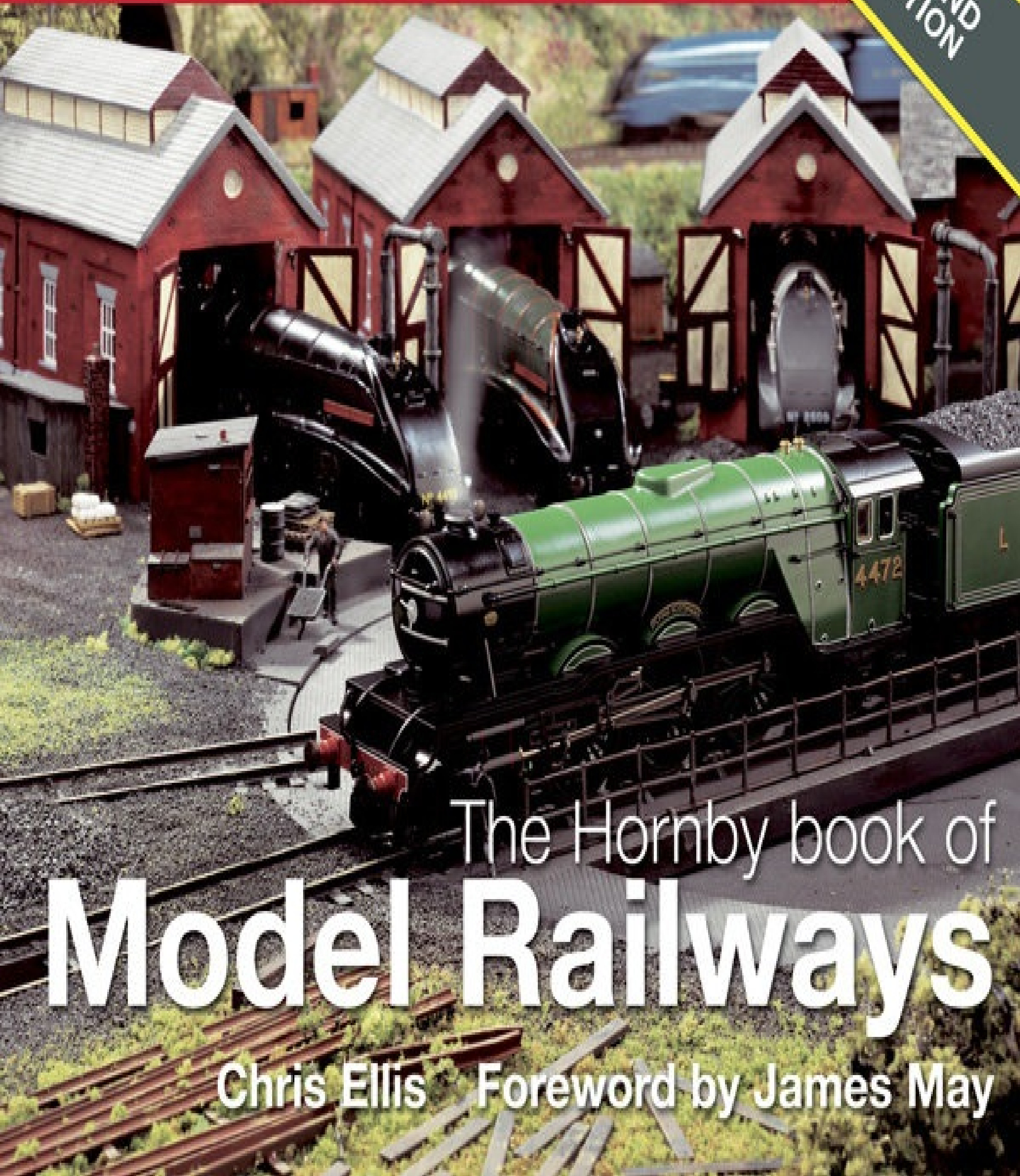
HORNBY®

SECOND EDITION



The Hornby book of Model Railways

Chris Ellis

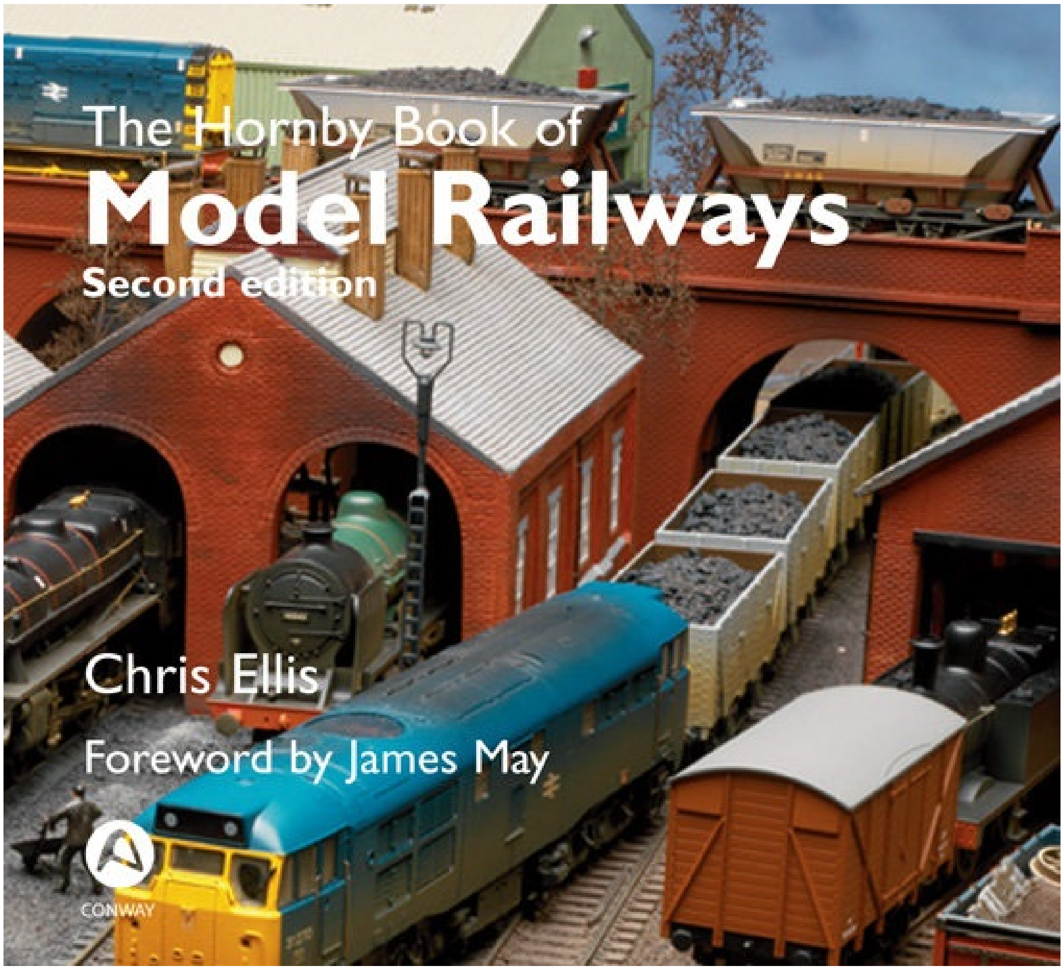
Foreword by James May

Compiled with the close co-operation of Hornby®, this book looks at the Hornby range in depth, and shows how Hornby models can be used to build a model railway layout to suit the space you have available and your own level of modelling skill. The book is packed with hints and tips for easy layout building, scenic and structure modelling, track laying and wiring, extra detailing, and all other aspects of the model railway hobby. Now updated and expanded, this second edition also examines new additions to the range of Skaledale accessories, Hornby locomotives and rolling stock (including 'Super Detail' models), as well as explaining digital command control systems in full.

Apart from its appeal to Hornby enthusiasts, this book will be of value to anyone beginning in the model railway hobby, including all young modellers (and their parents!) who start with a Hornby train set. It illustrates the fascinating and absorbing potential of the hobby and shows how recent technological advances have ensured that model railways continue to be interesting, realistic and fun.

Author Chris Ellis is editor of the magazine Model Trains International and he too started off as a child with a Hornby train set.


Websters (Engineering) Ltd
The Hornby Book of
Model Railways
Second edition


The Hornby Book of
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CONWAY

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Foreword

The model railway is, quite simply, the greatest indoor hobby ever invented, and Hornby is that hobby's most enduring name. No other hobby can satisfy such a broad range of interests and stimulate a mind in the way a model railway can. I love Hornby trains because they are masterpieces of engineering requiring skilful handling if they are to run properly. I enjoy the geometric challenge of building a layout, and the enduring puzzle of train operation.

But others build model railways to exercise their artistic skills in forming scenery, or to create an accurate historical record of a bygone age, or simply to rebuild the world the way they wished it had turned out.

But it can be a baffling business, which is why this book is so handy. Chris Ellis (who I've been reading since I was a lad) guides you gently through the magic of turning your simple oval starter set into a true miniature railway system as challenging to operate as the real thing.

And you will never tire of it, because a model railway is never really finished and a great train collection can be handed from generation to generation as an heirloom, growing as it goes. I still have my original train set. It was bought for me in 1967 and was second-hand even then.

It's a Hornby.

James May
March 2009


Nº4468

Introduction

This is a book to help and encourage anyone who likes model railways, a hobby and pastime that embrace any age group and, indeed, either sex. Whether you are a beginner with a train set, a more experienced modeller, or merely wondering what the hobby has to offer, this book will show that there is a lot more potential in them than just admiring the neatness of a new train set might lead you to believe.

There is an old saying in the hobby that a model railway layout is never finished. After fifty years of constant involvement I'm inclined to believe it! There is no end to what you can do with model railways. That, I think, is their great attraction. They offer massive variety and develop every talent, including some you may not have thought you possessed! In building a layout you get involved in simple carpentry, fairly simple electrics, and exercise as much artistry and imagination as you can muster, for the hobby is far more creative than most: the little trains run and operate much like the real thing, a key component of the fascination of model railways. The hobby is very accommodating, too. You can fill a loft or a basement with a maze of tracks or you can build a pleasing little layout no bigger than a bookshelf, as this book especially shows.

