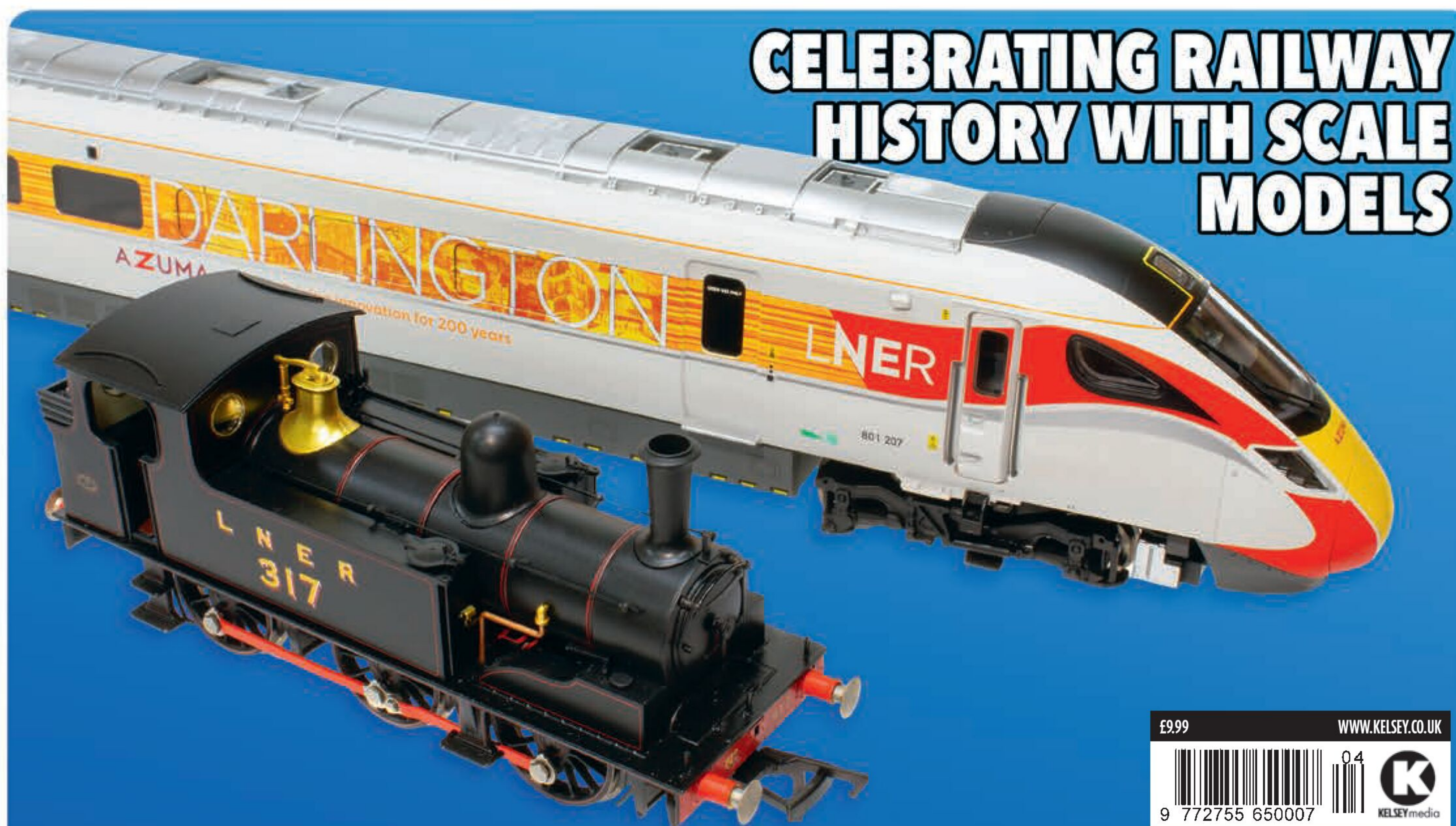


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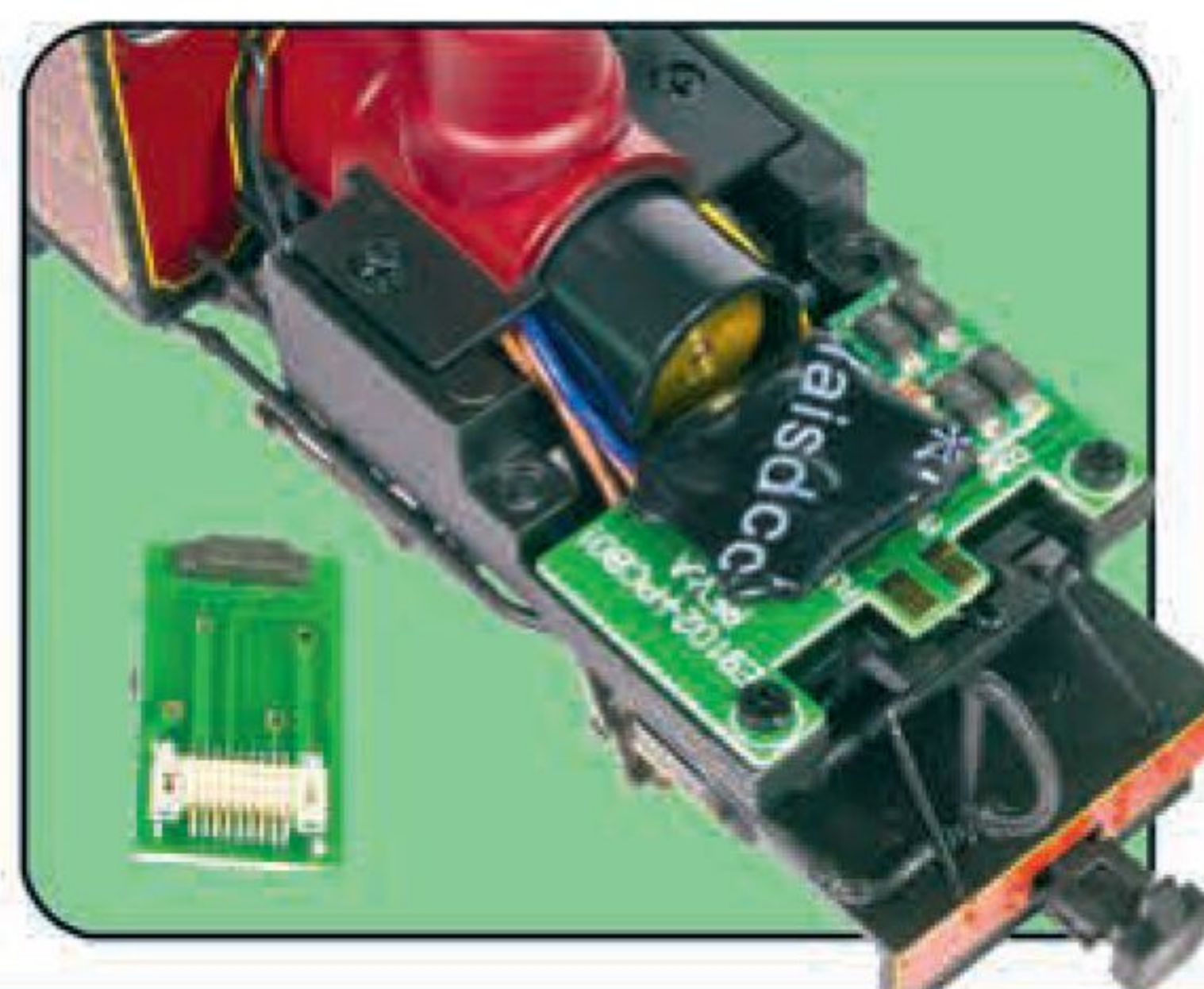
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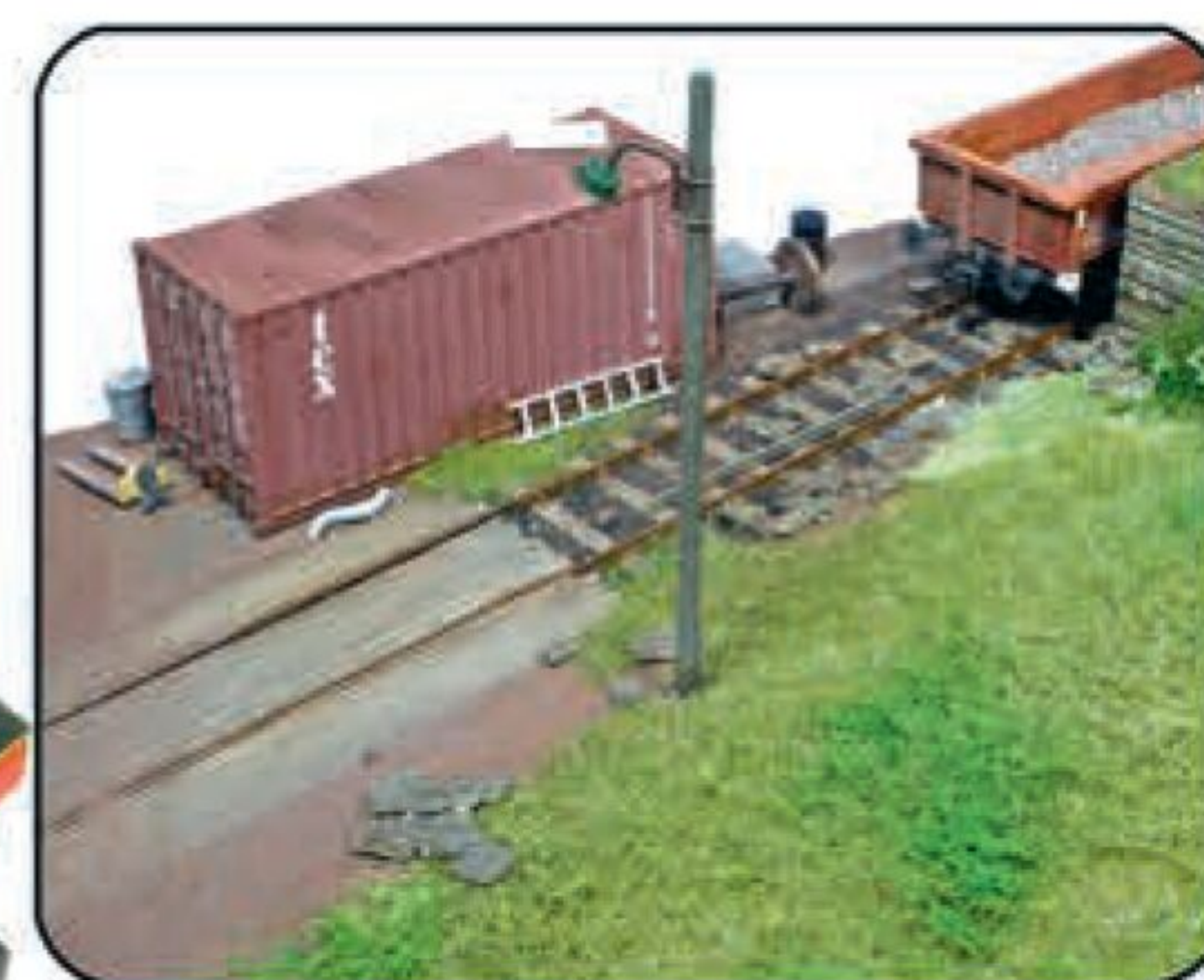
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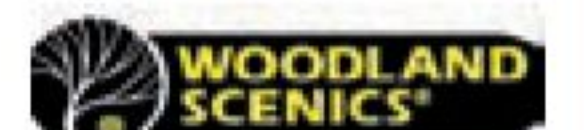
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EVEN as this introduction is written, another announcement for a brand new ready to run locomotive, crafted to the highest standard, lands in the inbox. The growing range of near museum quality models of all scales has encouraged more model railway layout construction too. However, what if space, or the lack of it is a barrier to your ambitions to create a slice of railway history as depicted on the cover? Do you feel unable to use some of the beautifully researched and manufactured models of locomotives, most of which are long gone from our railways?

In our small layout themed issue, we offer ideas and inspiration as to how a satisfying layout can be built in a very small space with excellent operating potential. The number of suitable small locomotives like the new Bachmann NER E Class locomotive or smaller scales like ‘TT:120’ all provide answers to the space conundrum. Fancy modelling the birth of the railways? It can be done with current models of locomotives like *Rocket* in a micro-layout footprint. As the featured micro-layouts show, there is no end to what can be achieved in a few square feet.

As a counter to layouts that can be finished in a matter of weeks and transported to shows on buses and trains, this issue is concluded with an ‘O’ gauge project of immense



↑ Tony Gillanders specialises in small layouts with a West Highland theme. He created two remarkable ‘N’ gauge micro-layouts called *The Viaduct at Loch Nan Uamh* and *Orchy Viaduct* in ‘N’ gauge which have appeared in our sister publication, *Rail Express*. One of his latest creations is *Corrour*, also modelled in ‘N’ gauge. It shows that careful landscape modelling and scenic blending with a photo-backdrop can make a small layout appear quite large.

size that needs a 45ft lorry trailer. From 40-inch long layouts to one that is 40-feet wide, the hobby is always rich, diverse and never boring!

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What's in the Shops

Welcome back to our guide on new models that arrived during the last quarter and where they fit in the grand scheme of things. They cover a lot of ground and Hornby seems to have been the most productive, with many new releases in 'OO' and 'TT:120' gauge being made in the last couple of months.



↑ The fine lines of the Adams T3 Class 4-4-0 locomotive are beautifully replicated in 'OO' gauge by the brand new EFE Rail model. It has an exceptionally high level of detail, some of it quite delicate, topped with a flawless livery finish. The model featured in this edition is decorated in LSWR Urie Green livery and numbered No. 564.

Elegant LSWR T3 from EFE Rail

LEADING THE FIELD in this issue of *The Guide to Model Railways* is the brand new LSWR Adams T3 Class 4-4-0 of which twenty locomotives were built for operation over the mainline west of Salisbury. The locomotives also worked west of Exeter during their lives as well as the Bournemouth line.

They were part of a family of four locomotive

types with the 4-4-0 wheel arrangement. They were regarded as successful lightweight passenger locomotives, which survived Grouping and the formation of the Southern Railway. They were steadily withdrawn as third rail electrification spread throughout the Southern Railway network, making light passenger locomotives surplus to requirements. One locomotive survived scrapping and that was

No. 563 which eventually became part of the National Collection.

The model replicates the fine lines of the T3 Class including the long running plate and relatively narrow boiler. This type of locomotive is tricky to model well with good running qualities, something which has been achieved by the designers. The 4-4-0 wheel arrangement is modelled with a sprung leading bogie and finely

modelled driving wheels. A cast boiler, running plate and frames gives the engine an impressive 195g of weight (total weight including the tender is 290g). If that is not enough for good traction, a replacement driving wheel fitted with traction tyres is supplied in the box. It can be used without having to dismantle any of the model's superstructure.

Operation throughout the speed range is smooth

ADAMS T3 CLASS FEATURES

- 1892 to 1945.
- Diecast metal boiler and running plate for weight.
- Numerous delicate details including hand rails, lamp brackets, whistle, injectors and other fittings.
- Five-pole motor with flywheel.
- Diecast engine and tender chassis.
- Sprung front bogie.
- NEXT18 DCC interface.
- DCC-interface is located in the tender.
- Factory-fitted twin speakers.
- Fully detailed footplate and cab.
- Firebox flicker.
- Electrical connector between tender and engine.
- Close coupling cam between engine and tender.
- Price: £199.95.



and the wheels a delight to watch as they rotate with their fine spoke detail. Gearing is set up for authentic running speeds and fine performance which was observed in this model.

Decoration is pristine and flawless, with a pleasing shade of Urie Green and fine lining being applied to the model. Numerous small parts are picked out in different colours including the cab interior surfaces and controls. A firebox flicker LED completes the picture and this can be controlled when a decoder is fitted.

Bachmann has produced a very fine model of an exceptionally attractive steam locomotive. The long, elegant lines of the Adams T3 Class locomotive are clearly present in the model and this is enhanced with the neatly made and applied fine details.



↑ Built in 1937 at Doncaster, LNER A4 Pacific No. 4498 was the 100th Gresley locomotive to be built and was named after its designer, Sir Herbert Nigel Gresley.

'TT:120' 'streamliner'

THE LNER A4 4-6-2 Pacific locomotive was one of the first models to be released in the new 'TT:120' range and it has been re-issued dressed in LNER garter blue livery with full side valances, the condition it was introduced to traffic in 1937.

Hornby has an eye on notable anniversaries and the release of this model coincides neatly with the 150th anniversary of the birth of Herbert Nigel Gresley or Sir Nigel Gresley, the name carried by LNER No. 4498. He was born in Edinburgh on June 19, 1876, and Hornby has lined up a commemorative A4 locomotive pack in 'OO' gauge to mark the anniversary.

A pleasing shade of garter blue with black trim and lining is applied to the re-run

model. Contrasting nicely with the livery are the red driving and bogie wheels. It is powered by a high quality coreless motor which is an upgrade on the first batches of this model and performance is improved as a result.

The bodysheet is well-shaped and detailed with a mix of integral moulding and standalone parts, a

combination to ensure the model's durability for use on temporary layouts. The long boiler casing hand rails are of metal whilst shorter cab rails are composed of plastic. More integral tooling is apparent in the cab where the driving controls are neatly picked out in appropriate colours. The cab roof hatches are modelled in the open position too.

Refined touches include brass whistle and safety valves.

The valve gear is reasonably fine given the need for durability to meet the likely market for Hornby's 'TT:120' range – the side valances being adjusted to accommodate it. The same goes for the driving wheels which have well defined separate





A4 PACIFIC LOCOMOTIVE DETAILS

- Locomotive modelled in 1930s condition.
- '1:120' scale.
- Fitted with 1928 corridor tender.
- Injection moulded body with fine integral detail.
- NEXT18 DCC interface.
- Coreless motor.
- Electrical pick-ups in the locomotive and tender.
- Close coupling cam fitted to the tender.
- Factory-fitted sugar cube speaker for digital sound.
- Metal hand rails, buffers, whistles and safety valves.
- Price: £179.99.

spokes. Beneath the cab is a fixed impression of the Cartazzi truck which has simplified the design of the chassis. It is fitted with a flangeless wheel set for operation on table-top layout curvature.

With table-top layout operation in mind, the gap

between tender and engine is a little wider than would be accepted in 'OO' gauge and the bar is fixed with screw fixings on both the engine and tender. There are connecting wires linking the two which do not interfere with operation.

Wrapping up this model's

features is a mention of its electronics. Current is collected from the driving and tender wheels. The decoder socket and digital sound speaker bay (if needed) are located in the tender which has left as much space in the engine for weight as possible which is

important for tractive effort.

In all the Hornby 'TT:120' A4 Pacific locomotive is an excellent model for the scale and the intended market where durability and detailing have to be carefully balanced. As with any developing range, suitable coaching stock remains to be added to the Hornby range.





↑ The desire to meet the need for a contemporary 'OO' gauge high-speed train trainset that will be recognised by young modellers prompted a second set of tooling for Hitachi IET and Azuma trains. It is a less complex model than the fully detailed version and is priced around 45% less too.

High-speed traction from Hornby

THE EAST COAST MAIN LINE streamlined train theme continues with Hornby's 'Railroad' Class 800 in the attractive LNER 'Azuma' livery. Hornby decided to produce a second 'OO' gauge tooling set for the Class 800 bi-mode unit which has a different grade of detail compared to the high-fidelity models of Hitachi Class 800-series trains it also produces. It is aimed at the budget end of the market and to meet the desire of younger modellers for a contemporary high-speed train set.

The starting train packs consist of two driving cars, one of which has a single drive bogie with traction tyres. To complete a five-car train set, there are intermediate coaches available as single units. The modeller can extend the train to suit the size of the layout. The overall cost of a five car set is about 45%



↑ The 'Railroad' version of the Class 800 bi-mode high-speed inter-city units focuses on five-car sets with GWR and LNER versions being released first.

less than the fully detailed version.

To achieve this, the model has fewer details and features compared to the 'full-fat' version. Cost savings had to be made somewhere to achieve the reduction in the cost of a five-coach train. The LNER and GWR packs released in early 2026 are priced at £149.99 and are the starting point for making up an authentic five-car bi-mode set.



↑ It is interesting to compare the cab and livery detail, of the 'Railroad' model of No. 800201 with the fully detailed model of No. 801207.



↑ When out on the test layout, the five-car train ran well and was smooth and quiet from the start. Whilst having an impressive top speed the model was capable of slow speed running too.



↑ In contrast to the 'Railroad' model is the fully featured Hitachi Class 801 model which is packaged as a five-car starter set for £549.99. An extension pack of four coaches is also available for £289.99. The featured model is of LNER No. 801207 which is decorated with commemorative Stockton & Darlington vinyls as part of the Railway 200 celebrations.



↑ The Darlington vinyls as modelled on the fully detailed Class 801 model. It is possible to model the 200 years of railway history with Hornby. Models of pioneering locomotives such as Locomotion No. 1 which was built for the Stockton & Darlington Railway through to Rocket (1829) and Lion (1838) are available from Hornby.

'RAILROAD' CLASS 800 FEATURES

- Two-car starter pack.
- Separate intermediate vehicles available.
- 2017-present.
- Single drive bogie with two powered axles.
- Powered wheels fitted with traction tyres.
- Two 21-pin DCC interfaces.
- Close coupling cams within the set.
- Flush cab and passenger saloon glazing.
- Posable cosmetic pantograph.
- Minimised graphics and livery details.
- Price: Train pack: £149.99.
Additional coaches: £34.99.

Hornby achieved a good balance between affordability, durability and detailing with its new 'Railroad' Class 800 models. It makes an excellent entry-level model for new modellers which is dimensionally accurate and with modern DCC and lighting features. Several months on, it very much looks like Hornby's new Class 800 models are going to be very popular – they are clearly meeting the needs of a specific segment of the model railway market. Hornby has since announced a Class 803 Lumo version together with a Class 800 in GBR livery.

The 'Railroad' model differs from the fully featured model in the following ways:

- Simplified liveries with some smaller details omitted.
- Fixed nose cones on the driving cars.
- Greater use of integrally moulded detail instead of separate fittings.
- Single power bogie with traction tyres.
- No interior detail or lighting.
- Heavily tinted flush glazing.
- Wheels have deep flanges and wider tyres than would be found in finer 'OO' gauge models.



↑ The cab side of the fully detailed LNER 'Azuma' model.



↑ Hornby has reissued its model of Stephenson's Rocket as a single model for the first time. It is a popular model which at the time of writing, showed signs of selling out at Hornby.

Hornby Rocket returns

INTRODUCED BY HORNBY in 2020, this tiny little 'OO' gauge model replaced a much older version of Stephenson's *Rocket*. It is one of four railway pioneer locomotives offered by Hornby at the time of writing including *Locomotion No. 1* and *Lion*. A model of *Rocket*'s successor, Stephenson's *Planet* locomotive was added to the catalogue in 2026. With the bi-centenary of the Stockton & Darlington Railway being reached in late 2025 along

with a wide range of events marking the event, models of historical locomotives from the pioneering era make sense to produce. Further, the bi-centenary of the Rainhill Trials, which made *Rocket* famous, is only a few years away and the anniversary of *Planet* is a year later.

The latest release of the model sees it finished in the black and yellow livery of the Liverpool & Manchester Railway and fitted with the 'crown' at the top of the long funnel as it ran at the Rainhill Trials.





The design was unique, and the use of a single axle and angled cylinders was influenced by the weight restrictions applied by the railway company for the trial locomotives.

Rocket won the trials and was placed in traffic with the L&MR, although the single driving axle design was always something of a dead-end technology for railway traction. As famous as the locomotive was, relatively few modern steam locomotives were built with single drivers making locomotives like the GWR Dean Single and the GNR Stirling Single remarkable designs.

Hornby's tiny model of *Rocket* more follows the replica locomotive than the original as preserved. In common with most prototype locomotives, the original was subjected to

Rocket features

- 1829-1830.
- Based on the locomotive when tested at the Rainhill Trials.
- Single powered axle.
- All wheel current collection.
- Fully working motion.
- Delicately modelled and finished wheels.
- Footplate crew modelled.
- Wires connect tender and engine together.
- Basic hook coupling.
- 6-pin DCC interface.
- Price: £184.99.

numerous modifications including relocation of the cylinders. When donated to the Science Museum, it looked quite different to its 1829 condition.

The model is delicate but fully functioning with a powered driving axle and current collection from all eight wheels, including the four tender wheels.

↑ A brand-new model of Stephenson's Planet locomotive which was built for the Liverpool & Manchester Railway was added to the Hornby Range in 2026.

It is supplied with a crew modelled with suitable clothing and top hats too. Despite being a model of an 1829 prototype, it is a fully contemporary standard model with a refined motor

and 6-pin DCC interface hidden in the water barrel. A decoder with long pins will fit if the pins are bent in a u-shape so the decoder fits parallel with the interface circuit board.



TYPICAL FEATURES OF HORNBY 'TT:120' CLASS 08 MODEL

- 1952 to present day.
- Locomotive-specific detailing.
- Outside frame coupling rods.
- All wheel drive with coreless motor.
- All-wheel current collection.
- Separate metal front footstep details.
- Six-pin DCC interface.
- Flush glazed with interior detail.
- Cab is a separate moulding.
- Close coupling cams and NEM 355 pockets.
- Price in 2026: £149.99.

↑ One of the recently re-issued Hornby 'TT:120' locomotives is BR blue No. 08817 which is embellished with Thornaby TMD kingfisher logos and a red running plate. This places the model in the 1980s era.

Re-issued 'TT:120' locomotives

T'T:120' GAUGE is gaining traction in British outline modelling and it is being driven hard by Hornby which announced new models for its 2026 catalogue including a new tooling suite for Class 31s and the LMS Class 5MT 4-6-0 'Black 5' steam locomotive.

In the meantime, the range is supported by further re-issued models which over the last quarter have included another BR Class 08 decorated as Thornaby depot's No. 08817 and several new liveries



↑ No. 66022 is modelled as a typical Class 66 delivered to EWS in the late 1990s. It is a good match for the 'TT:120' MGR coal hopper wagons and the recently released MHA spoil and ballast wagons.

applied to the established Class 66 model which has been tooled with different body shell and detail formats to match variation within the fleet.

In common with the rest of the range, there is a careful balance between durability and detail in the

models. It is recognised that 'TT:120' equipment has to be more resilient to handling due to the nature of the scale where it is likely to be used for temporary and table-top layouts.

The quality of motors and drives being used by Hornby coupled to more advanced

TYPICAL FEATURES OF HORNBY 'TT:120' CLASS 66 MODELS

- 1998 to present day.
- All-wheel drive and current collection.
- Dedicated space for a sugar cube speaker.
- NEXT18 DCC interface.
- Flush glazed and cab detail.
- Close coupling cams.
- NEM 355 coupling pockets.
- Working directional running lights.
- Alternative buffer beam assemblies.
- Separate metal nameplates.
- Locomotive-specific detailing.
- Price in 2026: £159.99.

electronics places its 'TT:120' models in the realm of serious modelling.



↑ The BR Class 08 was an important one for the Hornby range, a model which can be the signature locomotive of a small shunting layout. The model has a sufficiently fine mechanism to recreate realistic slow-speed shunting operations.



↑ Freightliner was another customer for General Motors Class 66 locomotives including the acquisition of a small fleet of low-geared Class 66/6s for heavy freight operation. One of the re-issued models is finished as Freightliner No. 66619, one of the small fleet of 'Heavy Haul' locomotives.



↑ The heavy metal English Electric Deltic returns from Hornby in its National Railway Museum format. The model's specification remains the same as the 1950s version.

NRM No. DP1

THE REMARKABLE Hornby Dublo model of English Electric No. DP1 *Deltic* returns to these pages with the release a model representing the locomotive in preserved condition as based at the National Railway Museum. The specification remains the same as the 1950s version except the livery and paint finish is slightly different.

To recap: the model has been produced to museum standard with an exquisite level of detail from fully fitted and illuminated cabs, driver and second man figures, etched metal radiator fan grilles and other details associated with a contemporary standard 'OO' gauge model. The model has all the quality of a high-end model in this price range and with era-specific details as seen in the NRM version.

The test sample demonstrated the same fine performance as the 1950s model featured in the last issue. The



array of electronics built into the model includes

engine room lighting, fully functioning running lights



ENGLISH ELECTRIC NO. DP1 *DELTIC* FEATURES

- Model is finished in current preserved condition.
- 21-pin DCC interface fitted.
- Decoder bay located in the roof with magnetic cover.
- All-wheel drive with frame-mounted coreless motor.
- Cast metal frame with engine details visible through the side windows.
- Motorised radiator fans.
- Fan speed controlled with a potentiometer.
- Fully detailed cab interior with illuminated driver's desk.
- Fully working running lights and engine room illumination.
- Room for a stay-alive power bank and bass enhanced speakers.
- Price: £349.99.

and motorised cooling fans. The speed of the fans is controlled with a potentiometer which is in the roof decoder bay.

DP1 is supplied in an appropriately decorated hard box. The model itself is fitted to a transport cradle which doubles up as a neat display unit. In all, it is a well-presented model which can be displayed or run as desired.



↑ Class 66s in various forms remain an important part of Hornby's 'OO' gauge 'Railroad' range and they are still produced in 2026. The model's tooling came to Hornby in 2004 through the acquisition of the Lima brand in 2004 (Lima had merged with Rivarossi, Jouef and Arnold by this time which why these brand names are also part of the Hornby business).

New Hornby 'Railroad' locomotives

ENTRY-LEVEL models have been recognised as important by Hornby and following the 2004 acquisition of the Lima business, the generally good British outline models tooled by Lima could be added to the Hornby range. It was recognised that they were not going to compete with the highly detailed models appearing in the UK at the time but would form the basis of a budget range which gained the name 'Railroad'.

No models were released until they had been upgraded with new single bogie drives (except the Class 20) and fitted with improved current collection and DCC interface sockets. At first, 8-pin sockets were universal in the range which was often produced with enhanced liveries, detailing packs and separate metal nameplates. NEM coupling pockets are also fitted to the models which brings them up-to-date as far as their technical specifications are concerned.

With the introduction of TXS digital sound in the Hornby range, the 8-pin

DCC interface has been replaced with the MTC 21-pin type which allows the fitting of sound speakers in the models. New releases are usually offered as DCC-ready and TXS sound versions.

The return of the range ensured that some important models such as

the Class 101 DMU and 156 'Super Sprinter' survived and they are re-issued from time to time.

The simple design of the models means that they can be produced relatively quickly which allows Hornby to respond to new developments with heritage traction currently

in use on the railways along with the latest special liveries applied to Class 66s. In 2026, Hornby released further Class 66s in various liveries including the Freightliner 60th anniversary livery.

Also released on a regular basis is the Class 37 and two new models reached



↑ Freightliner Class 66 No. 66601 in the 60th anniversary livery. The model is fitted with a DCC interface and digital sound can be installed. It comes with a detailing pack, but has no running lights.



↑ GB Railfreight No. 66775 was painted in a special livery which is replicated well by Hornby. Its enhanced livery 'Railroad' models are supplied with separate metal nameplates and are generally better finished.



↑ EWS No. 66022 fits the body shell format well and represents one of the first Class 66s to be built.



↑ The former Lima Class 31 makes an appearance every now and again even though there is a more detailed model in the range. No. 31271 was released in DCC-ready and TXS sound fitted options.



↑ Class 47s always do well for Hornby and this former Lima model benefitted from its power bogie upgrade and the other improvements applied to the range.



↑ Recent Class 37 releases feature up-to-date liveries including a heritage repaint of No. 37501 in British Steel blue. This livery was originally applied to No. 37501 in 1987 along with the *Teesside Steelmaster* nameplates.



↑ A fun addition to the 'Railroad' range was the classic Police liveried No. 37093, which was done for an InterCity advertising film in 1984.

the shops in April including a heritage repaint of No. 37501. Class 47s are

popular too and a Railfreight Distribution (European) version was released during

the first months of 2026. Further models are due in various liveries including Rail Express Systems (RES) No. 47749 and EWS No. 47787.

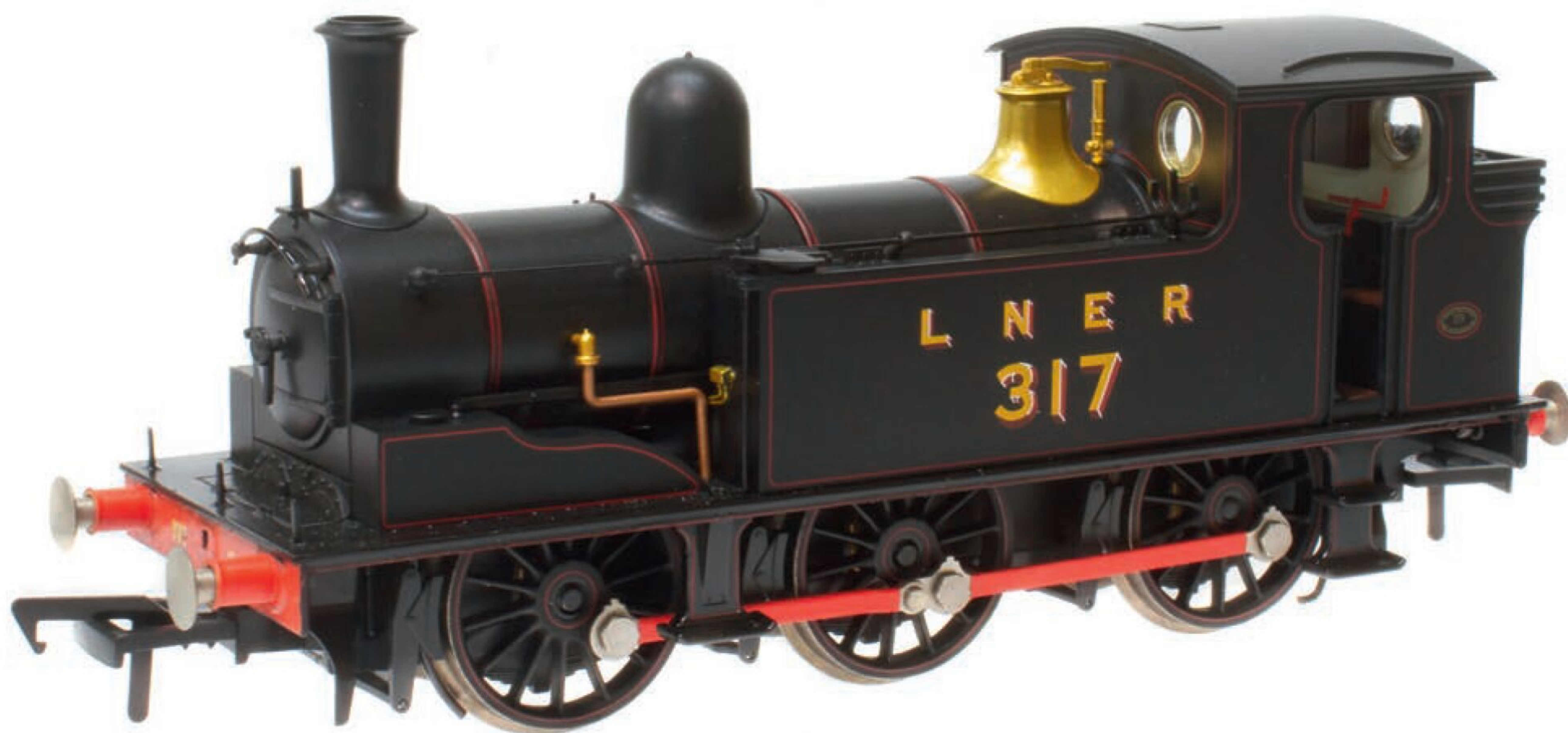
One of the more fun items to be produced in the last year is 'Railroad' Class 37 No. 37093 in 'Police' livery which dates back to the 1984 'Train Jam' advert. It is fitted with a blue flashing light and TXS sound decoder. Function F20 on the sound decoder activates the blue light and

TYPICAL FEATURES OF HORNBY 'RAILROAD' MODELS

- Single drive bogie.
- Two powered axles in the drive bogie.
- Traction tyres fitted to some powered wheels.
- All-wheel current collection.
- Dedicated space for a speaker.
- 21-pin DCC interface usually fitted.
- NEM coupling pockets.
- Accessory packs included where appropriate.
- Working directional running lights on some models.
- Metal nameplates with enhanced livery models.
- TXS digital sound options available.
- Price range: £89.99 - £149.99.

police siren, an adaption of the two-tone warning horn sound. The model was a sell-out in many places and is being re-run by Hornby.

Pricing for the 'Railroad' range is intended to attract new modellers and those with limited budgets. Although some models lack lighting and some detail is not as refined, they look the part and at the end of the day, they run well and provide traction for layouts. Some liveries are a close match rather than a precise one to bodyshell detail, but if one cannot afford £200 super-detail models, prices starting at £89 make the hobby all the more accessible.



↑ Although a J72 and NER E1 Class are part of the current Bachmann range, the NER E Class (J71) is a new model, filling an important gap for modellers of railways in the North East. The featured model, LNER No. 317 was involved in the centenary of the Stockton & Darlington railway.

North Eastern Railway E Class (LNER J71)

THE NORTH EASTERN RAILWAY constructed 120 E Class locomotives between 1886 and 1895. It was replaced by the E1 Class which differed in design by having smaller driving wheels which affected the size of the wheel splashers and this had a knock-on effect with the shape of the cab and water tanks. E Class locomotives were the workhorses of the NER, being used on shunting and station pilot duties throughout the network. Short trip working and transfer freights were among the uses that the class could be found working. The sharp curves of dock side lines, industrial sites such as collieries and goods depots were no problem to the class due to its short wheelbase and relatively low axle loading.

As the E Class were

constructed, they saw improvements in the design including differences in bufferbeams, safety valves and whistles.

All 120 locomotives passed into LNER ownership which reclassified them as J71. It is an LNER liveried locomotive which is shown in this edition, finished in pristine lined black as LNER No. 317. It is part of Bachmann's Railway

Celebrations range and is related to the S&DR 200 commemorations. It fits in by being one of the locomotives that was involved in what we might have called the S&DR 100 celebrations. The centenary was marked by an LNER event in 1925 where a cavalcade of locomotives showing advances in locomotive design was run over six miles of railway

between Stockton and Darlington. The event was opened by the then Duke and Duchess of York (later King George VI and Queen Elizabeth) and was attended by thousands of spectators. Although LNER No. 317 was a humble shunting locomotive which ordinarily might not be considered for such an event, it had the job of hauling NER electric locomotive No. 9 over the





TYPICAL FEATURES OF THE NEW BACHMANN J71

- 1886-1961.
- Era-specific details and features matched to the applied livery.
- Finely spoked driving wheels.
- Powered centre axle with finely tuned gearbox.
- All-wheel current collection.
- Coreless motor.
- NEXT18 DCC interface.
- Factory installed speaker for DCC sound.
- NEM coupling pockets.
- Accessory pack includes scale couplings.
- Metal sprung buffers.
- Fully detailed cab interior built up from separate detailing parts.
- Firebox glow LED fitted (flickers on DCC sound versions).
- Digital sound options available.
- Price: £159.95 - £265.95.

matching the locomotive's appearance when used on the first centenary celebrations of the S&DR. Of course, we have seen the bicentenary celebrations pass late last year making this model an interesting one to feature with the S&DR 200 Azuma model.

Sadly, no E Class (LNER J71) survived to see the bicentenary of the S&DR.

All of the class was retired by 1961 as BR 350hp diesel shunters replaced them.



non-electrified line, for which it had been specially prepared.

The Bachmann model of the E Class is a brand-new tooling which has been produced to current standards including a NEXT18 DCC interface, coreless motor and a factory fitted speaker for digital sound. The model's frame is of cast metal for tractive effort and the gearbox is finely tuned for scale speed running and the

smooth operation needed for such tank locomotives that usually ran at low or shunting speeds.

The models released in the first run are fitted with details that match the liveries applied to the models. The use of small fittings for hand rails, cab controls, water filler lids, lamp brackets and brake fittings gives the model a finely finished appearance.

The livery is lined black and pristine in condition,

MANUFACTURER WEBSITES

Accurascale and IRM: www.accurascale.com

Bachmann, Graham Farish and EFE Rail: www.bachmann.co.uk

Cavalex Models: www.cavalexmodels.com

Clark Railworks: clarkrailworks.com

C-Rail Intermodal: c-rail-intermodal.co.uk

Dapol: www.dapol.co.uk

Heljan: www.heljan.com

Hornby Hobbies: www.hornby.com

Oxford Rail: www.oxforddiecast.co.uk

Rails of Sheffield: www.railsofsheffield.com

Rapido Trains UK: rapidotrains.co.uk

Realtrack Models: www.realtrackmodels.co.uk

Revolution Trains: revolutiontrains.com

The benefits of building a micro-layout

Little space, time and/or money? A micro-layout might be the answer to making a start in railway modelling.



↑ The longest viaduct on the Oban branch of the West Highland line is Orchy viaduct which is named after the river it crosses. Tony Gillanders constructed a superb model of the viaduct in 'N' gauge along with the surrounding scenery within a micro-layout footprint. The layout is called (unsurprisingly) 'Orchy Viaduct' and it shows how realistic a micro-layout can be. www.facebook.com/profile.php?id=100064899331104

THERE IS A SAYING in railway modelling: 'No space is no excuse'. Easy enough for anyone to say. Yet, when so many homes are small flats, apartments and houses with domestic and family pressures, building a model railway might not be seen as a possibility. There is another side to this and that is time. Time could be

the deal-breaker even if there is space suitable for creating a railway world of your own.

