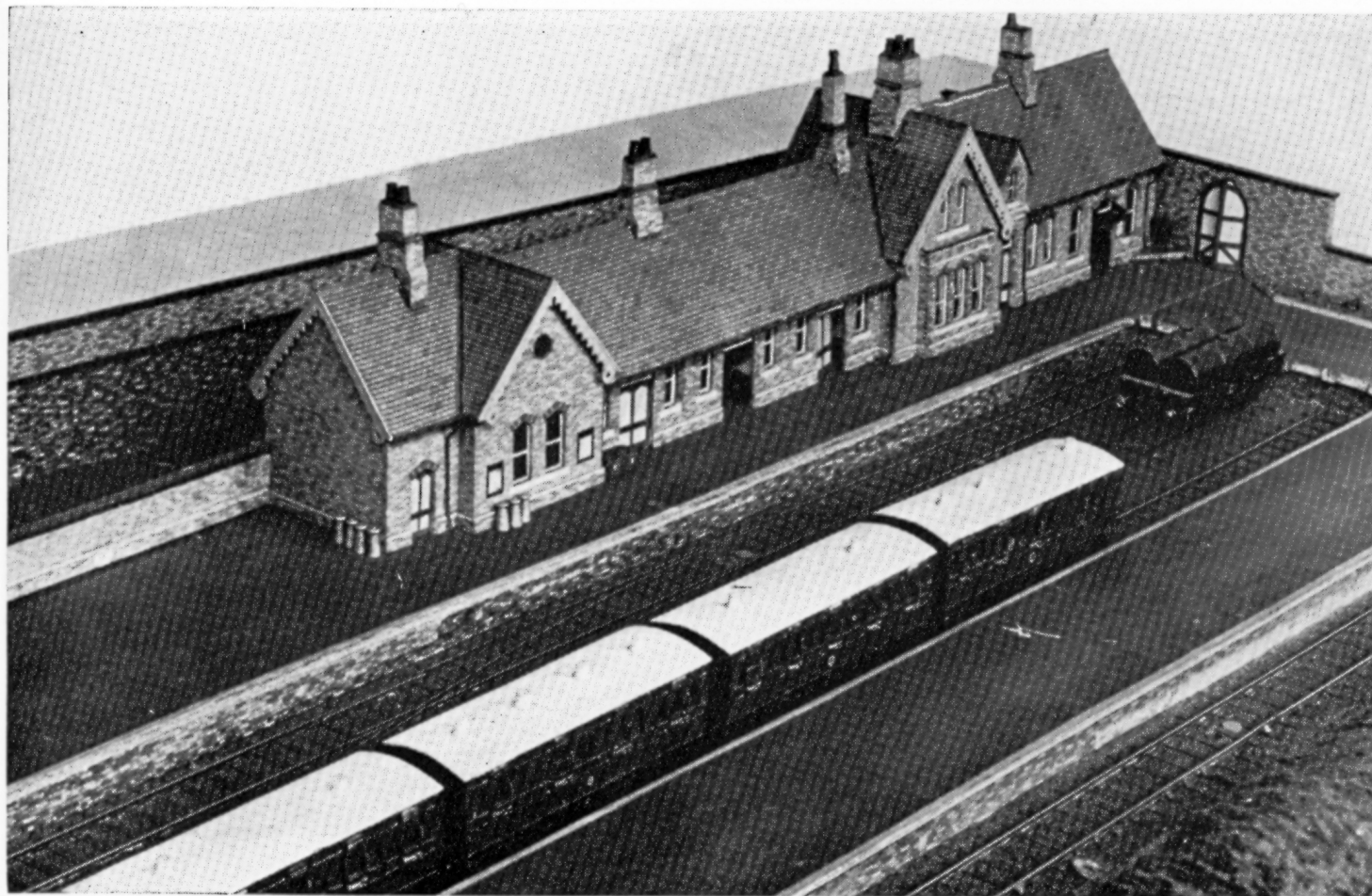
BOTTOM LEFT: *Northchurch shed with Terrier and Kirtley.*