The biggest UK name in model railways is Hornby, a name known even to non-modellers. Hornby trains are widely available, and for over eighty years most newcomers to the hobby (including me in 1950) have started with a Hornby train set. So this book is a guide for those who want to venture further. Though it has been written and produced with the approval and co-operation of Hornby, I must stress that it is not an official Hornby publication and I have no commercial connection with the company other than as a long-time user of the models. My comments are my own and do not necessarily reflect the opinions, policies or intentions of the company.

Several friends and colleagues have helped with this book and I would

like to thank Brenda Sherwood for assistance with the manuscript, Jack Trollope for most of the diagrams, Arthur North for the dimensional diagrams, Simon Kohler of Hornby for help and permission to reproduce several Hornby diagrams and illustrations, and Graham Weller and T. B. Owen for useful layout and magnetic coupling ideas, respectively.

Thanks are also due to Sean Domeney for provision of a number of Hornby photographs and Nevile Reid who made some of the layout settings illustrated.

Since this book was first published in 2005, the Hornby range has been extended quite considerably with many notable additions. Hornby digital operating equipment and locomotives fitted for digital operation have proliferated as more and more enthusiasts move to DCC from the old DC method of operating, though the latter has certainly not been superseded. A steady stream of new ‘Super Detail’ models of locomotives and rolling stock has continued to be produced, and some of the earlier models they replaced have reappeared in the new Hornby Railroad range, well suited to younger modellers or beginners to the hobby. And even these older models have been much improved and updated. Add to this many new accessory ranges covering scenics, road vehicles, and even more structures, and there is much to record and consider. This new edition reflects all these recent developments and is considerably enlarged as a result.

Chris Ellis 2009

Chapter 1

Before you begin

Model railways have existed for as long as real railways, which, when they appeared early in the nineteenth century, started a transport revolution that is still with us. In fact it could be argued that model railways *preceded* the real thing—by some years, for the first recorded model appeared in 1784. William Murdoch, who worked for James Watt, made a vertical boiler model to show how the same sort of stationary steam engine they were building to drive pumps and machinery could be mounted on wheels to drive itself as a steam locomotive. The idea seems not to have interested Watt, but when Murdoch went to Cornwall to install pumps in tin mines he met the mining engineer Richard Trevithick. Trevithick saw how a steam engine would be more useful than horses to haul wagonloads of ore from the mine on the horse-drawn wagonways then in use. In 1797–98 he experimented with models, using a horizontal boiler (instead of the vertical boiler) to allow higher steam pressure. One of the models is in the Science Museum, London. The experiments led to Trevithick's first roadrunning steam carriage in 1801 and the first rail-running steam locomotive in 1804 (eighteen months before the battle of Trafalgar, to give an idea of the time scale). Slow but steady development over the next two decades, using locomotives mainly to haul coal from the pits to the ports, led to a famous month in railway history: September 1825, when George Stephenson's *Locomotion* for the Stockton & Darlington Railway introduced commercial freight haulage with more efficient locomotive designs.