It is likely that the rise and rise of micro-layouts (and dioramas), the theme for this issue of *The Guide to Model Railways*, is a result of the constraints faced by many modellers today. What has helped is the high-quality models that

have become the norm in four mainstream scales. No longer is it a struggle to get inferior quality models to run well enough to work within the constraints of a compact or micro-layout, especially in smaller scales. A layout can be taken to an exhibition with just a handful of locomotives such as the superb new Bachmann NER E Class

featured elsewhere in this edition with the knowledge that they will run well and be reliable.

Technology has also come to our assistance. The tiny shunters and tank engine models that normally inhabit the confines of micro-layouts usually run well, even when they collect power from four or six closely spaced wheels. DCC

and stay-alive power packs ensure smooth operation under all conditions.

There is another side to micro-layout building and that is the benefit of taking a break from a larger project. How many of us have been tempted with a little German or French railway action but do not have the time, money and space for a larger layout based on SNCF or DB practice? Do you have the desire to head north into Scandinavia or across the Irish Sea to model something different? A micro is the obvious way of scratching that kind of modelling itch.

The same goes for changing scales. A diorama or micro-layout can test new techniques and new scales to see if they suit. The cost of such experiments can be minimised as a result.

So, whilst some modellers might dismiss micro-layouts as a gimmick or not to be taken seriously, this article shows that there is lots of very high quality modelling to be found in a few square feet. There is a lot of whimsy too and a lot of fun to be enjoyed

with a micro-layout project that does not take itself too seriously.

Your editor's first micro-layout was built in the late 1980s and was to 'P4' gauge standards. It was a four-foot long section of the West Croydon to Wimbledon line and modelled the single platform station at Mitcham along with the point that the single track line doubled. It ran with kit-built Class 456 units and 2EPBs. For such a simple layout, it was engaging, fun to operate and run, to build and detail. So much easier to handle and exhibit than a larger project it replaced!

What is a micro-layout?

"Micro layouts are small model railways, usually less than three or four square feet in area, that nonetheless have a clear purpose and excellent operating capability."

Quotation from the Carl Arendt micro-layout website.

The key to a successful micro-layout is 'excellent operating capability'. It is possible to give the miniature world you wish to create a clear purpose and make it run in a convincing



↑ Technology now ensures that tiny but suitable traction can be made to operate reliably and that includes stay-alive power packs to prevent stalling on dirty track during low-speed shunting moves. Stay-alive power packs are becoming smaller but will still deliver a second or two of power to prevent stuttering and stalls.



↑ If an industry is too large for the micro-layout footprint available to you, a simple exchange siding will suggest the presence of the industry and creates a purpose for the railway. The backdrop could have a picture of the industry as if it is in the distance at the end of an exchange siding which could end in a staging area or fiddleyard. Such industries include cement making, coal mining, chemicals, petroleum and quarrying.



↑ A Heljan Class 02 shunter collects empty BR 16t mineral wagons (that are too clean) from a distillery boiler house with the intention of delivering them to a mainline exchange siding. This is one of several clear purposes for this railway which is based around a Speyside distillery theme.

and prototypical manner. That is also the challenge, for micro-layout design and concepting takes a lot of time to achieve the purpose and operating potential needed to retain interest and make the model believable.

At the same time, there is room for whimsy too and creative flair does not have to be sacrificed on the altar of prototypical accuracy. If you want to build a layout

in a biscuit tin, who is to say that is not as valid as some of the larger layouts on the exhibition circuit today?

What size?

In reality, you can build a layout to any dimensions and shape that you desire (or will fit your home). There are no hard and fast rules – it will be whatever works best for you.

There are some size rules that define a micro-



↑ 'TT:120' scale is the new kid on the block in for British outline modelling. In a few years, sufficient models have been released which would make 'TT:120' viable for an excellent micro-layout. One of the first locomotives to be released in the Hornby 'TT:120' range is the BR 350hp Class 08 - perfect!



↑ In recent years, Hornby has covered a number of small 4WD industrial shunters in its 'OO' gauge range including the Ruston & Hornsby 48DS and its bigger brother, the 88DS. What better traction for an industrial themed micro-layout than this pair of locomotives?

layout from other small layouts and they have been established for practical purposes such as micro-layout specific exhibitions or community groups.

In the US, a micro-layout is generally considered to be no more than four square feet in area and no longer than 4ft in length. This was a set of dimensions suggested by micro-layout pioneer Carl Arendt.

In the UK, dimensions are a little more generous. The maximum area cannot exceed 4ft by 2ft and with a maximum length of 4ft (1200mm by 600mm) for any scale from 'Z' to 'P4'. For larger scales, the maximum size is 6ft by 2ft. Several layouts can be

linked together but must be completely separate standalone scenes which can be operated in their own right with a fiddle or staging yard (this is often done with box file layouts).

It should be noted that the dimensions exclude fiddle or staging yards. However, modellers should match the size of supporting areas of the layout to the size of the scenic section. If the maximum length of train is a three-car Class 117 DMU or a set of wagons that fits in a siding on the layout, there is no need to build a longer fiddleyard than that. It should not dominate the layout.

For reference, compact layouts are not necessarily

micro-layouts. It is fair to say that a compact layout is larger in size but can still fit in a medium-sized car along with two people for transport to shows (if designed to be portable) together with its legs, fiddle/staging yard, lighting rig, tool and stock boxes.

Baseboards? Anything goes!

The advantage of small layouts is being able to build them on support structures that would be far from suitable for larger layouts. Compact layouts have been constructed on doors, commercial shelving and table tops.

Micro-layout builders enjoy taking this to the extreme, with fully

functioning layouts built in box files, fiddle cases, plastic storage boxes, pool cue and brief cases. Almost everything with a handle has been used at some time or other.

Baseboard kits for dioramas, although not as heavy as full-blown baseboards, are perfect too. The small size of micro-layouts removes much of the structural need for strength. They can be built on boards made of lighter materials such as 6mm plywood instead of the usual 12mm ply favoured for large layouts. Even accurate baseboard alignment systems can be avoided because few layouts have more than one join and that will be



↑ Need compact mainline traction? Look no further than a Class 20! Their operational era covers the steam to diesel transition to current day operations.



↑ Whilst long freight trains do not fit with the micro layout principle, a trip working theme such as this would fit in a four-foot long scene very nicely.

between the storage or staging area and the scenic board where alignment can be done by eye when setting the layout up.

If you are a new modeller, you probably will not have any pre-conceived ideas about building a layout and can let your imagination work on building something a little unconventional. Experienced modellers can let their creative hair down for the same reason.

How about building a pizza box layout or one in a sweetie tin? Build several micro-layouts in storage boxes and link them together? Build one base layout and create different buildings and backdrop boards to change the scene completely from one operating session to the next?

Tricks, tips and dodges

Nothing brings forth the ingenuity of railway modellers like a restricted layout footprint. Suddenly, finding ways of making realistic building flats that sit against the backdrop becomes the norm.

Part stations, freight or locomotive sheds that are modelled against a layout end with the internal track leading into the staging area are just some of the space tricks employed by micro-layout owners. Mirrors are literally used to visually extend the layout and backdrop scenes take on more importance to create depth to a narrow box (see *Orchy Viaduct* above).

Track planning tricks include minimising the number of turnouts through the use of sector plates which can be hidden in buildings as seen on *Jacks Hill Loading Point*

3 (below). The staging or fiddleyard has a more important role to play in the operation of micro-layouts than it might on a larger layout. Micro-layout builders use a wide number of methods for stock staging and storage, from sector plates, narrow single track fiddlesticks, turntables and cassettes.

Height is important

Now, here is a thought and one that has been taken on board by a talented micro-layout modeller based in Scotland: Luca Jaconelli. The effective footprint of

a layout can be increased within the micro-layout dimensions by building it up into slopes, cliffs and cuttings. Luca's '009' gauge *Craggy Halt* has operating track on three levels and a number of different cameo scenes too. The same principle can be applied to buildings and structures. Both make a micro-layout appear much larger and in the case of *Craggy Halt*, quite spectacular as can be seen in the pictures below!

Low cost and simplicity

There are several key benefits with micro-layouts

and the primary one has to be economy. Economy of size, cost of materials to complete a layout and ease of transport. Yet, they can be detailed to a very high standard and this is often desirable. Small layouts are usually viewed at closer distances than large ones.

Simplicity often makes a micro-layout more believable and a common joke among builders relates to the number of turnouts. More than two can be considered to be excessive and there is a lot of pride in modelling a realistic scene with



↑ Sometimes a train pack is offered by one of the manufacturers which provides an unlikely idea for a micro-layout theme. It pays to look out for them.



↑ Narrow gauge railways offer some lovely micro-layout opportunities and the growth in off-the-shelf models for '009' gauge may set many new modellers on the road to building their first micro-layout.



↑ Larger scales can be enjoyed within the constraints of micro-layout design. The Heljan 'O' gauge Ruston & Hornsby 48DS is crying out for some weathering, detailing and the addition of a crew. That is one of the beautiful things about micro-layout themes – you can really enjoy customisation and detailing that might not be so obvious on a larger layout.

minimal turnouts. Joking apart, there is a practical consideration because minimal trackwork simplifies wiring, controls and reduces cost. Some of the featured layouts have no more than two turnouts and some fewer than that. Finally, the time element comes into play. A micro-layout can be completed to a good standard in a very short time. It is possible to have trains running in a few hours after completing the base

structure or baseboards. How satisfying is that?

Micro-layout examples

To get an idea of how micro-layouts are put together, from whimsical pizza box projects to serious industrial rust, dirt and grime themes, there are several online resources that provide a wealth of information and inspiration. The following photographs are micro-layouts based in the UK built to a very high standard and regularly seen on the



↑ What feature on the benefits of micro-layouts would be complete without a Yorkshire Engine Co. locomotive? This little beauty is a Heljan 'O' gauge model which is packed with features.

exhibition circuit in 2026. Our thanks to their owners and builders for being allowed to photograph and feature them.

Online resources

Micro-layout designs: www.carendt.com

The Micro Model Railway Despatch quarterly online publication:

micromodelrailwaydispatch.com

Micro-layouts Facebook page: www.facebook.com/groups/1911992839045598

MICRO-LAYOUT PLANNING CONSIDERATIONS

- Use the longest locomotive you are likely to use on the layout to determine shunting neck and siding length.
- Calculate wagon lengths and the minimum run-round loop length to fit the desired number making up a train.
- Use large scale paper plans and items of stock to simulate operations to see if a plan will work.
- Test the minimum curvature your models will negotiate reliably – curves on a micro-layout are often sharper.
- Use templates of turnouts to assist with track planning. Fitting track into a micro space can be challenging!
- Think how separate areas of the layout can be visually separated.
- Space can be saved by extending a run-round loop into the fiddle yard.
- Empties in and loads out can be set up by carefully locating loading sheds against the back drop adjacent to the fiddle yard so emptied and loaded wagons can be exchanged off scene.
- Think about how the layout may be expanded in the future – can the layout design be extended by adding another baseboard?
- Fiddle yards represent 'the rest of the line or network' and should be carefully designed for maximum operational utility. They are not just for stock storage on micro-layouts.
- Think about the desired operating position. Do you wish to operate from the front or from behind the layout? How are you going to fit controls into the baseboard?



↑ Fancy something different but do not have the time or resources for a second large layout project? The Irish Railway Models (IRM) 'OO' gauge Córás Iompair Éireann/Iarnród Éireann A-Class locomotives are very tempting and small enough to fit a micro-layout theme.

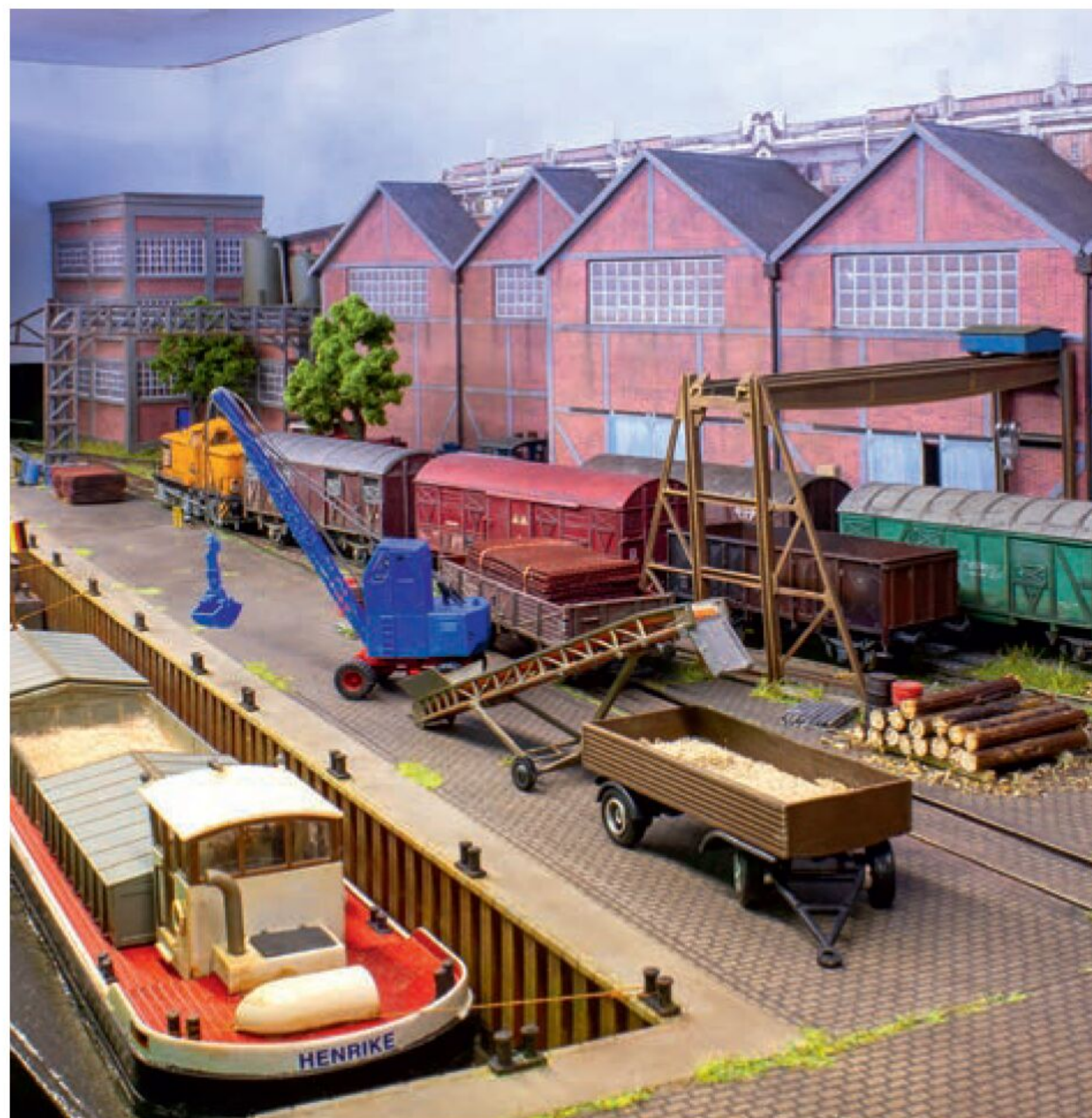
HAFEN AUTENBACH

A neat Rhine harbour scene has been modelled in 'HO' gauge by Ray O'Neil. The layout has an industrial purpose with the quayside and adjacent industries served by rail.

The layout has three turnouts fanning out into sidings and a holding point for shunting locomotives which provides quite a variety of shunting moves. The track leaves the scenic area of the layout between buildings which disguise the exit track. A single track fiddle stick is both head shunt and a place to switch wagons over.

The tall buildings to the rear of the scene use a micro-layout dodge by being half or quarter the depth they would ordinarily be. The scene is carefully composed by offsetting the buildings and a door in one of the structures at the right side of the layout suggests a longer siding which is out of sight in the building.

Whilst the track plan is simple, composition of the scene, use of tall buildings and the Rhine wharf scene with barges add to its interest and complexity.



↑ Vans are shunted at *Hafen Autenbach* by the layout's DR106 shunting locomotive. The careful composition put into the layout makes it appear quite large.



↑ When challenged by space constraints, go up instead. The tall buildings to the rear of the harbour sidings add to the layout without overwhelming it.



↑ Railways and water scenes are always excellent combinations and add to the layout's purpose. Shunting is based on 'inglenook' layout principles and is assisted with magnetic uncoupling.



↑ Presentation is important for an exhibition layout. *Hafen Autenbach* has a front fascia that frames the layout neatly. It made its exhibition debut in October 2025 at the Barrow in Furness show.

RUSTY JUNCTION

A pizza style layout built by Rob Bowater, but enclosed in a sweetie tin! This layout has the simplest track plan and wiring imaginable and no turnouts. It will be easy to transport too! Yet such layouts can be detailed to a high standard and are a lot of fun, not to mention being quite a talking point.



↑ A fully enclosed micro-layout which lives in a sweet container.



↑ There is much to see in this simple scene including a dog sitting on a pile of pallets! It is well composed and has interest that draws the eye deeper into the scene.

CROFT BRIDGE

Andy Thompson's 'O' gauge diesel and electric layout based on Scottish practice shows that the benefits of micro-layout building can be enjoyed in larger scales. It has several features including an illuminated and detailed signal box, goods shed and fuelling point. Shunting is the main activity on the layout, although the fuelling point adds an extra dimension to operations and provides the perfect reason to run various types of light engines on the layout. Overall, the layout is 10ft long including the fiddle yard and 15-inches wide. It shows that 'O' gauge can be fitted into a small space with lots of detail and operational potential.



↑ An idea of how detailed micro-layouts can be is seen in this view of the beautifully finished *Croft Bridge* signal box. The overbridge is the scenic break between layout and staging yard.



↑ One of the features is a two-road fuelling point which hosts a variety of diesels. The backdrop is close to the track, but has been blended in well with the rest of the layout to increase the impression of depth.

CRUIVE YARD

Welcome to *Cruise Yard*, a tiny, but inspirational '009' gauge layout built and exhibited by John Galbraith. It is a freelanced shunting layout which measures a mere 18-inches wide by 9-inches deep, the size of the simple plastic storage box which contains it.

The layout sits on a tabletop when in use and is illuminated with simple household LED lights which sit on top of the box. A 14-inch long fiddleyard is attached to the layout as a destination for trains to leave the scene.

The cost of constructing a layout of this size is quite small, yet it can be a very involved project. A single turnout and two sidings make up the simple track formation. Yet, there are several cameo scenes which will have provided the builder with a lot of modelling enjoyment.

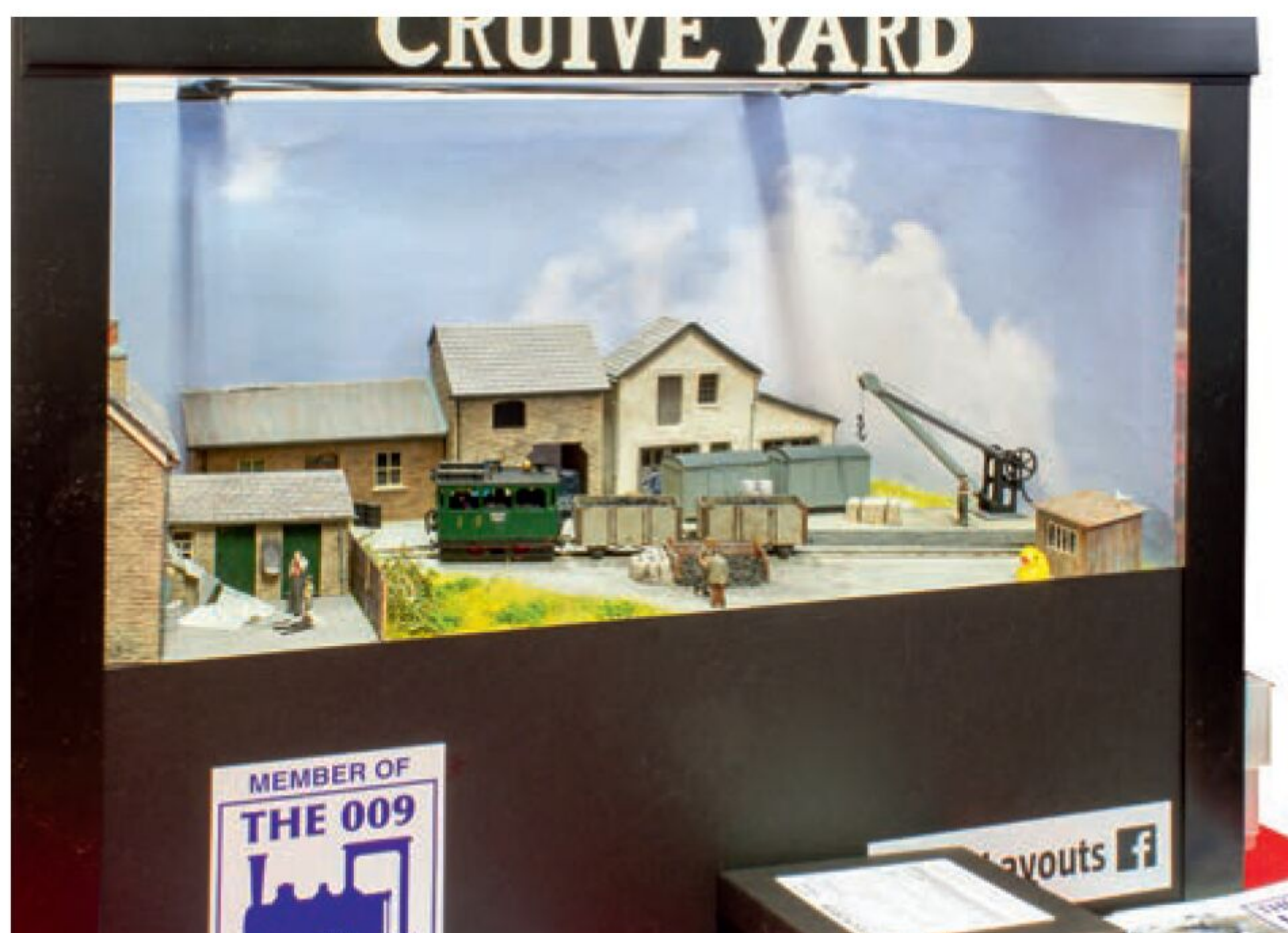
Cruise Yard (*cruise* is a Scots word for a small space) can be stored easily, taken to shows on public transport and needs little support equipment such as legs, lighting rigs and sophisticated controls. A model railway in a plastic storage box is well within most people's reach.



↑ One manually controlled turnout leads to two short sidings. The small size of '009' rollingstock makes the layout concept work and work well.



↑ Part buildings set against the back of the layout and offset relative to each other really gives the tiny *Cruise Yard* layout some character.



↑ A neat frame presents the layout beautifully for exhibition work, yet it can be carried easily to and from exhibitions.



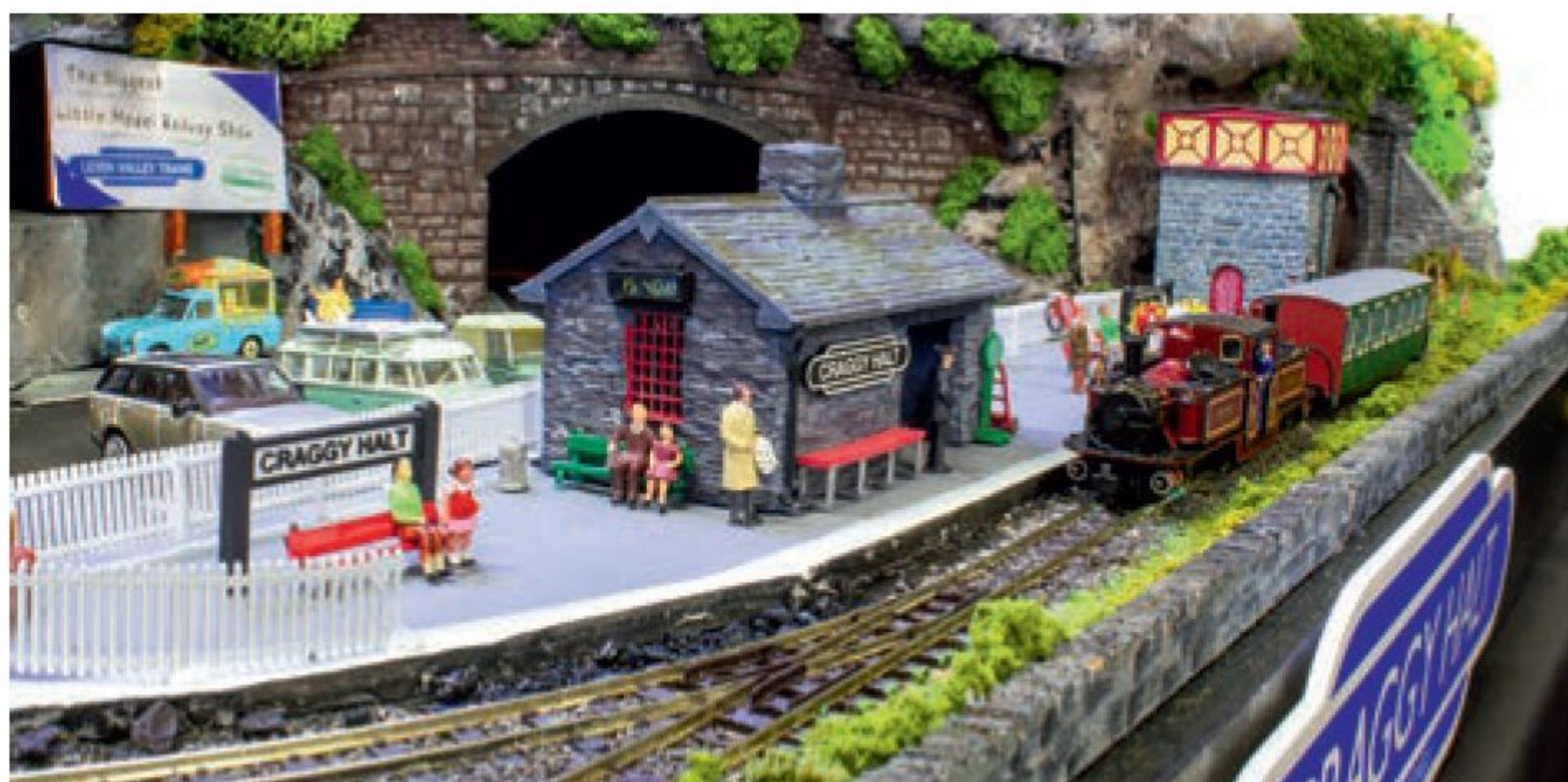
↑ It is possible to fit several cameo scenes into a layout that is small enough to live in a plastic storage box. Someone is in trouble on washing day...

CRAGGY HALT

Take the landscape and tilt it up to gain more space for modelling. That is what has been done on *Craggy Halt* which is an imposing layout featuring a lot of landscape! Creator and builder Luca Jaconelli has fitted in three 'OO9' gauge lines on three different levels on this Welsh narrow gauge inspired layout. There is room for a slate loading point, trees, waterfall, station and staging to the rear of the layout. It all fits together very nicely and although fitted into a micro-layout footprint, it does not feel overcrowded.

[www.facebook.com/groups/](https://www.facebook.com/groups/1911992839045598/user/61556530813765)

1911992839045598/user/61556530813765



↑ Craggy Halt station with a stone-built building and water tower. It is located on the bottom level of a three-level layout.



↑ On the second level is a slate mining railway which winds its way through the rocks.



↑ vertical height has been used to advantage for rock work and the slate mine building. The height really adds to the layout's striking appearance.



↑ The third and highest level can be seen at the top of the rockwork. There is always some movement on *Craggy Halt*.

TRAM STOP

Tram Stop built by Douglas Sutherland is inspired by German Strassenbahn practice. It is a good example of what can be achieved by careful detailing which has created a lot of visual interest in a small area.

This tiny project shows that a micro-layout is a way for experienced modellers to venture outside their modelling comfort zones. With so many superb European outline models available the opportunity to try something different is presented by the micro-layout layout concept. The amount of stock needed for such a layout is small and the high quality of European equipment will ensure good running characteristics. This 'HO' gauge layout has a twin tram circuit around an Altstadt or old town with historical buildings. Tucked away in its narrow streets are market stalls, bars and hotels. The structures are quite large, but have been carefully composed by the builder so not to overwhelm the small layout. The tram track is paved in the external road surface and includes a typical tram stop. Appropriate road vehicles and figures complete this German town scene.



↑ Another example of a different approach to railway modelling is with *Tram Stop*. The old town buildings typical of a German Altstadt are an excellent backdrop to the trams.



↑ The tram line is double-track, set into paving. The trams run round the buildings which are the perfect view block no matter which side of the layout one is on.



↑ The tram stop itself at what is the front of the layout. The whole scene is nicely detailed and well composed, a secret to successful micro-layouts.

CHARLOTTESVILLE

A small switching yard set in the early 1950s is the theme for this neat 'HO' scale US-outline micro-layout built by Ian Rankin. The location is inspired by the New York Central's Indiana Division in Charlottesville. The track formation consists of three sidings leading to a three-road staging area which also has the layout's control panel. It is neatly framed for exhibition and the enclosed boxy nature common to a lot of micro-layouts is softened by using trees in the far corners instead of buildings. To the rear is a freight house with dock whilst a team track has been modelled at the front of the layout for general freight.

www.facebook.com/ian.rankin.984



↑ A freight house is one of the 'industries' on Ian Rankin's 'HO' scale New York Central *Charlottesville* layout. It is simply and neatly detailed with packing cases and forklift truck.



↑ Freight is being handled at the public loading dock or 'team track'. Both the freight house and loading dock give the layout purpose.



↑ A hinged board has useful information on the layout and the inspiration for it. It folds up over the layout front to protect it during storage and transport.

BURNS ROAD

Andrew Barclay is the builder of this detailed 'OO' gauge motive power depot layout. A variety of different stock is run into the depot which is privately owned. On-track plant and track machines feature along with privatisation era locomotives. Servicing of all types of railway equipment is possible, making the layout flexible in its use within the privatisation theme. Although built within the dimensional requirements to qualify as a micro-layout, the builder has managed to fit in a depot building, refuelling point and a small station without overcrowding the layout. The theme is contemporary as can be deduced by the modern road and railway traction.

www.facebook.com/BurnsRoadTMD/



↑ Imaginative use of building flats and retaining walls adds to the atmosphere on *Burns Road* without taking up valuable space. The walls and many other details on the layout are 3D printed which give the layout a more customised appearance than if the usual Wills retaining wall arches had been used. The short station platform is located behind the double-deck bus.



↑ Looking in the opposite direction, the depot building, a part structure, can be seen. Setting part buildings against the layout backdrop is one way of suggesting more activity than can be contained on a micro-layout footprint.



↑ 3D printed details were used to complete the refuelling point scene. A pair of turnouts and minimal track is used on the layout, but it still has a great deal of operating potential.

JACKS HILL LOADING POINT 3

Industrial grime is a favourite theme for micro-layouts along with the tiny locomotives that often worked industrial locations such as coal loading points. *Jacks Hill Loading Point 3* is one such layout, replicating a typical small coal loading point which was once a common sight in coal producing regions. It was built by members of 12AD MRG.

There is one turnout and a crossing in the track layout which adds a little awkwardness to operations and therefore makes the layout interesting to operate. It uses a dodge common to micro-layouts and that is fitting a simple traverser in one of the buildings which is reached from the rear of the layout. It switches a shunting locomotive and a couple of wagons from one track to the other instead of using an additional turnout as well as being an off-scene place to switch trains over. It is a favourite way of completing a run round loop on micro-layouts although in this case, there is no loop track.

Locomotives and wagons are necessarily small to fit the layout's sidings and the loading point. In such tight spaces, clearances are important and the turnout fouling points are clearly marked as they would be on the real railways. Finishing has been carefully considered and the layout is enclosed in a neat box with fascia, sky backdrop and drapes.



↑ The loading point at *Jacks Hill* which has an external loading hopper and an area within the structure for changing stock over and coal loading. This packs a lot of operational action in a very small footprint.



↑ An industrial themed layout allows all manner of stock to be used including privately-owned industrial shunting locomotives and a variety of short wheelbase coal wagons. This layout is dated between 1950 and the 1970s which allows quite a mix of rollingstock to be operated.



↑ The mine building to the right of the scene has a traverser cunningly hidden in it. Unless one looks closely, this operational feature is not obvious.



↑ *Jacks Hill Loading Point 3* is built on a single manageable baseboard making it easy to transport and quick to set up for an operating session. Wiring will be simple and the amount of stock needed to run the layout in an interesting way will be minimal.

THE BRICKWORKS

Originally constructed as a test bed for a number of project ideas by Jim Finlayson, *The Brickworks* developed into a layout project in its own right. Two gauges of track are present on the layout with 'HO' 6.5mm narrow gauge track serving the works itself and a length of 'HOe' 9mm gauge track on the left of the scene. The works has a wood-fired kiln, supplied by the 9mm gauge railway, which is dealt with in the adjacent sawmill. The remainder of the complex, featuring a lot of interesting little scenes and cameos, is served by the smaller gauge line. Noteworthy is the way in which the 9mm gauge railway leaves the scenic layout to the off-scene area at the rear of the layout.



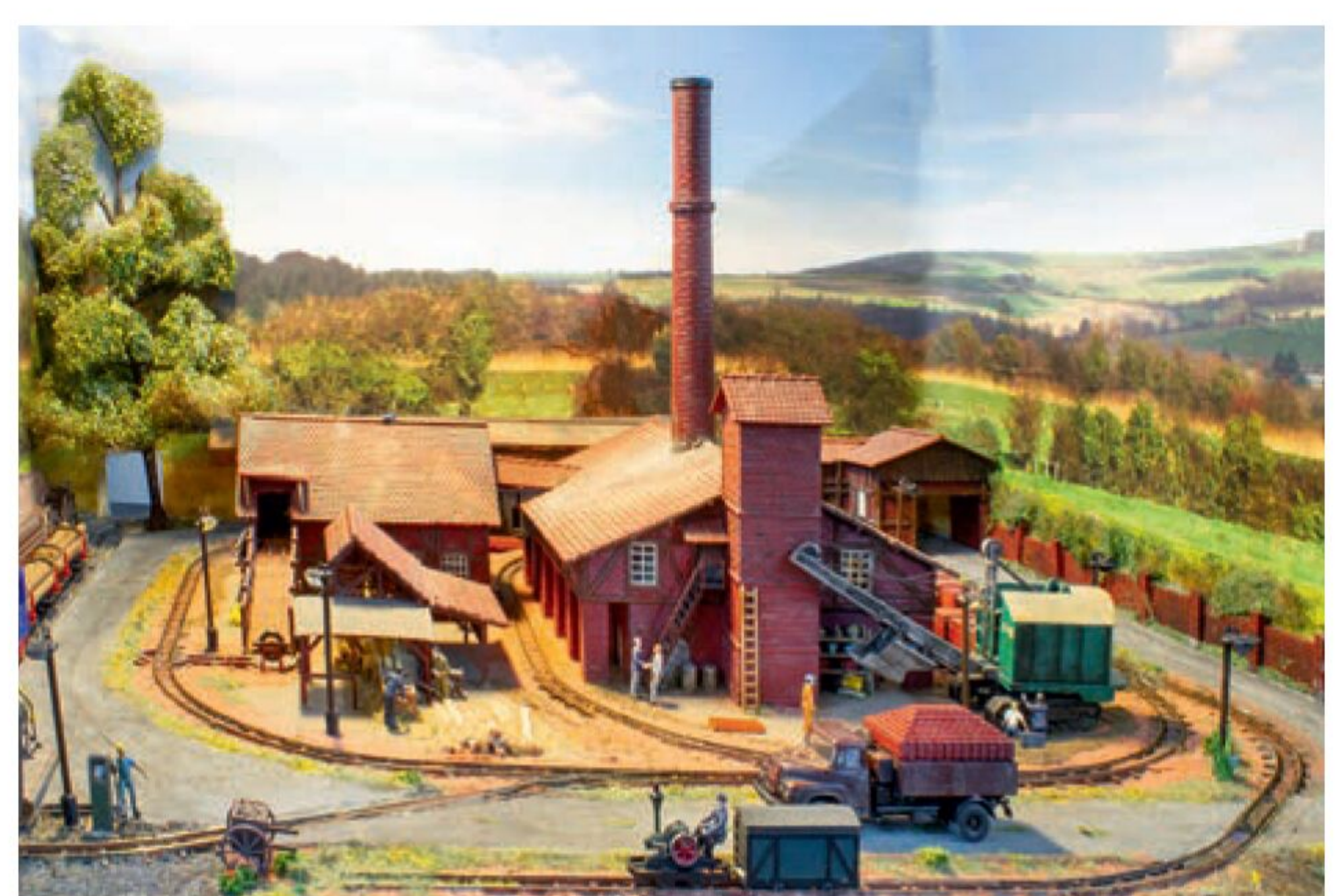
↑ Fuel for the brick furnace is delivered by rail on the 9mm gauge line. Immediately in front of the wood stacking area is the maintenance shed for the smaller gauge line.



↑ The more one looks at Jim Finlayson's lovely brickworks layout, the more detail can be made out, including a cat sitting on the roof of one of the buildings.



↑ A length of roadway is modelled which operates! Note the stacked bricks waiting for collection and the 6.5mm gauge track layout.



↑ One of the features of micro-layouts is the level of detail applied to the small scenes and they are often well finished with facias, backdrops and lighting which adds to their neat presentation.

Start a micro-layout quickly with easy layout baseboard kits

Micro-layouts can be built on almost any stable baseboard structure. An easy way to get started is to use commercially available baseboard kits and those produced by Scale Model Scenery and similar designs can get you started quickly.



↑ The real fun with a model railway starts when the baseboards are complete. Some micro-layout builders often want to complete a layout in a short time, making baseboard kits the ideal starting point.

AN EXCELLENT range of modular baseboard kits is produced by Scale Model Scenery which offer a quick way to make a start in model railways. They

are ideal for small layouts or diorama building for the display of favourite models. The range of kits is quite comprehensive and attractively priced, which is important for those

wanting to build low-cost micro-layouts. They have been investigated by your editor in the past for diorama building and first impressions at the time were of a well presented

and neatly manufactured product which was easy to assemble. It also became apparent that they would be perfect for use in small homes where traditional baseboard making would

be impracticable due to the noise, dust and general mess associated with it.

Several sizes of baseboard unit are offered at the time of writing along with leg brackets, baseboard spacers and fixings to join them together. The range includes baseboards for larger layouts as well as micro-layout and diorama boards which come in varying widths. In the diorama and micro-layout range, the boards are available as 'boxes' with corner and extension boards designed to fit integral backdrop boards, a very useful feature.

It should be pointed out that there are other manufacturers of precision baseboard kits which are quick to assemble, all of which have units sized that would suit micro-layout building. Some manufacturers focus on heavier baseboards more suited to larger layouts which are heavier than the ones demonstrated here.

Ideal size for micro-layouts

The featured diorama boards will help make a



↑ A good-sized micro-layout in 'N', 'TT:120' and 'OO' gauge will fit a combination of three of the large diorama baseboard units offered by Scale Model Scenery. Three units is sufficient length (just under 4ft) for a small station served with a multiple unit or a steam locomotive and auto-coach train in any of the smaller scales.

quick start on a 'TT:120' gauge micro-layout project which has to be finished within a reasonable time so not to distract from a longer term project, but provide a change from it.

The diorama baseboard range was chosen due to the good depth from the front to the backdrop board in each of the units. Two large end or corner board units (BB001 with back

and side boards) along with a large centre board unit (BB002) were chosen for the 'TT:120' gauge project.