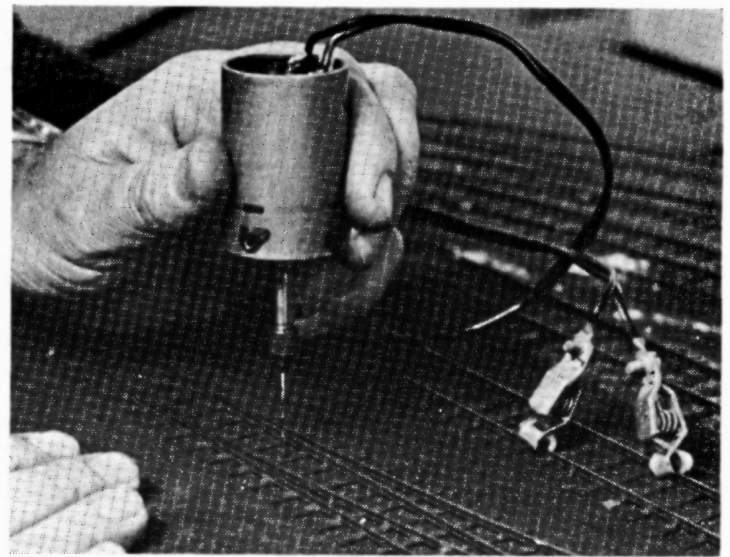
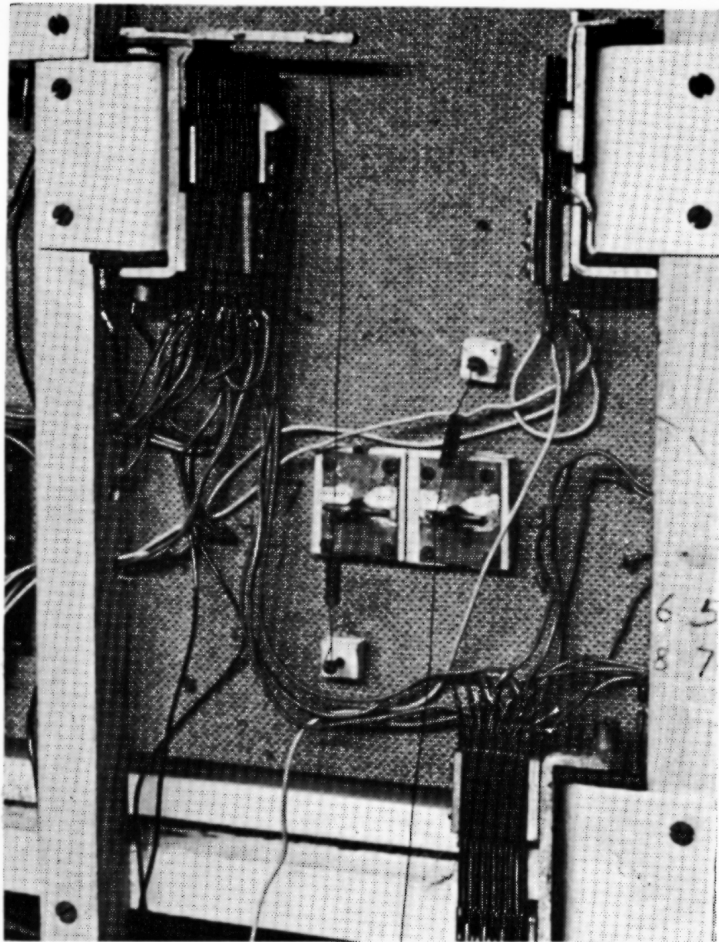
BOTTOM RIGHT: *Northchurch station, with train of L.B.S.C. 4-wheelers and Midland gas-tank wagon.*

purlins at 4ft. 3in. height and open mattress frames of 1in. \times 1in. laid on this, the latter being located by vertical steel dowels and bushes. Each section of frame therefore lifts out instantly being located by the dowels and its own weight. Multi-pin plugs and flexible cables carry the circuits between frames.

Strips of $\frac{1}{4}$ in. hardboard, rather wider than the ballast, provide the track bed but the track itself is laid on strips of $\frac{1}{8}$ in. black rubber sheet, cut to the width of the ballast with bevelled edges and spread with Bostik No. 2 adhesive. After the track is pressed firmly down on to the adhesive, a coarse sand is sprinkled overall and also pressed into the Bostik. After 24 hours, the surplus sand is brushed off, leaving ballasted track. The surface of the hardboard is painted with thick dark-brown paint where it is not to be covered by the rubber and sprinkled whilst wet with a mixture of No. 80 carborundum grit and soot (the wife's still looking for that pepper pot). This gives a fine cinder-foundation effect when dry. The rubber strip carrying track and ballast is then tacked in place with a blob of Bostik every 18in. It lies flat, does not move and, being floating on a thin layer of air, gives wonderful quiet running with every rail-joint click audible.