The nineteenth-century developments were reflected (from 1826) by wood pullalong toy trains for children and more ambitious working steam brass models for the affluent (Fig. 1.1). Probably the first model railway layout was made for the Prince Imperial of France in 1860. The first clockwork locomotive appeared in 1867. The first toy train set in the modern sense, with tinplate clockwork locomotive, wagons and sectional track, was introduced in Germany in 1892. German firms made all the early running in the model railway field (and are still prominent today), but in 1920 Frank Hornby started making tinplate train sets in Great Britain and soon the Hornby name became the best known model railway name in the country, as it still is. A more detailed account of the Hornby story is given next in this chapter.

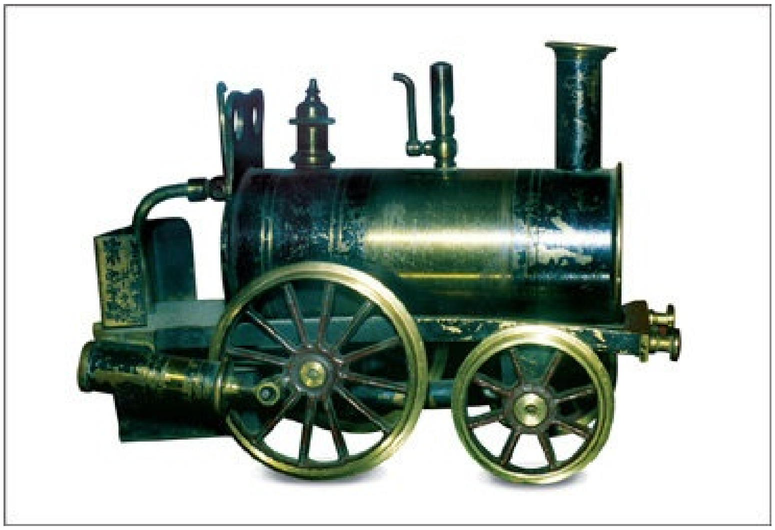


Figure 1.1. A brass model live-steam locomotive from the first half of the nineteenth century of the type known as a 'piddler' or 'dribbler' because of the amount of hot water that leaked out on to the floor! This one is in the collection of the Model Railway Club, London.

What is not in doubt is that model railways have had a fascination for very many people of all ages (and both sexes) for over two centuries, though mass availability has extended back less than a hundred years or so, and then mainly for the more comfortably off. It has been accompanied by magazines, books, clubs and exhibitions covering both the real railways and the models.

Most of those who are enthusiasts for real railways, model railways, or both, will say that the whole subject is infinitely interesting, with endless ramifications and applications, and always something new to discover. Railways have been built in virtually every type of terrain in the world except the arctic and antarctic wastes, always related to commerce and social needs. The small island of Britain alone has seen broad gauge, narrow gauge, standard gauge, mountain railways, seaside railways, steam, electric, diesel, ropeways, horse and vacuum power, while railways have served industries of all sorts, plus cities with main trunk routes and local communities with suburban and branch lines. Across the world there have been even more applications such as logging lines in America and dedicated ore lines in Scandinavia.

Hence there is no end of modelling possibilities, though nearly all those attracted to the model railway hobby prefer to replicate the railways they are most familiar with. Obviously this is reflected in the Hornby range, just as it is in the products of manufacturers in other countries.

I’m often asked to describe the typical model railway enthusiast, but a single answer to that question is not possible. I know keen railway modellers aged, quite literally, from three to eighty-three (and beyond), from all walks of life and all social levels. The only common factor is enthusiasm and fascination with the subject, and for the most part all are keen to share their enthusiasm with others and to be helpful with advice and information. Kindness and friendliness are, in fact, a bonus you get from the model railway hobby.

If you are reading this book you are sure to already have an interest in model railways. Some readers will be complete beginners, possibly the owner of a new train set, while others may already have some years of experience and may have built layouts. Plenty of ideas and solutions to the problems of layout building and operating are given in this book, but nothing is too technical for the average person.

I think that one of the attractions of model railways over other modelling hobbies is that miniature trains replicate the action of the real thing—traction on rails—unlike scale model cars, tanks, ships and aircraft, which can only be static display pieces. Perhaps you will appreciate this ‘magic’ too.

History of Hornby

Hornby is one of the oldest surviving names in the British model railway hobby: the original Hornby trains appeared in 1920. The instigator was Frank Hornby who had invented the Meccano idea of model engineering in 1901 and had formed a company to make Meccano sets in 1908. After World War I the German-made model trains that had dominated the market until 1914 were in short supply, and there was anti-German feeling in Britain, too. The new Hornby trains were, therefore, well received and became extremely successful. The models were to gauge 0, scaled at 7 mm to 1 ft, which is nearly twice the scale of present-day Hornby models (Fig. 1.2). They were made in printed tinplate or formed metal and were produced in both clockwork and electric (20 V a.c.) forms. The range grew enormously between the two world wars (Fig. 1.3), and Hornby models were widely exported. To start with, the models were rather simple and toy-like, but they had great character and charm.