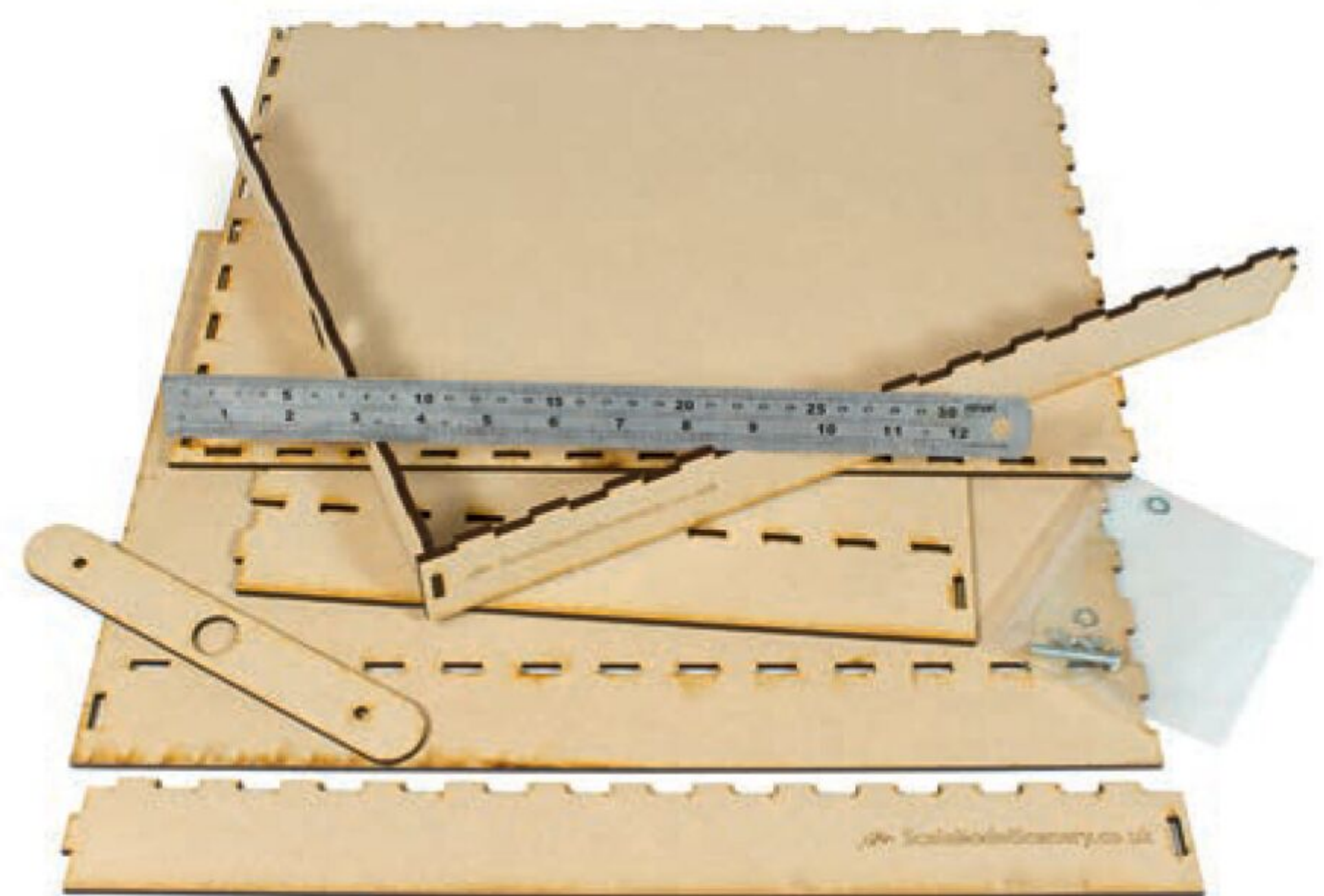
The end or corner boards can be assembled either as right- or left-hand units to complete the layout ends. If two end boards were put together, they would provide a neat foundation for a micro-layout with an

overall display length of 800mm with a single join.

The centre extension board is inserted between the end boards to make up any length of layout. The overall length of the centre unit is 405mm. All of the units have a depth of 290mm available for scenic modelling and the back and side boards are 280mm



↑ Two types of baseboard were built for a micro-layout project which has to be under four feet in length. End units (from kit BB001) constructed as a left-hand and right-hand unit together with a centre unit (from kit BB002).



↑ This brand of baseboard kit was chosen for its simple design and light weight. Beefy baseboards are not usually required for micro-layouts. This picture shows one of the end baseboard units laid out to show the various parts. There are sufficient parts to construct an end unit with back and side boards creating a corner. Two front plinths are supplied allowing end boards for either end of a layout to be assembled.

tall and strong enough to support low relief buildings and scenery.

The surface of each baseboard unit sits on a 40mm deep plinth which provides room for under-layout turnout motors, servos, wiring and electrical circuits. Holes are cut in the end plinths to allow wiring to pass through and spacer units are included together with M5 size fixings to join baseboard units together.

To keep within the 4ft rule for micro-layout length, two corner boards and one extension board was assembled. When joined together, they were just under the 4ft length rule! Further, a single board only weighs about 1kg which means the finished layout will be relatively lightweight and easy to handle for storage and display.

Simple assembly

Building baseboards from sheet material is time consuming and one that many newcomers to the hobby are not keen to try. Apart from the required tools, there is the afore-mentioned issue of mess and noise within the home environment. Suitable plywood for baseboard building is around £20 a sheet and mistakes could be costly.



↑ Keen to get going with your new layout? CA mitre bond glue used by joiners to speed up the gluing of joins can be used for assembly in addition to wood glue. Apply wood glue to most of the join and use CA glue to hold the parts together whilst the wood glue sets.

Kits such as the diorama baseboards simplify matters considerably and the Scale Model Scenery baseboards are simple to put together with basic tools and a small amount of adhesive. It is possible to be ready for track laying in a matter of an hour or two if a fast-setting wood adhesive is used and the environment is warm and dry.

Each baseboard is manufactured from high

quality 4mm thick MDF which has been cut to size using laser-cutting including a very accurate slot and tab joint system. The components are ready to use straight from the packet and require no filing, cutting or sanding. The build started by assembling the front and side plinth

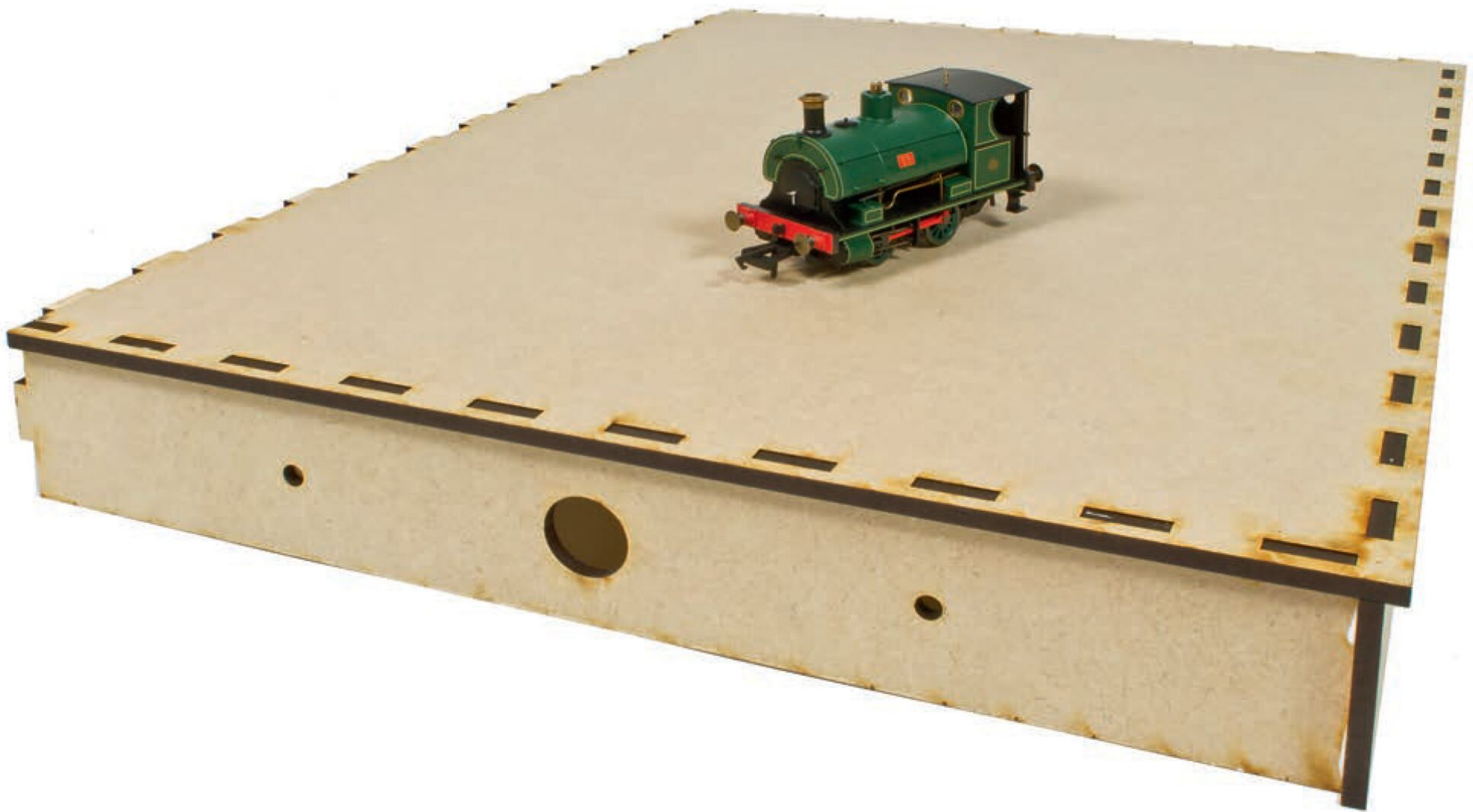
strips together before adding the baseboard top. The dovetail joints are an interference fit and a light tap with the hand was required to seat some – a small mallet and a piece of wood would also suffice. Despite this, the instructions advise the use of a quality wood glue and



↑ The plinths and tops are assembled first before the backdrop board is fitted. Note the hole for wiring and connectors. The oval piece is a packing piece for joining baseboard units together.



↑ All of the parts are laser cut from sheet MDF and to a very high standard. Nothing has to be trimmed, filed or cut to fit together. Simply apply glue as shown and tap the parts together. The slot and tab construction is very strong and stable.



↑ The flat part of the first unit is completed. The backdrop board is added to complete the structure.

for the long term, assembly with glue is a must.

With the tops in place, the back and sides can be fitted to the end units and to the rear of the centre unit. End units may be constructed either left- or right-handed: choose the correct front plinth strip for the one you wish to assemble – both are supplied in kit BB001. A long oval strip with three holes is located in the end of the plinth to pack out the join between baseboard units. The M5 fixing screws and washers fit the holes neatly and the larger hole matches the one in the plinth allowing wiring to be fed through from unit to unit.

Speeding up the job

Baseboard construction is far from the favourite job for most railway modellers and when a plan is conceived, modellers want to proceed

to track and wiring as quickly as possible. Whilst it is possible to put the boards into use after a day of glue drying time, there is a dodge which can make them immediately serviceable.

Mitre glue, designed to glue awkward joinery together, provides the answer. It is a cyanoacrylate (CA) product which has been used by experienced modellers for baseboard construction for years.

When applying wood adhesive to the slot and groove joins, also glue some sections with the CA glue supplied in mitre glue packs. Wipe excess wood glue away so it does not drip when working with the mitre adhesive. Fit the pieces together immediately and support them so they are square. A quick blast with the acceleration spray immediately freezes the CA glue, holding the parts together. The wood glue

can dry in its own time, the parts effectively held with a glue clamp. This dodge will not allow much adjustment time, so align baseboard parts carefully with the aid of a good square. Further, the acceleration spray is not healthy to breathe in, so complete this in a room with good ventilation where it will not have an adverse effect on the rest of the home.

Although there are fumes from the accelerator spray to consider, CA based mitre glues are really very useful in layout building and can be used to quickly reinforce existing joins or make quick repairs. Keep some in your modelling adhesives armoury!

Making the best use of the boards

Having a quick-to-assemble diorama baseboard system like this brings that small layout project closer and

as described elsewhere in this micro-layout themed issue, a small project to give a break from a larger model railway or to try new techniques in layout and scenery construction can be within reach for a low outlay. Military and scale modellers have the perfect platform for displaying finished plastic kits and in 'N' and 'TT:120' gauge, three units should be long enough to create an immersive layout.

There are many options as to what could be done with the units. Two end units and two centre ones offers a good length of layout and to save baseboard joins, one each of a centre and one end unit could be permanently secured together, reducing the number of separate boards from four to two along with a reduction in joints – bearing in mind the maximum length for a micro-layout. Boards



↑ If large steam or diesel locomotives are your thing, a motive power depot could be modelled convincingly in the space offered by the baseboard kits.



↑ An end baseboard assembled ready for the addition of back and side boards. The boards are secured together with M5 fixings and packing strips which are supplied in the kits.

can be mounted back-to-back too for double-sided layouts and an end corner unit reversed to create a staging area for train storage. The opportunities are pretty numerous – all it

takes is a little imagination in your compact layout and diorama design.

Building on the design

The assembled boards can be used as they come apart

from cutting a hole or two in the backdrop boards for track to leave the scenic layout to enter the staging area. If you are feeling a little more adventurous, more interest can be added to the layout. The boards could be given a little more depth along the front by adding a fascia. The 290mm width (about 1 foot) of the board kits means that the three-unit assembly demonstrated in this article falls well within the maximum area to qualify as a micro-layout for smaller scales in the UK.

Ideas include extending the front of the layout slightly (when adding a fascia board) to create more space and to curve it to take away from the rigid right-angled design. If the three boards chosen for the 'TT:120' project are joined to make a single unit, a fascia board would strengthen

them. A corresponding board would be needed to the rear too.

An increase in plinth depth from the supplied 40mm to 100mm would allow more room for turnout motors and other equipment. It would also help with the fitting of layout controls, although the idea of a micro-layout concept is to keep complexity (and turnouts) to a minimum.

Another consideration is the flat baseboard top. This provides little scope for scenic features to be modelled below track level. The track bed will have to be built on risers to create the required height above 'ground zero' and that might complicate the fitting of turnout controls.

The short unit length (400mm) will make the placing of turnouts more challenging when the

track plan is designed. They should not cross baseboard joins to ensure that they work reliably. This is another good reason for joining the boards together permanently and a four-

foot long layout board is not difficult to handle.

Saving mess and time

Pre-made small and diorama baseboards can be very beneficial to new modellers and those

with limited space. They provide a manageable base where a train or two can be run. The 'lack of space' excuse for not modelling may be due to not having somewhere for the messy work of layout construction

to be completed and that includes baseboard building. The Scale Model Scenery diorama baseboards could be assembled on a kitchen table, with suitable protection. There is no mess from cutting and drilling except for a small hole made in an end board for a line to leave the scenic area of the layout to reach the fiddle yard or staging. Here is a summary of the benefits:

- Low cost per unit – a small layout can be assembled for very little cash outlay.
- Simple and quick to assemble – each board unit takes about ten minutes.
- Minimal tools and adhesive are required.
- Suitable for assembly in a small home.
- Get track laid and trains running quicker than with conventional baseboard construction.
- Several units may be joined together to create longer dioramas and layouts.
- Ideal for micro-layout themes.
- A modeller can build something different on a small board to test new modelling techniques, materials and skills.
- They can be enhanced with deeper fascia boards and extended slightly in width for a more interesting appearance.
- A couple of strips of planed timber can strengthen the joins between tops and sides without adding much weight.



↑ The Bachmann 'OO' gauge 'Capital Commuter' train pack and Wickham trolley is used to illustrate how much can fit the baseboards and how a convincing scene could be built with low relief buildings. Small single and two-car multiple units would make the ideal passenger train formation. The Heljan single Class 128 parcel unit and other 'OO' gauge rail car models are ideal subjects for a layout of this size.



↑ The low 40mm plinth which supports the baseboard top is deep enough for small point machines like the MTB range, servos and solenoid motors. A deeper fascia will be needed if the larger Circuitron Tortoise point motors are to be used, even when placed on their sides.

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Building a compact shunting layout in 'N' gauge Part 2

In our guide to modelling in 'N' gauge which appeared in the last issue of *The Guide to Model Railways*, a compact Cornish china clay themed layout was used to illustrate how an 'N' gauge layout can be built to a tight budget. The story is concluded with scenery, structures and presenting the layout for display.



↑ This small, micro-sized 'N' gauge shunting layout was built for detail and realistic operations. The story continues with buildings, structures and scenery representing the china clay landscape of Cornwall and all in a length no greater than four feet.

WELCOME BACK to our compact Cornish china clay themed layout designed and built for portability, low cost and a lot of scope for modelling and operations. In the last issue of *The*

Guide to Model Railways, we looked at ideas you can use to build a realistic layout on a tight budget, achieving something that is both fun to operate and can be exhibited at your local show if you feel so inclined.

In the last issue, the baseboard, wiring and track laying was completed to the testing stage. It is now time to jump into scenery modelling! Before enthusiastically breaking out the ballast, glue and

styrene card, consider that all new layouts and particularly one designed for slow speed shunting operations must be thoroughly tested for snags and track faults. As far as possible, every

locomotive, wagon and coach is run over the layout to find problems with the track, particularly at rail joints and turnouts. It is easier to fix dry solder joints, wiring faults and misaligned rail joiners when there is no scenery to get in the way.

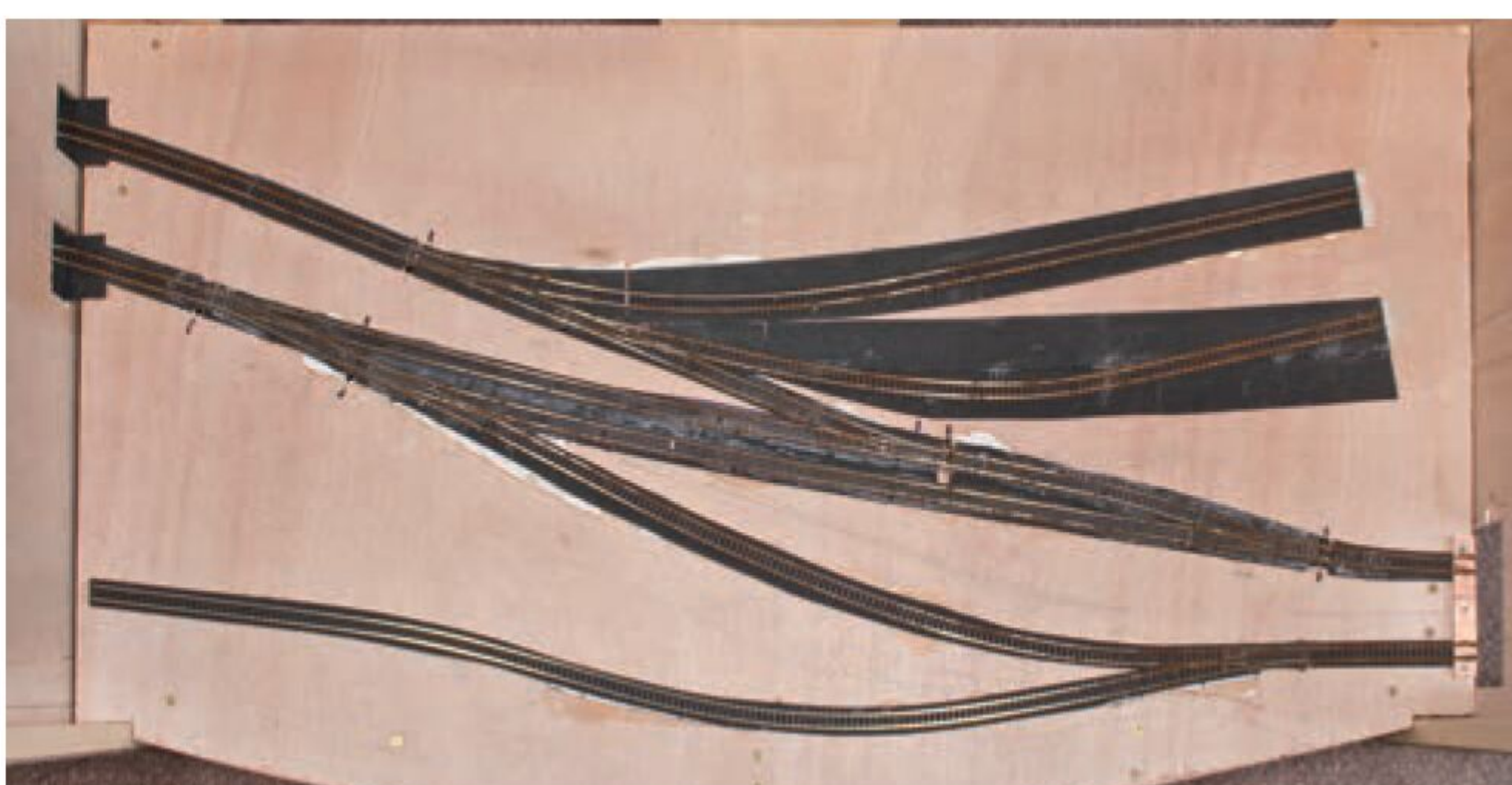
Having completed some fairly intensive testing (several small technical problems were found with the project layout at this stage of construction), the layout moved on to to hard landscaping and buildings. Progress has not necessarily followed a clear linear path as the articles suggests – layout construction rarely does. As glue and paint is left to dry on one part, work is completed elsewhere, sometimes at the work

bench, sometimes on another part of the baseboard. There is nothing wrong with this approach which makes good use of valuable modelling time. In this phase of construction, the following tasks were completed in a more or less logical order:

- Track was painted and ballasted.
- Paved sidings adjacent to works buildings made from styrene card.
- Neglected track effects modelled on one siding.
- Mock-ups of works buildings were completed.
- Position of the buildings determined to achieve a pleasing composition using mock-up structures.



↑ At this stage of construction, one important job was to build mock-ups of the clay works from thin card stuck together with adhesive tape. They are used to test the position of scenic features, structures and landscaping. In this view, some paving and the station platforms had been installed.



↑ At 40-inches in length, the scenic part of the layout meets the criteria for a micro-layout. This top-down view shows the track formation which is angled across the width of the baseboard for the longest length of mainline track and passing loop that can be fitted in the space, a useful technique for builders of small layouts to consider.



↑ A simple method of making concrete paving for paved track is to cut it from styrene sheet. Whilst straight sidings are easy to do, those with curves are not as straightforward. A paper cutting template is made by tracing the track formation onto paper using crayon before the track and rails are painted.



↑ The styrene paved track sections are carefully cut out using the templates and test fitted to check flange way clearances and to achieve a neat join between pieces. The panels are numbered for identification before being placed to one side until the track and rails are painted.



↑ Sleepers are painted with wood effects and rust colour is applied to the side of the rails, making the track look better by taking unrealistic shine away.

- One station platform constructed.
- Over-bridge at right hand end of the layout constructed.
- Basic land forms created.
- Roads and other areas of ground painted.
- Layout fascia and backdrops cut to size and fitted.
- Lighting box constructed.
- Back drop boards painted.
- Work on layout presentation completed.

Painting track

Before starting work on ballast and paved track, paint the sleepers with a dirty brown colour and apply rust shades to the side of the rails. A mixture of two favourite colours was used including 'frame dirt' for the sleepers and brown rust or 'rusty rails' colour for the rail edges. If acrylic paint is your preference, the range of brown shades produced by Tamiya and the 'Rust and Dust' range by LifeColour will keep you busy with colour mixing for hours.

Whatever rust shades you like to use, colour blending in places will help to avoid an unrealistic uniform colour. The rail tops were

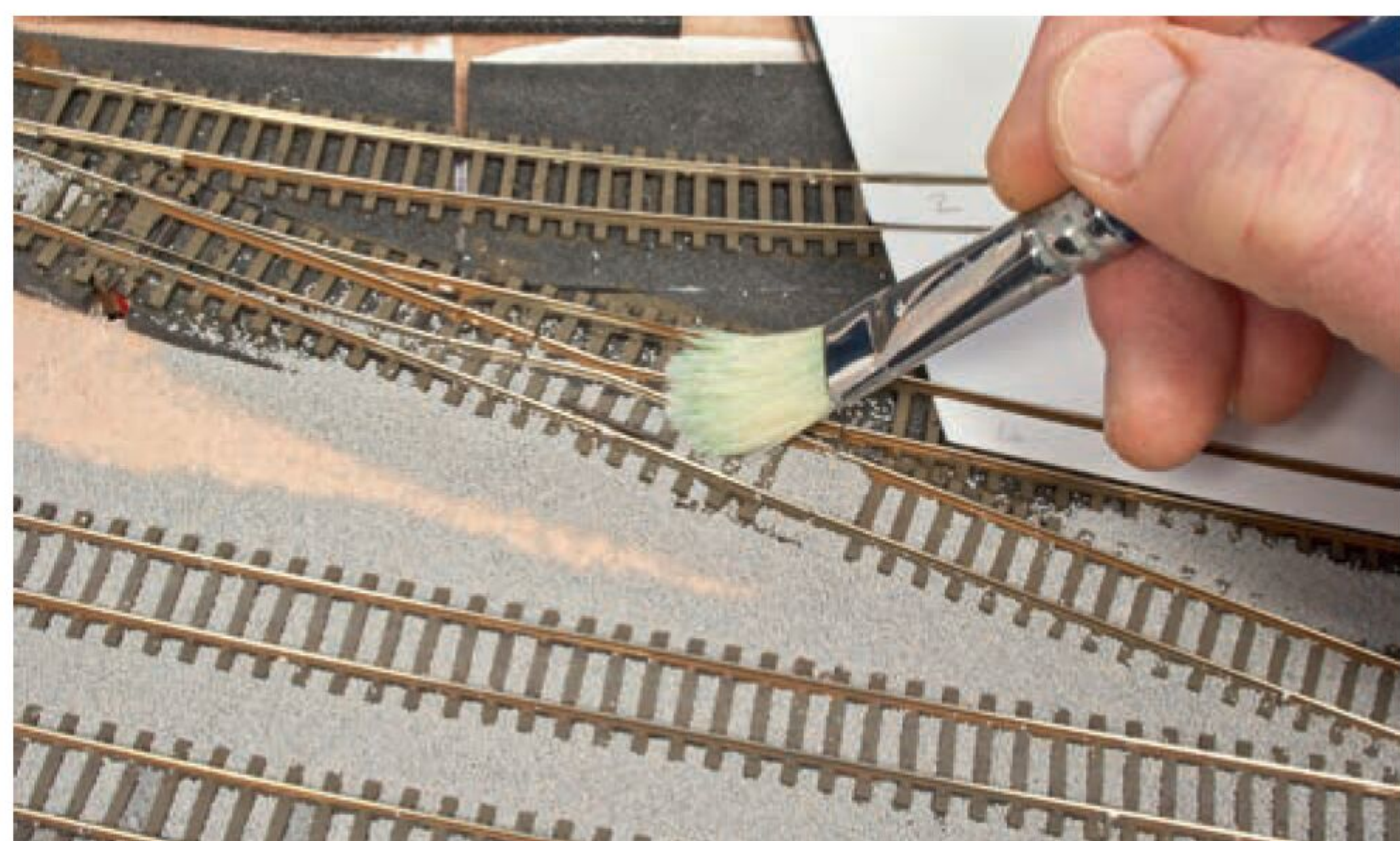
cleaned of paint before it dried too hard for solvent to cut through it. Dry-brush weathering of the sleepers with light grey paint to make them look bleached and dusty-dry was a job left until the layout had reached the point where detailing and accents are applied. Subtle effects can be lost during the less delicate stage of landscaping and applying ground cover.

Paved track

Paved sidings (usually concrete) adjacent to or running into works buildings, allowing transit sheds to be used by road as well as rail vehicles, are an important feature of china clay works.



↑ Poor or non-existent maintenance of little-used sidings can be represented by burying the track in Das modelling clay, level with the sleeper tops, creating the appearance of years of clay spillage and neglect. Care is taken to keep the inside edge of the rails free of modelling clay. Trains still have to run well on this track.



↑ Ballasting commences once all track painting and detailing is finished. A flat brush was used to spread ballast evenly over the track before it was carefully teased into its final position using a smaller brush.



↑ In this view, the paved track sections remain to be fitted whilst the size and position of the buildings is finalised. In the meantime, the single platform of the halt was in the process of being fabricated from styrene card.



↑ The station platform was made up of styrene card, whilst the adjacent concrete paving has been painted a beige colour to represent old concrete.

Paved track can be used to separate clay works sidings from the main track and loop, creating further visual interest. Complex track formations are tricky to model unless a template of the rails is made which is used to cut out paving material.

The track formation on this layout project was traced on paper using crayon and the resulting template used to cut 20-thou styrene sheet to shape. Straight sidings are easier to model with paving: the styrene pieces being carefully measured and cut with a cork-backed steel rule (cork-backed to prevent the rule from slipping on the smooth styrene).

Paving was fitted to the track using cyano-acrylate

(CA) adhesive, allowing enough room for wheel flanges to pass between the paving and the inside of the rails.

Ballasting track

The layout starts to take on a modelled appearance with ballasting – a layout of this size being finished comfortably in a couple of days. Ballasting is rewarding as it covers joins and patches in track underlay and fills in gaps too. It is the first sign of the layout taking on the appearance of a real railway. Fine grey ballast by Woodland Scenics was used on the main tracks. It was highlighted with a pinch of light grey here and there to mimic the different shades of ballast observed in photographs

of Cornish branch lines. A small quantity is first poured into a plastic container to mix different shades to the right proportions. Ballast was applied to the track in manageable quantities using a teaspoon and brushed evenly over the track using a flat paint brush. A dropper bottle can also be used to direct ballast into place in a controlled manner. Finishing work involves brushing ballast carefully between the sleepers, first with a broad brush and then a finer one to work grains of ballast into place. The moving parts of the turnouts were avoided. At the same time, ballast shoulders were created along the edge of the track underlay, hiding it completely.

Scenic Cement by Woodland Scenics was used to glue the ballast in place and was introduced from the side using a simple plastic pipette, a small quantity at a time. When ballasting, you will know when you have applied enough cement when the ballast turns white in appearance as the cement soaks through it. Artist's matte medium also works



↑ Paving and ballasting is complete along with decisions made as to the position of the various buildings. The time to replace card mock-ups with styrene card buildings has come!



↑ The original card mock-ups of the 'Wheal Annah' clay works have given way for building cores composed of 60 thou styrene card following the dimensions determined through construction of the mock-ups. The basic buildings are shown in this picture after painting.

well for this job, as does diluted woodworking glue. The layout and its fresh ballast was left alone for several days to dry before

work on adjacent areas of the layout commenced.

Modelling track in poor condition

Sleepers buried in years of accumulated clay spillage

and dirt will make a length of track appear particularly neglected. A buried length of track leads to an old clay works on the layout. Trains would run on an intermittent basis with one or two wagons for loading. Such lightly used sidings rarely saw more than scant maintenance and nature soon takes hold!

Das modelling clay was worked between the sleepers of the neglected line together with the track side. The sleepers were not completely buried in clay which was levelled with the top of the sleepers. Once hardened, it was painted in a light soil colour. When vegetation was added to the layout, this length of track was treated with grass and weeds as far as was practicable in 'N' gauge without risking contamination of locomotive mechanisms or affecting the running of trains. Das modelling clay was also used to create a road crossing with grooves cut into the modelling clay applied between the rails to make flange clearances. Working manual gates were fitted to the crossing to make an interesting operational feature. Having



↑ A variety of styrene materials is used to build the clay works buildings to reflect the variety of modifications and materials observed on field trips to Cornwall. Plain styrene sheet is used for building cores whilst embossed styrene is used as a cladding to add texture. Each section of the works buildings is loosely assembled on site to check the fit against the backdrop. The buildings are angled for greater visual interest.



↑ The buildings are not built as a single unit but in manageable sections for transfer to the work bench. They are assembled together when detailing and painting is complete. The roof sections have been fitted to the works buildings and tested for clearances.

to open and close the gates serves to slow operations down in a realistic manner.

Buildings and structures

One important question was how the limited area of bare baseboard could be filled with enough industry to justify intense operations without making the layout look overcrowded and allowing good angles for photography. For a shunting layout to have 'purpose', there has to be industry to serve with trains. Industries are represented with structures and china clay country offers a host of clay dries and transfer sheds as inspiration. Experienced modellers often joke about 'flat pack' building kits when buying styrene sheet material, the preferred medium for the structures on the *Wheal Annah* project.

It is true because the humblest sheet of styrene can open up a world of structure modelling. The wide variety of embossed styrene available from both Slaters and South Eastern Finecast simply adds to the appeal of styrene for modelling buildings and structures of all kinds.

Three groups of industrial buildings were planned for the layout. A clay drier works with loading shed; a covered transit shed and a traditional china clay works with a loading dock (wharf). All of the industrial buildings are located on separate sidings providing lots of shunting locations for spotting wagons.

The choice of buildings is not random, the structures making up the main works is a post-war affair with corrugated loading shed for bagged clay providing a shunting spot for vans

of various types. To the right of the Wheal Annah site is a part concrete, part corrugated covered loading shed which can accept a variety of covered hopper wagons and open wagons such as the UCV 'Clayhood' for ball clay loading. In both cases, the structures are relatively modern and were inspired by those at Parkandillack.

The third structure, a traditional clay dries, is located at the front of the layout with an adjacent loading dock. It was inspired by the numerous smaller works buildings once located in the Bugle area along with the Par to Newquay line and its various branches. It presents different challenges compared to simply building the more modern structures with its corrugated cladding.

Building mock-ups

Card mock-ups of the clay works buildings were prepared from sketches and photographs to see how the planned buildings would fit without overwhelming the layout. Any rigid card will do for this job. Cereal boxes, shoe boxes and similar card containers were dismembered to make up the basic outline of the buildings stuck together with adhesive tape. One might resent the thought of spending time working on mock-ups. Why not jump straight into building the models themselves to save time?

Well, for those modellers unaccustomed to working in a particular scale, mock-ups help with composition and balance. They will help determine the best position of the buildings in relation to other features and to

reconcile the size of the buildings in relation to the rest of the layout – some are partial structures set against the backdrop to save space. Whilst playing with the mock-ups, the position of platforms, paved track, roads, bridges and landscaping was determined to build up a picture of how the layout should develop.

Making up the buildings

Constructing the various works buildings was relatively simple to do and was done by scratch building with styrene sheet. Scratch building is nothing special and with careful measuring, cutting and assembly, quite complex structures can be built by all modellers.

The foundation to each structure is a core consisting of two layers of 60-thou styrene with internal bracing at the corners. The angled position of some of the structures required a little care in measuring and cutting the roof pieces so they would fit neatly against the backdrop. The cores were assembled using solvent cement and squared up using 'Right Clamps' and an engineer's square. The cores were left for several hours to allow the solvent to dissipate and the corner joins to harden.

Where doors and windows were needed, holes were cut in each piece of styrene before assembling the cores. Care was taken not to fit bracing and layered card where an opening may be required or where they would be clearly visible through open doorways. The relatively modern works buildings were clad in fine

corrugated embossed styrene by Slaters. Each strip of cladding is measured to replicate the vertical joins in the cladding of the full-size buildings. Care is taken to trim and smooth the edges for a neat finish with the suggestion of a join. When the roof cladding is completed, the horizontal join lines are scored at right angles across the corrugations.

The traditional works was built with a core of 60-thou styrene and clad with random stone sheet by South Eastern Finecast which was random enough to suit large stone blocks in 'N' gauge. Parts of it were clad in corrugated material to make it look like it has been altered over the years and various repairs and modifications with more modern materials were incorporated to add to its character.

Details added to all of the buildings include the sliding doors, roof gutter and rainwater down pipes (rainwater goods). The transit shed has the loading dock constructed on the inside of the building whilst the Wheal Annah loading shed has a narrow external platform. Where possible, the buildings are built with a narrow foundation which fits into the scenery to hide the join between the structure and scenery. It is not always possible to do this, as demonstrated by a couple of the works buildings and other methods of blending buildings into the layout are used instead.

Painting clay works buildings

Each structure is carefully prepared for painting using fine grade wet and dry paper to smooth away any

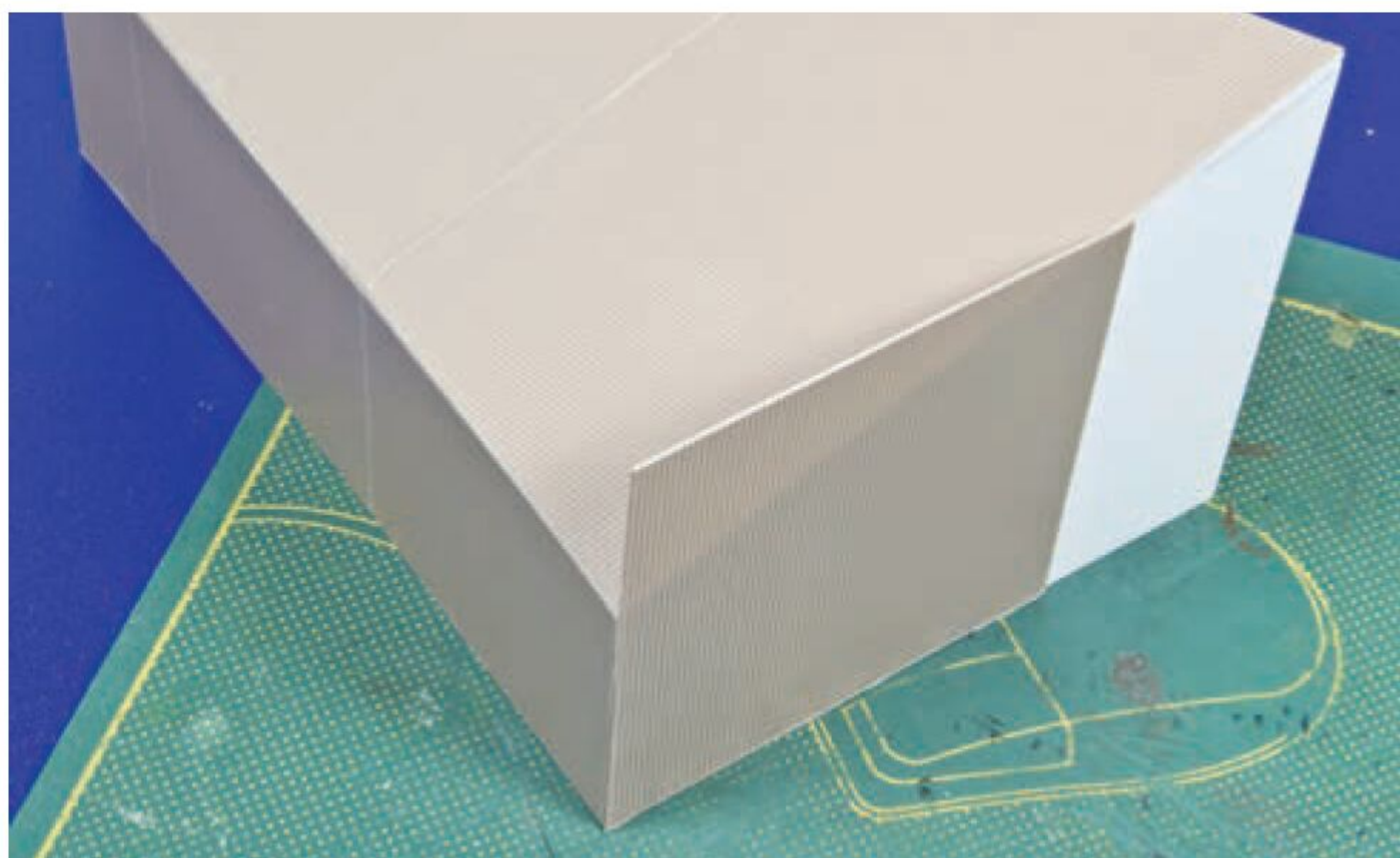
rough edges. A wash in the kitchen sink to degrease the plastic followed by 24 hours' drying time is good practice. Modern china clay buildings are light in colour with light grey corrugated cladding, concrete panels or cream stonework – all weathered with clay dust, of course! The models were coated with a base coat of light grey acrylic paint before being painted

particular colours such as the transit shed's concrete panels which are painted faded red. The cladding on all the buildings received further thin coats of subtly different shades of light grey acrylic paint to add depth and character to the buildings. Those panels designed to let light into the building are rarely clear as glass, but are usually opaque. They can be

represented by masking off selected roof panels and painting them a different shade of grey.

Small details such as loading doors, guttering and frames are painted blue or grey depending on the

works building. The models are finished with weathering which is applied both as thin washes of darker grey paint to pick out the seams in the cladding and as a dusting of very light grey to represent china clay dust.



↑ Building cores are clad with appropriate material depending on the type of structure. Corrugated sheet was used extensively on this layout!



↑ The same styrene techniques used to construct the clay works buildings were used to construct the over-bridge at the right-hand side of the layout. It is inspired by the one at Bugle on the Newquay line.



↑ The completed bulk clay loading shed which is an extensive structure. It is set at a slight angle against the backdrop board.



↑ A view of the completed bagging shed lifted off the layout for weathering and detailing. It rains a lot in Cornwall, so guttering is important. The building has a 10mm foundation which is hidden when the building is placed on the layout. An adjacent building fits into the unpainted space in the side wall.



↑ The models of modern works buildings are clad in corrugated material and painted various shades of grey using Tamiya acrylic paint. Points to note are the angled roof lines which allow the buildings to sit at an angle to the backdrop and where the building sub-assemblies fit together.



↑ Only part of the old works was modelled, and it was designed to fit up against the side of the layout at the front to provide a view block between scenes. A wash of pale grey and beige colour was applied to the building, flooding the mortar. The walling was completed by hand painting individual stones.



↑ Acrylic paints by Tamiya and Vallejo were mixed together to create a variety of different shades for colouring the stonework. Colours included frame dirt, mid stone, light brown, roof dirt and concrete colours. Points of note include the corrugated roof which was used to replace the original tiled roof; broken guttering; loading dock; wooden sliding doors which were distressed with the tip of a scalpel and the use of brick to show patch repairs and modifications to the building.



↑ The old works was designed to fit up against the side of the layout at the front. The roof was cut to fit the lighting pelmet support. Sadly, there was no room for the works chimney, so one was painted on the back scene instead!