Track is home-made, using Bull-head rail, unfortunately slightly over scale because, although a scale die was made at the time, it





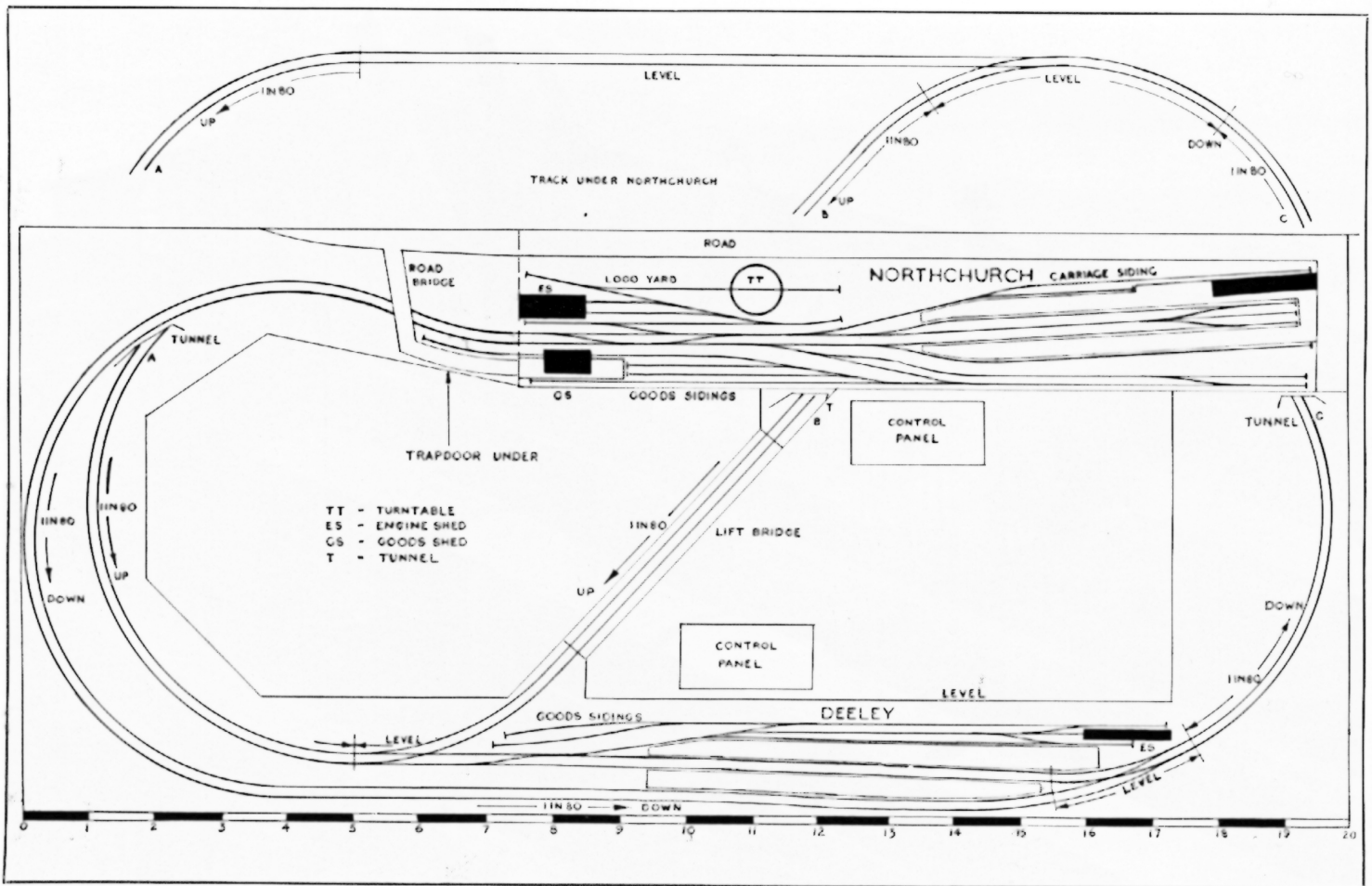
ABOVE: Track repairs with a miniature drill, based on an ex-government 24V motor. Current picked up from track.