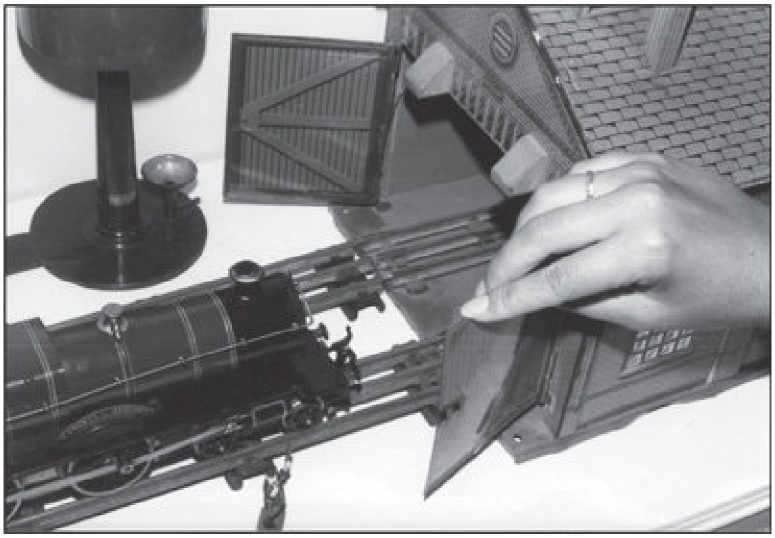


Figure 1.2. The tinplate Hornby gauge 0 models were big, as can be seen from the size of the hand opening the engine shed door The 20 V a.c. power required a centre third rail. The engine shed is of tinplate, with the tiles and windows, etc., printed on it.

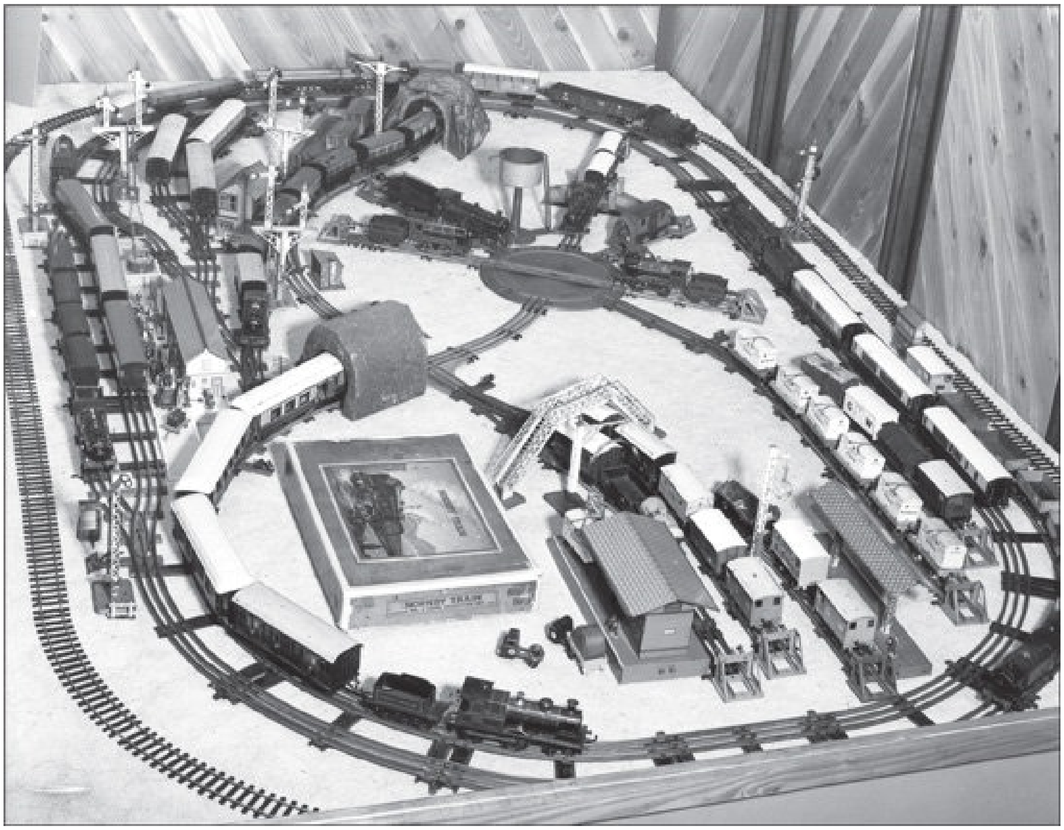


Figure 1.3. Models in the Hornby gauge 0 range of the 1930s, including a train-set box and accessories. Modern 0 gauge track is on the outside of the oval by way of contrast with today's standards.

Frank Hornby died in 1936 and his son Roland Hornby took over as chief of the company. By now some bigger, better and more realistic models were coming along, like a series of nice 4-4-0s from the ‘big four’ British companies (e.g. Fig. 1.4), the ‘Schools’ class loco *Eton*, and the topof-the-range model, the 4-6-2 *Princess Elizabeth* of 1937 (Figs 1.5–7). Hornby gauge 0 production continued until toy manufacture in Britain was prohibited in favour of war production in 1941. It appeared again in 1947–48, when a much reduced gauge 0 range, clockwork only and without the big locomotives, resumed production. It continued until 1960, when the old tinplate gauge 0 range was phased out. Today these old Hornby models are all collectors’ pieces and fetch high prices as sale items.

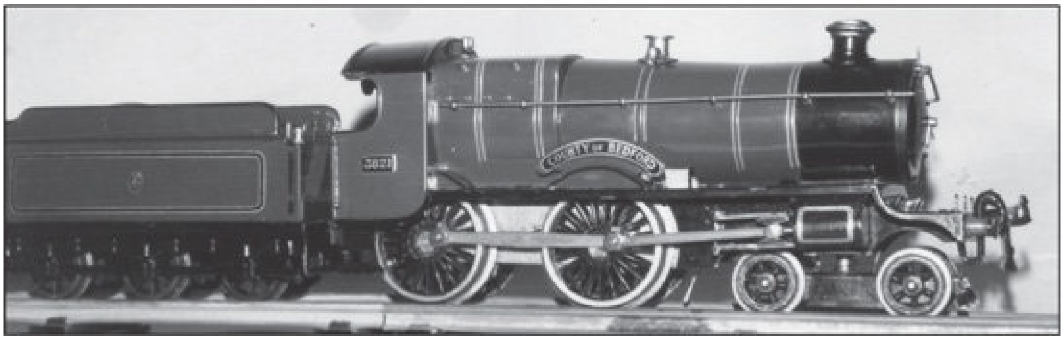


Figure 1.4. *County of Bedford* in 0 gauge was a famous Hornby model of the 1930s. This GWR engine was reproduced again, this time in 00 gauge, in 1982.