Finally, the traditional works to be located at the front of the layout has stonework painted in a

STRUCTURE MODELLING MATERIALS AND TOOLS

- Steel ruler.
- Engineer's square.
- Modelling knife and new sharp blades.
- Self-healing cutting mat.
- Small paint brushes.
- A variety of sheets of white styrene card including 10-, 20-, 40- and 60-thou.
- Embossed styrene for random stone, stretcher bond brick, stone blocks and fine corrugated cladding.
- Grade 600 and 1200 wet and dry paper.
- Solvent cement such as 'Plastic Weld'.
- CA glue and accelerator spray for laminating styrene card.
- A selection of styrene strip for detailing and cladding trim.
- General purpose primer for painting.
- Detailing parts appropriate to the building being modelled, including guttering, rainwater pipes, ventilators, window frames, door mouldings, light fittings and so on.
- Acrylic paints for stone, mortar, brick and cladding materials.

wash of light beige acrylic paint which flooded the 'mortar' without concealing the stone detail. It dries quickly allowing colouring of the stone with a mix of stone colours which was applied by gentle brushing of thickened paint. Care was taken not to allow it to flow into the mortar. Notably, the older works may have used coal rather than gas for drying clay. Some soot damage may be represented with a dirty black colour dry brushed over some of the stonework if desired.

Landscaping

A start was made on hard landscaping once the track was ballasted and coloured. Scenery was progressed as a parallel project whilst the buildings were drying between each paint and weathering session.

Care was taken to protect completed areas such as ballasted track from glue and paint spots during landscaping. Several embankments were made using the card lattice method (a method described in detail in the last issue of *The Guide to Model Railways*). Strips of card are woven and glued together and covered in

masking tape. A thin layer of plaster cloth is placed over the masking tape to make a hard shell. The masking tape prevents moisture from the plaster cloth from softening the supporting card lattice. One embankment forms part of a shallow cutting at the front of the layout whilst the other was built as part of the road and station over-bridge at the right-hand side of the layout.

Dry stone walling

One of the first jobs was to separate a narrow lane from the railway with a representation of a low dry-stone wall. It is a classic landscaping feature which can be built in numerous different ways and on this layout it is an important divider between different cameos. Making a narrow stone wall in 'N' gauge is not easy and the classic method of building the wall from small, shaped pieces of Das modelling clay (an air dry clay which does not have to be baked) was going to take forever! An alternative method was needed to save time.

Structure modellers often resort to a well-known technique to create stone walled buildings where

stonework is carved in Das modelling clay. The shell or core of the structure is assembled from thin plywood or styrene card before being covered with a thin veneer of Das modelling clay. Stonework is carved into the surface of the dried-out clay to make a unique wall without the repetition of embossed styrene building sheets.

The same technique can be used to quickly build a long length of dry-stone wall. It started as a strip of 60-thou styrene, 10mm high, which was fitted to the landscape and covered with Das modelling clay. It was smoothed with sandpaper once completely hardened and before carving stonework using a scribe. The top of the wall received careful attention to give it the impression of capping stones and included places where capping stones had been lost. Once the carving was complete, the wall was brushed down with a toothbrush and vacuumed to remove loose material before painting with acrylic paint washes. It was then protected from subsequent scenery work using low tack masking tape.

Static grass

Some of the most realistic textures that can be achieved come from the use of static grass which is layered, blended and even painted when it is in place. Fibres 2.5mm and 4.5mm long in two colour were blended together for general rough grass. To begin, hard areas and the railway itself was protected with masking tape and newspaper before a cover of Woodland Scenics green fine turf scatter was

applied. Once set, the grass was applied over the turf, thinly in places so some of the underlying turf colour strikes through. The static grass was glued using thinned matte medium and uniformity was avoided by applying a second shot of fibres in selected places to vary the length of the grass. Weeds in the grass were added with a sprinkling of fine turf scatter, fixed in place with matte medium. As soon as grass application was complete, the

protective cover and tape was removed, with care taken not to disturb the grass edges.

Shrubs and bushes

One of the challenges of scenery application is softening the lines between hard structures and the landscape itself. For example, the road bridge and embankment located at the right-hand side of the layout was one area needing some convincing work with shrubs and bushes to blend



↑ In any layout project, several jobs can be ongoing at around the same time as long as they do not affect each other. Whilst backdrops were drying on the work bench, a start was made on ground cover.



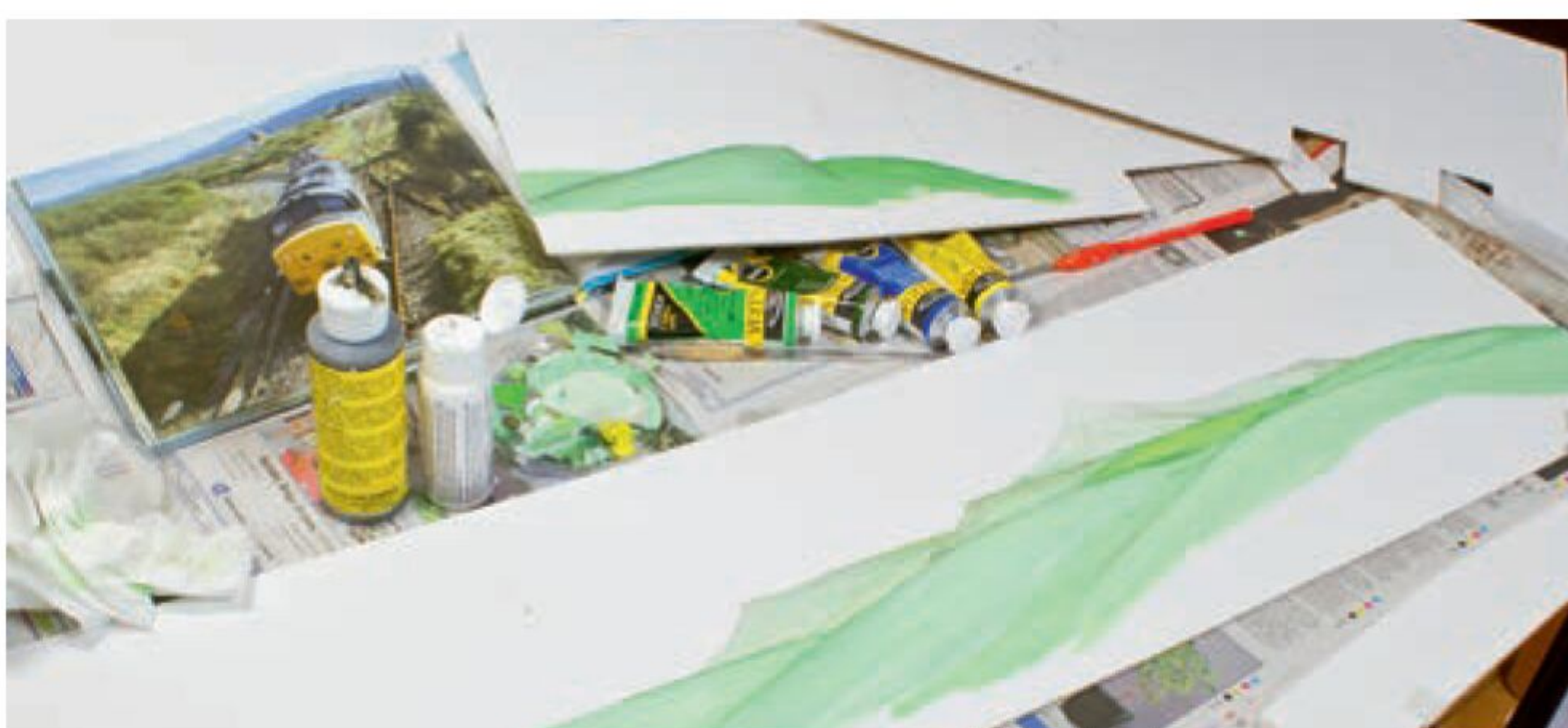
↑ Ready for scenery – the painted concrete paving and landscaping looks stark and harsh, but will be softened with scenery materials and weathered with real china clay.



↑ The small areas of ground cover can be awkward to treat without causing problems with other areas of the layout. It is time consuming to work on a small layout but be prepared to do very small areas at a time and allow plenty of time for adhesives to set.



↑ The backdrop boards are painted in several coats of white household paint, being smoothed down between each one. The position of the background works buildings was sketched in place.



↑ Backdrop painting is started after some light sketching with a pencil. The colours look bright at this stage but are toned down with thin washes of matt white acrylic paint. Cleaned food trays and plastic container lids make cheap and effective paint-mixing pallets for this work.

it in. Soft scenery materials such as Woodland Scenics 'Poly Fibre' or foliage material make a good starting point. Poly Fibre is coated in dilute matte medium or firm-hold hairspray before being dipped in fine or coarse turf material of the desired colour. The volumising effect of firm-hold hairspray softens the Poly Fibre, making it easier to apply to the landscape using PVA glue or more hair spray. It is stuffed down the gaps between structures and landscape using tweezers, hiding a multitude of sins. It can be decorated with 'flowers' too, depending on the season you are modelling.

The bushes, shrubs and small trees end up covering some of the carefully applied static grass, but it is part and parcel of creating the differences in texture which makes a modelled landscape look more believable. Anyway, applying large areas of static grass after the bushes have been planted is difficult to do without covering them with fibres.

Weedy track

The short branch to the older china clay works is over-grown and neglected in character. With traffic amounting to one train every fortnight or so, little maintenance was done to

the branch and weeds take over during the summer months. There is little scope for creating a truly weed and grass infested branch line in 'N' gauge without scenery material impeding the performance of the occasional train that might venture down the branch. It is a fine balance between applying static grasses for a truly neglected effect and using a smattering of fine foam scatter to give the impression of long-term neglect.

A study of photographs of overgrown lines is always helpful to achieve a good result. Shrubs and static grass were 'planted' as close to the track as possible without fouling the trains, copying scenes of real branches in china clay country. It was finished with a sprinkling of fine turf between the rails. A smattering of 2mm static grass fibres, well flattened and glued down as if passing trains had pushed longer grass over was added to the scene.

Backdrop painting

On small layouts, the backdrop has a vital role to play. It has to give an impression of the area in which the layout is based and of other buildings and structures to suggest off-scene activity. *Wheal Annah* is built on a baseboard frame recovered from an older layout. Integral to the baseboard frame was a backdrop designed with two access holes to suit the previous layout. Two new backdrop sides had to be fabricated together with backdrop boards cut from good quality hardboard. The boards were made to be removable so they could be

painted comfortably at the work bench. Scenery work could also be undertaken with the backdrop boards removed from the layout avoiding the risk of damaging them with glue or scenery material.

Painting backdrops are best painted with artists' acrylic paints which dry reasonably quickly so in the likely event that one is unhappy with the result; the boards can be painted over for a fresh start without the loss of too much time.

The boards for *Wheal Annah* were first painted with three thin coats of white acrylic household paint using a paint roller for a smooth finish before being dropped into place and the position of the background buildings marked in with pencil together with the rough outline of the scenery. Winsor & Newton acrylic paints were used to paint the images, taking note of where the buildings would be located so as not to waste time painting those areas.

White is an important colour because all of the mixed faded paint hues for the landscape are added to white to make pale colours opposed to adding white to the colours themselves. The difference between the two is subtle but noticeable.

The background scene has to give the impression of distance and openness in a wooden box and that is created by making distant landscape features appear hazy and pale. It is amazing how much white is mixed to paint colours to mute them enough to 'push' back scene images away from the foreground modelling.

Images were painted with the aid of reference photographs from a book on Cornish china clay workings.

Scenic backdrops are not meant to be the focus for attention but as support for the foreground scenes. The hills and profiled clay tips depicted on the backdrop must give the impression of the area without any real detail. The only concession to this was the painting of several chimney stacks because there was not room to model them convincingly. The three separate backdrop boards were worked on side by side to ensure that the landscape features matched both in colour hue and shape at the corners. If you find that your backdrop painting is too bright and overwhelming, consider brushing several washes of diluted matt white paint to tone them down before resorting to repainting.

Real china clay

A box of real china clay, fresh spillage collected

from a CDA covered hopper wagon at St Blazey, has survived several clear outs and at last, the opportunity to use it arrived with *Wheal Annah*. The clay was damp and sticky when collected but it turned out to be a good find, having not become dirty or discoloured. It was dried out completely on top of a radiator and lumps crushed back to a fine powder, ready for use. After all, it is a particularly fine material, not dissimilar to weathering powder and should make the perfect weathering material for a clay works scene.

In the end, the needs of an 'N' gauge micro layout are nothing like as much as a 4mm scale project and only a tiny quantity of the clay was needed to weather the clay works areas. One technique which took advantage of the sticky properties of china clay was to dry brush it onto



↑ Real china clay was mixed with diluted scenery adhesive (or matte medium) and stippled on to the paved areas of the clay works. Clay can be sprinkled in scenic cement to represent accumulation of spilled clay against buildings and at the edges of the paving.



↑ Photographing the layout as work progresses shows up areas that need further attention. It has reached the point where the main scenic work is nearly complete. Detail needs to be added to break up the currently spartan appearance of the layout which shows in this picture, including the interior of the store with the open door!



↑ The station scene is simple, with a shelter constructed from off-cuts of styrene sheet. The shelter was inspired by the example at Roche station on the Par-Newquay line as were the lamp posts. The platform is long enough for a two-car DMU or Class 150.

buildings and into the rail ballast of the sidings in the same manner as weathering powders. The concrete slabs and surrounding areas were treated with a mix of clay and Scenic Cement (Woodland Scenics) which dried to a nice hard but dusty looking finish.

Finally, spillages of clay were represented with china clay sprinkled into Scenic Cement which gave a dusty appearance without being a dust problem. It was allowed to collect along the edges of the hard stands and the corners of buildings. All of this was used to soften the hard landscaping and to introduce a clear sign of what the layout is about.

Detailing the layout

Collecting packets of small detailing parts is great fun

to do. Hours and hours can be spent looking over trade stands at shows to find tiny packets of white metal, 3D-printed resin and brass details which will add to the character of a layout. Even a small layout can swallow several hundred pounds' worth of detailing parts with ease and it is easy to get carried away.

So how do you avoid the 'detailing trap'? Use reference photographs of the area you are modelling to get a feel for the required level of detail and stick to it. Scratch build it if you have to and avoid one of everything from detailing part catalogues, as good as they are.

Cornwall's china clay country is surprisingly sparse, with little industrial clutter around the works

buildings. Visits to this area of Cornwall over the years have shown that there are few vehicles and even fewer people wandering about on a day-to-day basis. In essence, it is a relatively remote rural area with open spaces and a great deal of vegetation. The local roads are narrow and not fit for heavy vehicular traffic – hence the dominance of the railway and pipelines over road haulage.

Apart from a vehicle or two and a couple of figures, most of the detailing of *Wheal Annah* was completed very simply, if slowly. Railway features were cobbled together using brass strip and rod, styrene card and strip material. Few actual commercial details were employed because they were either unsuitable for the area or too heavy in appearance. Building lamp posts and making wire and post fencing made this phase of the project very time consuming indeed. You will find that detailing will take up to 40% to 45% of the total project time and is it ever really finished?

Fencing

Fencing is a very ordinary everyday feature which actually adds dramatically to the appearance of a layout simply because it is

such a common feature. The railways are characterised by miles of fencing of various types and that can take many hours of work to model satisfactorily. It's worth the time and effort to make your fencing look as neat as you can – spend more time on good fencing rather than special features – it will have more impact. There are several types of fencing on *Wheal Annah*: spear fencing along the platform together with wire and concrete post fencing on the lineside and a line of industrial railing on one of the clay works buildings.

Ratio Models GWR fencing is fitted along the rear of the platform – a delicate product in 'N' gauge which took some time to install. Post holes were marked in with pencil; drilled through the platform top with a 0.6mm drill and fitted the fencing with tiny quantities of CA glue. Care was taken to fit it completely upright and as straight as possible. Once set, the fencing was painted dirty black acrylic paint from the Railmatch range. There is the option of adding a little rusting at a later date.

Lineside fencing was built up the hard and time-consuming way, and although it can take hours, try to enjoy the process and take your time. Several lengths of 30-thou square



↑ Ratio 'N' gauge fencing is delicate, needing care in its installation to avoid breaking it! The post holes are marked in position with a soft pencil. The fencing was supported on pieces of 30thou styrene to hold it clear of the platform surface.



↑ The level crossing gates are worked manually using angled levers located on the underside of the baseboard.



↑ Plastic tube comprising of insulation sleeve stripped from 24/0.2 equipment wire is used as a crossing gate pivot bush and is inserted into the pivot holes drilled through the baseboard and secured with super glue.



↑ Detailing of the crossing, including gate posts and fencing is undertaken once the gates are working reliably and smoothly. The gates are a little heavy in appearance, but being composed of a soldered metal frame, they should stand up to the rigours of exhibition operation.

styrene strip were painted a suitable concrete colour and left to dry for a day before being painstakingly drilled through with a 0.4mm drill in three places: at the top of what will become the fence post and at 3mm spacing from the top before being cut to 15mm in length. The top of the post was profiled with a curved

top. Once sufficient posts had been manufactured, 0.3mm nickel-silver wire was threaded through and the posts planted in 0.6mm holes drilled into the baseboard, taking care not to spread drill debris onto surrounding scenery. Fencing can be a fiddly job – getting it straight and upright is no mean feat. The

post tops were touched up with concrete coloured paint, weathered and then blended into the scenery using grass tufts.

Station fittings

The station is to be finished as one that has just been closed to passengers. It retains its main features but is slowly being overgrown and showing signs of neglect. The local civil engineers are more than likely to use it as a convenient loading bank! Commercial models of lamp posts were avoided in favour of old style lamp posts similar to a type observed in a 1970s photograph of Roche station. They consisted of concrete posts and metal fittings. They were soldered up from a mix of 0.3mm, 0.45mm brass wire and square brass rod. A scrap of styrene was used to make the light fittings. Roche also provided the inspiration for a simple station shelter – the best side of which actually faces away from the viewing side of the layout! It was built up using off-cuts of styrene sheet and strip; left-overs from various 4mm scale projects.

Level crossing

Rosemellyn crossing located on the now-lifted Carbis Wharf branch is the inspiration for the gated level crossing scene. The gates were measured from photographs using known dimensions as a guide – they are surprisingly large pieces of equipment. Constructed from 1mm square section brass rod they are a little on the chunky side for 'N' gauge because a good degree of durability was needed so they could be made operational. Purely cosmetic

gates could be constructed from finer section styrene but at the cost of strength. The gate posts are simple pieces of styrene strip, cut to length and shaped at the top. Each post was fitted to a mounting spigot of 0.45mm brass wire mounted in the baseboard top.

More grasses

As small details are added to the layout, they must be blended in with the existing scenery. A batch of static grass clumps and tufts was prepared ready for the task of hiding mounting holes and to conceal glue spots and other evidence of detailing. The same tufts were used to enhance works buildings by adding grasses to the rain gutter and to help conceal unsightly gaps between the ground and features such as fencing and structures.

Layout fascia and light box

The layout was built for exhibiting and with that comes the need to make it presentable for display to the public. The fascia was rubbed down with fine sandpaper and painted grey so not to detract from the layout itself. Several coats of tough household acrylic paint were applied with some rubbing down with abrasive paper between coats to remove rough edges to achieve a neat finish. The same paint was used to coat other visible panels of plywood and particle board too.

A light box spanning the length of the scenic layout was constructed from plywood and planed timber. Side pieces were added to complete the box which was both glued and screwed together for



↑ A light box spanning the length of the scenic layout was constructed from plywood and planed timber – the assembly is shown being test-fitted to the uprights installed during an earlier stage of layout construction.



↑ This photograph shows how one of the side panels can be removed to allow photography from the end of the layout.



↑ The light box was finished with side pieces and the whole assembly slots neatly on the upright supports creating a frame for the scenic section of the layout. Acrylic household paint was used on the fascia and was applied to the underside of the layout too to seal the wood and eliminate rough spots and splinters. This makes it much more comfortable to handle.



↑ A plan view of Wheal Annah showing the position of works buildings and the track layout. In 2026, it is still far from finished, but presentable enough for exhibition use.



↑ The weedy branch line leads to the oldest china clay works modelled on the layout.

The project was a fun one, completed with as minimal cost as possible and in a small footprint. It can be flung in a car with support parts for exhibiting or set up quickly for an operating session. A single train of wagons destined for two of the three clay works can become an involved shunting session lasting an hour or more. Operations will be looked at to make them more formal using a wagon card and destination system.

We hope that the *Wheal Annah* project, like the other micro-layouts and dioramas featured in this issue of *The Guide to Model Railways* will inspire you to have a go at building something!

BACKDROP AND SCENERY COLOURS

Winsor & Newton Galleria acrylic paints:

- Paynes Grey.
 - Hookers Green.
 - Olive Green.
 - Titanium White.
 - Cerulean Blue.
 - Cadmium Yellow (pale hue).
 - Permanent Light Green.
- Household matte white paint.

Woodland Scenics Pigments:

- C1217 Concrete.
- C1218 Stone Grey.
- C1219 Slate Grey.

strength. The box was rubbed down to remove rough edges before being painted blue on the exterior and white on the interior to reflect light.

Ordinarily, it will be fixed to the layout with two screws making the box easy to remove when work must be undertaken to scenery, track or the buildings. A single under-cupboard strip light fitted with a cool white tube was fitted at first and this proved adequate illumination without shadows. The combination of back and side panels and lighting box frames the scenic part of the layout and adds to its presentation.

In recent times, the tube light was replaced with a two-foot LED batten light which is equipped with a light colour selection switch. Cool and cold white light can be used to create different moods as a result.

Is it finished?

A layout is never finished until the day you scrap or sell it. Detailing can go on for years as better materials, products and techniques emerge. To complete *Wheal Annah* beyond what you see today, a 1970s forklift truck or two; pallets and road vehicles either in kit form or as ready to use products are needed. There are some shortcomings which will need more attention and some are easy to remedy and others not so. The dry-stone wall can be enhanced with better colouring and more bushes and shrubs added. There's a lot more wire and post fencing to add to the model together with weathering of the lane surface and structures.

As it stands, it is finished to exhibition standard with updated lighting fitted in the form of a two-foot

LED batten light. It has its own trestles and drape to complete its exhibition presentation.

SCENERY MATERIALS

- Das modelling clay.
- Plaster cloth (ModRoc).
- Acrylic modelling paints including Life Colour and Tamiya rusts, dust, greys and green colours.
- Humbrol AV0002 white weathering powder (instead of china clay!).
- Clean lolly sticks.
- CA glue.
- Various sizes of white styrene card.
- Static grass.
- Fine and coarse turf scenery scatter.
- Poly Fibre (Woodland Scenics).
- Household white acrylic paint.
- Kitchen paper towel.
- Masking tape.
- Masses of old newspapers.
- Firm hold hairspray.
- Matte medium.
- Scenic Cement (Woodland Scenics).
- PVA glue.

Practice your modelling skills with a diorama

Keen to get going in railway modelling? Start with a small diorama. They are ideal for practicing various modelling techniques before starting on the grand plan.



↑ A simple diorama is a great way to try out a new scale and gauge, for both newcomers to the hobby and experienced modellers. They can be built in any scale and need not take up too much room. This 'OO' gauge diorama was used to test different techniques including modelling bare rocks and colouring them with paint washes.

DIORAMAS have different uses for different modellers. New modellers may choose to build a diorama to practise modelling skills before tackling something bigger. A diorama can be the start of a larger project if designed to be extended into a working layout. Some micro-layouts are diorama-sized but wired for operation and

retrospectively fitted with train staging areas.

More experienced modellers may use dioramas to test new modelling methods, particularly in a new scale as was the case of the diorama shown in this article. New modelling materials can be tested on a diorama before they are used on a main layout project. Photographers like

dioramas for posing models in a realistic scene to better show them to their advantage. They are great to take to shows as part of an display of models.

The benefits for new modellers

It is a good idea to build a small diorama before tackling your first layout. It pays not to rush into a large project if you are

a newcomer to railway modelling or are trying a new scale for the first time. It helps to practice with track and scenic techniques in a small area where mistakes will not be significant or costly. It can be wired up to allow limited testing of locomotives, becoming your first micro-layout, in effect.

A diorama is usually a compromise between



↑ A diorama can be built relatively quickly and with left-over materials from larger modelling projects as was the case with this 500mm long double track main line scene. It could be detailed further with signage and other lineside features.



↑ Initially, the diorama was intended to test 'N' gauge layout building techniques. In the end, it turned out to be a useful photographic unit. The elevated track level allows some interesting shots to be posed and without the short length being obvious.

having a scenic unit long enough and deep enough to create a convincing landscape scene without building something that becomes too big a project to finish off in a reasonable time. It has to be easy to store and small enough to sit on a tabletop with a simple white background or short length of backscene if photography is one of

the objectives. Generally speaking, a diorama is rarely more than a few feet in length, built on a single baseboard unit.

You never know, you might want to take it to your local show, making portability desirable. Dioramas typically take a few days to complete to a good, basic standard (allowing for glue and paint drying time) and might be

enough to determine if a particular scale is right for you.

The project diorama

The featured double track diorama was built to test the modelling methods likely to be needed for an 'N' gauge layout. It was also intended to be a photographic stand too and when it was finished,

it was used to photograph numerous 'N' gauge models.

It is 500mm long and 200mm wide which has proved to be sufficient to fit a locomotive and a couple of wagons or coaches. It only took three to four days to build and used up scraps of timber left over from a 4mm scale layout along with remnants of scenic materials, making its overall cost minimal. When the accompanying photographs were taken, it was still in need of more weathering and detailing with thin washes of acrylic paint – layering up colour washes certainly takes time if the desired toning down is to be achieved.

However, at the time, it taught your editor a great deal about how Peco Code 55 track works and how to scale down scenic materials such as static grass, Woodland Scenics' fine leaf foliage product, rail ballast and various shades of turf.

Diorama frame and track

The diorama frame is very simple, comprising of a base of 19mm plywood for strength cut 500mm in length by 200mm wide. Rough edges were carefully sanded down to remove splinters. To introduce more visual interest, the track bed of 19mm plywood was raised on an embankment using pieces of two-by-one planed timber cut 100mm in length.

Fast drying wood glue, supported by CA glue and accelerator to bond parts together quickly was used in construction along with quality woodworking screws.

The track bed was laid with 2mm cork sheet cut 60mm wide. It provided a shoulder for the track ballast. The same



↑ The diorama base supports for the track bed and landscaping were constructed from scraps left over from other projects. New items included two lengths of Peco Streamline 'N' gauge Code 55 flexible track, Dapol catenary masts and screws.



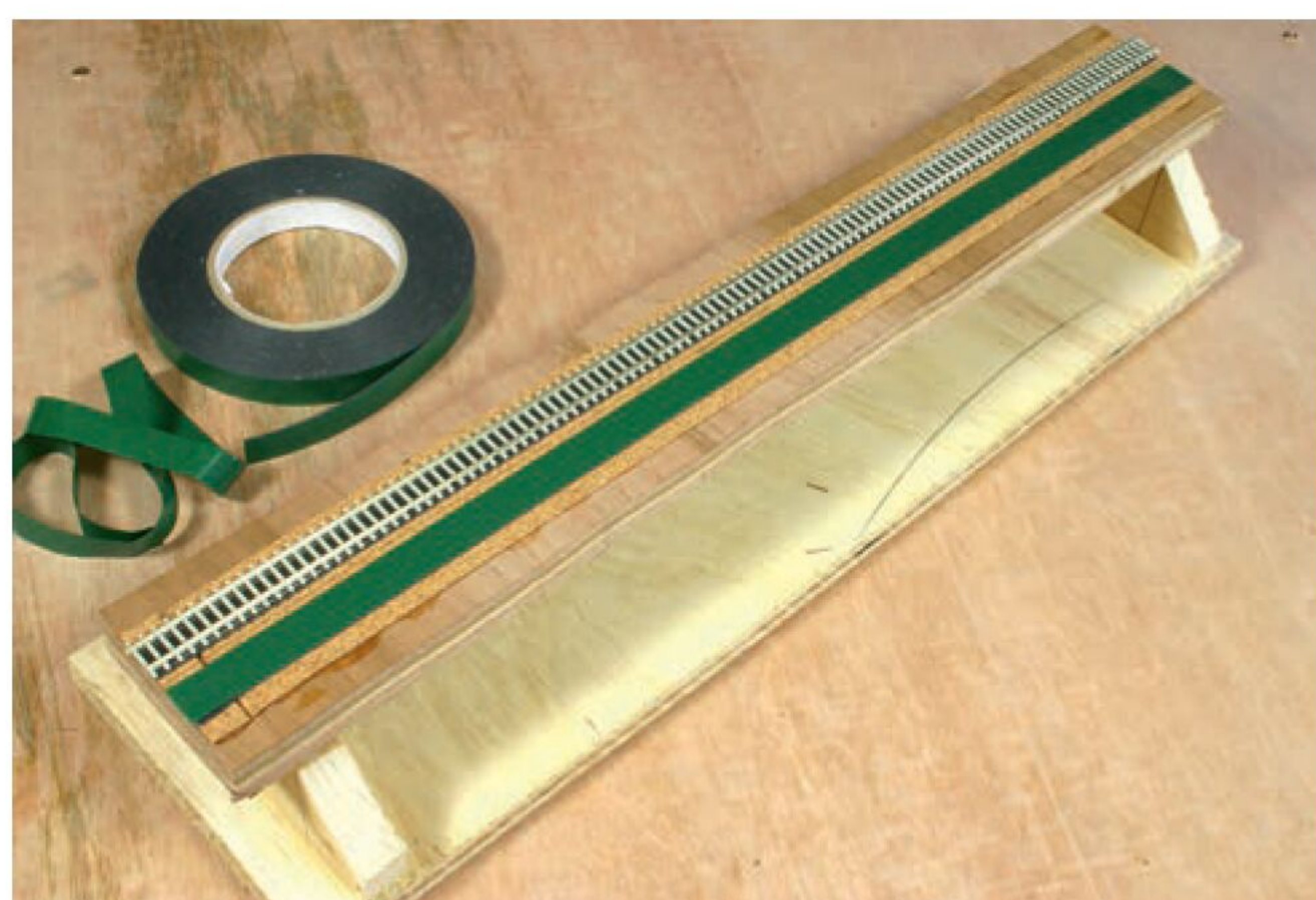
↑ Two supports for the plywood track bed were measured and cut from 44mm by 18mm planed timber, using a wood working square to for accuracy. The base and track bed are of 19mm plywood for stability. When using thinner plywood, insert an additional support in the middle.

DIORAMA DIMENSIONS

Building a photo diorama is a compromise between having a scenic unit long enough and deep enough to work as a convincing landscape scene without having to build something that becomes too big a project to finish with offcuts of wood and left-over scenery materials. After all, the idea was to keep the cost to a minimum and the physical size small enough to make it easy to store. The size of the diorama described in this article was determined by the size of timber offcuts. The finished diorama is 500mm long and 200mm wide. Its overall height including the Dapol catenary masts is 130mm.

The materials used in its construction were cut as follows:

- Diorama base: 19mm plywood cut to 500mm by 160mm.
- Track bed: 19mm plywood cut to 500mm by 80mm.
- Cork track bed: 500mm by 60mm.

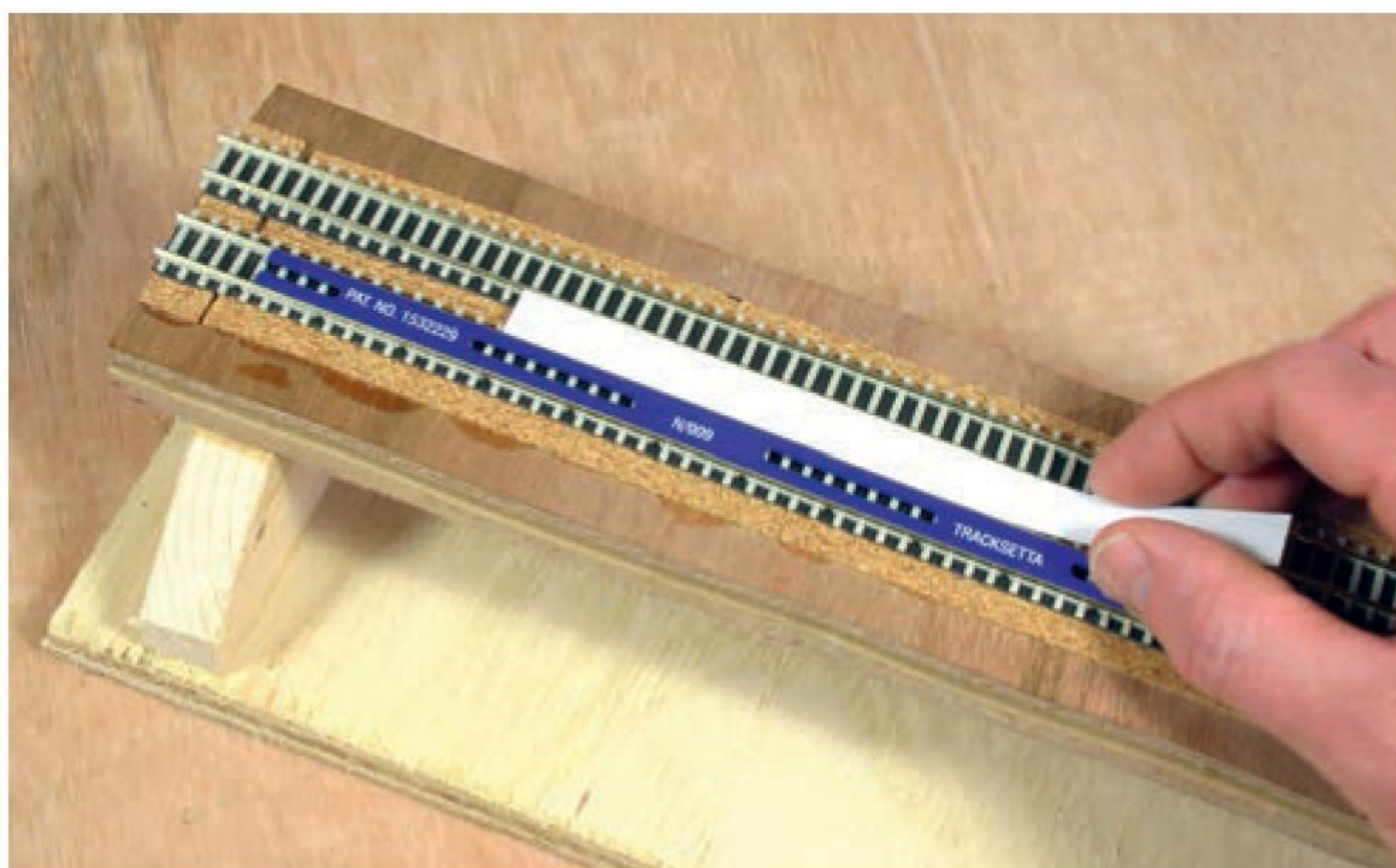


↑ Double-sided foam tape was used to secure the Peco flexible track in place for speed and to avoid using track pins which do not look good in 'N' gauge. Glue can be used instead of foam tape. Make sure track is properly held in place as glue sets.

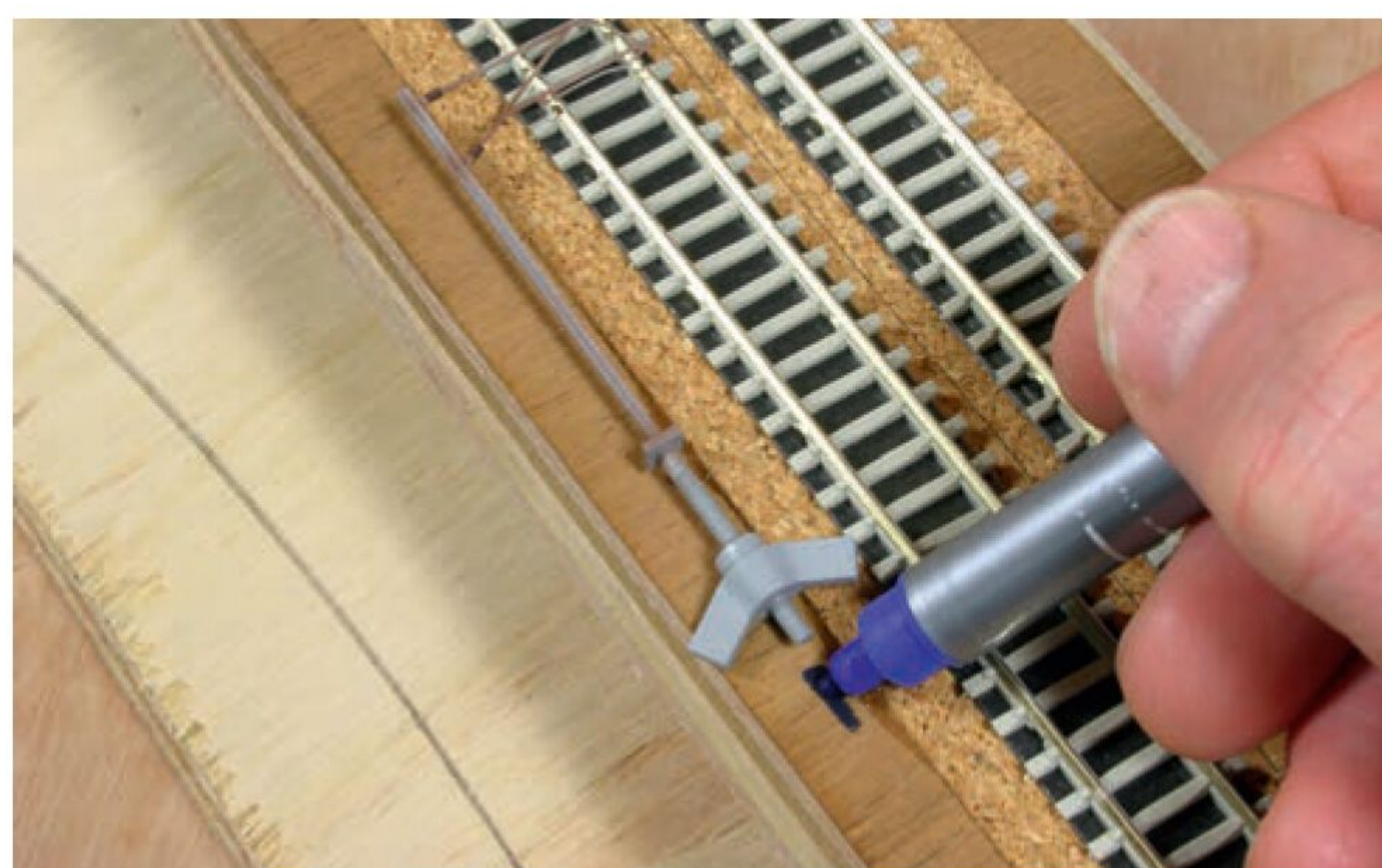


woodworking glue was applied to the cork before it was placed on the plywood track bed. The whole assembly must be left set with some weights on it to allow the glue to grab the cork and hold it in place before the track was laid in place.

In the meantime, track can be prepared by cutting it to length and ensuring that short off-cuts left over from layout building are joined together neatly. If the diorama is to be powered, consider soldering dropper wires to the track before it is laid. Care will be needed to drill holes through the track board to match the position of the dropper wires. Before using the track, consider



↑ When laying the second line, a piece of styrene card, cut to the correct distance for the 6-foot way, was used to keep the track at a consistent distance apart for clearance. A centre line is drawn on the cork to assist with placing the track in the right place.



↑ The position of the cosmetic Dapol catenary masts is carefully checked so the register arms are properly positioned over the track. They are mounted in holes drilled through the track bed plywood and fitted using the supplied wing nuts.



↑ Track laying is complete, ready for it to be painted. The sleepers of flexible track can be painted at the work bench if desired, but not the rails if it is to be curved at any point. Paint will impair its flexibility!

painting the sleepers and rails at the workbench – it could save a lot of time!

To further speed up the project, double-sided foam tape was used to secure

the track. Its position was carefully measured for realistic clearances. The features diorama has no curves, so allowing widened clearances needed for



↑ The masts are shown installed in place. Clearances are checked using a Dapol Class 86 model with its pantograph set at a fixed height so that it just passes under the register arms without coming into contact with them. This is an acceptable compromise in 'N' gauge where modelling the overhead line equipment is very fiddly and prone to damage. They should be removed when scenic work is undertaken.

sharper than prototypical curves did not have to be factored in.

The double-sided tape immediately grabbed the track and allowed it to be laid quickly without glue, allowing ballast to be brushed into place straight away.

Simple landscaping and scenery

Landscaping along the front of the diorama was completed using card strips cut from cereal packets. It is one of the most basic and cheapest materials for landscaping work, provided the span it is required to

cover is not too great. The card was cut into 10mm wide strips to build up a strong mesh of woven card to form the embankment, starting with the vertical strips. A hot glue gun speeds up this process which helps to achieve the quick building time.

To the rear was built a partial embankment as a backdrop. With no rear support on this diorama to attach card strips to, foam was chosen as the landscaping material instead.

The card strip landscape was covered with several layers of inexpensive

Modelling

masking tape before a hard shell of plaster bandage was applied. This material needs about 24 hours to dry in a warm place, so should be kept as thin as possible.

The landscape surfaces were painted with ground colours and there's a lot of nice earth brown pigments and paints to choose from. The dedicated pigments from Woodland Scenics are very good, but money can be saved by buying low-cost artist acrylic paint from your local art supplies shop.