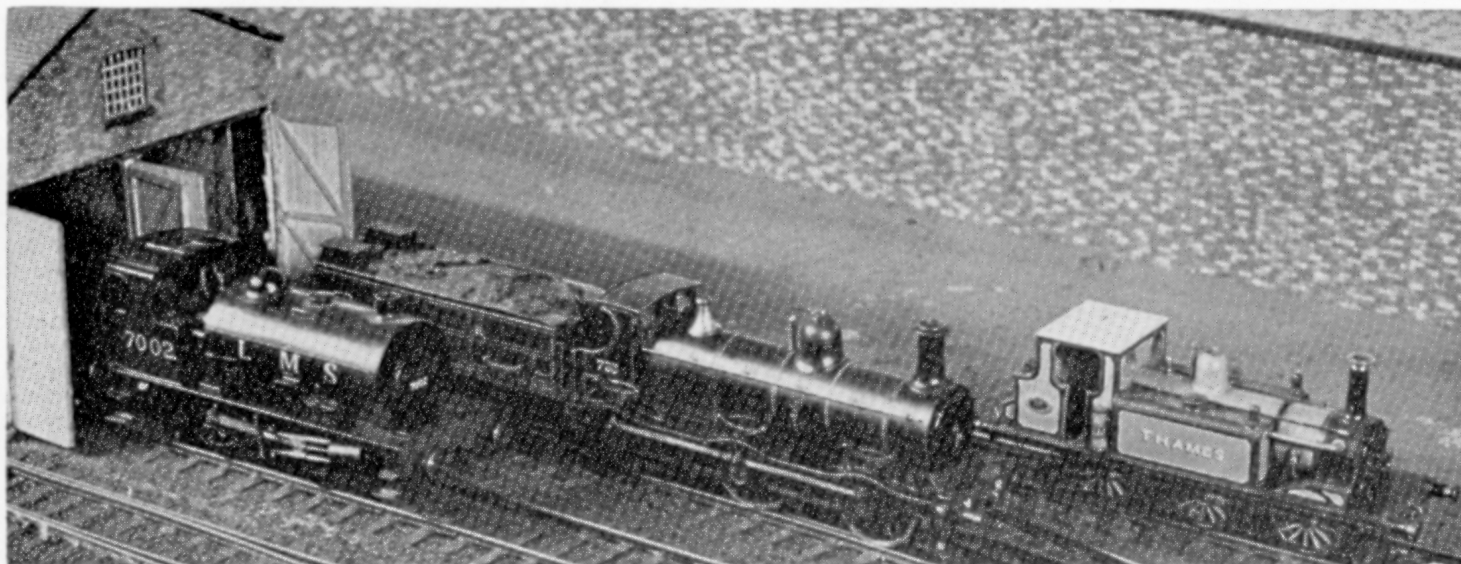
LEFT: Underside of baseboard, showing method of point control by relays.

TOP RIGHT: The loco shed. Stanier saddle tank No. 7002, Kirtley 0-6-0 No. 733 and Stroudley "Terrier" No. 57 "Thames".

BOTTOM RIGHT: Northchurch engine and goods sheds.

BELOW: Plan of layout.