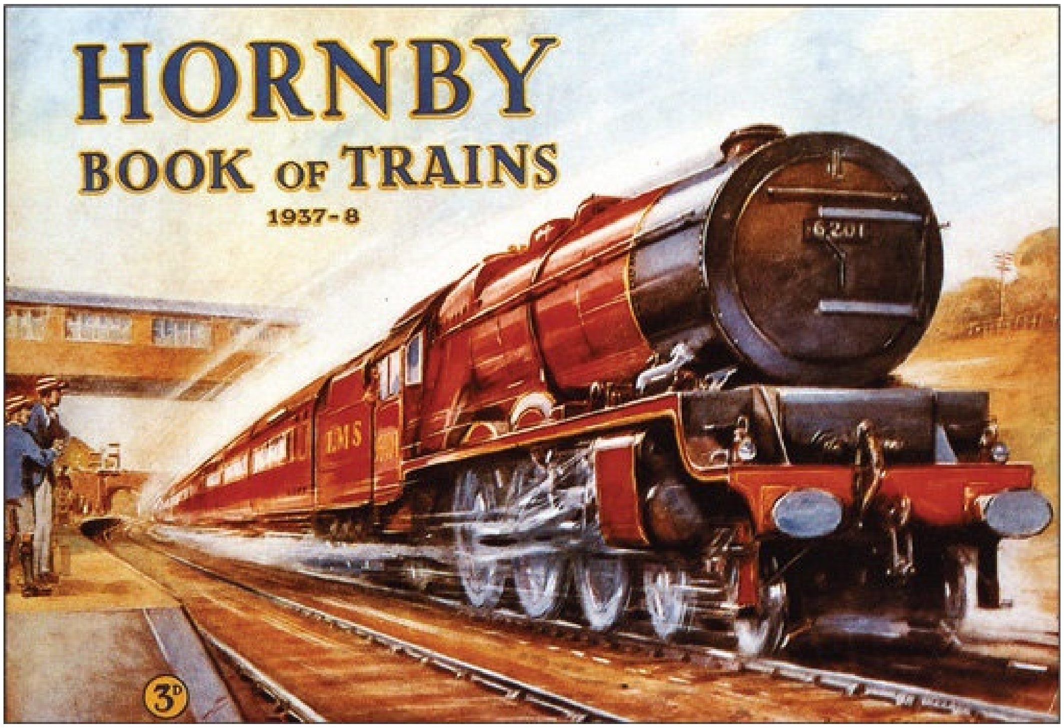


Figure 1.5. Between 1924 and 1939 there was an annual publication called The *Hornby Book of Trains*. This is the cover of the 1937–38 edition featuring the real *Princess Elizabeth* (the latest Hornby model) in a painting by a noted artist of the time, Bryan de Grineau.

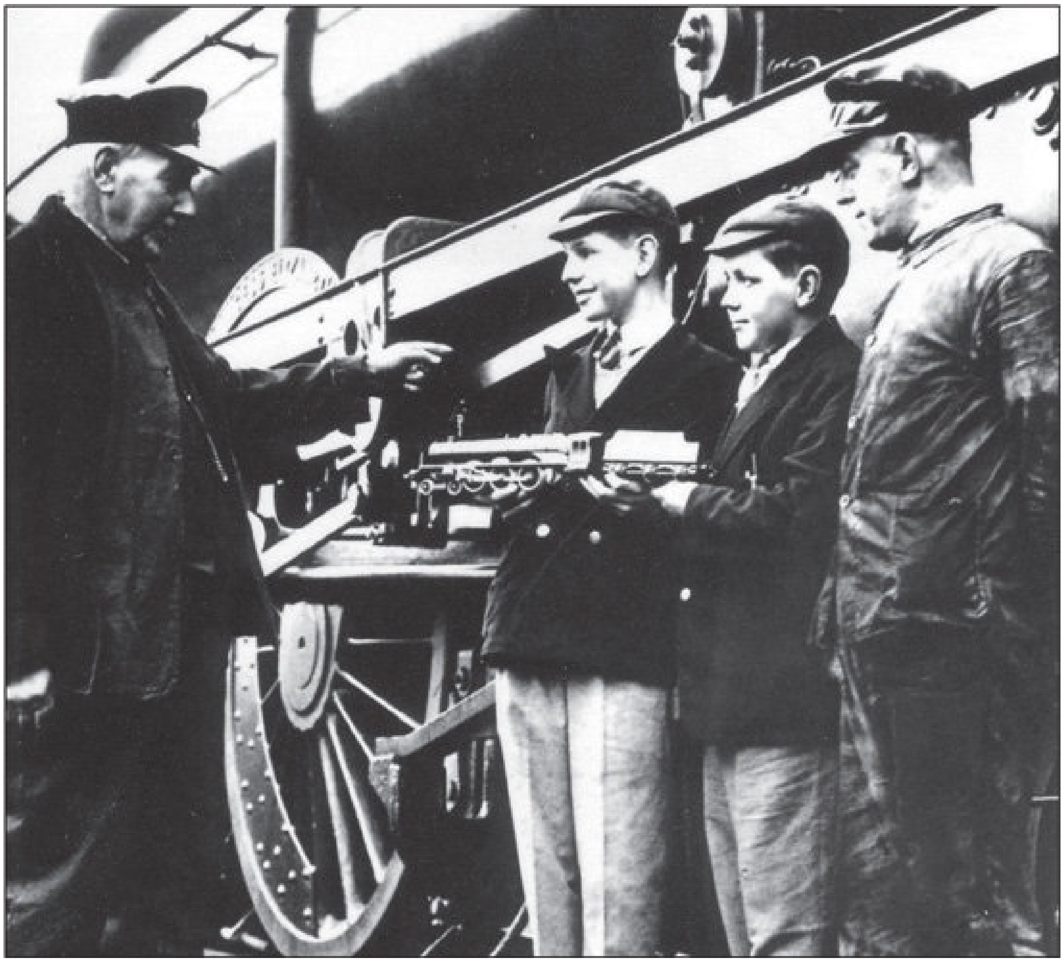


Figure 1.6. The new Stanier Pacific *Princess Elizabeth* made a record 400 mile non-stop Euston–Glasgow run at an average speed of 70 m.p.h. in November 1936. Shortly afterwards the Hornby gauge 0 *Princess Elizabeth* appeared as the ‘top of the range’ model. Schoolboys were pictured with the driver, T. J.Clarke, his fireman and the model, in front of the real locomotive.

Figure 1.7. A similar scene was shown on a leaflet of 1937.