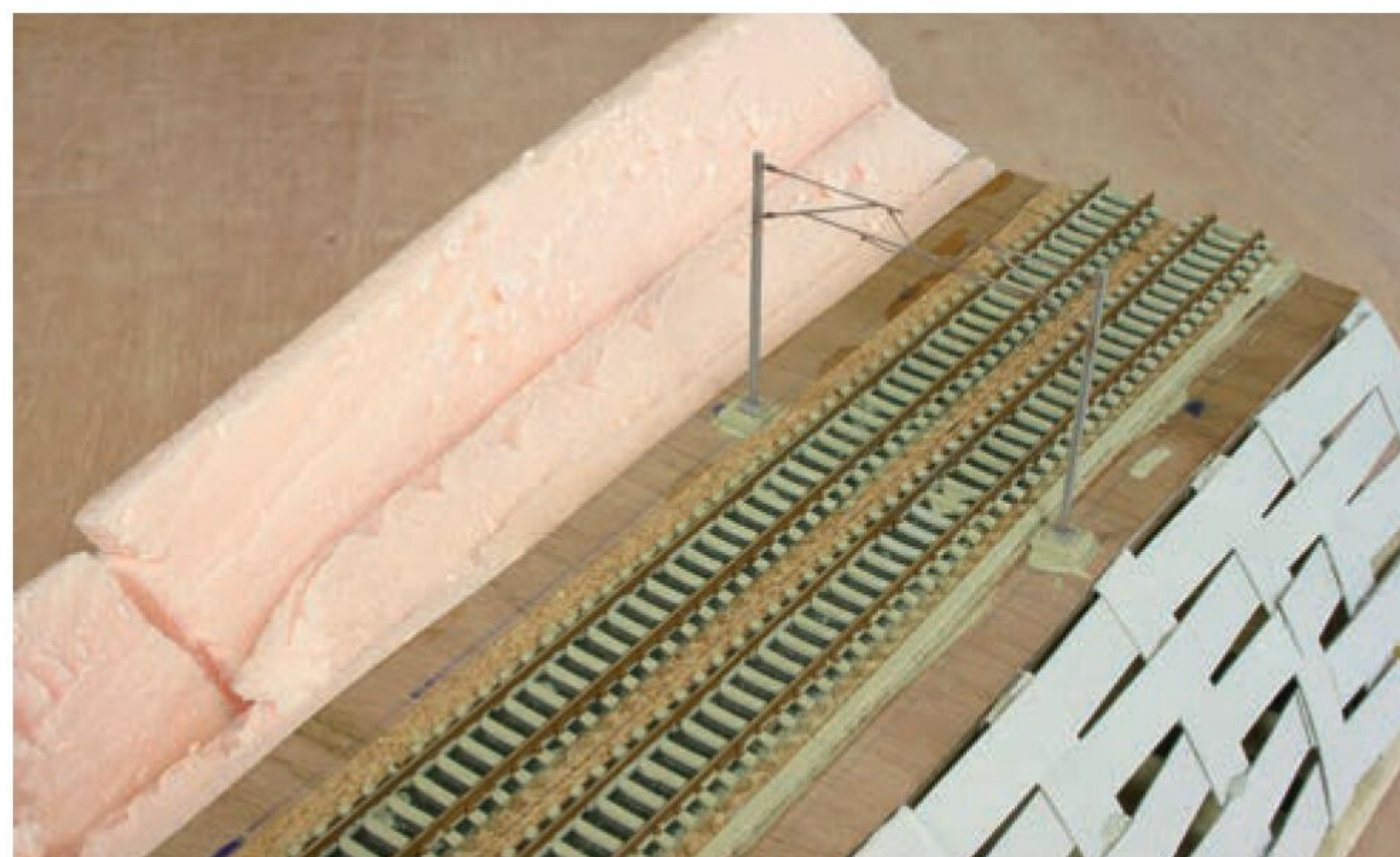
Acrylic paint was used extensively for detail painting such as the track sleepers (Tamiya XF-55 'Deck tan'), rail edges with rust colours (Tamiya XF-10 'Flat Brown'

and XF-79 'Flat Linoleum') and washes of track dirt on the ballast too (Mix the Tamiya brown colours with XF-01 'Flat Black' and dilute it at least 10:1 with Tamiya Acrylic thinner).

The grassy areas were built up with Woodland Scenics turf scatter and topped off with static grasses ranging in size from 2mm to 4mm. It was applied in several layers in places.

Shrubs and bushes were made up of fine leaf foliage branches and all of the scenery toned down with very thinned washes of Tamiya XF-52 'Flat Earth'.

To summarise, scenery was completed in the following order:



↑ The rear section of the diorama was built up with scraps of insulation foam to create an embankment behind the railway. Foam was a better material for this job because there is no support at the rear of this diorama for the card strip method. The foam is glued in place with wood glue, held with pins until it is secure and then carved with a serrated kitchen knife, one dedicated to the task!



↑ A hard shell of plaster bandage finishes off the landscape work, making it ready for decorative scenery details including a talus slope to the front representing a built-up embankment that has had to be repaired and reinforced by the civil engineer using coarse rock material to prevent the embankment from slipping.



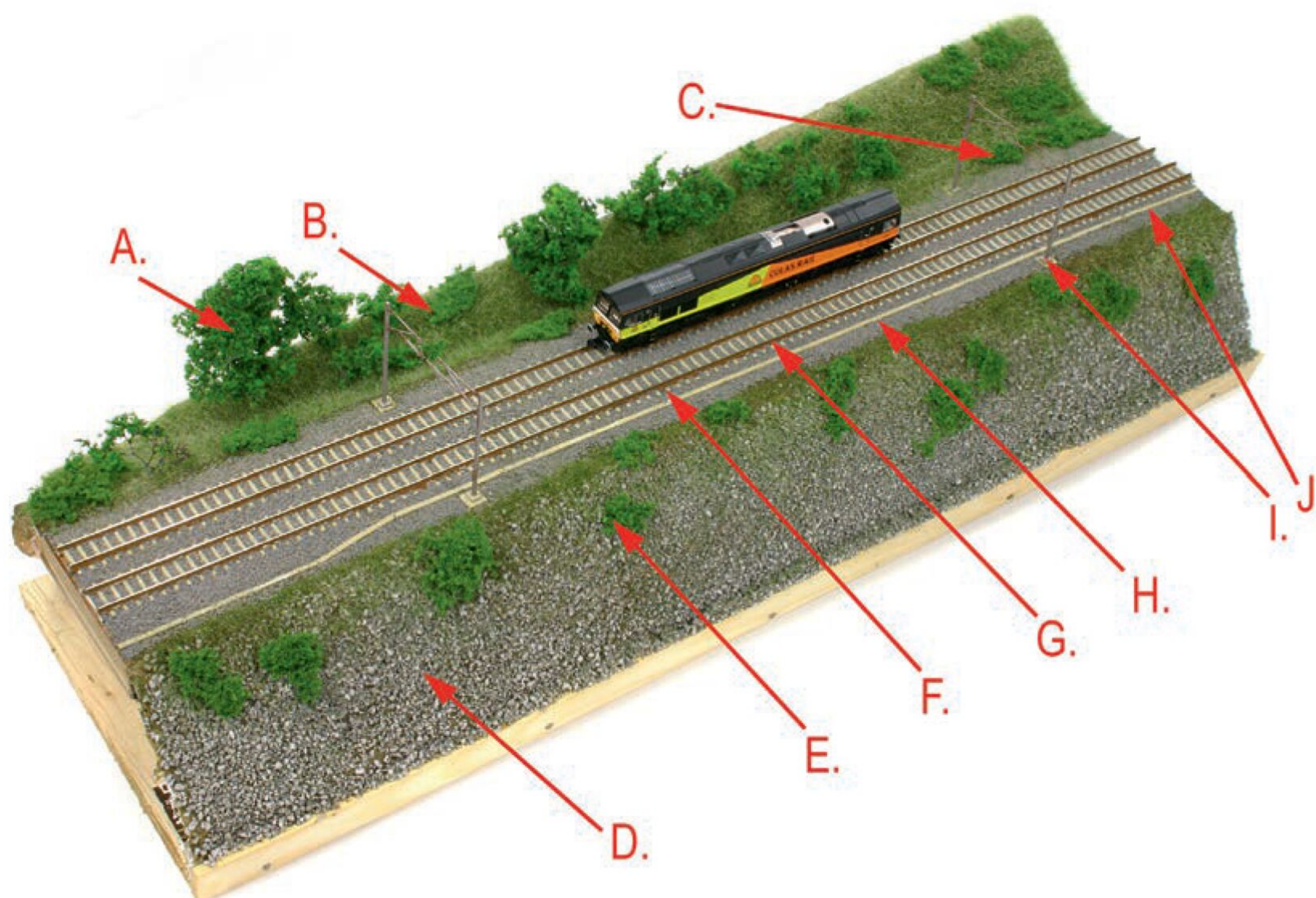
↑ Long strips of cereal packet card are used to build up the embankment, woven together to make a strong but cheap foundation and secured with hot glue.



↑ The resulting woven embankment can be finished with a layer of cheap masking tape and a thin layer of plaster bandage ready for paint and Woodland Scenics 'talus'.



↑ Talus is added to the embankment to the front of the diorama in several stages. White glue is first applied to the slope and the talus simply sprinkled over the top. It pays to do this sort of work over a shallow tray or container so surplus talus can be collected and reused. It can take several attempts to get this particular feature right because the glue doesn't always catch the talus first time.



↑ Completing scenic work was as straightforward as applying Woodland Scenics fine turf T42 earth colour up to the track bed before ballasting the track with B75 fine grey ballast. The landscape to the rear of the track was then treated with static grass and then left to dry before bits of Woodland Scenics F1131 medium green 'fine leaf' foliage were used to create bushes and small trees. Medium green foliage mat (F52) was teased out and applied to both sides of the running line by adding a spot of matte medium and pressing the material to it.

Details include:

- A: Woodland Scenics F1131 medium green 'fine leaf' foliage.
- B: Static grass over Woodland Scenics T42 earth colour fine turf.
- C: Woodland Scenics F52 medium green foliage mat.
- D: Woodland Scenics C1278 fine grey talus over C1229 earth undercoat pigment.
- E: Woodland Scenics F52 medium green foliage mat applied to the talus.
- F: Cable troughing made from 20 thou by 40 thou styrene strip and painted with Tamiya 'Deck Tan'.
- G: Track sleepers painted in a concrete colour (Tamiya XF-55 'Deck Tan') whilst the rails were painted in rust (Tamiya Matt brown).
- H: Woodland Scenics fine grey ballast was applied after troughing and catenary mast bases made of cork were fitted.
- I: Masts were fitted after ballasting was completed.
- J: Ballast and track fittings were lightly weathered with dark grey weathering powders.

SCENIC MATERIALS

- C1278 fine grey talus.
 - B75 fine grey ballast.
 - F1131 medium green fine leaf foliage.
 - F52 medium green foliage.
 - T42 fine turf earth.
 - C1229 earth undercoat pigment.
 - C1203 plaster cloth.
 - S191 scenic cement.
 - S192 scenic sprayer.
- Undercoat pigment was used to colour the hard shell landscape to hide the white plaster.
 - Woodland Scenics fine turf in earth colour was applied to the rear of the diorama up to the cork track bed.
 - Woodland Scenics talus was glued to the embankment to the front.
 - The track was painted with weathered concrete paint colour to the sleepers and track dirt (rusty rails) to the sides of the rails to kill the shine. At the same time, a representation of cable troughing was added and painted.
 - Track ballast was applied to both lines and the cork shoulders.
 - Static grass was applied along the top of the embankment and to the landscape at the rear of the diorama.
 - The scene was completed with fine leaf foliage branches to create bushes and small trees to the rear of the diorama to give it some vertical elements. Low growing bushes and shrubs were represented at both the rear and front of the diorama using Woodland Scenics foliage mat. Both were applied with spots of wood glue.
 - The final task was to check that no scenery material had landed on the track where it was not wanted. Both scenery and track could be further toned down with thinned paint washes, airbrushed dustings of dark brown paint and application of weathering powders.

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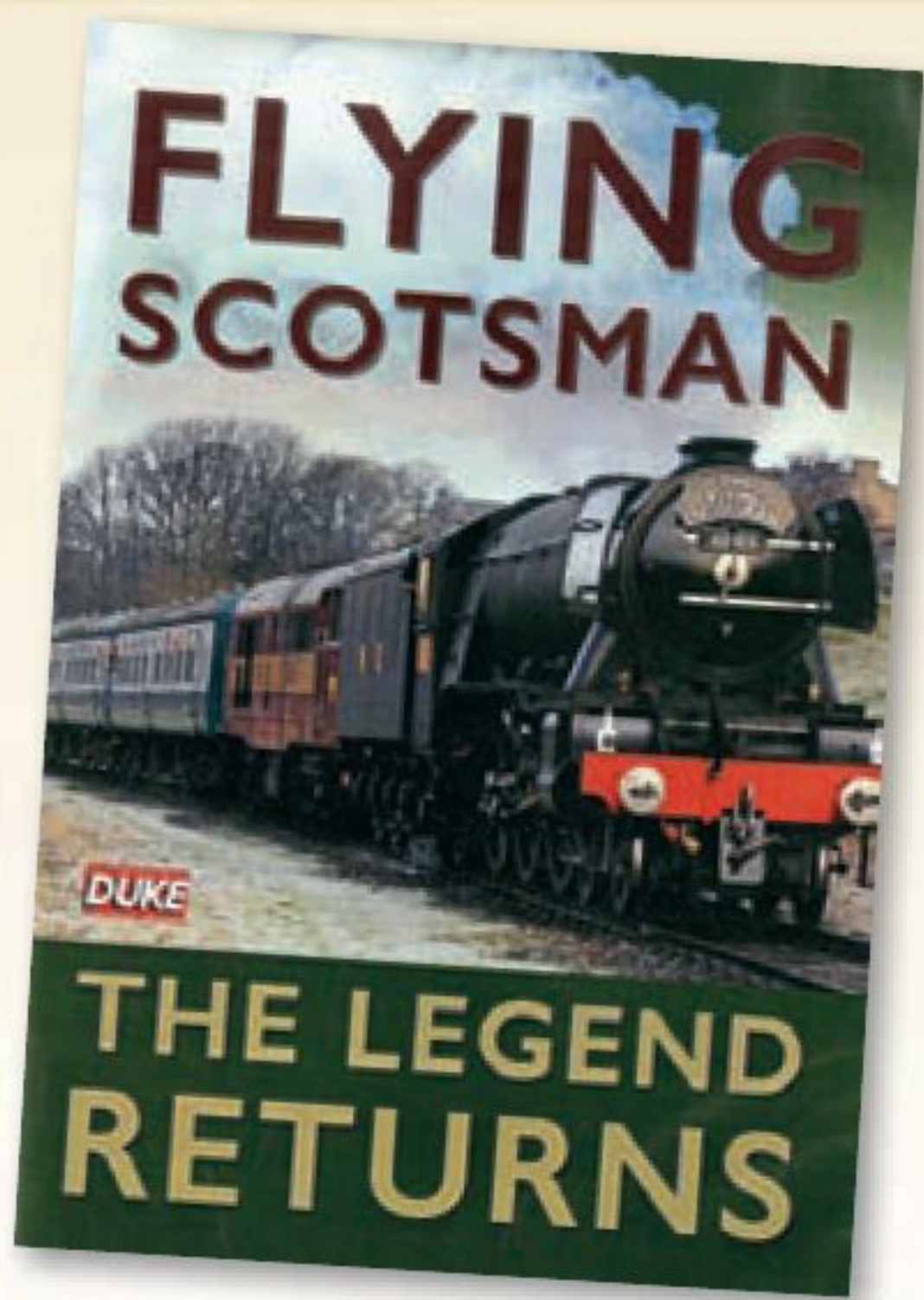
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How to choose mobile decoders

Digital Command Control has become increasingly sophisticated in the last decade, with the original 6- and 8-pin DCC decoders being supplemented with a wide range of advanced designs including bespoke decoders for specific locomotives. How do you make a suitable choice?



↑ Decoders are an integral part of DCC, making the flexible control of a model railway possible in a way that conventional analogue or direct current (DC) control cannot, no matter the size, type and era of your layout.

Why does DCC control need decoders?

FOUR MAJOR COMPONENTS make up a basic digital control system for model railways: the controller (cab, throttle); power station (booster); command station and the device that is the subject of this article: decoders. Decoders are the heart of DCC operation because they are the true controller of the locomotive, the device that literally controls the

locomotive's motor, lighting and sound playback. They sit between the track power collected through the wheels and the model's internal electronic circuits. Control instructions made by the modeller through the DCC controller or handset are transmitted through the track power by the command station to be read by the decoder and acted upon.

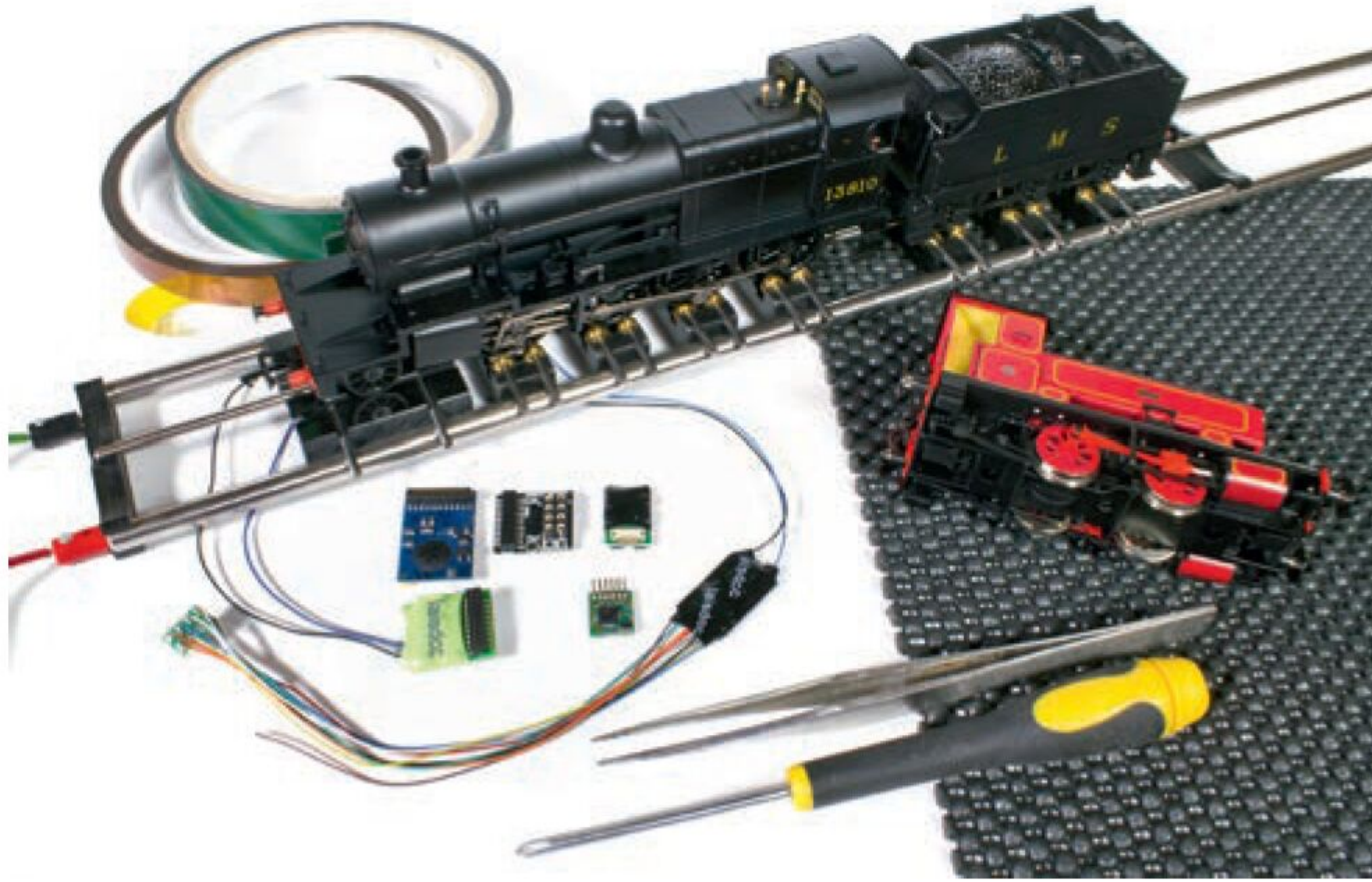
Decoders may seem like an unnecessary added

expense to newcomers to the hobby. Whilst the cost is often cited as a reason not to adopt DCC as a model railway control system, that tiny circuit board delivers a great deal of functionality, making the independent and flexible control of a model railway possible in a way that conventional analogue or direct current (DC) control cannot.

Decoders have several jobs to do, and the primary one is to work as a power

rectifier to convert DCC track current of around 15V-18V AC typical of most digital systems to the more common 12V DC so it can be used by the model's motor and on-board lighting circuits.

Decoders next control the action of locomotives by interpreting the data packets transmitted by the command station through the alternating track current. The ability to control a model



↑ There's a wide range of different decoders available from numerous manufacturers. Each brand usually offers a decoder to fit most situations including plug and play decoders designed to fit the various decoder interface sockets fitted to modern ready to run models. All of the models in this photograph come with either a 6-pin, 8-pin or MTC 21-pin socket. Choosing the right decoder takes a little thought!



↑ The range of features and functions can vary between decoder brands as well as individual decoders. The Hornby HM7000 decoders (left) can communicate directly with a smart phone device via Bluetooth whilst the Train O Matic Lokcommader 2 decoders (centre) have sophisticated lighting functions. On the right is a bespoke PLuX22 decoder (by Zimo) for Bachmann Branchline models with functions pre-programmed to match the company's 'OO' gauge models. The black unit is a stay-alive power bank designed to plug directly into the Hornby HM7000 decoders.

independently of all others on the layout is due to the unique address and control features of mobile decoders.

Operating features can be adjusted to suit the model and operating conditions existing on the layout independently of any other model. Such features can be set to suit a particular type of locomotive and for certain lighting effects. Such effects include braking delay, shunting modes and sound playback. This

benefit is made possible by being able to 'programme' decoders which really means making changes to their settings called configuration variables or CVs. The menu of features together with the various settings are detailed on decoder instruction guides. Most decoder CVs for settings like acceleration and braking delay are standardised.

The control characteristics of decoders means there has to be one

in every locomotive and multiple unit at least for independent control. Life has been made easier for modellers by the advent of plug and play decoders which drop straight into the model with no need to adjust CVs other than to set the all-important unique address.

Decoder variety

There are so many different brands and types of mobile decoder available that it can be quite difficult to make an informed choice when confronted with your first installation. Care is needed to make the best choice for a specific model before making a purchase. Decoders come in all shapes and sizes, with different power ratings and functions. There are several different methods used to connect the harness wires to the decoder or there may be no harness wires attached to the decoder at all, only a socket or plug arrangement.

The choice of decoder will also be determined by the type of models you have on your layout and how many of them are equipped with decoder interface sockets. The scale you are working in and how much space is available in your chosen model to accommodate a decoder are factors to consider. The following is a summary of mobile decoder types:

- Single sided: All of the components are fitted to one side of the circuit board and the opposite side is completely flat. These decoders may be larger in area but quite minimal in terms of
- Double sided: The components are mounted on both sides of the circuit board on double sided decoders. They may be thicker in section as a result but take up less of a foot print in the model for the cost of needing a little more headroom.
- Harness wire-fitted: Harness wires are soldered directly to one edge of the decoder. The wires may be bare ended as intended for hard wire installations of older models without decoder interface sockets. Instead of wires soldered to the edge of the decoder, it might be fitted with a plug and socket arrangement called a JST socket. It connects the harness wires to the decoder instead of soldered connections. JST sockets and plugs allows the decoder to be removed from the locomotive without unsoldering harness wires from the model's circuit board and motor.
- Function-only decoders: These are designed to provide additional function outputs for locomotive that require more than the functions available on most

thickness allowing them to fit models with low internal head room.

Single and double-sided decoders come with all the various forms of wiring or interface socket together with a wide variety of functions, including digital sound. The following notes show how many variations on the theme are available to buy in 2026.

standard decoders. Function-only decoders do not have an output to control a locomotive motor. They can be used to supplement a mobile decoder or in the opposite end of a multiple unit to ensure that the running lights operate in each driving car.

- Plug-in decoders: 'Plug and Play' in other words – decoders that have a convenient interface for plugging them into a socket fitted to the model's circuit board. There are several different types of DCC interface socket, so care must be taken to choose the right type. The models may be described as 'DCC-Ready' or 'DCC-enabled' to indicate that a socket is provided – the model's box usually has a label indicating which type is fitted. Your model shop should be able to advise which type of socket your model is equipped with when making a purchase.
- Circuit board replacement decoders: Whilst not common in the UK as yet, the circuit board replacement decoder is a popular way of fitting decoders to models with limited space, particularly US outline models in 'HO' and 'N' gauge. The decoder is the same shape and size as the factory fitted circuit board and has the same LEDs attached to it. One simply replaces the other as a direct exchange. They are usually locomotive specific and will be set up to perform well with

the model they are designed to fit.

There is a separate family of decoders which can be used to enhance layout control, called accessory decoders, which are designed to control layout features such as signalling, turnouts and even switching building lights on and off. They also draw power and data packets from the DCC system to activate their functions in the same way as mobile decoders.

They are usually located on the underside of the layout baseboards and can be used on layouts built to any scale up to and including 'O' gauge. They are not fitted to locomotives and are not considered to be mobile.

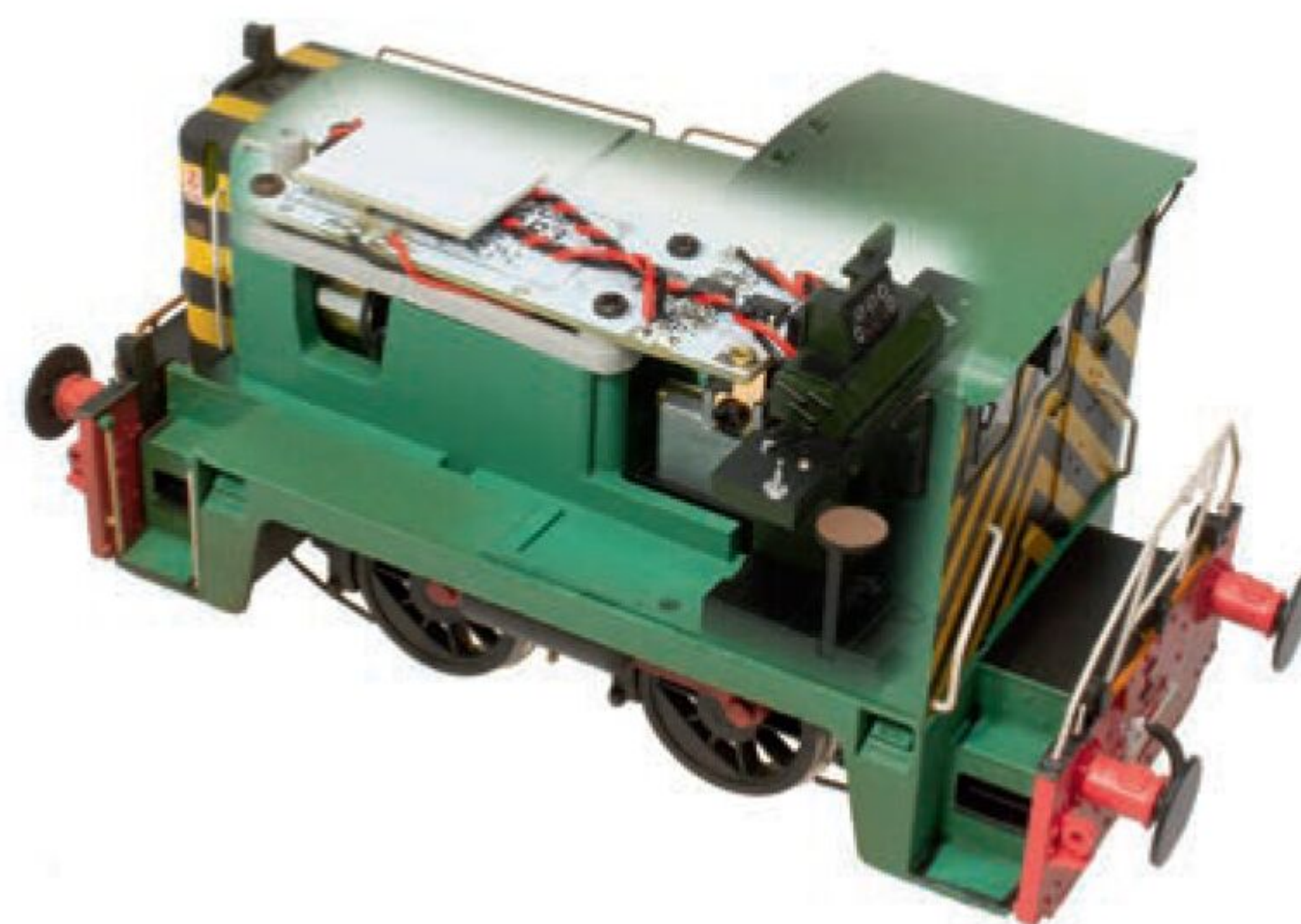
Decoder interfaces in more detail

There are numerous types of interface socket, the development of which has grown from the original NEM-651 6-pin for 'N' gauge and 8-pin for 'OO' gauge to allow for the increase in lighting and digital sound functions being built into ever more sophisticated models.

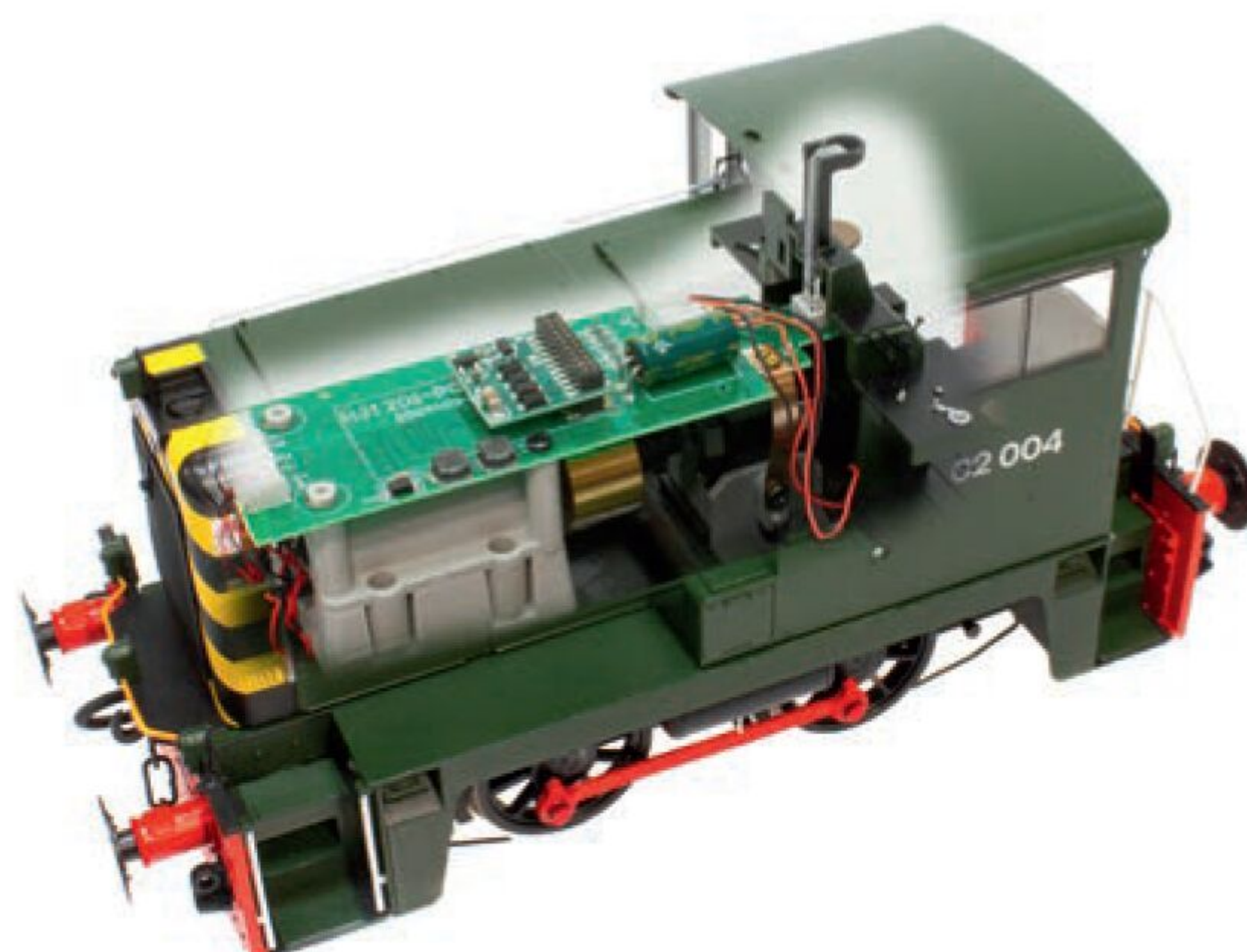
Before the advent of the interface socket, decoders were all fitted with harness wires with bare ends. They were soldered to motor terminals, pick-ups and any lighting circuits in a process called 'hard wiring'. Even today, some modellers may choose to 'hard wire' decoders in certain models for reliability, discarding the circuit board in the process. Some tiny models in 'OO' and 'N' gauge such as the Bachmann Wickham trolley do not have interface sockets, leaving it to the modeller to hard wire a



↑ As models and their onboard electronics become more sophisticated, the manufacturers are offering decoders bespoke to their models which are set up with the correct lighting and control functions. Bachmann uses Zimo PLocX22 decoders for much of its range including multiple units like the Class 158 and locomotive models.



↑ Most ready to run models, even small industrial and shunting locomotives, are equipped with digital interface sockets to allow the simple use of plug and play decoders. The Heljan Yorkshire Engine Company Class 02 locomotive has a NEXT18 interface fitted to a circuit board in the bonnet. The use of a small decoder type such as the NEXT18 leaves the cab clear to model the driving controls and other detailing.



↑ Heljan's 'O' gauge Class 02 locomotive can be operated with a 21-pin decoder normally used in 'OO' gauge models. Its small motor does not take enough current in normal operations to need a larger capacity decoder.

nano-decoder to the motor and pick-up terminals. The same goes for older models

including those with split-frame chassis where hard wiring is the only option.

NEM-651 6-pin interface

'N' gauge modellers will be familiar with the NEM-651 6-pin socket which has become a standard for 'N' gauge and remains in use today. It is being superseded with the NEXT18 socket (with 18 connections to the circuit board) as onboard sound becomes more universal in 'N' gauge.

NEM-652 8-pin interface

'HO' and 'OO' gauge models were first equipped with a NEM-652 8-pin socket which was mounted on the model's circuit board. This allowed the motor controls, track current and the first three lighting functions of a decoder to be directly connected to the model via the socket. If the decoder has a fourth lighting function or digital sound, fly-out wires are soldered to the decoder as bare-ended wires. Most decoders are fitted with harness wires with the 8-pin plug soldered on the end. Wires take up room, so some manufacturers have developed direct plug-in 8-pin decoders, some of which are not much larger than the analogue override blanking plug fitted to the socket.

The 8-pin interface is now considered to be obsolete except for specialised applications, although decoders with 8-pin plugs are still made to cover older model designs.

MTC 21-pin interface

In an effort to make more connections between decoders and the model's circuit board for sound and additional lighting functions, the MTC 21-

pin interface socket was developed as a replacement for the 8-pin socket. It has become the standard in 'OO' gauge models when there is sufficient room for it. It is a direct decoder plug-in system with no bulky harness wires to accommodate in the model. Speaker connections for digital sound decoders are now made through the socket and circuit board of the model with the only soldering required being to connect the speaker to the correct solder pads on the circuit board if digital sound is being installed. That is assuming the model does not have a factory-installed speaker set, a feature which is now standard in many models.

The PLuX system

In Europe, the PLuX interface system was designed to achieve the same end as the MTC 21-pin interface except that the largest PLuX interface could also accommodate smaller PLuX decoders with fewer pins due to the manner in which the individual pin connections are arranged. Three pin arrangements are available in the PLuX interface arrangement: 12-, 16- and 22-pin. Models can be fitted with an interface for any one of those pin arrangements. What makes it flexible is that a PLuX12 will fit a 16- and 22-pin interface, for example. It is a more flexible arrangement than the MTC 21-pin interface and allows many different functions to be connected through the model's circuit board without hard wiring. Bachmann has adopted the PLuX system in many of its latest 'OO' gauge models.

NEXT18 socket

One of the weaknesses of decoder interface sockets is their size and bulk which can take up valuable space in even the largest models. NEXT18 is an interface for direct plug-in decoders with eighteen separate connections or poles for numerous functions and digital sound in a very compact space. The interface socket is literally a clip fit and is perfect for 'N' gauge and smaller 'OO' models together with 'OO9' models. It has been applied to Bachmann's new 'OO9' Baldwin locomotives, the 'OO' gauge Webb Coal tank and other smaller

'OO' gauge models such as the Class 03 shunter and NER Class E1. In 'N' gauge, NEXT18 has been applied to Graham Farish models such as the GWR Castle Class locomotives and Class 40 model. It brings a wider range of functions to 'N' gauge than the 6-pin interface including factory installed digital sound.

Decoder functions

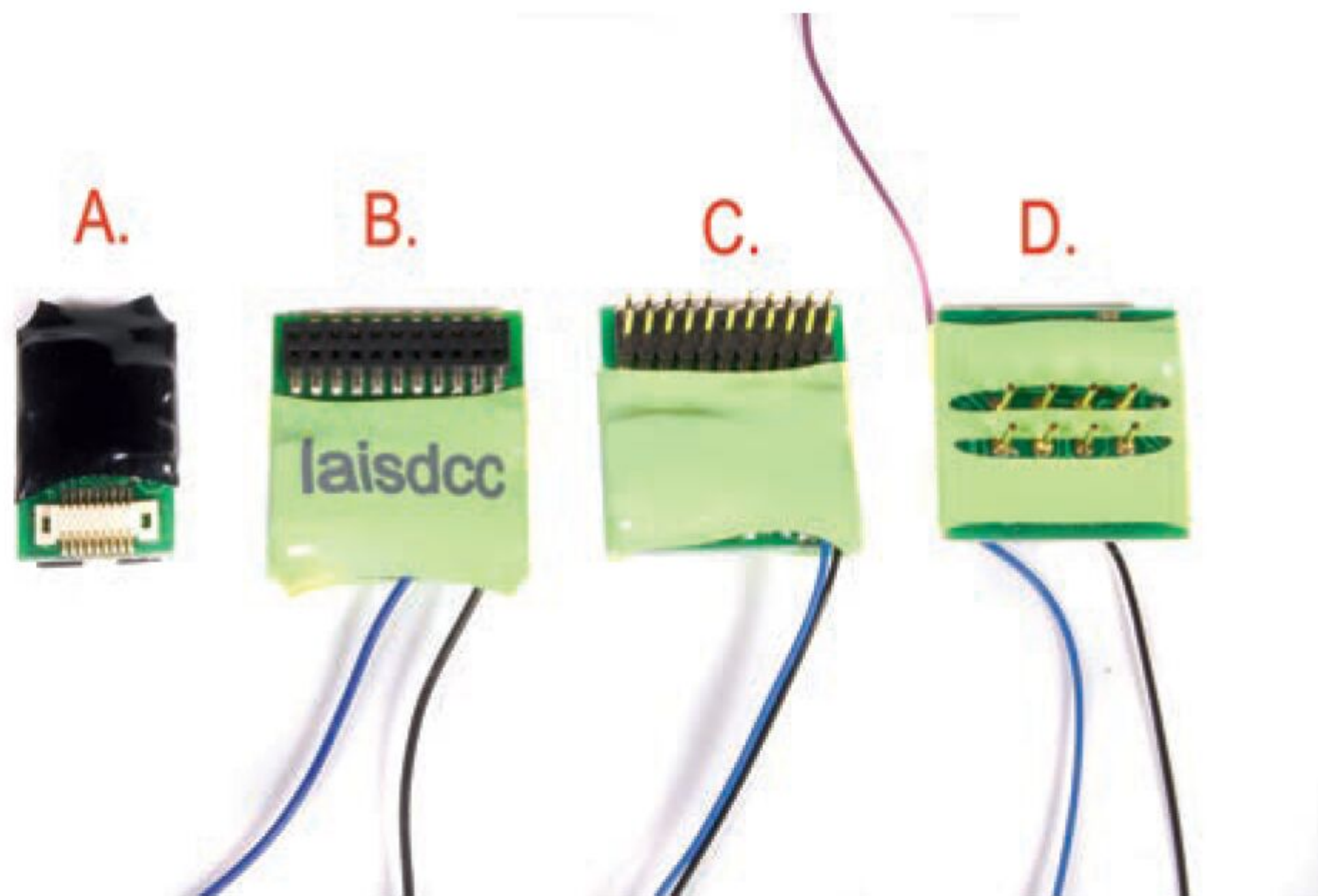
In addition to the motor drive capability, decoders have auxiliary outputs for the control of onboard systems. They are primarily used for illumination including operational or running lights. Typically,



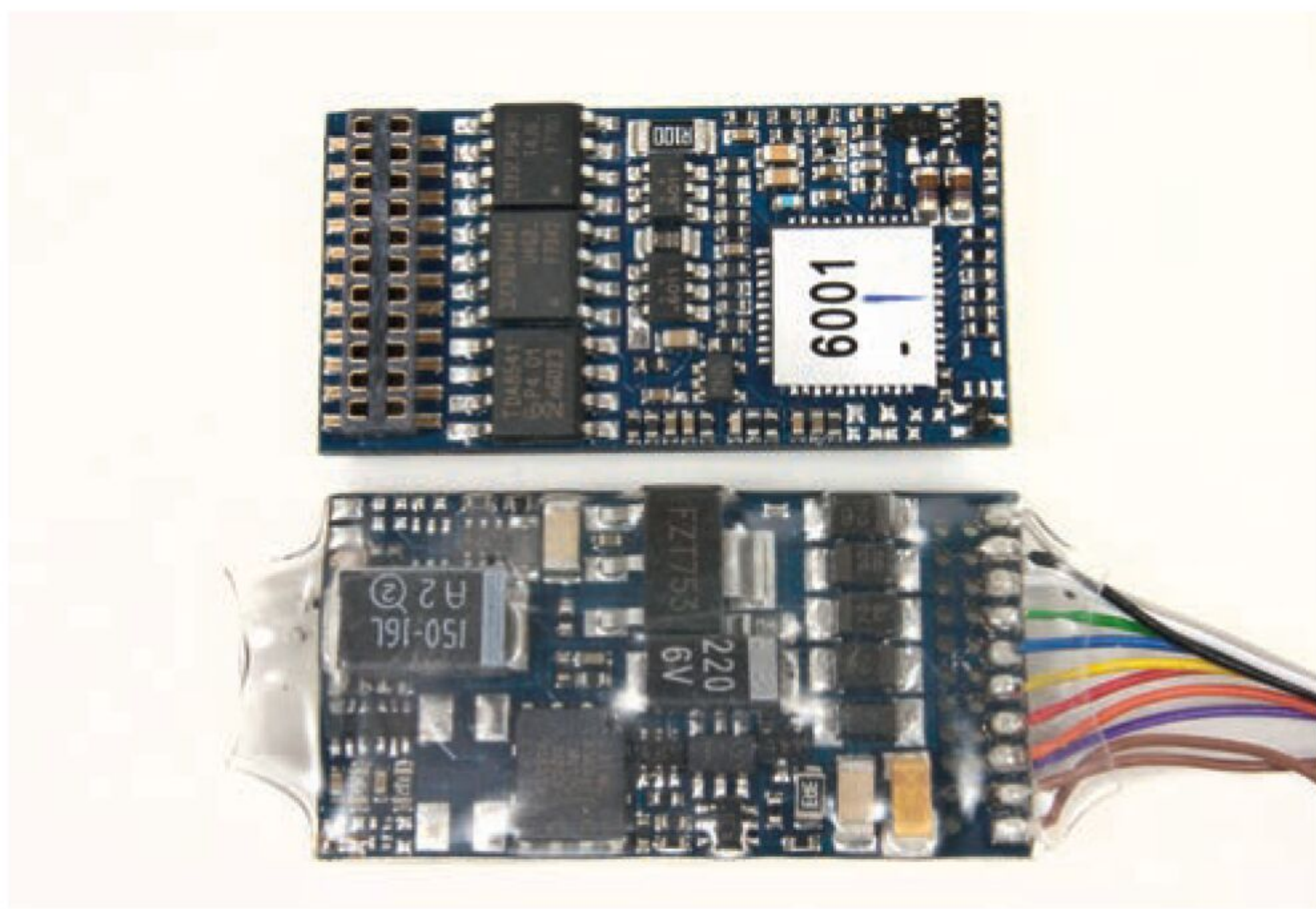
↑ When purchasing models, take a note of the symbols on the box. They will tell you what decoder (if any) is fitted and the type of interface. In this case, the model is pre-fitted with an HM7000 TXS sound decoder and the interface is a 21-pin type.