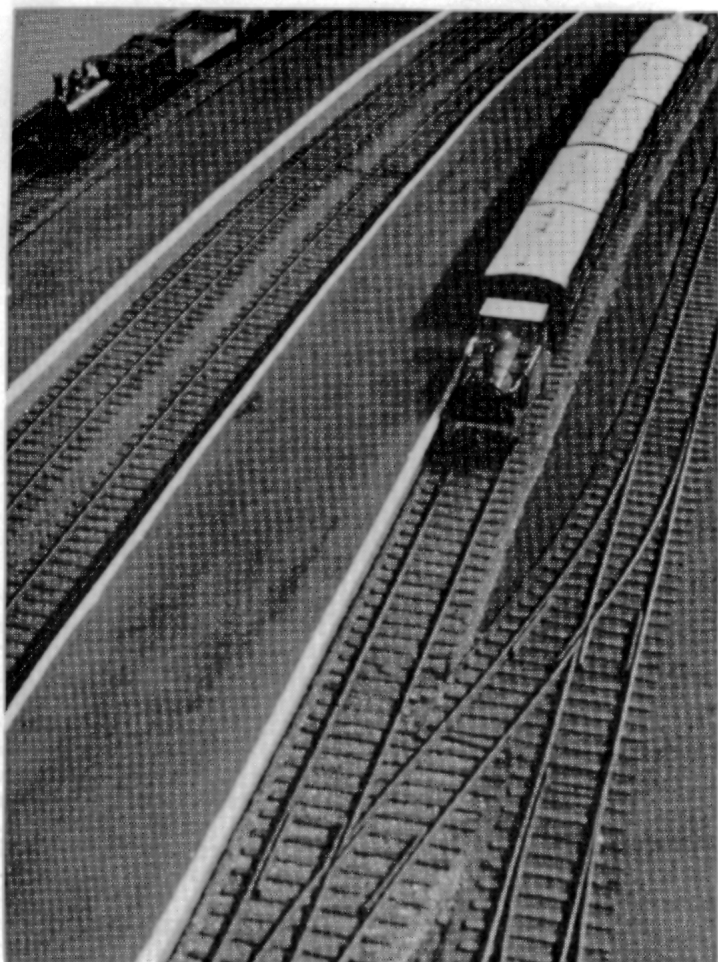
was not possible to have small quantities drawn. Sleepers are shellacked card $\frac{3}{16}$ in. thick with pairs of holes punched in to receive the prongs of the chair plates. The latter are 5mm. \times 3mm. \times 0.01 in. brass, with prongs for clinching over beneath the sleeper after the manner of a staple. Some 10,000 sleepers and 20,000 chairs have been produced with home-made press tools. The rail is soldered to the chair plates.

Points are operated by ex-Government type 3000 relays with a gainstroke arm soldered to the armature and a fine wire soldered from the end of this arm to the end of the rocking lever which projects through a slot in the baseboard and engages the point tie bar above. The wire is flexible enough not to break under the slight movement involved and soldered as opposed to pivoted joints obviate lost motion. The point is held in the normal position by a light spring against which the relay pulls when

switched on to reverse the point. Current flows through the relay all the time it is on. Every relay has at least a set of single-pole changeover (SPC/O) contacts to switch the polarity of the point frog thus obviating the need for blade contacts which are not always reliable. Further contacts up to a total of 8 SPC/O are fitted to the relay as needed to provide automatic cab control by switching the current from a given controller right through any route set up. Relay current consumption is low as points with only one set of contacts need only 1000-ohm (0.024-amp) relays with a maximum of 250 ohm (0.10 amp) for 8 sets of contacts. Total consumption if all points were on together is $3\frac{1}{2}$ amp and since the locos consume but 0.10 to 0.20 amp each, the home-built 6-amp power unit is quite sufficient.

Control is by 350-ohm rheostats which, together with the efficient motors, give very smooth running. Automatic resetting



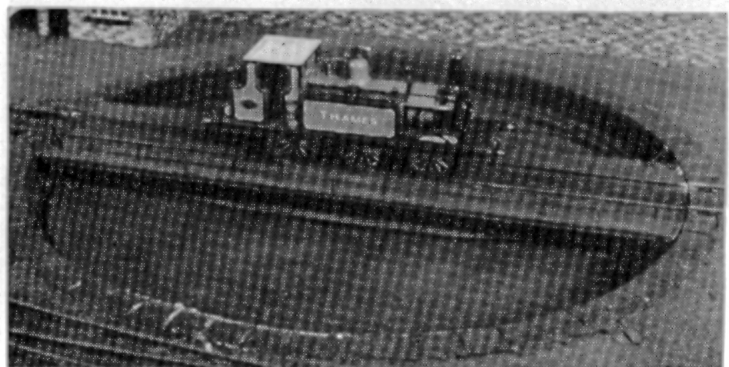
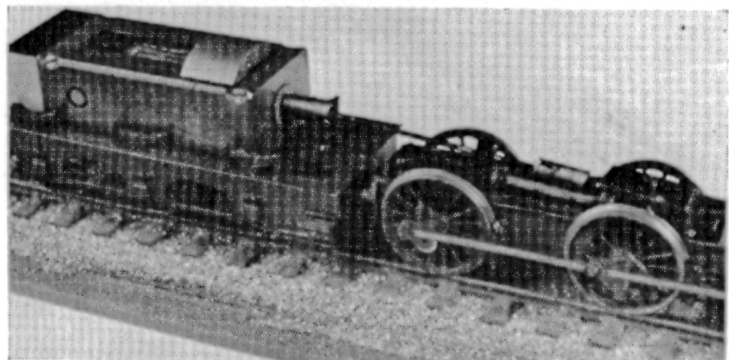


TOP: Deeley station, only track and platforms, but, being exquisitely made, these suffice. The screw marks the uncoupling magnet.