Into 00 gauge

The way ahead was shown in 1938, when—noting developments in the German model railway industry—Hornby introduced a new range, highly realistic for its time, called Hornby-Dublo. This was scaled at 4 mm to 1 ft. The significance, which remains to this day, is that 4 mm to 1 ft scale, 00 gauge, is much more compact than the earlier gauge 0, and in the 1930s houses were getting smaller, so a handier size of model was clearly the solution. The earliest Hornby-Dublo models were produced in both clock-work and electric (12 V d.c.) versions, but when production resumed again after the wartime stoppage only electric locomotives were produced. But the post-war range expanded with ever better models (Fig. 1.8).

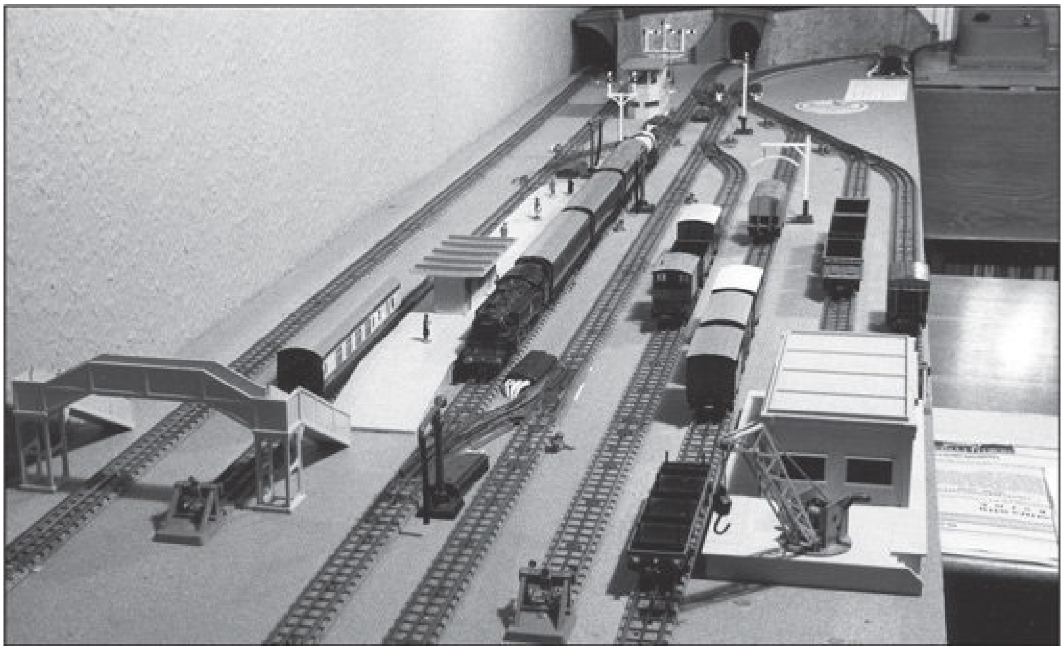


Figure 1.8. A Hornby-Dublo layout of the 1950s, showing most of the accessories and the third-rail track.

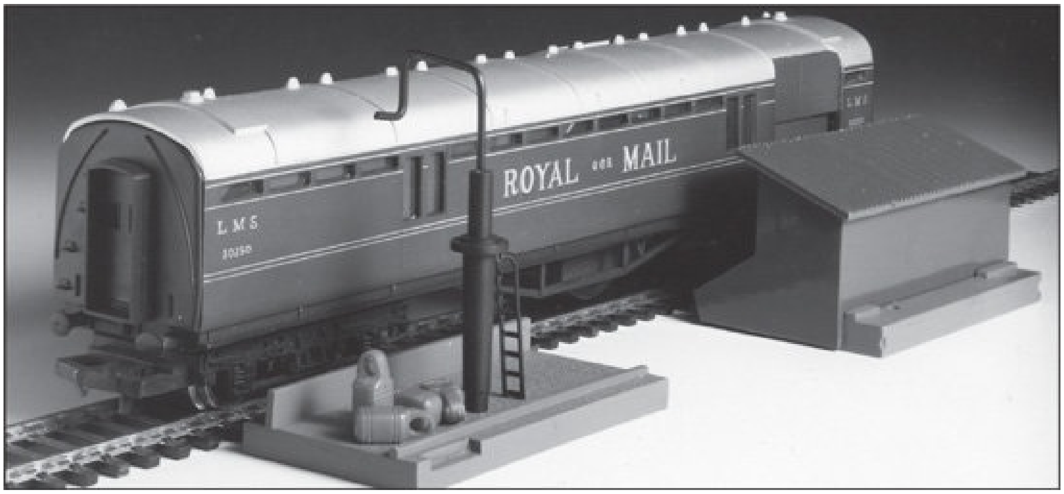


Figure 1.9. One of the best-known working models produced in the 1970s (replacing an earlier version) was the Royal Mail travelling post office van that collected mail-bags and dropped them off at speed.

However, there was competition that was strong. Other companies were now trading in the territory (die-cast cars, construction kits, model trains) that Meccano had made its own. Two-rail 12 V d.c. had advantages of appearance over the old three-rail d.c. electrification that Hornby-Dublo used. So Hornby was forced to introduce a two-rail version of Dublo, which required big investment. But by the early 1960s they were in financial trouble, and in 1964 Meccano was taken over by its main rival, Lines Bros, whose best known trade name was Tri-ang.

Rovex and Tri-ang

Rovex Plastics was founded by Alexander Venetzian in 1946, initially as a maker of inexpensive plastic toys for chain stores. In 1949, moving to an old brewery building in Richmond, Surrey, the firm started to develop an 00 gauge train-set range, using plastic rather than tinplate for the bodies, and standardising on two-rail 12 V d.c. for the power. The first sets were ready (just) in time for Christmas 1950 and were a sell-out, but only a few hundred were made. Much work was done in 1951 to improve the chassis, motor and pick-ups of the first locomotive, which was called Princess, duplicating the real ‘Princess Coronation’ type of 4-6-2. It was clear that Rovex had a winning product on their hands but they were really too small to exploit it. The Tri-ang company, however, was looking to expand into model railways, so Rovex became a member of the group as Rovex Scale Models in autumn 1951. Triang also took over another small company, Trackmaster, which made a locomotive and wagons, plus the Zenith company, which made the electric motors that Rovex used. In May 1952 the Rovex name was changed to Tri-ang Railways, and the range under Lines Bros’ ownership grew hugely and successfully, not least because the two-rail track and the plastic bodies were realistic, and the prices were lower than rival ranges such as Hornby-Dublo.