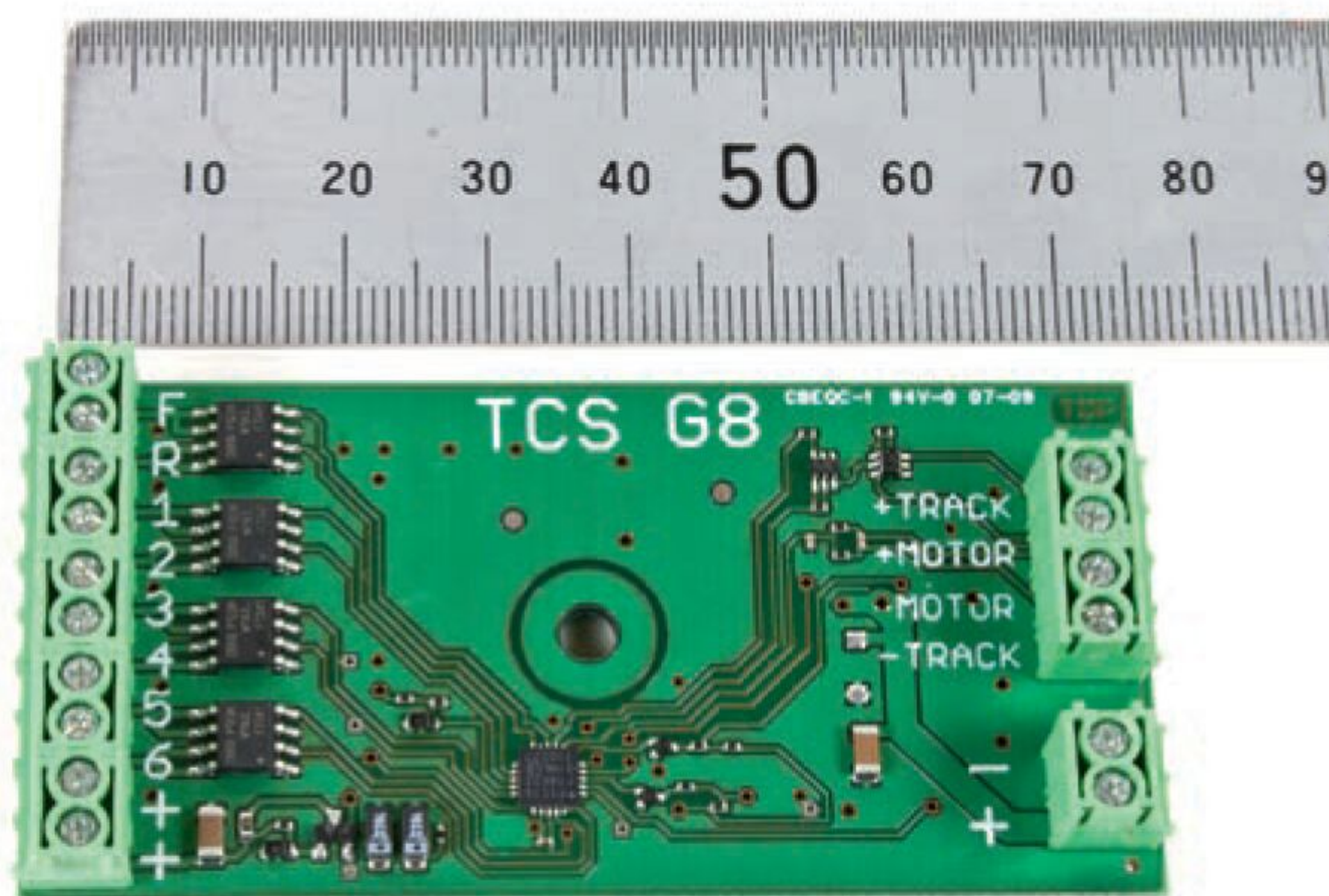
↑ One way of avoiding having to worry about decoder choice and fitting is to buy models that have a decoder pre-fitted. The boxes should be clearly labelled as such.



↑ A selection of different LaisDCC decoders showing different plug arrangements including NEXT18 (A); MTC 21-pin (B); PLuX22 (C) and a direct plug in 8-pin interface with no wiring harness (D). All but the NEXT18 decoder have fly-out wires to connect to a stay-alive power pack (blue and black).



↑ Single-sided decoders (components arranged on one side only) designed for 'HO' and 'OO' gauge. One has an MTC 21-pin interface whilst the other has a wired harness including two brown wires for a speaker connection. Both are ESU Loksound digital sound decoders.



↑ At 75mm in length, this decoder is clearly intended for large scale locomotives and it will have the capacity to cope with the higher current demand of a twin motored 'O' gauge model. Terminals in this type of decoder are usually screw terminals. Do not be tempted to use decoders intended for smaller scales in large 'O' gauge models to save money. They will not be able to cope with the current draw.

what would be directional running lights under direct current control are powered by the first two outputs which are controlled with button 0 on the controller. They show the change in running direction when the direction of travel is changed on the controller.

Decoders for 'N' gauge models were usually limited to two outputs whilst 'OO' gauge decoders had two to four outputs. This was limited by the number of harness wires and the interface plug/socket arrangement. There were decoders with more than four auxiliary outputs and they were accommodated with additional wires.

New plug-and-play interfaces has allowed the number of connections to the locomotive circuit board to be increased dramatically and with it has come decoders with a larger number of auxiliary outputs along with logic outputs. It offers control of more lighting circuits and better control of lighting combinations than the earlier four-function arrangement.

Higher end models have sophisticated function control and it is important to check that your decoder has enough functions to control all of the control features fitted to the model.

Special situations

Small tank locomotives and shunters may be fitted with 6-pin interface sockets, which are normally associated with 'N' gauge models. Small 'OO' gauge models with low current or coreless motors are unlikely to exceed the typical power limit of a 6-pin decoder, so the space saving is a benefit.

The same occurs in 'O' gauge where small locomotive models such as the Heljan Class 02 shunter and Accurascale's Ruston & Hornsby 88DS locomotive have motors with low current draw. Decoders usually intended for 'OO' gauge can be used in them to keep costs down compared to decoders intended for larger scales.

Decoder interface adapters

Interface adapters are connectors which allow one type of interface plug to be used in a model fitted with an incompatible socket. For example, 8-pin to 21-pin adapters are commonly available, allowing a 9-wire decoder fitted with an 8-pin plug to be used in a model equipped with a 21-pin socket and so on – but only when space permits. Other adapters include those with solder pads allowing a bare ended wire harness to be soldered to an adapter that will fit a 21-pin interface, for example. They are referred to as 'break-out' adapters.

'Stay-alive' decoders

The latest designs of decoder, including micro-decoders, direct plug-in decoders and those with wire harnesses come with stay-alive capability and can be recognised by two additional wires (usually blue and black) soldered to them. They connect to a separate power pack or power bank which is usually composed of capacitors and a control circuit board to prevent over-charging.

The idea is to provide a back-up power source to feed the model's lights and motor when track power is interrupted for

a second or two. This can be long enough to stall a model, interrupt sound playback and cause flickering lights and in the process, spoil an operating session. The causes of such interruptions can be dirt on track and wheels along with insulated turnout common crossings (frogs). A stay-alive power pack overcomes such problems, especially with small locomotives such as the Hornby Peckett 0-4-0ST. They smooth out operation in larger models too. The discharge time can be as little as half a second or as much as ten-seconds or more depending on the size of the power pack assembly. The choice of power pack will depend on how much space you have to fit one in your models.

Anything from a NEM-651 6-pin interface for 'N' gauge and smaller 'OO' gauge models to NEM-652 8-pin; 21-pin and PluX22 pin decoders for 'HO/OO' gauge models are now fitted with connections for stay-alive power packs. They are worth considering for unpowered multiple unit trailer cars for lighting, and small shunting locomotives that have a short wheelbase chassis and reduced current collection potential.

Sound decoders

One of the features of digital systems is the continuous supply of current to the track. It is always live enabling constant lighting and efficient communication between the command station and decoders no matter if the locomotive is on the move or not. Sound playback with authentic locomotive noises is made possible through this

constant supply of current. Digital sound decoders have the same features of mobile decoders along with several additional ones: an amplifier; volume control, speaker output and additional memory to store sound files as data packets, to be played at the appropriate time. They come in all formats including 8-pin, MTC 21-pin and PLuX interfaces. One of the major benefits of the NEXT18 system is that it has made mainstream digital sound a standard for 'TT:120' and 'N' gauge models. In some instances, the models are factory fitted with suitable speakers which are wired to the circuit board, making the fitting of digital sound as simple as fitting an appropriate decoder – a five-minute job.

Wi-Fi decoders

Hornby HM7000 decoders are designed to be directly controlled through a smart phone application as well as a DCC command station. The system is capable of bypassing a major and often expensive piece of DCC kit. Power is fed straight to the track from a suitable transformer and the digital signals for locomotive control are transmitted by Bluetooth signals which are picked up by the decoders. A good range of quality decoders are available in the Hornby HM7000 range including 6- and 8-pin decoders along with NEXT18 and 21-pin decoders. The HM7000 system will be described in more detail in a future issue.

Large scale decoders

One of the key considerations for large scale modellers is the high potential current draw

of larger motors fitted to 'O' gauge models. Diesel and electric locomotives are commonly fitted with two motor and flywheel assemblies, one on each bogie. Space, on the other hand is not such an issue and consequently, the decoders are correspondingly large and may be connected to the model's circuit board with wires and screw terminals. Their correspondingly larger components will easily handle the higher current draw (without generating much heat) which is usually in excess of the usual 1 Amp continuous rating of an 'HO' and 'OO' gauge decoder.

Current draw

Most contemporary standard models are fitted with efficient motors with low current demand, making the available decoders for a particular scale more than adequate. 'N' and 'TT:120' gauge models along with 'OO9' narrow gauge models will, in the main, need less than 0.5 Amps in normal operation. In 'OO' and 'HO' gauge, up to 1 Amp is not uncommon with conventional five-pole motors and more than four auxiliary outputs for lighting. The decoders aimed at these scales will be more than adequate for the job, with sufficient peak current capacity for starting heavy trains.

Nonetheless, it is prudent to check older model designs and larger scale models to find out if your chosen decoder can handle the current draw. In the past, motors were far from efficient as the modern coreless and skew-wound five pole motors commonly

used today and current draw can be quite high.

Cost versus features

A more expensive decoder does not mean that it is necessarily better than any other. Cost can be the result of added features such as RailCom which when used with layout accessories can offer features such as braking effects and decoder address readout. Asymmetrical DCC is another added feature of some high-end decoders which when used with a device that creates an asymmetrical signal will trigger braking functions. It is used in conjunction with signal modules among others.

As mentioned above, stay-alive features are available on some decoders and this too may add to the cost. One has to decide if asymmetrical ABC braking features, stay-alive and RailCom are needed and if the additional cost is worthwhile.

As long as the decoder is compatible with accepted standards and recommendations, very reliable ones with good current ratings can be bought for around £20-£25 including the more modern interfaces and an array of lighting functions.

Closing notes

There is no doubt that digital interfaces have made DCC decoder installation more plug and play than ever before and it is becoming easier as time goes on to choose and use decoders. The variety of plugs and sockets ensures that suitable decoders are available for the growing range of ready to run models fitted with onboard system control

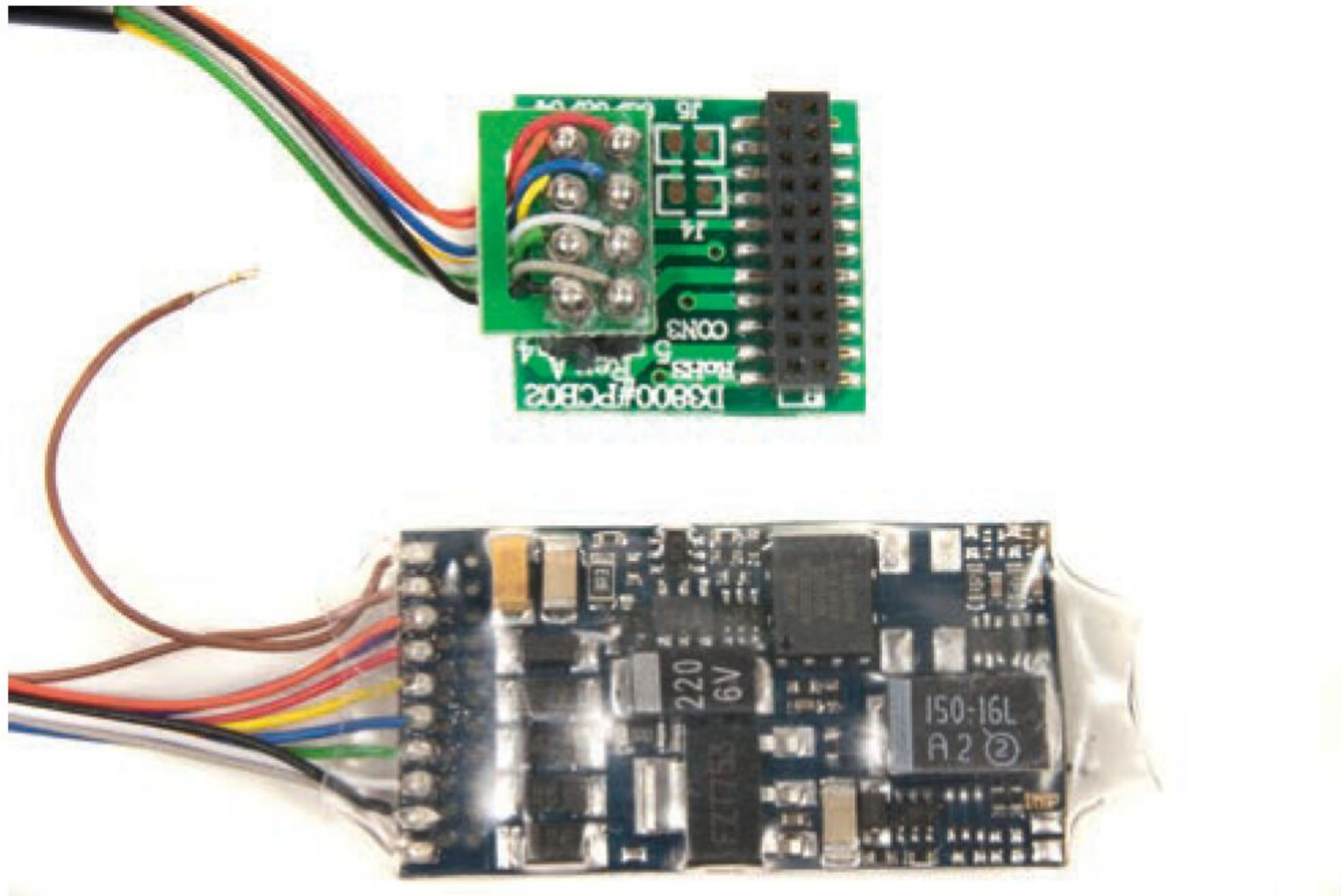
Control Systems

and driving features not even considered to be possible a decade ago. Once you become familiar with decoders, brand types and functionality, decoder selection becomes much easier.

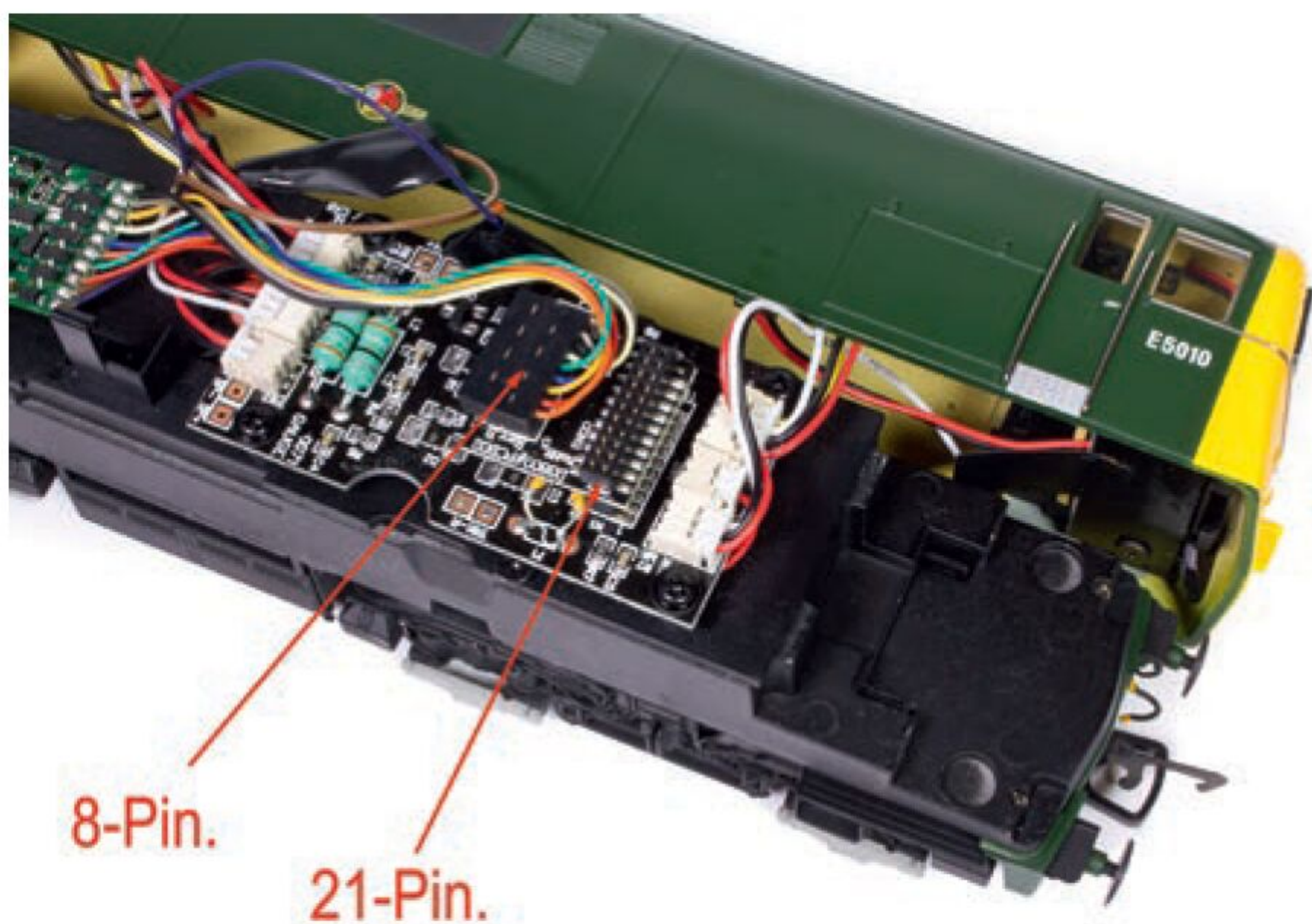
When starting out in the hobby or in DCC, always ask

your retailer for advice on the correct type of decoder for your new model.

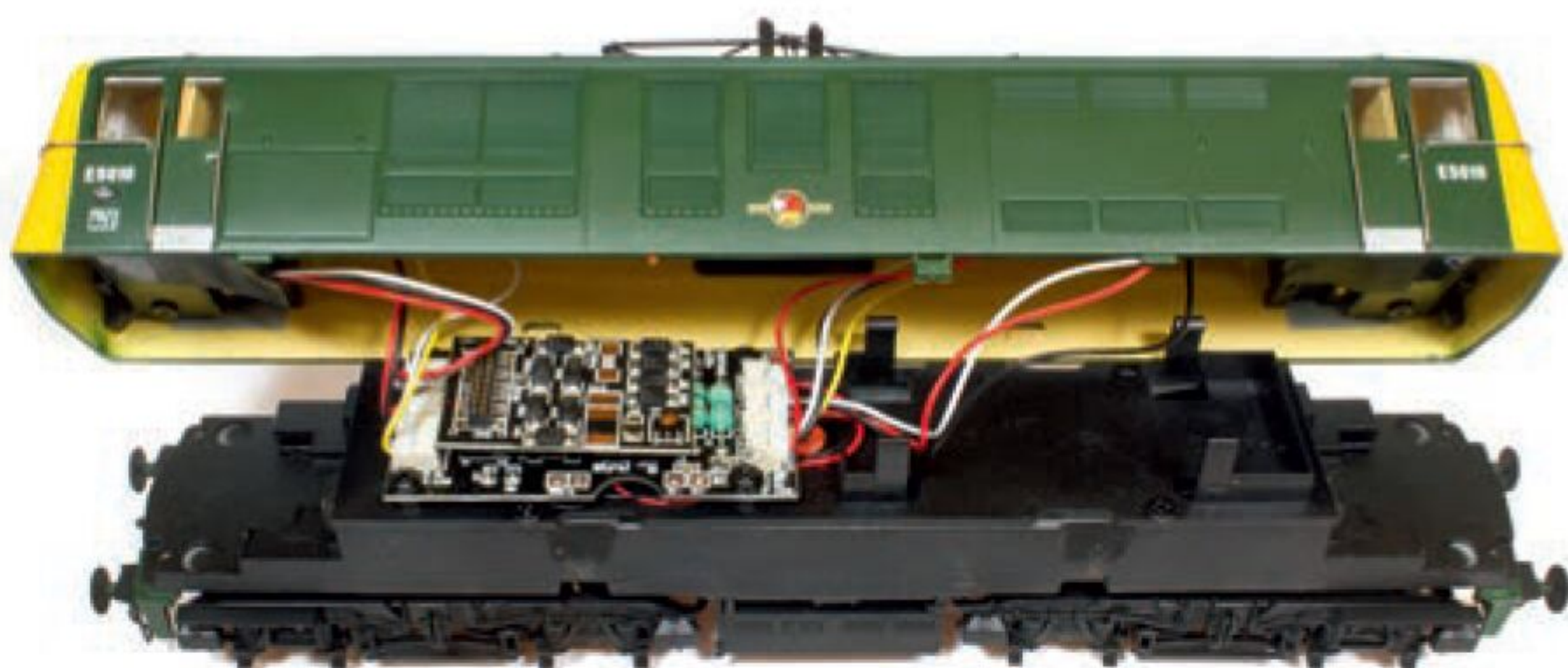
Most decoder designs will operate well with contemporary ready to run models without having to do any tinkering with the settings except allocate a unique address to the



↑ This picture illustrates an 8-pin to 21-pin adapter, a method that allows a decoder with a different interface to be used.



↑ An 8-pin to 21-pin adapter is shown being used in a 'OO' gauge Class 71 model. There has to be space to accommodate the additional component. It is better to use the intended decoder type to ensure that all lighting functions are available. However, this made good use of a spare 8-pin decoder to get the model running until a 21-pin type could be purchased.



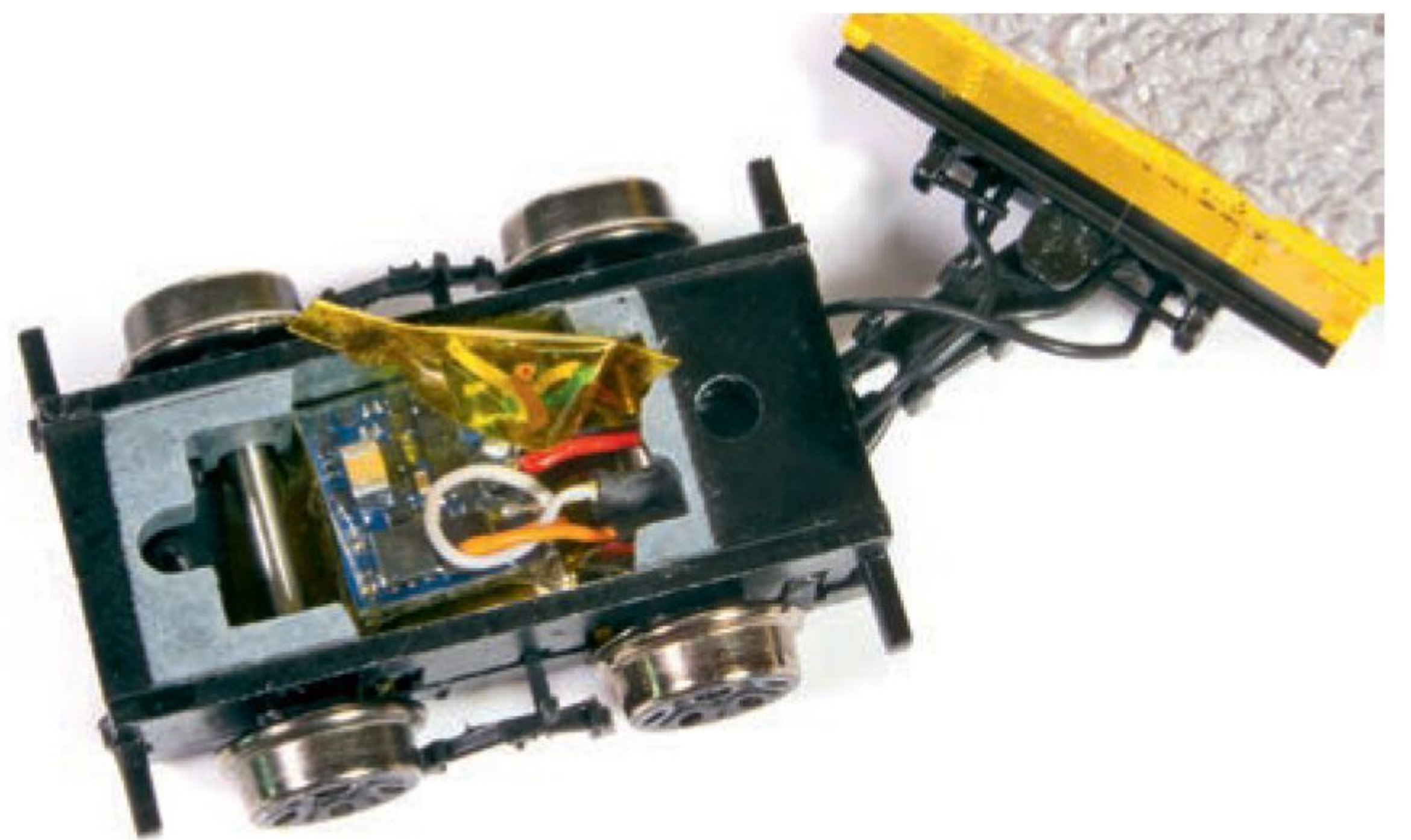
↑ The same model fitted with a 21-pin decoder, directly to the interface fitted to the circuit board.



↑ Tiny decoders are also available for the smallest of locomotives with good power ratings and durability, but they can be expensive! The ESU Nano 'Standard' is feature-rich double-sided measuring 8mm by 7mm by 2.4mm with one high spot of 2.8mm. It is available as a wired decoder (shown) or with a NEM-651 6-pin interface.



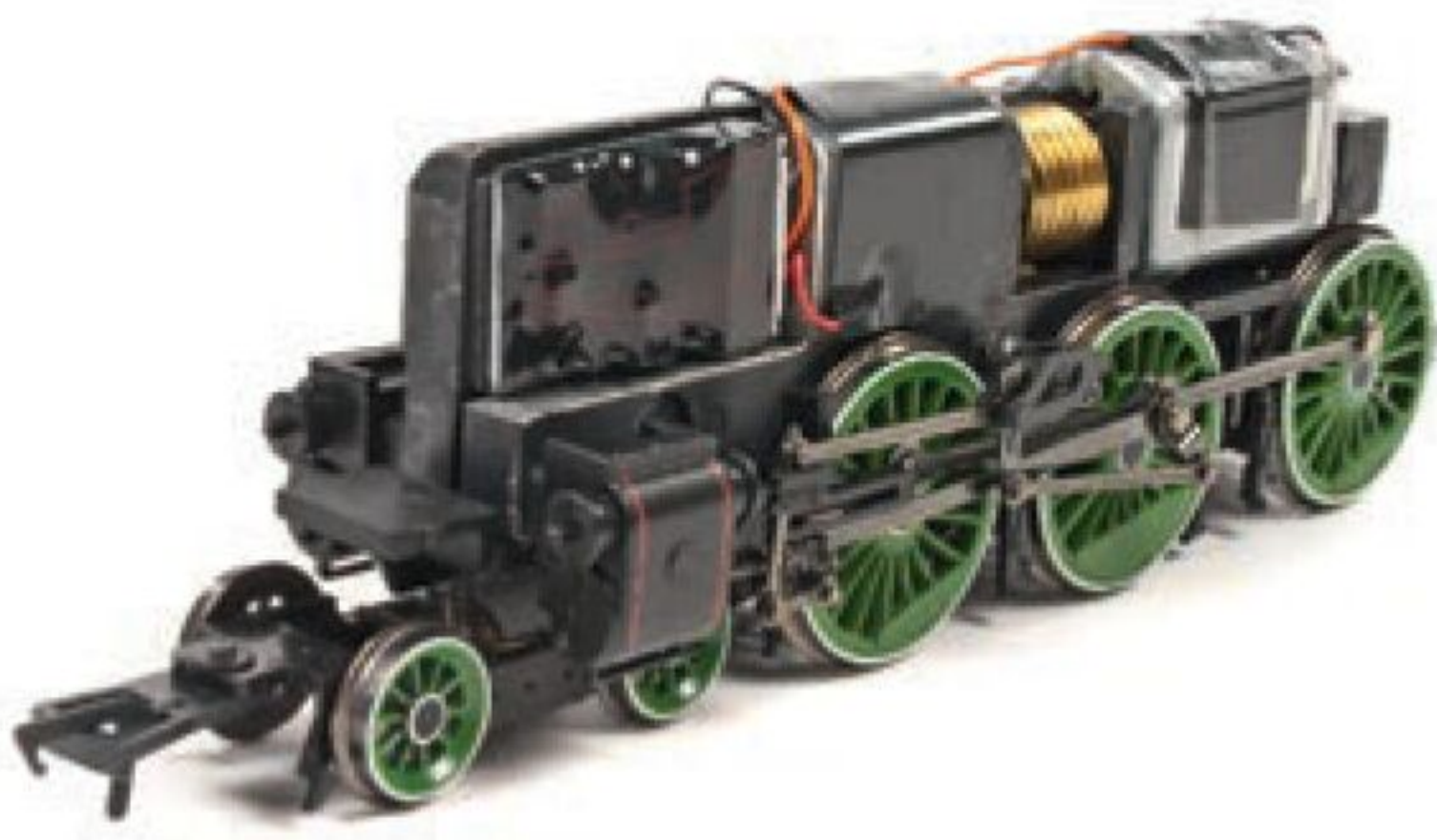
↑ The smaller the model, the greater the challenge of finding and fitting a suitable decoder. The Bachmann 'OO' gauge Wickham Trolley has no DCC interface which requires a hard wire installation of a decoder. The logical place for it is in the trailer.



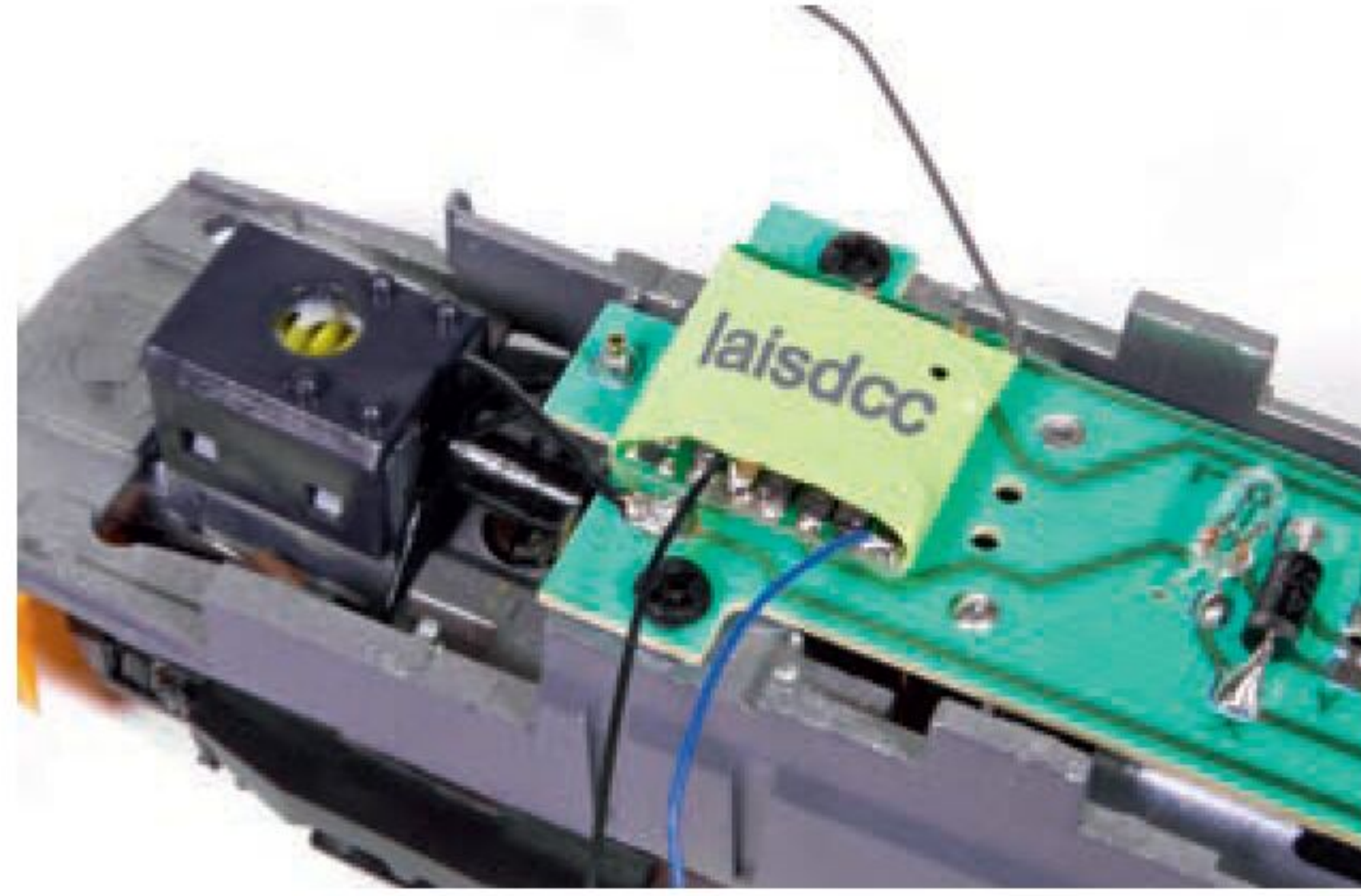
↑ The completed ESU nano decoder installation in the Wickham Trolley. There is little room for the decoder wires! Such installations are at the extreme end of decoder projects.



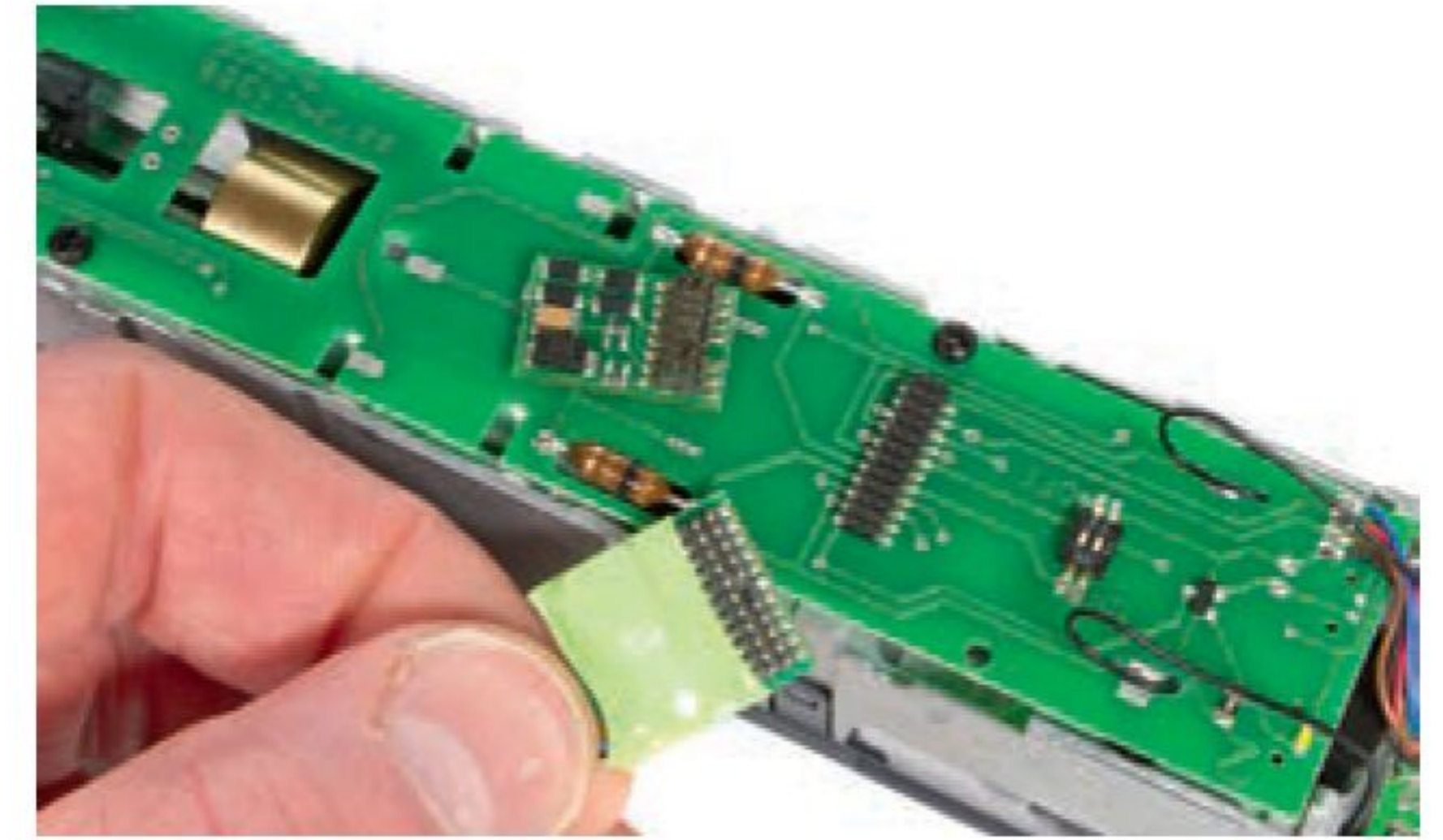
↑ There is a conflict between model size and the need to fit more than a decoder for reliable operation without potential stutters and stalls. The smaller the locomotive, the more likely it will need a stay-alive in addition to a decoder. Yet space is tight because such models also need as much weight as possible! Researching the choice of decoder will be important to achieve the best result.