CENTRE: Kirtley chassis, showing tender motor, flexible drive and floating gearbox on spring axle. (photo Sid Stubbs.)

BOTTOM: "Thames" on turntable.

FACING PAGE: The superb track and pointwork at Northchurch Station throat.



cut-outs protect each controller, these being made out of relays with an overload winding added, the relay coil providing a "hold" winding until the short circuit is removed. There are two control panels, that at Northchurch controlling the station and approaches and that at Deeley covering the station and main circuit. The panels are quite separate from the main baseboard, being connected by multi-core cables and plugs. Tracks and controllers are colour-coded and the layout is painted on to the appropriate control panel using cellulose paint which bites into the white, opaque Perspex. Section and point switches are then built into their appropriate positions on the diagram. The turntable is controllable for speed and direction and operates at the press of a button on the panel, switching off and locking automatically when 180° has been traversed.

Couplings are of the Alex. Jackson magnetic type as described in the *Model Railway News* for January 1960 and demonstrated many times at the Manchester and London Shows. They are quite trouble-free.

Locomotives and rolling stock

Apart from the aforementioned saddle tank, there is an L.B.S.C. Terrier tank No. 57 "Thames" in original colours and a Midland "Kirtley" 0-6-0 tender engine with outside frames. The latter has a tender full of motor with 5-pole armature, 0.65in. dia. and a 23mm. dia. lead flywheel following the precept, "The bigger the motor, the longer it lasts." Drive is by 3/8in. steel shaft via the firebox to a totally enclosed oilbath wormgear unit which rides on and moves with the sprung driving axle, the shaft having universal joints both ends. Even with the gear ratios of 22 1/2/1 (45-tooth wheel, 2-start worm) the gear is fully reversible, having 1/2in. dia. ball thrust races both ends of the worm. All wheels on all locos are sprung and the rear end of the "Kirtley's" tender is carried on the engine drag beam to increase adhesive weight.

There are some 20 wagons, all home-built, and a set of 5 "Ks" L.B.S.C. 4-wheel coaches for the Terrier, very much altered (no battery boxes or tiebars, oil-lamp tops fitted, spring buffers, etc.). Finally, there is a 4-coach Southern Electric set on loan from Mr. R. W. Inkster. This incorporates a Romford motor bogie, much rebuilt some 15 years ago with a heavy flywheel and 24V winding, without slot insulation be it noted! Earlier stock has pin-pointed end axles running in fine cones in brass insets in the axle boxes but current practice is to fit axles stepped down to 3/8in. journal running in brass bushes. Either way, the stock will run away on the 1 in 80 gradients. Such a reduction in friction greatly assists the haulage of scale loads.

Scenery

The provision of scenery is now under way and it does not come too easily to one who is primarily an engineer. Nor is the creation of good scenery so simple as it is often said to be. Much of the stonework is being embossed in Pyruma, grass is basically surgical lint dyed green, an effect considered to be superior to the flock or sawdust method although these have their uses on small expanses or as a means of adding colour to rocky ground. Since the setting is in the 1890's, all vehicles must be horse- or hand-drawn, motor cars having not appeared although a steam traction engine is to be seen. The local population will be much modified Huminitures. A canal, colliery and beam pumping engine will have to go in somewhere and the 60ft. of background mural will probably be painted off colour transparencies projected into position and sketched.

Future plans also include 8 locomotives of which the Midland 7ft. 9in. single, 7ft. 0in. 4-4-0 "Beatrice" and "800" class 2-4-0 are due to be laid down any time now. Then must come some Midland coaches and the signals. The circuits for the latter are in fact laid in.

The single-handed creation of a model railway of these dimensions is no light task especially when one makes virtually everything. Even the routine maintenance becomes quite a chore, although good and careful workmanship in the first place pays dividends in this direction at a later date. The satisfaction to be derived is, however, more than sufficient reward in itself and one supposes that this, above all, is our reason for following this most excellent of hobbies. Over the years, many friendships arise and, in closing, tribute must be paid to those numerous members of the Manchester Model Railway Society and others whose advice and encouragement has been invaluable and whose brains have been picked shamelessly. Without them, the Northchurch Branch would never have come into being.