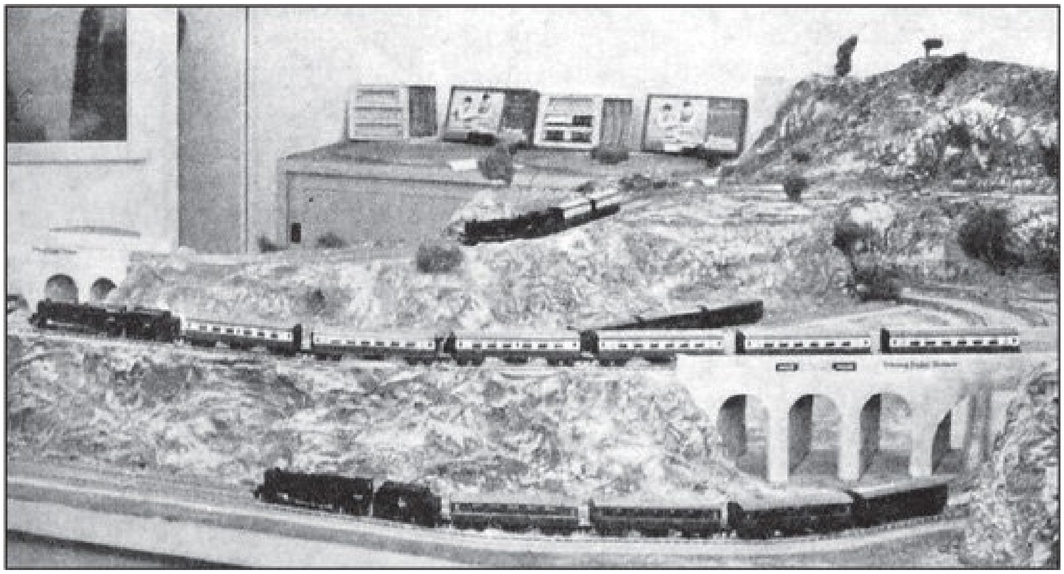


Figure 1.10. The very first Tri-ang Railways display layout and sales stand at the British Industries Fair, Olympia, May 1952.

In 1954 the company moved from Richmond to a huge new factory at Margate and the range continued to improve its fortunes. The range got ever larger, with a ‘Transcontinental’ series for export sales (Figs 1.11–12), and such features as smoke units in some locomotives and Magnadhesion (with steel track) that made locomotives haul heavier loads. Better track and finish came along, as did the tension-lock coupler that is still used today (Figs 1.13–16).

Figure 1.11. R54 Canadian Pacific style 'Hiawatha' 4-6-2 of 1962 in the H0 Transcontinental range aimed at the North American market.

Figure 1.12. R352 Budd diesel railcar, 1960–65, a nice model in the Transcontinental range.

Figure 1.13. Some of the most popular and attractive models of the 1962 Triang Railways range were shown in colour in *Triang Railways: the first ten years*. One of them was the GWR ‘single wheeler’ R354 *Lord of the Isles*, a sensation at the time as the first historical model by a mainstream British manufacturer. It was withdrawn in 1964, but was produced again in 1970-74 and 1981-82.

Figure 1.14. R351 BR Manchester–Sheffield–Wath EM2 electric No. 27000, *Electra*, which came with a working overhead catenary system. Production period 1961-65.

Figure 1.15. R356 ex-SR ‘Battle of Britain’ class 4-6-2 *Winston Churchill*, produced 1961-69.

Figure 1.16. As in 0 gauge tinplate days an 00 ex-LMS ‘Princess’ class Pacific topped the range. R258 *Princess Royal* was made in the 1959-65 period.

In 1964 Lines Bros took over Meccano and set out to integrate the Hornby-Dublo range with Tri-ang. In fact very little was compatible and most of the old Dublo models started to appear in the late 1960s under the Wrenn name, another subsidiary of the group, and today, with the name in private hands, Wrenn models are still produced in small numbers. But basically the main part of Hornby trains that was transferred to Hornby was the name, and the Tri-ang range became known as Tri-ang Hornby, in which form it traded into the 1970s.

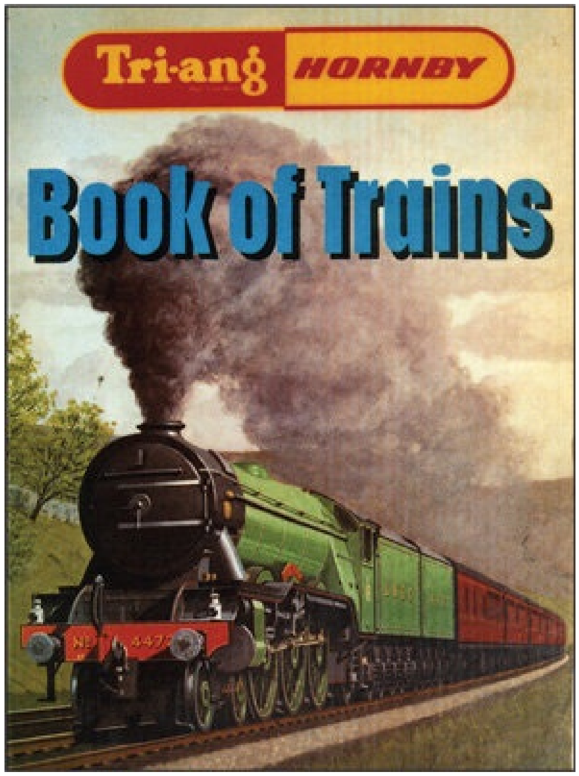


Figure 1.17. A post-war version of the *Book of Trains*, was published in 1968 by Ian Allan but as a 'one off', not an annual.