↑ A four-function harness wire decoder is shown hardwired to an older Bachmann steam locomotive which is fitted with a split frame chassis. This is an awkward job to undertake and with so little space in the model, a section of the chassis frame was cut away to make room for it. This is a typical use for 'wired' decoders.



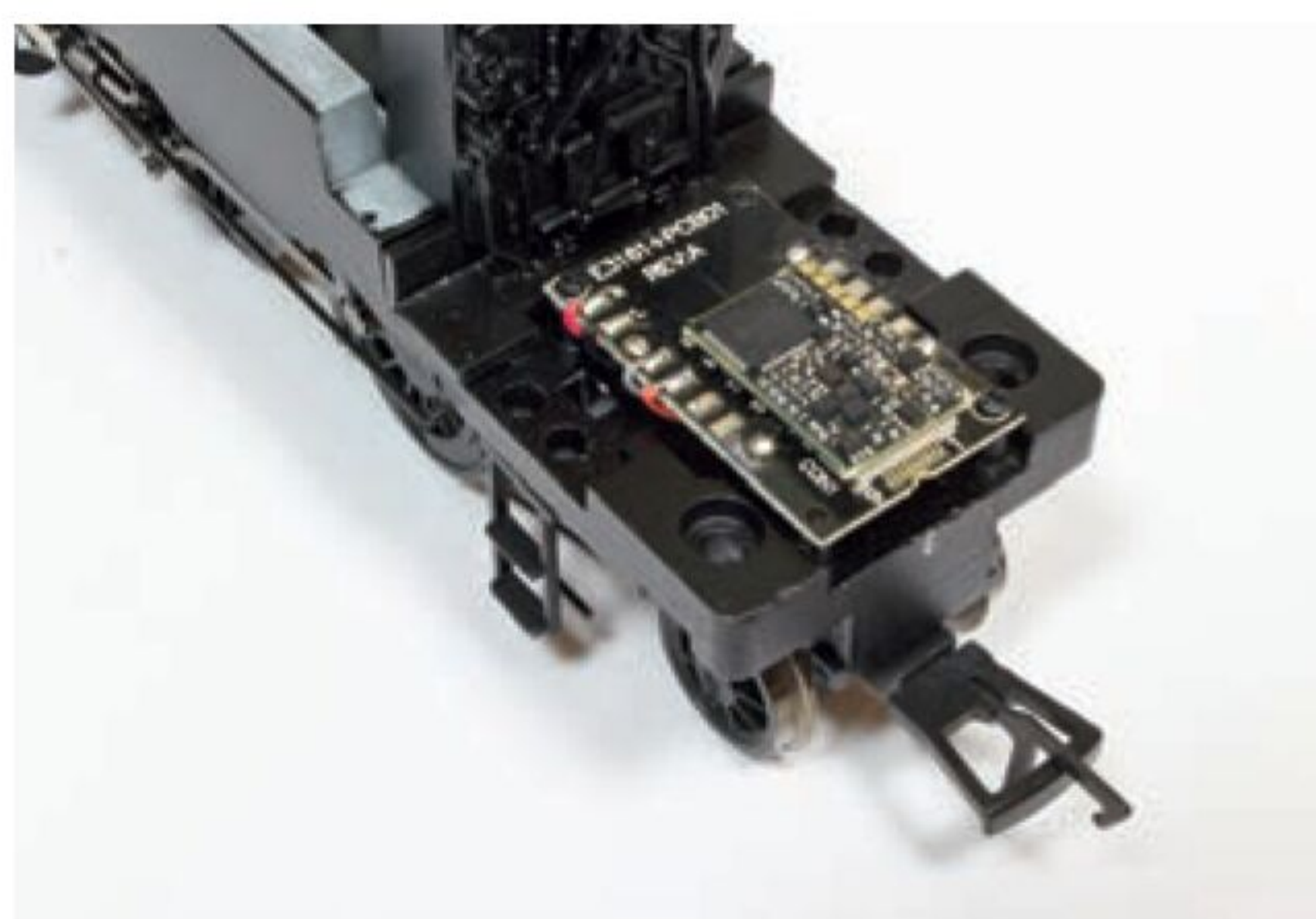
↑ Some decoder installations are simple. Simply remove the body and DCC interface analogue plug to make room for a direct plug-in decoder as seen in this picture. They are available as 8-pin as well as NEXT18, 21-pin and PLuX formats. Note that this version has additional wires for stay-alive.



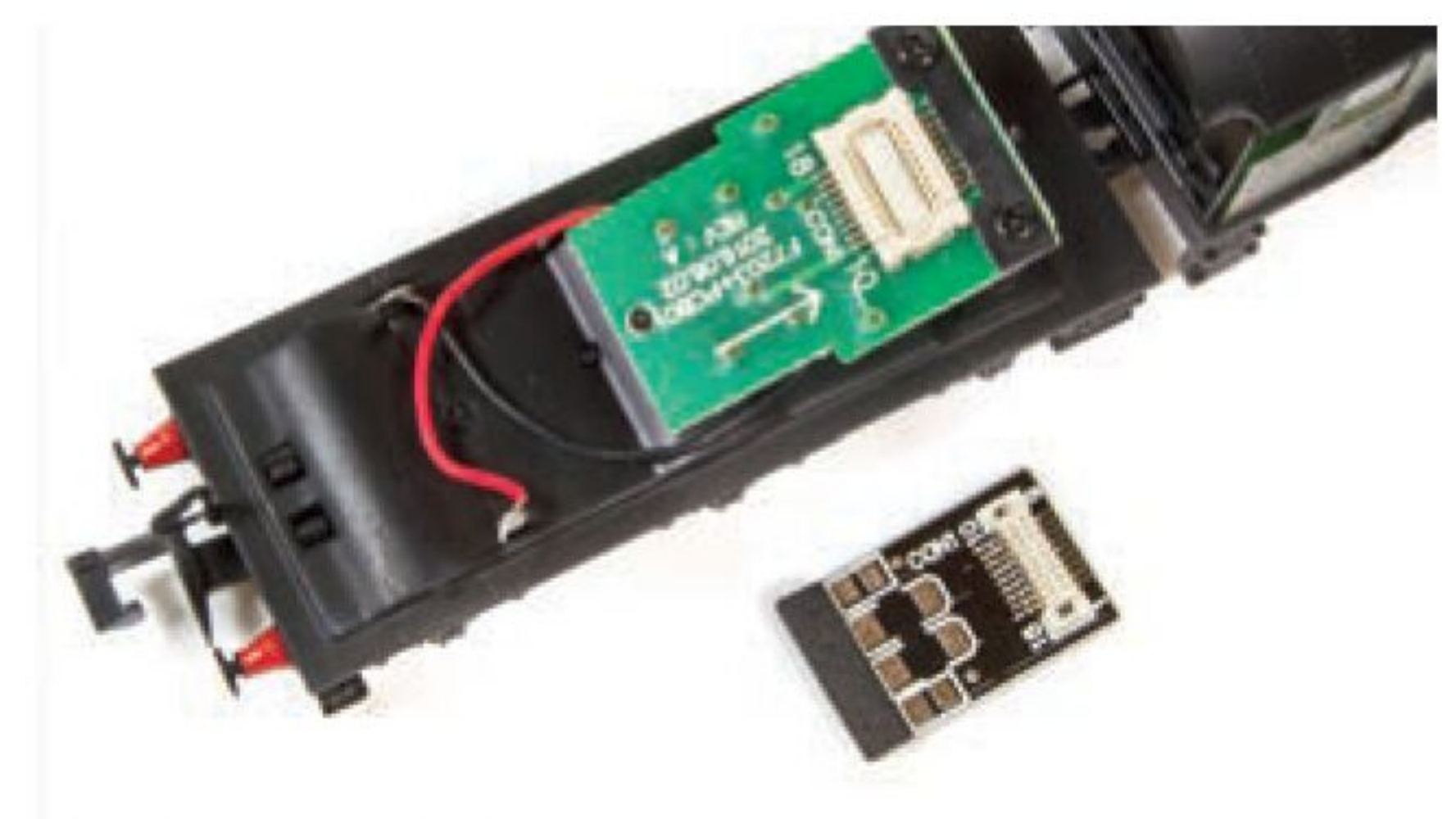
↑ A PLuX 22 interface (22-poles) as fitted to a European-outline model, namely a Roco NSB EL18. The arrangement is different to an MTC 21-pin interface in that the pins are fitted to the decoder. PLuX interfaces are not usually found in British outline models, although they have been adopted by Bachmann in recent times.



↑ NEXT18 decoder sockets have become the answer to tight installations. This model is a Bachmann Ivatt 2MT 2-6-2T which has most of its bodyshell filled with weight for the best possible tractive effort. The decoder interface is hidden in the floor of the cab and there's not much room for it!



↑ The 2MT's motor is unlikely to draw a lot of current making NEXT18 decoders suitable for it. The benefits of NEXT18 become clear, with eighteen connections available in a small space.



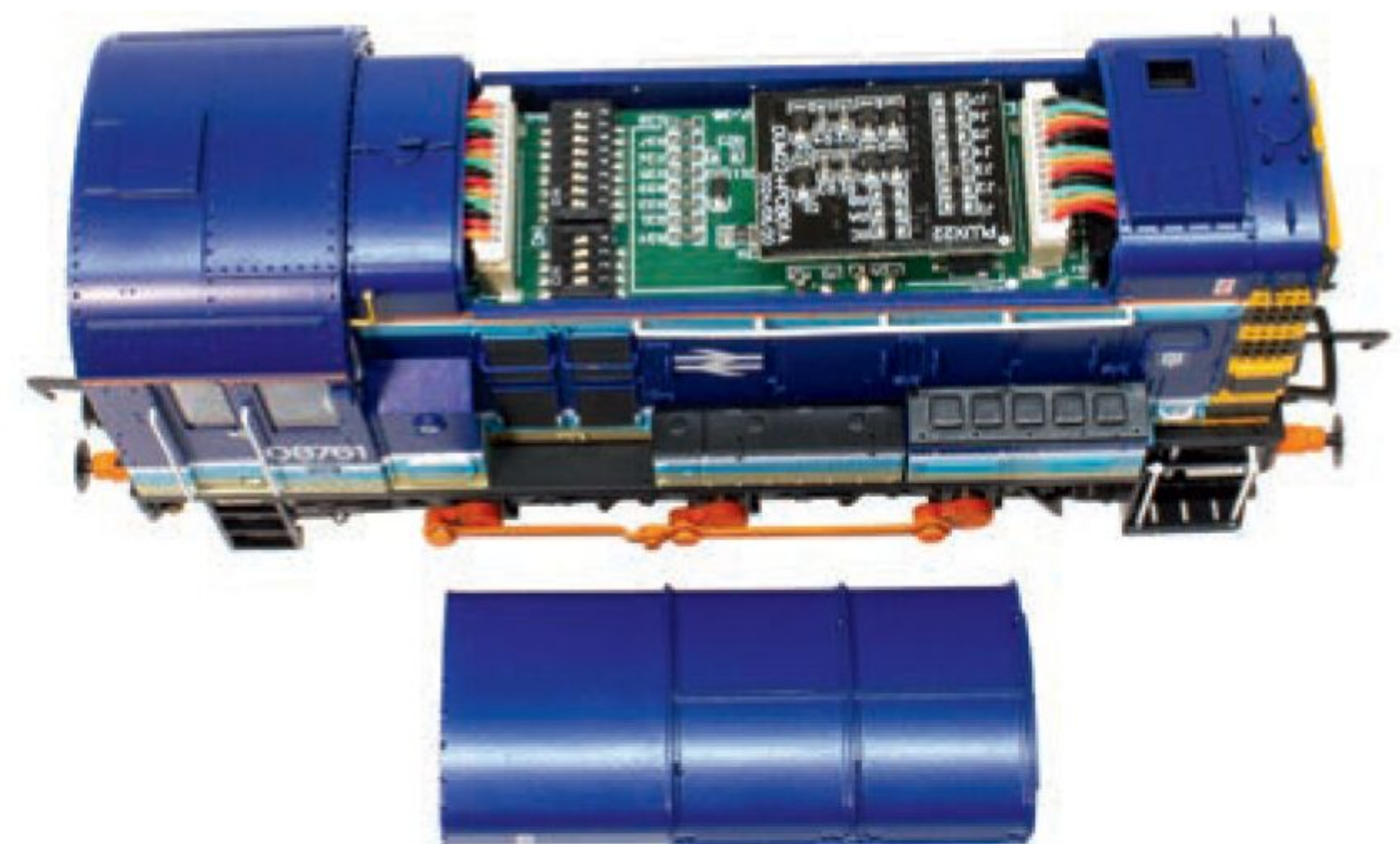
↑ NEXT18 decoders have brought a lot of benefits to 'N' gauge models too, including factory installed digital sound and a reduction in wiring. The NEXT18 interface is hidden in the tender of this Graham Farish model - the analogue plug simply unclips to allow the decoder to be push-fit into place.



↑ A 21-pin decoder interface as fitted to the Heljan 'OO' gauge Class 104 DMU. The model has a wide range of lighting effects including interior and cab lighting which will take advantage of many of the 21-poles or connections between the circuit board and decoder. A decoder with at least six functions is required to control all of the lighting circuits in this model.



↑ Not all installations are complex. The 21-pin interface socket fitted to the Hornby 'OO' gauge Class 755 'Flirt' train is concealed under a lift out panel in the roof. There is no need to remove the body to fit the decoder.



↑ The latest versions of the Bachmann Class 08 and Class 09 shunters are fitted with a removable bonnet cover. Note the PLuX22 interface. It is not compatible with the MTC 21-pin design.

decoder. Some models will benefit from having BEMF turned off whilst the use of a stay-alive unit requires CV29 to be adjusted to turn traditional analogue compatibility off.

When choosing a decoder, it is worth considering how your layout operations are

likely to evolve in the future and if the features of the decoder are advanced enough to fit in with your plans, such as the use of RailCom. Until then, with DCC, it pays to keep things as simple as possible to get the trains up and running, and running well.

Ground cover modelling: How to apply scenery materials to terrain

Covering plaster hard-shell or carved foam terrain with vegetation is some of the most satisfying layout work you will ever do. And it is fun too!



↑ One of the greatest pleasures in railway modelling is creating landscapes on your model railway. The vast range of products available today means that almost any landscape can be modelled in any scale.

IN THE LAST issue of *The Guide to Model Railways*, various methods for building landscape terrain were presented along with the advantages and challenges of each method. Now the plaster bandage has set and dried, or the

foam carved to shape and mess cleaned up we come to the fun of adding colour, texture and vegetation.

Ground cover modelling consisting of grasses, bushes, scrub, weeds and flowering plants is the first of several layers of

scenery that start bringing the layout to life. There is another side to ground cover and that is soil, gravel and sand which may be exposed in dirt tracks and gravel roads. Include beaches and areas along rivers and where the plants

have been eroded away. In fact, almost anything you apply to the surface of your terrain could be called 'ground cover' including water, rail ballast, rocks, paved roads, garden modelling, trees and snow, although some of those



↑ Whilst simple in appearance, this industrial diorama was used to experiment with dirt road modelling techniques as well as having a little fun with scrap box odds and end. Ground cover vegetation is a mix of static grass and ground foam. The grass is applied with a static applicator and also as tufts.



↑ The quality of scenery products has improved beyond recognition over the last three decades. Dyed sawdust has given way to colour-fast ground foam in a vast range of realistic colours along with long grass fibres and static grass products.



↑ Ground cover is in the process of being applied to this micro-layout. Note how thinned pigments are used to stain the rocks and plaster bandage making up the landscape before vegetation is applied.



↑ Static grasses are available in a variety of lengths and colours from numerous suppliers of scenery products including Noch, Woodland Scenics, WW Scenics and Jarvis. They have become mainstream in recent years due to the realistic effects that can be achieved relatively easily. An electronic applicator is usually required, although Noch also offers an economical static grass bottle for working with small layouts where the investment in an electric applicator would be excessive.

subjects need to be covered separately in a future issue. All of the ideas listed here apply to all scales and layouts of all sizes. Ground cover scenery techniques are generally universal.

Before you start work

If you are starting out with your first scenic layout, you may wish to build a separate diorama on an off-cut of hard board or a polystyrene ceiling tile to practice on. The benefits of diorama building are discussed elsewhere in this issue. You can use up left-

over landscape and terrain modelling materials to give the diorama relief if you wish. It does not need to be more sophisticated than the one featured in this issue or the 15-inch square diorama shown in the adjacent photographs which was built up on a convenient off-cut of 9mm plywood.

Use the diorama to test different materials and techniques. Certain ground cover materials may look fine in the packet but then appear inappropriate in your given setting. Others may prove to be harder to use than they first appear. Mixing colours and sizes may produce startlingly different results. The choice of glue may also have an impact on the finished result. Practice a little and apply what you have discovered with your experiments to the layout.

As a part of the process of deciding which scenery materials to use, take a look at reference photographs to see how the landscape appears in your chosen modelling area. Consider the time of the year in which your layout is set because colours change

Scenery

with the seasons and the same grasses, weeds and bushes will look different at different times. Look at factors which affect the shape of ground cover including how livestock affects the growth of grasses in pasture compared to the less manicured environment of railway embankments. How do weeds and grasses grow in urban and industrial areas? What trees and plants are the first to populate brownfield sites such as old railway yards? Photographs will help you with determining how much ground cover looks right.

Choosing ground cover 'vegetation'

Scenery materials have developed dramatically in the last three decades with the traditional dyed sawdust giving way to considerably more refined and better-coloured products for ground cover vegetation. Ground has given way in favour of static grass which has seen it become mainstream in the hobby as the price of static grass applicators has fallen.

Scenery material suppliers such as Noch, Woodland Scenics, WW

Scenics, ModelScene and MiniNatur offer materials to represent specific ground cover including cereal crops, meadow grasses, cattle and livestock pasture, rough ground and wild ground cover. The seasons are also taken into consideration with products coloured to suit, making ground cover modelling a satisfyingly precise area of landscape creation.

Whatever lengths you plan to go to (the majority of experienced modellers choose to use static grass as the main component of green ground cover), the idea is to achieve the correct colouring for your chosen season and go for a variety of textures too. A swathe of static grass fibres of uniform length will look no more convincing than a thick scattering of old-fashioned dyed sawdust. The real landscape has a variety of colours and textures which, when replicated on a layout, will make it appear more realistic.

For example, livestock will eat pasture grasses down, sometimes leaving the tougher broad leaf weeds alone. Bracken will grow pretty well unchecked



↑ Ground foam is rarely used for finished ground coverage today, being preferred for adding accents and the impression of weeds. It is also very useful for creating deciduous tree foliage.



↑ Fine turf from Woodland Scenics is a very fine ground foam product available in various colours, perfect for weeds and accents. Its fine texture makes it ideal for the underlying layer of material before static grass is applied.



↑ Grass mats are available in textures ranging from plain colours to fully finished ground cover with colours adjusted for season and location. The Woodland Scenics Vinyl Mat product can be cut to shape and heated to mould it into various shapes to make hillsides and embankments or used flat and enhanced with other scenery products.



↑ Before ground cover is started, track and associated features such as ballast, cable ducting and point rodding bases are fitted and painted. The track should be finished too. Reworking such areas is not easy once grass and weeds have been applied.



↑ Paint plaster bandage with diluted, cheap acrylic paint from a craft shop. The paint should be thin enough to soak into plaster hard-shell terrain.

in upland areas where acid soil dominates – it is rarely eaten by anything, being relatively toxic to livestock and will grow to the exclusion of other plants. Lineside locations such as embankments and cuttings together with road verges and field boundaries will see longer grasses and bushes

growing together with weeds. All of these features have their own textures and cannot be created with just one or two applications of ground cover material.

Colour is another factor to consider and that is affected by the seasons. Grasses and weeds will have reached their maximum

height in late summer. Whilst the underlying colour of grass will be green, the longer strands and flower stalks will likely be dry and straw-coloured.

Winter grasses will be dead and dried to a straw colour, together with what is left of summer weeds which may be dark brown. Not all grasses stand tall – they can be beaten down by rain and wind, particularly in winter, whilst spring and early summer grasses will be a lovely fresh green but not very tall. Areas of good drainage will result in prematurely dry grasses, such as the area immediately adjacent the permanent way and dirt roads. Creating these textures is the route to making your landscape modelling appear convincing.

Static grass has done much for realistic landscaping, but like any mechanically applied material, can appear too uniform in appearance. There are several ways of avoiding an artificial appearance and one simple method involves mixing different sizes of static grass in the applicator and applying them at the same time. Another technique is to drift a second layer of straw-coloured grass over the first in selected areas to vary the height of the grasses. Push it over whilst the adhesive is still wet to flatten the grass in one or two areas. Add a smattering of ground foam material in places to represent weeds, particularly in areas where hedging and bushes will be planted. Choose darker



↑ This picture shows completed and painted landform or terrain. It is ready for ground cover vegetation along with painting and texturing of the dirt road and bare ground.

colours to represent broad leaf weeds and wildflowers. Remember that texture and colour is important when selecting 'green' ground cover materials and always choose those advertised as colour-fast.

More ways of covering 'ground'

Not all ground cover consists of vegetation and not all ground is covered by grasses and weeds. Dirt tracks and roads together with hard standing and areas of bare ground are just as important features to model. On the practice diorama featured in this article, the semi-abandoned industrial scene features areas of hard standing and little used dirt road. Areas of bare soil, tracks and dirt roads are not easy to create convincingly and modellers may go to extraordinary lengths to achieve an acceptable result. A simple technique involves the use of earth coloured acrylic paint or powder paint mixed with water and a quantity of fine sand. A dollop of fast-drying PVA glue or artists' matte medium is an important ingredient which binds the sand together in the road surface. It is brushed on and various markings can be introduced into it to represent ploughing, tyre tracks and other features. Colouring can be dark brown or grey for industrial areas and dark brown for peaty soils. Choose lighter colouring for dry sandy soils and dry gravel tracks. Remember that water will make gravel, sand and soil appear darker, so adjust paint colour shades accordingly around puddles and standing water.

Other options include the use of landscaping plaster for creating dirt roads and areas of bare earth. Woodland Scenics 'Hydrocal' plaster is easily dyed with pigments and acrylic paints to achieve a good colour before it is applied to the layout. Air-dry clays are also popular materials for making effective dirt tracks and roads, being soft enough to introduce tyre tracks and ruts. Once hardened, they may be painted and treated with weathering powders and a touch of fine sand to make them appear dusty and gravelly.

Where there are tracks, bare ground and dirt roads, there will be weeds and grasses. Clumps of weeds can be represented with pieces of ground foam and grass tufts applied using long static grass pinched between two fingers and stabbed into a spot of glue. Short grasses may grow in a strip along the hump between the tyre tracks. Usually, the colour of such grasses is lighter than those found on railway embankments and cuttings.

Scenery accents

There is scope to give your ground cover individuality by adding scenery accents. Grass tufts can be made at home with a static grass applicator and applied to tracks, the edges of structures and along the bottom of walls. Weeds are made with a smattering of coarse ground foam as long as it is a slightly different shade of green, usually darker in colour. Again, the choice of such accents and colouring will depend on the season. Wildflowers are unlikely to be found in late autumn or winter; yet

make a lovely accent when applied to the smattering of ground foam used to add further weedy texture to static grass.

A different way of making grass clumps is to use separate grass fibres such as the field grass range by Woodland Scenics. They are cut to length and planted using a spot of scenery glue. A tiny amount of fine ground foam is applied to the base of the clump to disguise the glue used to secure them.

It is important not to go overboard with accents in your ground cover. Neutral areas of ground cover vegetation will avoid detracting from important layout scenes and cameos. Nonetheless, a little interest can be added, depending on the season being modelled, by using flowers (Woodland Scenics flowering foliage), specific plants representing weeds together with rocks and plant debris such as old tree branches and stumps. It is worth looking at the Noch range of laser cut plants for accents which would suit a particular scene.

Alternative scenery materials

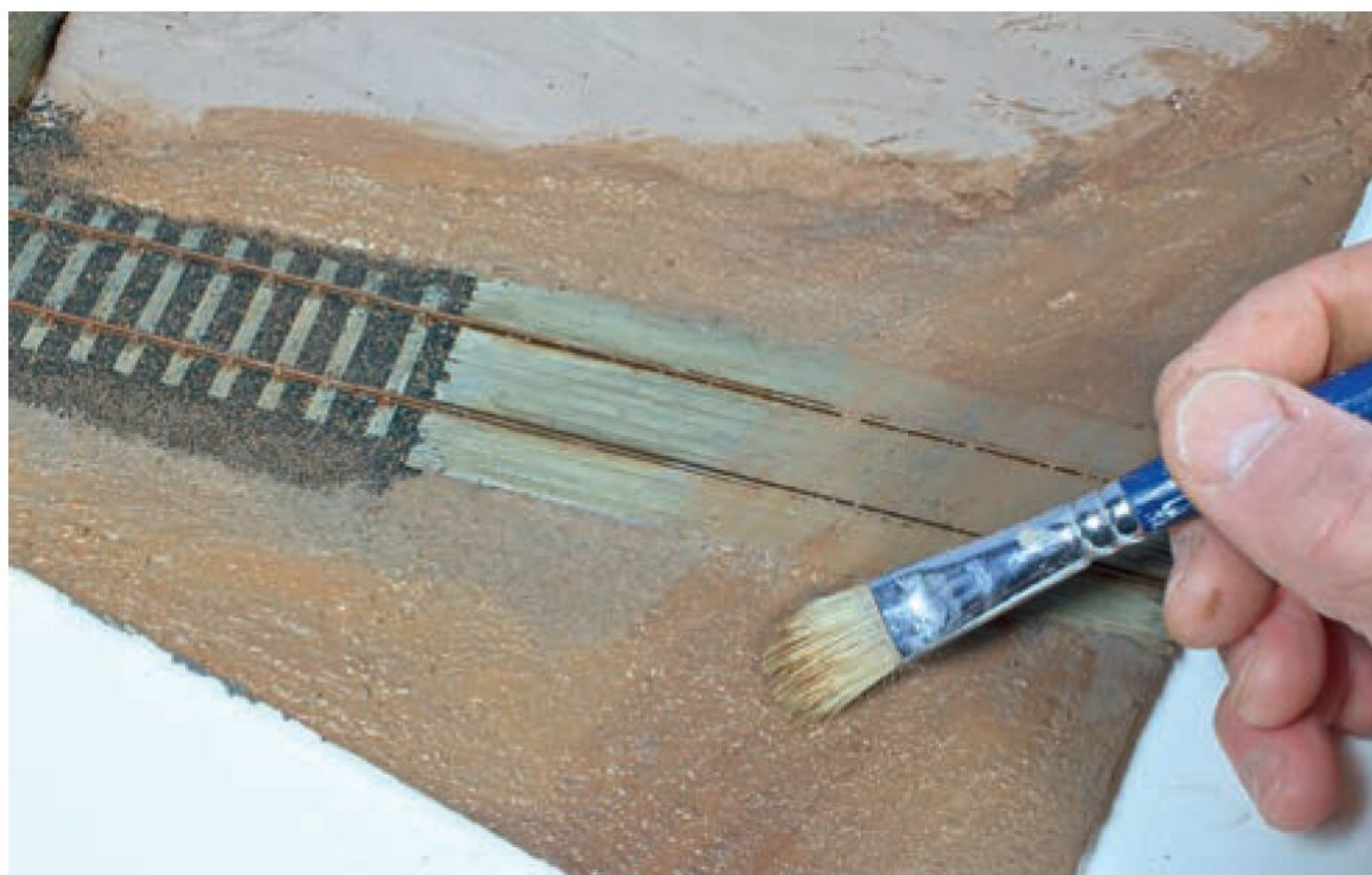
Being dissatisfied with

the appearance of dyed sawdust, modellers sought alternative materials for ground cover before the advent of static grasses. Popular ideas included sticking down medical lint bandage and leaving it to dry before ripping the backing away to leave the texture of long coarse grasses. This was dyed or painted different colours with accents applied. Faux fur is popular for the same reason. It adds interesting texture to the layout and is relatively easy to buy from fabric stockists and paint with acrylic paints. Both these methods are quite valid today and are chosen for cost effectiveness as well as appearance. Just be sure, when using this method, that underlying hard-shell and terrain is strong or it will lift when the lint or fur backing is attempted to be ripped away.

Some modellers are attracted to the natural colours of hanging basket liner, although it can be inconsistent from one packet to the next and is not colour fast. The texture of hanging basket liner is perfect for the modelling of scrub and long grasses in wild areas of the layout. The



↑ Dirt roads and areas of exposed earth or soil on a layout are considered to be 'ground cover' and can be modelled using a mix of paint, PVA glue and fine sand for texture before greenery is applied.



↑ Pigments and water-based paints are ideal for colouring dirt roads and bare ground. It can be applied with cheap pound shop craft brushes. You do not have to use expensive sable paint brushes on scenery work!



↑ Naturally, track will have been placed on the layout, wired and tested before scenery is started. It pays to protect track and ballast from spills and unwanted scenery material contamination with paper and card board before starting work.



↑ Ground cover vegetation follows the dirt and soil colours. A good layer of PVA glue or scenic glue was applied to the painted terrain. It should be diluted no thinner than the consistency of dairy cream so it does not run down slopes or pool in hollows.



↑ To give a good base for static grass, consider applying a layer of fine turf scatter before static grasses. The turf should be a very finely ground sponge and is easier to apply evenly when dispensed from a plastic cup rather than the bag.



↑ Multiple layers of static grass are shown being applied to create different lengths of grass and in slightly different colours. Grass fibres do not have to be applied in one shot for total coverage, but in successive thin layers for texture and colour.

colour can be supplemented with the use of dilute acrylic paints.

Old fashioned plumber's hemp makes the perfect grasses and its natural



↑ The uniform appearance of static grass as seen on this test piece can be relieved with a smattering of weeds composed of ground foam and a shot of a different colour of grass. The glue mix was still wet when this picture was taken.

neutral colour is a close representation of dried grasses. It can be dyed a

variety of shades of green and beige with clothing dyes to suit a particular

season and cut to a variety of lengths with sharp scissors. Along similar lines, hemp rope and string is a useful material together with postiche as used to make theatrical wigs. Whatever you plan to use, be sure you can acquire it throughout the layout project for consistency. Making a change in scenery materials part way through the construction of a layout will show in the finished result.

Finally, commercial grass mats deserve a mention and the variety is on the increase, particularly from manufacturers like Model Scene who offer quite sophisticated sheets which are beyond that used for table top trainsets. Mats are cut into specific shapes to suit areas of open ground and secured in place along with blending of the edges. Accents, bushes and other vegetation is added, especially along the edges of the mat to blend them in, to break up the uniform appearance of the mat.

Suitable adhesives

Choosing the right adhesives is important because the last thing you want is your carefully applied scenery material coming adrift over time or during handling and transporting the layout. The various manufacturers of scenery products and modelling chemicals offer a variety of specific adhesives including scatter glues, dedicated glue for static grass and general scenic cements. Products such as Deluxe Materials Scatter Grip are very useful for applying the first layer of 'scatter' on the landscape. Woodland Scenics 'Scenic Cement' is used in a variety

of ways and may be applied using a spray bottle or a brush.

Firm-hold non-perfumed hair spray is the perfect spray adhesive for touching up tree foliage and for adding further layers of static grass. Cheap and easy to use, it is applied in small amounts and in a well-ventilated space! Avoid over-application because its sticky consistency can leave visible traces which will appear shiny!

Matte medium used by artists is an excellent adhesive and is typically diluted before use. Also consider acrylic matt varnish as an adhesive and again, it can be diluted to make it go much further. Check adhesives on your chosen scenery material to see if the colour shade is affected by it in any way. They should dry clear and as matt in finish as possible.

In summary: the ground cover process

For consistent results every time, develop a process or workflow for ground cover application and make notes of the colours used and how they were applied along with the order in which they were used. A typical system for good ground cover modelling is as follows.

1. The landscaped area should be painted with an earth colour in preparation for ground cover. All manner of paints can be used from Woodland Scenics pigments to inexpensive acrylic paints from craft shops. Whatever is used, ensure the final finish is matt and can be diluted so it will soak into plaster bandage.
2. Dirt roads and hard

standing should be modelled first and painted in with a dirt mixture of powder paint, glue (or matte medium or acrylic varnish), sand and water.

3. Paints and pigments can be used to add further tone and texture to dirt roads and bare areas of ground.
4. To apply the first of the ground cover vegetation, dilute PVA or scenery glue should be brushed onto the painted terrain.
5. A scattering of fine ground foam turf is an option for creating the first vegetation layer

and it is scattered on immediately after the glue has been applied to the painted terrain. Spray with diluted scenery glue or matte medium to secure it and leave to dry completely.

6. The first layer can be sprayed with the appropriate scenic adhesive prior to a first application of static grass. It can be followed up with a second application once the first had dried using different coloured fibres. Make the second application less uniform for a random appearance.



↑ Low-cost grass tufts can be made using a static grass applicator and a metal cooking sheet. Glue is first applied to the sheet in blobs and ribbons. A lot of grass tufts of different colours and lengths can be made this way.



↑ The finished tufts are left to dry after the grass has been applied using a static applicator. They will be easily peeled off the metal sheet.



↑ Scale Link produces a range of etched brass foliage which can be used to add accents to ground cover such as bracken and ferns which thrive in wooded areas and on railway embankments in the north of England and Scotland.

7. The grasses can be enhanced by sprinkling fine turf material to create the impression of weeds and other broad leaf plants. A light colour of fine ground foam can be used to lift the scene as if seen on a bright sunny day too.
8. The uniform colour of static grass can be further broken up with careful paint application. Tamiya acrylic paint from the 'XF' range is particularly suitable for this process and useful colours include XF4 Yellow Green, XF58 Dark Green and XF60 Dark Yellow. It should be diluted to a ratio of at least 10:1 and applied in thin sprayed washes to enhance colour rather than cover the grass.
9. Accents can be added to the layout using dyed plumber's hemp, static grass tufts and even etched plants such as bracken and fern fronds by Scale Link. Noch and other companies offer laser cut models for specific plants in a variety of scales which include reeds, ferns (bracken), nettles and garden plants.

10. Bare ground, roads and tracks are enhanced with spots of static grass, usually around 2mm to 4mm in length depending on the scale. Grass tufts can be planted in such areas to break it up and create texture.

TWELVE TIPS FOR SUCCESSFUL GROUND COVER MODELLING

1. Choose scenery adhesives carefully – they must dry clear and matt. They can include PVA glue, matte medium and artists' matt varnish.
2. Materials used for ground cover should be colour-fast to avoid fading.
3. Use photographs as reference for seasonal colour and size of plants.
4. Always look for good colour and texture. Avoid uniformity in ground cover and use accents to bring it to life.
5. Always paint plaster hard-shell or foam terrain with a good coat of matt brown or green paint before applying ground cover. Thinned paint will soak into plaster hard-shell.
6. Ground cover includes the modelling of dirt roads, bare earth and tracks which should be completed before adding 'green' scenery.
7. Apply static grass to a thin layer of fine ground foam cover for vegetated areas and use more than one size and colour of fibre for variety.
8. Natural materials can be used to good effect but must be clean and free of insects and bugs!
9. Look for alternative materials which will add texture and interest to the landscape including plumber's hemp (which has to be dyed) and hanging basket liner (if it is the right colour).
10. Apply the same materials consistently over the layout for a neat finish and keep notes of successful techniques and the materials used.
11. Ground cover materials can be used to 'blend in' specific features to make them look part of the landscape.
12. Simple accents can add valuable colour and texture to your layout scenes but avoid overdoing it! Less is often more.



↑ Each frond of bracken being used to detail a grassy embankment is painted and then cut from the etch. Once bent to shape, it can be planted in clumps or as individual plants. Scenic glue has to be thoroughly thinned so it dries clear and matt without leaving dried blobs in the vegetation.



↑ Ground cover modelling in this siding scene consists of the vegetation layers described in the article. The static grass areas were enhanced with bracken fronds, small shrubs, weeds added with ground foam and selective painting. Weedy tufts in the ballast are applied directly to it using short static grass fibres.



↑ Weedy track enhanced with grass tufts applied using the cut and plant method. A spot of glue is applied to the desired location and the grass fibres 'stabbed' into it.



↑ Grass, weeds and old barrels abandoned in the undergrowth. A trick used by experienced modellers is to hide gaps between structures and landscaping with scenery such as shrubs and bushes to make the scene appear more cohesive



How to fit locomotive nameplates

Etched metal nameplates are routinely supplied with new models and are available for repainting and renumbering projects. How are they fitted with the minimum risk of a mistake?



↑ Since the first days of the railways, locomotives have been honoured with names and the tradition continues to this day. It has been expanded to include multiple units as well. No. 73201 was renamed *Broadlands* at the Eastleigh 100 event in May 2009. The proceedings were carefully watched by the then editor of *The Railway Magazine*, Nick Pigott.

ONE OF THE first improvements or detailing tasks that modellers attempt on locomotives is to replace printed nameplates with etched metal ones. Nameplates, be they etched brass for steam locomotives, etched nickel silver or stainless steel

for diesel and electric locomotives, or even 3D printed transfers look considerably better because they usually have the relief which is lacking with factory printed detail.

The fascination with naming railway locomotives goes back to the infancy of the railways. Pioneering

locomotives were all named. In fact, names were more common than running numbers until fleets become larger in size. That has not stopped railway men showing pride in their 'nags' and names were applied in various forms throughout railway history including present day.

Such locomotives become celebrities and the model manufacturers capitalise on this fact by producing popular named locomotives on a regular basis.

Manufacturers have realised that modellers want more than printed nameplates applied to models at the factory when

they are being decorated. Metal nameplates are usually included in the box along with an accessory pack of small details, couplings and brake pipes to meet this expectation. The printed nameplate is a guide to positioning the metal ones and it is up to the modellers whether they are used at all. New modellers may be concerned about fitting them without making a mess of the model. Advice provided in the manuals accompanying locomotive models is usually unhelpful. Blu Tack is the usual recommendation and this is as unsuitable as it comes. The plates will not sit flat

on the side of the model and it is not a permanent solution because Blu Tack is designed to be a temporary adhesive which will not hold plates in place for very long.

Another solution offered in instructions, which is a little more helpful, is to use PVA adhesive. It will allow nameplates to sit hard on the side of a model, but PVA glue is quite thick and heavy. Its use can be along the lines of cracking a walnut with a sledgehammer.

Suitable adhesives

More subtlety is needed to attach metal nameplates (scale notwithstanding)



↑ It is quite common for metal nameplates to be supplied with most locomotive models today, including the entry-level Hornby 'Railroad' range.

and the choice of adhesive is more important than many modellers realise. PVA glue and matte medium can be used if it is thinned sufficiently. Choosing a brand of PVA that dries to a clear, matt finish is the best, although any PVA glue squeezed out from around the nameplate as it is pressed into place will have to be cleaned away carefully or it will create a halo around the nameplate as it dries.

Perhaps the best adhesive is enamel matt or satin varnish as used in the repainting of models or its acrylic equivalent. It will dry clear and likely to match the finish on the model. It is easily brushed on to the rear of nameplates and thin enough to allow nameplates to sit flat on the side of the model. It needs time to dry and that means one nameplate or set of plates should be applied to one side of the model at a time. If time is a consideration, acrylic varnishes will dry much quicker than enamel varnishes.

Whatever adhesive you choose to use, be sure it will allow you to adjust the position of the plates before it grabs them. Further, the advantage of water-

based adhesives such as PVA, matte medium and modellers' acrylic varnish is being able to clean up accidents with water which is unlikely to leave annoying marks on the side of your models.

Metal nameplate preparation

Etched metal nameplates are usually supplied on a small fret and held in place with half-etched tabs.

They are removed from the fret with sharp scissors. If there is insufficient room to insert scissors between the fret and nameplate, place the fret on a firm cutting mat or similar surface and cut through the tabs with a sharp modelling knife. This is easy to do with brass nameplates for steam locomotives and a little harder with stainless steel nameplates that are fitted to diesel and electric locomotives.

There will be a trace of the etched tab on the edge of the plates after removal. Gently, but firmly hold the plates with fine pliers to support them and file off the tabs with a fine needle file.

Sometimes, the etching process causes a curve in the nameplates which



↑ Freightliner Class 57 No. 57 005 shows off its *Freightliner Excellence* nameplate when photographed at Eastleigh on November 7, 2003.



↑ Class 59s show off their nameplates which were attached to the cab sides. Class 59s also carried GWR style cast number plates too and the methods for fitting those to a model are the same as nameplates.



↑ Knowing how to prepare and fit nameplates is also a part of renaming and renumbering models to give them a different identity. GWR locomotives also carried cast number plates which were fitted to the cab side of most tender locomotives and smoke box number plates too.



↑ Nameplates and depot plaques for modern traction are readily available to fit to most models as part of a detailing project. They are ideal for repainting projects too.



↑ When etched nameplates are supplied with a model, they are sized to cover the printed plates.

is removed by gently manipulating them with fingers until they are flat. Next, roughen the rear face of the nameplates to remove any paint and to create a key for the adhesive to bond to. This can be done

with a modelling knife blade, fine needle file or abrasive paper. Once cleaned, the nameplates (and any associated plaques) are ready to fit.

It is not unusual for locomotives to carry



↑ Cavalex Models does not print nameplates on its models such as the Class 60 but provides a useful etched template to ensure the etched nameplates supplied with the model are located correctly.

plaques with emblems in addition to the names themselves. Good examples include Southern Railway Bulleid Merchant Navy class or Battle of Britain class 4-6-2 locomotives which have complex artwork in addition to the nameplates. The same applies to modern traction where a nameplate can be accompanied with a plaque or two! It is usual for the artwork to be supplied as a transfer which has to be applied to the etched plaque before that goes on the model as seen in the picture of the model of No. 34112 609 Squadron.

Repainting nameplates

An interesting point about nameplates, particularly modern traction nameplates, is that they did not always stay the same colour throughout the life of a locomotive. Renaming, rededications and de-naming are also common, so it is worth checking if a name is appropriate to your modelling era and if the plates you have bought for a project have the correct background colour. It is fair to say that names applied to steam locomotives usually remained in place for the

duration and rarely changed colour whereas modern traction names can be and are often fleeting.

Should you need to repaint a nameplate, it is simple enough. The nameplates should be given a gentle rub down with a fibre scratch pencil to take the shine off the original paint. This provides a key for the new paint which is applied over the entirety of the nameplates including letters and the rim. The paint is left to completely dry for a couple of days. Be absolutely sure the paint is hard before using very fine abrasive paper to polish paint off the raised lettering and rim. Avoid scratching the paint that has settled between the letters. Once cleaned off, the plate can be sealed with varnish.

Applying metal nameplates

The actual task of applying nameplates is quite simple. The hard bit is dropping them precisely in place (using reference photos or the printed plates as a guide to positioning). Apply a very sparing amount of your chosen adhesive to the

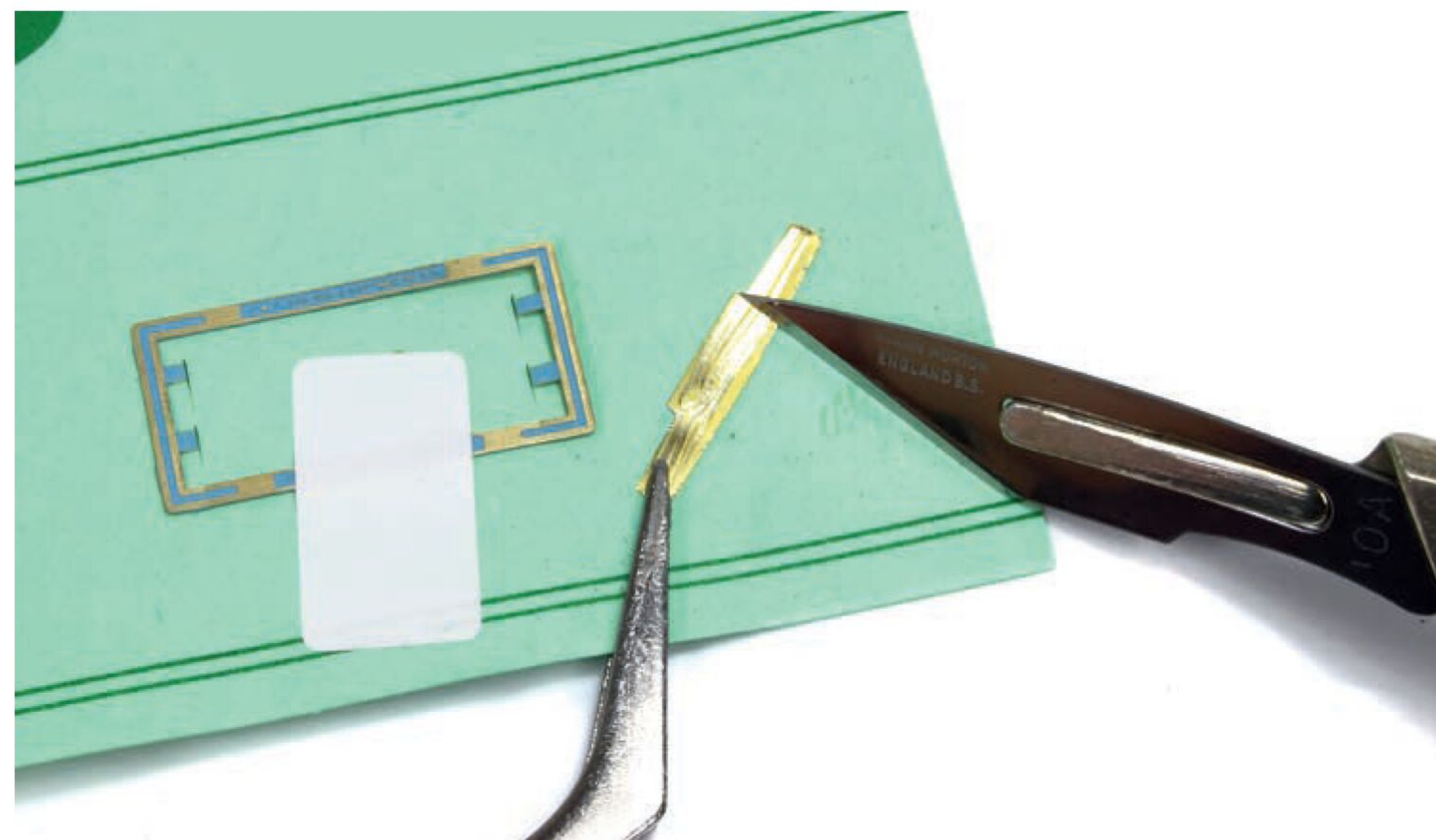
rear of the plate and spread it out evenly over the entire surface.

The plates are dropped in place as precisely as possible using fine tweezers. Hopefully, they will need only the slightest adjustment to level them before gently being pressed down. Excess adhesive is soaked up with the ragged edge of a piece of kitchen paper towel. Double check positioning before leaving to dry.

If you get it wrong, simply remove the plates and wipe away the varnish or glue and try again – a task made easier with water-based glue or varnish.

Using transfers

Nameplates are also produced as transfers, primarily for modellers wanting to refinish their locomotives with a different number and name. They are



↑ All metal nameplates should be roughened on the rear surface before fitting. This provides a texture for the adhesive to bond to. A shiny metal surface will result in a weaker bond.

easier to use than metal nameplates, but have lacked the relief of etched metal ones. To alleviate this, backing pieces are cut from 10-thou styrene to the dimensions and shape of the transfers and the

transfer plates applied to them. This technique partly achieves the raised appearance of cast metal nameplates.

In recent years, printed nameplates with raised lettering, also known as

3D-printed nameplates have become available and they are applied in the same manner as waterslide transfers. They are easy to use and effective too. One valid point is not to soak them in water too long

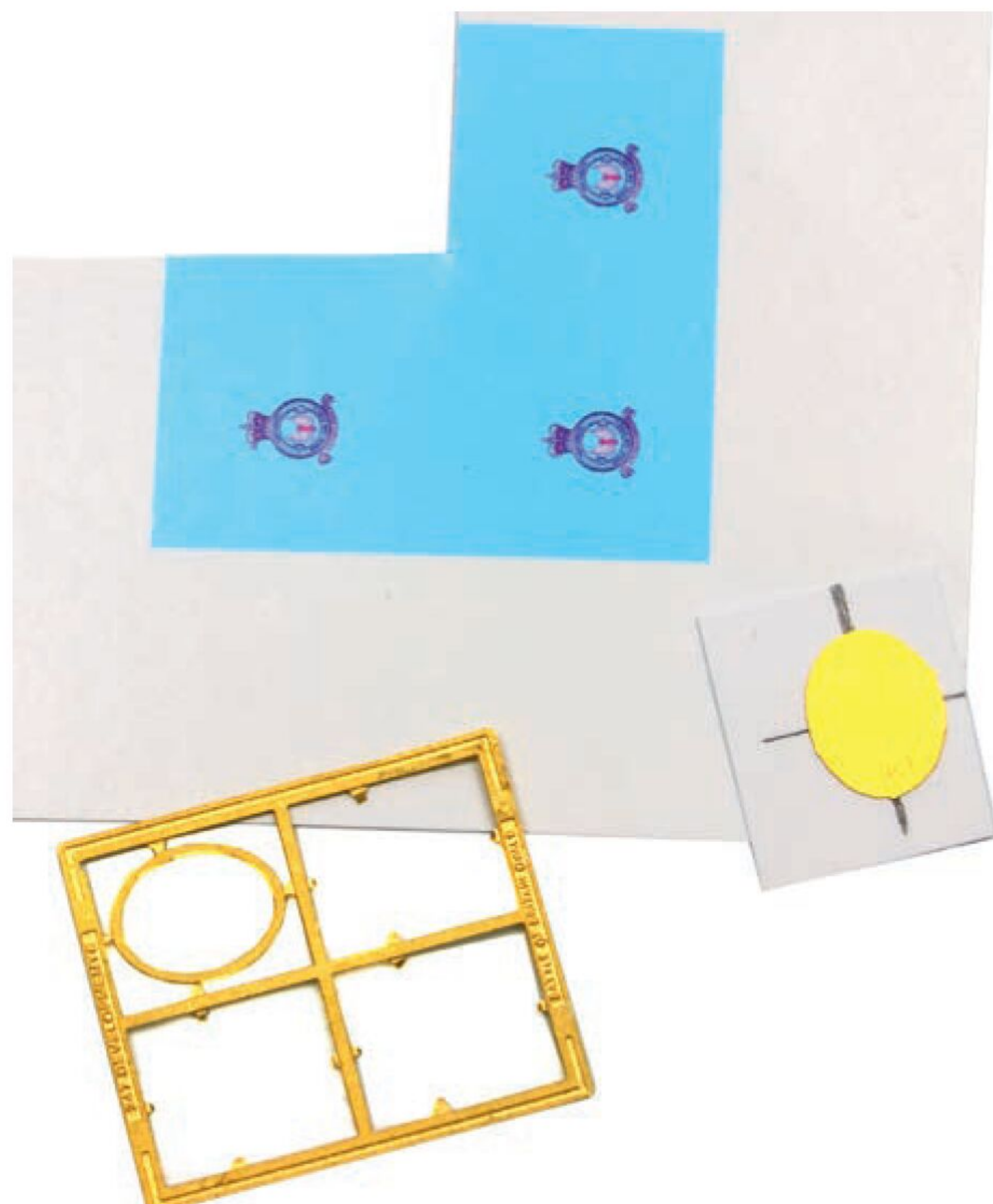


↑ Nameplates and plaques designed to fit a Hornby West Country class locomotive. Each crest is made up of three pieces: the backing piece, the printed herald and frame. The model was being renumbered and the old crest as fitted by Hornby is shown in the foreground after removal.

before use because the adhesive can be dissolved away making them less likely to bond to the model. A touch of varnish will help to fix printed nameplates in place.

Can you use superglue to fit nameplates?

Why not use CA glue or superglue to fit metal nameplates? After all, it is a fast-setting solution which would save a lot of



↑ A closer view of the separate parts designed to build up a plaque for a Southern Railway/BR locomotive.

USING NAMEPLATES IN A NUTSHELL

1. Place the model on its side on a soft surface. Fit nameplates to one side at a time. Leave sufficient time for the adhesive to dry before turning the model over to complete the opposite side.
2. Whatever you use, avoid superglue, epoxy glue, impact adhesive or solvent cement to apply nameplates. Enamel or acrylic varnishes are the perfect adhesives for fitting nameplates.
3. Cut the nameplates from the fret and gently file away traces of the etched tabs until the edges of the plate are smooth.
4. Turn the plate over so it is face down and gently roughen the rear surface to provide a key for the chosen varnish to form a strong bond to the metal.
5. Holding the nameplate in a pair of tweezers, apply a thin coat of varnish to the rear surface with a paint brush. Do not flood it.
6. Transfer the nameplate to the model and drop it precisely in place. If you miss and make a mess, quickly remove the plate, clean off the varnish and try again.
7. When you are happy with the position of the nameplate, gently remove any excess varnish from around the edges with kitchen paper towel dampened with thinners or a paint brush similarly loaded with a small amount of thinners. Capillary action will draw the excess varnish away. The same works with water-based varnishes too.
8. That is all there is to it. Leave the varnish to dry for a couple of hours before moving the model.



↑ Etched nameplates and plaque applied to a renumbered Hornby rebuilt West Country class locomotive. The name is fictitious! One can have bespoke nameplates made with fictitious names including narrow gauge and industrial locomotives. Several suppliers offer such services.



↑ Both enamel and acrylic varnish makes the best adhesive for applying nameplates, number plates and plaques.

time and would provide a very strong bond. As you can gather from the techniques described above, one false move and glue will land on parts of the model where it can cause unsightly and irreparable damage, at least to paint finishes. Place a nameplate incorrectly and the glue could bond it to the model before adjustments can be made. Further a clean-up is nearly impossible to achieve without leaving a trace on the surface of the model.

Another factor is the possible need to remove nameplates in the future

TOOLS AND MATERIALS NEEDED FOR NAMEPLATE FITTING

- Sharp scalpel.
- Sharp scissors (small ones).
- Fibre scratch pencil.
- Firm self-healing cutting mat.
- Fine abrasive paper.
- Fine nose piers.
- Fine-cut needle file.
- Size 1 paint brush.
- Suitable adhesive such as matt or satin varnish.
- Torn corner of kitchen towel.
- Matt or satin acrylic or enamel-based varnish.



↑ Nameplates really make the locomotive as seen on Merchant Navy class No. 35005 *Canadian Pacific*.



↑ A close-up of the *Canadian Pacific* nameplate and herald applied to BR No. 35005.



↑ The large brass plate fitted to preserved A4 Pacific No. 60009 *Union of South Africa*.



↑ Not all steam locomotive names date back to BR service days of steam locomotives. 8F No. 48151 carries the name *Gauge O' Guild* which is a recent addition. Note the blue-backed herald above the nameplate.



↑ Freightliner No. 66503 carries the name *The Railway Magazine* as seen on September 6, 2020, which it has carried for over twenty years. The locomotive has since received additional plates with the legend *Celebrating 125 years, 1897-2022* which were fitted in August 2022.



↑ Not all modern traction nameplates have black backgrounds as seen with GB Railfreight No. 66707 on April 1, 2008.



↑ The black backed nameplates fitted to EWS No. 90040 *The Railway Mission*. Note the small plaque below the nameplate. The Railway Mission provides mental health and chaplaincy support for railway industry staff in the UK.



↑ Not all modern traction nameplates are of cast metal. You will find names applied as vinyls and the InterCity version was a slim design made from polished metal. They survived on HST power cars and electric locomotives long after privatisation. This is the nameplate applied to Great Western Class 43 HST power car No. 43191.



↑ Nameplates are applied to multiple units too and 4-VEP No. 3417 received the name *Gordon Pettitt* when painted in heritage BR blue livery for the last couple of years of slam-door EMU operation by South West Trains. The unit has been preserved and is owned by the Bluebell Railway. The small plaque positioned under the nameplates reads: "In 1967, this train was one of the first VEPs to arrive on the Southern Region and it will be one of the last to be withdrawn by South West Trains. To commemorate this, it has been named Gordon Pettitt in honour of one of the most respected general managers of the former BR Southern Region."



↑ Nameplates can be quite large as seen on EWS No. 37411.



↑ All of Freightliner's small fleet of Class 57s were named with traditional cast metal plates, including No. 57005. Class 57s are no longer used by the Freightliner business which has undergone considerable change in 2025 and 2026.



↑ Direct Rail Services once had a number of operational Class 20s which were rebuilt with modern running lights and other features. No. 20301 (photographed on May 23, 2009) shows that a nameplate does not have to be fitted to the side of the locomotive!

if you decide to change the identity of the model. Superglue will do its job very efficiently and removal could prove difficult without

damage. It is not worth the risk when the price of new models starts at around £100 for entry level locomotives and £170 and

more for super-detailed models.

Nameplate fitting is one of those deceptively simple jobs that is easy to get wrong

and mistakes are potentially costly. Following the simple guide on page 80 should ensure successful naming of all your locomotives!

Top rollingstock picks of 2025

2025 was certainly a significant year for new models and from manufacturers both large and small. We conclude our Top Picks guide for the year with multiple units, coaching stock and wagons.



↑ One of the notable releases in 2025 was the eye-catching TransPennine Express livery that was applied to the advanced Hornby 'OO' gauge Class 802 five-car EMU or TPE 'NOVA1' model.

A WIDE VARIETY of rollingstock in all of the popular scales entered the market during 2025 and that trend continues into 2026 with some notable new models announced in 2025 now making an appearance in the shops. There are some very unusual items of stock being produced in 'OO' gauge that at one time were avoided by manufacturers. Also emerging are models of common vehicles that were built in their thousands also not covered in the past by established manufacturers (for reasons known only to them) which have emerged as mainstream models. Some of them are important releases such as 'OO' gauge

models of the BR standard 21t hopper wagon (HOP21) in original and rebuilt form.

A relatively new manufacturer to the 'OO' gauge market is Clark Railworks and it has released some fascinating rollingstock in 2025 along with revealing new models of the L&Y Class 21 'Pug' 0-4-0ST steam locomotive in both 'O' and 'OO' gauge.

Cavalex Models issued its long-awaited Bardon Hill Quarries bogie aggregate hopper wagons in 'OO' together with a lovely Foster Yeoman O&K PHA bogie box wagon. The new PXA/JXA scrap and steel carrying wagons did not quite make it in 2025 however, arriving in early 2026!

Accurascale produced models that spanned several eras. NER 20t coal hopper wagons rubbed shoulders with china clay hoods, HOP21 HTO/HTV coal hoppers, BR 16t mineral wagons and re-runs of Hatton's Originals models. The latter included a batch of the popular ICI hopper wagons and BR Beilhack snow ploughs.

Coaching stock was not missed by Accurascale, with BR crimson and BR maroon suburban stock arriving in 2025 along with new models for BR Mk.2c stock in liveries ranging from early BR blue and grey through to the livery of current operator West Coast Railways.

Bachmann decided that a high quality 'OO' gauge 20t LMS brake van would be just the thing and it also released an 'N' gauge Royal Mail travelling post office stowage van for its Graham Farish range.

Irish Railway Models (IRM) recognised the potential of the Bulleid triangulated chassis wagon adopted and constructed by Córas Iompair Éireann (CIÉ) in the 1950s. This is an important range of 4mm scale models for Irish railway modellers and covers a vast number of vehicles including opens, vans, grain hoppers, flat wagons and tanks wagons which were built on the same basic chassis design.



↑ Bachmann worked on new Mk.1 coaches releasing several vehicles which have not been part of its 'OO' gauge 'Branchlines' range in the past. One coach was a catering vehicle, the BR Diagram 24 Mk.1 Restaurant Buffet car (RB) which saw a change in construction method compared to earlier Mk.1 coach models from Bachmann.



↑ Neat looking BR Diagram 1/801 fish vans were released by Rapido Trains in various liveries, from revenue wagon liveries through to BR parcels and departmental colours. It is the first time that this type of van has been produced in 'OO' gauge.



↑ Bachmann released a highly detailed model of the LMS Stanier brake van with numerous detail variations in five liveries. The new tooled model included a BR departmental vehicle No. DM731790 decorated in engineers' yellow and grey livery. It is a model of a Diagram D2068 vehicle with wide duckets and deep underframe ballast boxes



↑ Accurascale has tackled the huge subject of BR 16t mineral wagons, starting with the unfitted Morton-braked versions which were released in several different liveries in boxes of three individually numbered wagons. There is a long way yet to go with this story.



↑ A delightfully delicate 'OO' gauge model of BR demountable tank wagons was released by Clark Railworks featuring differences in brake and underframe details. As expected from a Clark Railworks product, exquisitely fine detail comes as standard and this applies to the wagon loads as well as the underframes.



↑ A neatly detailed addition to the Graham Farish 'N' gauge range was a Travelling Post Office (TPO) Diagram 732 stowage van which will go with its BR Diagram 720 sorting van model which has been available for some time. Diagram 732 stowage vans were constructed in 1968, numbered as 80415-24 and they lasted until TPO operations ceased in 2004. The featured model is numbered as No. 80422 and coded as an NTX; a dual braked vehicle finished Royal Mail livery.



↑ Irish railway modelling has seen a huge boost in trade support with numerous new models being produced to 4mm scale by Irish Railway Models (IRM). CIÉ unfitted H Vans are part of a range of models which charts the Bulleid triangulated underframe design which includes opens and vans. The H Van and the grain carrying version were released during 2025. The level of detail in these simple wagon designs is exquisite.



↑ Foster Yeoman's O&K PHA/JHA wagons modelled in 'OO' gauge by Cavalex Models are a welcome addition to the growing range of aggregate wagons available to model the traffic in the south east of England. It has taken some years for the important fleets of wagons used on the intense modern flows of stone, sand and gravel to be modelled to such a high standard, but that is a fast-changing situation.



↑ Hornby's new 'OO' gauge YMO and YMA 'Salmon' bogie bolster models include BR types with both 5ft 6ins (short plate bogie) and 8ft plate bogies. The useful LMS design was included in the range which covers the life of the wagons from LMS to BR ownership and early privatisation. The modernised air braked version is shown in this picture.

Mention should also be made of Dapol's complex 'OO' gauge Powell Duffryn low track force aggregate hopper wagons, Hornby's 'OO' gauge 'Salmon' track

carrier and the Revolution Trains IHA steel carrying wagon which has been produced both in 'OO' and 'N' gauge. The company does not shy away from

complex prototypes and also released the complex 'Cartic4' wagon in 'N' gauge.

Hornby has been developing new models for its 'TT:120' range, releasing

both 21t mineral wagons and the modern KFA single bogie container flat wagon with containers.

Multiple units

Hornby Class 755 'Flirt'

Hornby's most ambitious project in recent years was to model the Stadler Class 755 bi-mode 'Flirt' unit with its unique power pod vehicle and articulated bogies, a job which it did exceedingly well.

Class 755 'Flirt' units are very modern, being introduced in 2018 and are now well established on the railway of East Anglia where diesel engines provide power away from the 25Kv electrified Anglia mainline. The model is offered as three- and four-car sets with the power module vehicle detailed with the correct number of exhausts and cooling fan groups to match.

An underfloor drive has cleared the interiors for some excellent seating and partition detail. Close coupling cams, comprehensive running lights and interior



↑ The superb new and eye-catching Class 755 bi-mode 'Flirt' model produced by Hornby, first released as two three-car and two four-car sets. They are both intensely detailed and loaded with technical features. The four-car Class 755/4 is shown in this view of the model.



↑ One of the driving cabs of Class 755/4 unit No. 755422 showing its working front coupling and large curved windscreen.



↑ A second four-car Class 755/4 was released during 2025 as No. 755421 with 'Pride' markings.



↑ The roof of 'Flirt' vehicles is flat with side panels to protect the array of equipment modules for the electrical systems and air conditioning. On the model, cabling is a mix of moulded conduit and separate details. All of the larger items of roof equipment is applied as separate modules and fittings.

illumination are just part of this model's impressive specification.

Since the first four models were released, No. 755421 in

'Pride' livery has been added to the catalogue, produced as a four-car set.

- 4mm scale, 'OO' gauge.

- Flush glazed with interior fittings visible.
- Flicker-free interior lighting.
- Illuminated destination screens.
- Illuminated cab door foot wells.
- Through wiring of passenger cars.
- Length: two-car: 860mm, three-car 1070mm.

Heljan 'OO' gauge Class 104

It was an immense project taken on by Heljan when it announced a Class 104 DMU for 'OO' gauge, a model or rather a range of models which were delivered in 2025 to much acclaim. The size of the project and the innovative features of the model set it on our list of outstanding models from 2025.

Heljan produced models to meet the needs of 1960s and 1970s modellers with three green sets in the first run, one of which is a two-car Eastern Region set along with three BR blue units and one finished in 1980s blue and grey livery. More up-to-date models include a Network SouthEast power twin set and the famous ScotRail 'Mexican Bean'.

- 2018-present.
- Highly detailed coach bodies including roof modules.
- Extensive use of etched metal grilles in the power pack vehicle.
- Correct format of exhausts and cooling grilles on the power pack vehicle.
- Illuminated door lock lights.
- Illuminated interiors.
- Sprung pantographs on the intermediate cars.
- Power bogie located in each driving car.
- Two five-pole motors power the train.
- Two decoders required per set for basic DCC operation.
- DCC bays located in roof modules.
- Factory-fitted digital sound speakers.
- 4mm scale, 'OO' gauge.
- 1957 to 1995.
- Underfloor motor and drive shaft assembly.
- All-wheel drive in powered vehicles.
- Current collection from all wheels.
- 21-pin DCC interface in powered DMBS cars.
- Sprung metal buffers with correctly modelled shanks.
- Frame-mounted NEM coupling pockets.
- Inner gangway electrical connectors.
- Fully detailed



↑ Class 104 character has been captured well in the models, from the cab fronts and windows to the shape of the roof and inner ends. A lot of thought went into the design to make the large, flush-glazed windows look authentic and to conceal the drive mechanism to allow the interior to be fully modelled.



↑ Another area of careful design are the thin-sided body shells which helps to make the comprehensively equipped interiors all the more effective. They are secured with magnets rather than body clips.



- Numerous lighting functions including cab and passenger saloon lights.
- Fully detailed interiors.
- Length: 488mm.

↑ for BR-era modellers, the Class 104 is an important feature of suburban and rural services in the Manchester area together with the north and east of England. The model could form the backbone of a passenger service to a remote rural station or be used in a small urban station layout theme.

Model Review

Hornby Avanti West Coast Class 390

Hornby has produced a good model of the Class 390 since 2007, although it is becoming a little long in the tooth compared to the brand new Stadler 'Flirt' bi-mode unit model. It has the typical features of Hornby's multiple unit models of the time when the company utilised self-contained motor bogies in its EMU and DMU models. The motor bogies are well hidden in the driving vehicles and allow

much of the interior to be modelled.

Many of the model's features stand up fairly well in 2026 including posable pantographs which are fine in appearance. Passenger saloon glazing is flush fitting and a small number of roof details are modelled with separate mouldings.

What makes this train pack featuring No. 390121 and coach extension packs of interest is the complex COP26 livery featuring environmental themed

graphics along with legends including 'Ride Against Climate Change' and 'Our Planet Means The World To Us'. Hornby is certainly unafraid of tackling complex contemporary liveries and it does the job reasonably well.

- 4mm scale, 'OO' gauge.
- 2021 to present.
- Four-car starter pack with powered cars.
- Extension coach packs were produced allowing the full eleven-car train to be run.

- Base train pack fitted with two motor bogies.
- Three pole motors.
- All wheel current collection in the powered models.
- Working running lights in the driving cars.
- 21-pin DCC interface.
- Two decoders are needed to power the train fully with all lighting functional.
- Working tilt mechanism.
- Posable cosmetic pantographs.
- An eleven-car train is over 353cm long.



↑ The Hornby Class 390 was re-issued in 2025 as No. 390121 in the special COP26 *Ride Against Climate Change* livery.



↑ Various lengths of train could be made up to suit the layout size using the coach extension packs.



↑ Printing of the livery graphics is generally sharp with even legends and numbering. The colours are close to those seen on the full-size No. 390121 and are properly positioned relative to the windows and other physical features.



↑ Assembly of Hornby's five-car TPE Class 802 on a layout shows it off to advantage. The model has specific details for TPE Class 802 units which is composed of three intermediate MS vehicles, a DPTS and DPTF.



↑ The bright TPE livery colours are neatly applied to all five vehicles.

Hornby TransPennine Express 'Nova 1'

Nineteen five-car units classified as Class 802/2 (802201-219) were introduced by TransPennine in 2019 for long distance services. The first revenue service ran on September 28, 2019 and the trains are in full service today. The units were constructed as bi-mode trains due to the mix of electrified and non-electrified lines on its core Newcastle – Liverpool Lime Street route.

Hornby chose to model No. 802203 which consists



↑ The DPTS vehicle or Coach A. Note the tinted flush glazing, pantographs and neatly printed passenger information screens which display details of a Newcastle-Edinburgh Waverley service.

of DPTS No. 831203, MS No. 832203, MS No. 833203, MS No. 834203 and DPTF No. 835203. It makes the

top picks for 2025 due to the well-executed livery which is quite complex and detailing specific to the

type. The model has proven to be very popular, with stocks selling out in a short period of time.

Model Review

- 4mm scale, 'OO' gauge.
- 2019 to present.
- Posable pantographs on both driving cars.
- All-wheel drive in a single powered car.
- Working directional lights illuminated by LEDs.
- Flush glazed with interior fittings visible.
- Flicker-free interior lighting.
- Detachable nose cones.
- Close coupling cams within the five-car set.
- Two decoders are needed because there are no inter-vehicle electrical connectors.
- Decoder bays located in the underside of the driving vehicles.

Rollingstock

Heljan 'O' gauge PMV/CCT

Heljan released a highly detailed model of the Southern Railway PMV (Parcels Miscellaneous Van) and the similar CCT (Covered Carriage Truck) in 2025. PMVs were also known as Passenger Luggage Vans, although their primary role was to transport almost anything from parcels, mail, luggage and even livestock from time to time. CCTs carried road vehicles and general goods too.

Their general-purpose role ensured a long operational history well into the BR diesel era where they operated as revenue vans coded PMV and NQV. Many passed into departmental service ensuring their survival beyond their last revenue use in 1986.

The Heljan models represent Southern Railway Diagram 3101 and Diagram 3103 vehicles which have subtle differences including end doors for vehicles (Dia. 3101) and fixed ends (Dia. 3103).



↑ More than a dozen models of the Southern Railway PMV/CCT were released in 'O' gauge by Heljan. The range of models covers the careers of the type from 1925, through to Nationalisation and beyond. The illustrated model is finished as a BR departmental vehicle.



↑ Heljan tooled several versions of the PMV/CCT including the version with end doors and uneven body planking. Vans with fixed ends, even planking and plywood sides also make up part of the range.



↑ All of the distinctive features of Southern Railway general utility vans have been captured in the model, from the neat planking, which is not over-defined, to the shape of the roof. The model is square, solid and well assembled on a fine but robust underframe.

- 7mm scale, 'O' gauge.
- 1925 until the 1980s.
- Highly detailed one-piece plastic body shell.
- The range of models covered numerous variations in the fleet.
- Torpedo ventilators fitted as separate parts.
- Flush glazing and detailed interiors.
- Sprung axle boxes.
- Metal wheels with axles running in brass bearings.
- Working screw link couplings.
- Sprung buffers with metal heads.
- Numerous parts for hand rails, lamp brackets and suspension details.



↑ Seating in Mk.2c TSO coaches is faithfully modelled and with separate tables and 'winged' seats found in Standard Class saloons. Note the clarity of the flush glazing which is a close fit to the openings.

Accurascale BR Mk.2c coaches

Accurascale followed up on its successful Mk.2b coach models with the 1969-built Mk.2c type which was technically an evolution of the design as air conditioning became more of a consideration. The level of detail applied to the Mk.2c coaches makes it a top pick for 2025.

Tooling was completed for the five coach types constructed as Mk.2c stock along with parts for specific conversions such as the TSO(T) micro-buffet coach. Detailing includes specific interiors and colouring through to coach-specific features on the exterior, all fitted to single-piece bodysells.

Mk.2c stock has survived to see operation with smaller private operators today and this is reflected in the liveries which include original BR blue and grey, Regional Railways and private operator liveries.

The models have a good balance between a museum quality model and one robust enough to be run on the average model railway, not an easy thing to achieve in 4mm scale.



↑ One of the range of Mk.2c coaches released by Accurascale in 2025 is No. M19536, a declassified Corridor First used on inter-regional services following cascading from top-link duties.



↑ Network SouthEast TSO(T) micro-buffet No. 6500 is included in the range and will go well with previously released Mk.2b stock in the same livery. Note the quality of the flush glazing and livery application.

- 4mm scale, 'OO' gauge.
- 1969 to present day.
- Single piece body shells tooled for each vehicle type.
- Highly detailed B4 bogies.
- Close coupling cams with
- NEM pockets.
- Magnetically controlled interior lighting.
- Stay-alive power pack for flicker-free lighting.
- Interiors built up from multiple components.
- Stub axle current collection.
- Finely detailed underframes.
- Separate brake and electric train heating details.
- Wire handrails.

Cavalex Models JGA hopper wagons

The aggregate hopper wagons built by W H Davis for Bardon Hill Quarries in 1990 were both colourful and an interesting wagon design. They soon appeared on numerous aggregate flows making the new Cavalex Models 'OO' gauge wagon a desirable model for modellers of the Railfreight era and beyond. It is a complex model deserving a slot in our top picks list for its neat finish and near museum quality levels of detail.

The main hopper structure is constructed on a cast metal frame for weight. This has allowed the interiors, including discharge doors to be faithfully represented. Externally, brake fittings, door discharge equipment and pipe runs are applied as small separately made fittings. The model is as neat as one could wish, making it one of the best models of a wagon of its type currently available.

- 4mm scale, 'OO' gauge.
- 1990 to present.
- Neatly assembled hopper made up of several panels.
- Interior detail is modelled including hopper dividers and discharge doors.
- Accurate discharge chute detail modelled on the exterior.
- Cast metal underframe for weight.
- Bogie-mounted NEM coupling boxes.
- Sprung buffers with correctly shaped heads.
- Metal disc wheels.
- Brake hose and couplings supplied in the box.



↑ The hopper assembly is made up of several panels together with the hopper bay dividers, all fitted to a cast frame for weight. Detailing has been completed with numerous small fittings which are neatly assembled to the model.



↑ The sloping end panels are designed to protect the brake equipment mounted on the wagon ends and prevent build-up of spilled aggregate on the underframe. Most of the brake fittings are almost out of sight as a result, but are present on the model, nonetheless.



↑ The bright green and yellow livery first applied to this type of aggregate hopper wagon is perfectly authentic, right down to the yellow bogies.

‘O’ gauge giant: Eastfield TMD

As an antidote to the micro-layouts in this issue, we present Mick Worrall’s impressive ‘O’ gauge *Eastfield TMD* layout which is one of the largest portable model railways in the UK.



↑ Building a model of the large traction maintenance depot at Eastfield in Glasgow has been an ambition of its creator for many years. The result is an accurate portrayal of the sprawling complex as it existed in the 1980s along with Cowlaers and the main running lines which hosts passenger trains to and from nearby Queen Street station.

SCOTTISH DIESELS have been a love of Mick Worrall (of Durhan Trains of Stanley) for decades and so has the ambition to build a layout Eastfield depot based in the 1980s. The plan evolved over the years from

an ‘N’ gauge project (due to the size of the site) through to ‘OO’ gauge and finally the massive ‘O’ gauge layout that took seven years to build.

Heljan’s growing range of affordable ‘O’ gauge diesel locomotives decided

the scale whilst being unable to run his model railway business during Covid lockdowns saw Mick make a start on this hugely ambitious project.

The layout initially took shape in his garage. As the

size of the layout quickly outgrew this space, it was accommodated in club rooms situated up a flight of stairs above offices which adds to the complexity of moving the layout (and its *Queen*

1980s Glasgow character is present throughout the layout including tenement buildings. Structures are all scratch built from styrene card, foam board and laser-cut parts.



Street extension) around for exhibitions! Whilst it can be moved, a 45ft lorry trailer is needed to transport it. Each baseboard has a carry case which is loaded on to pallets for safe handling.

The layout evokes memories of ScotRail diesel days before Sprinterisation really took hold which eventually saw closure of the depot in 1993. Locomotive

classes include Class 37/0 and Class 37/4 along with Class 26s and Class 27s. The fleet includes the electric heat Class 47/4s used on long distance journeys in Scotland alongside the Edinburgh-Glasgow push-pull operations which had a dedicated fleet of Class 47/7 locomotives.

A parade of freight and passenger trains run across the main line at the

front of the layouts whilst movements take place in the depot area, all controlled by a Roco Z21 DCC system and tablets used as controllers which are linked to the system through Wi-Fi.

The locomotives are finished in authentic liveries which were carefully researched and typical of the location and the era. The result is an impressive layout with amazing visual

contrasts and operational interest. It adds up to quite a spectacle when exhibited at shows which due to the logistics and the need for a large enough show hall, is not very often, so catch it when you can!

Web: **www.durhamtrainsofstanley.co.uk**
Social Media: **www.facebook.com/mick.worrall**



↑ The depot building was constructed using a mixture of known dimensions and measurements worked out from photographs. It too is built from a mix of styrene and foam board. The interior is lit and detailed.



↑ The depot boards are 13ft wide which can present practical challenges if a locomotive has to be railed or removed from the layout if it develops a fault. The answer is for the lightest person in the operating crew to remove his footwear and climb over the layout!



↑ The 70ft by 40ft size of *Eastfield TMD* can be appreciated in this view. The choice of locomotives and trains is the result of careful research. Each locomotive is weathered, detailed and appropriate to the location. Thornaby's No. 47363 *Billingham Enterprise* is visiting after arriving in the area on a freight from Teesside.



↑ The main running lines past the depot host a variety of trains including freight such as this MGR working hauled by No. 37018, a typical BR blue locomotive of the era

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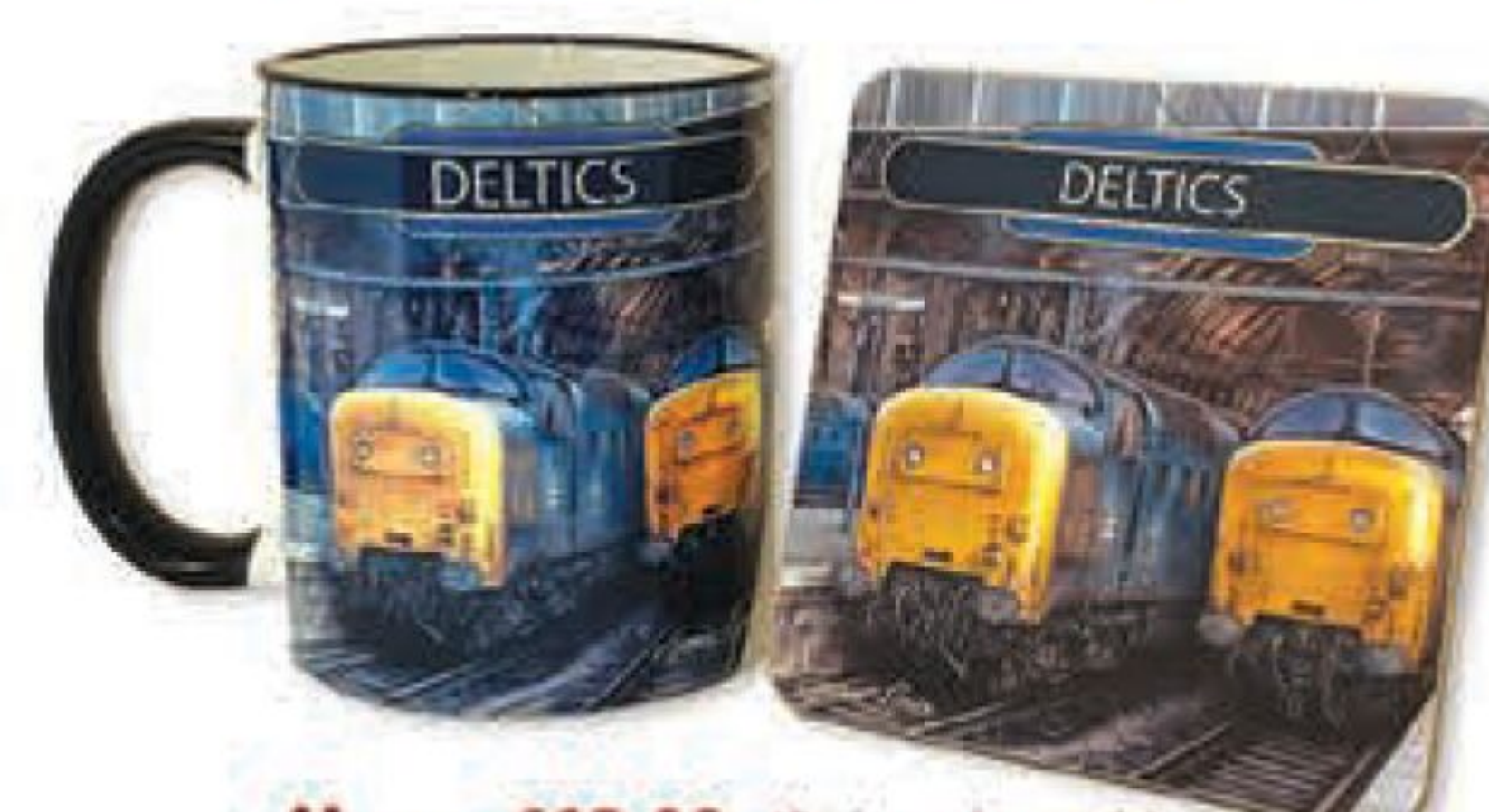
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