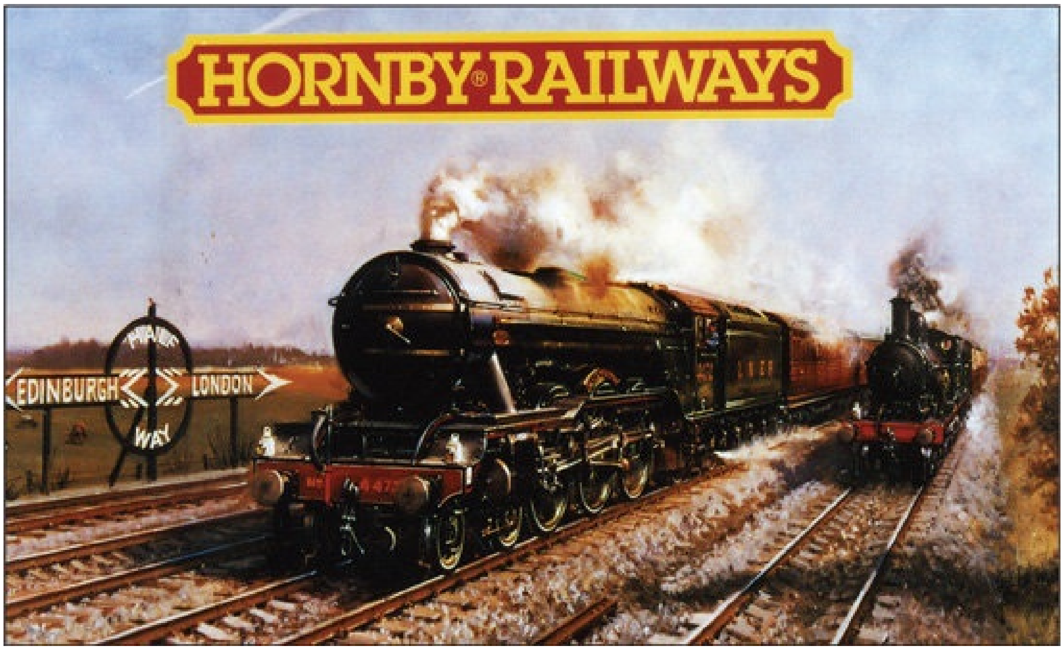


Figure 1.18. The Hornby Railways annual catalogue, now exceeding fifty editions, is itself a collected item, earlier editions being especially sought after. The thirty-ninth edition (1993) was one of a number over the years to feature a painting by the celebrated artist Terence Cuneo on its cover.

Hornby alone

In 1971 Lines Bros themselves went into receivership and the model railways side was bought up by a British company, Dunbee-Combex-Marx (DCM), and in 1972 the range was renamed Hornby Railways. In 1980 DCM collapsed in turn and Hornby was saved by a management buy-out. In 1986 Hornby Group became a public limited company, the situation that remains to this day. However, in the 1970s there were several significant events, most notably the coming of good model ranges from other companies, such as Airfix, Palitoy and Lima of Italy. These all challenged the Hornby market. It had the effect of causing Hornby to upgrade its own products and the fruit of this came in the early 1980s with some excellent 4-4-0s from the ‘big four’ (repeating the 0 gauge models of the 1930s), some nice Pacifics, and other well received models and rolling stock. In the 1980s the companies that had set out to rival Hornby, however, all fell upon hard times, and the reinvigorated Hornby Group ended up acquiring a large part of Airfix tooling in 1996 (Fig. 1.19), some of the Palitoy Mainline tooling, and in 2004 the Lima tooling. In 2004, in fact, Hornby made its greatest advance yet, for it succeeded in acquiring the assets and tooling of the large Italian group owning the Rivarossi, Arnold, Pocher, Jouef and Lima ranges and, additionally, bought the large Spanish company Electrotren, all these being placed under the Hornby International banner in 2005 but retaining their famous trading names.

Figure 1.19. One of the former Airfix models now in the Hornby range is the well detailed LNER N2 tank engine, showing its realism in a scenic setting.

An important development, starting in 1995 and completed in 1999, was the transfer of production to a factory in China, which enabled a much higher standard of model to be produced at a price which remained competitive. Digital control (DCC) as an option was introduced in 2005, and this system is under steady expansion. There is also an increasing advanced generation of fine models (Fig. 1.20). Perhaps the most stunning was the introduction in 2004 of live steam models in 00 gauge. Unlike a Tri-ang venture into live steam years earlier, with Stephenson's *Rocket* in large scale, this departure involves sophisticated modern technology giving electric control over the models and no concessions on scale detail in the first loco, an LNER A4 Pacific (Fig. 1.21).

Figure 1.20. One of the new generation of ‘Super Detail’ models. This Class 31 has opening cab doors, a rotating radiator fan on the roof and flywheel drive, giving superb performance plus every conceivable tiny detail.

Figure 1.21. A development of 2004 was live steam in 00 gauge, demonstrated here on a steam-propelled LNER Gresley A4 Pacific. A Gresley A3 has also been produced.

Hornby International

The Hornby story moved quite literally into new territory on 16 December 2004 when the Hornby Group officially acquired the assets and ownership of some of Europe’s most famous model railway brands, after about a year of negotiation with the receivers and the Italian courts. Lima was a major Italian group which had expanded by acquiring its rivals in Italy and the main French model railway maker, Jouef, and the leading German N gauge producer, Arnold. Difficult trading conditions in Europe in the 1990s had led to these circumstances, and in theory the large grouping should have worked well, owing to the rationalisation and standardisation possible between the various ranges. For example, all production was moved to Italy from France and Germany. However, by the time the reorganisation was well in hand the same difficult economic conditions brought the whole group into receivership.

Hornby was the successful bidder for the group, and then became one of the largest model railway groups in the world but with the mighty task of reorganising and sorting out these large ranges of model railways into a sequence of releases that the various major markets (and model railway enthusiasts) could relate to. Because the tools and moulds were in Italy, Hornby personnel had to work fast, first of all to find new warehouses and offices in Brescia, where Lima had been centred. Hornby Italia was formed to run the operation in Italy, but all production would be in China. This meant that the many tools (over 10,000) had to be located, examined and stored prior to the move. It took some three months of hard work to do this and the tools occupied 1,000 pallets. The old factory and warehouses in Brescia also had to be vacated and cleared. There followed an equally busy and complex project engineering task, selecting tools for the models to be introduced first, and picking up on tools and models which were only part complete when Lima went into receivership (Fig. 1.22).

Figure 1.22. Just part of the collection of some 10,000 tools for producing models in the Lima, Rivarossi, Jouef and Arnold ranges stored in a warehouse at Brescia after being sorted by Hornby personnel.

The constituent ranges that have been acquired by Hornby have at least forty years of history behind them, which accounts for the vast number of tools on hand. It is not physically possible to produce everything in one go, so the plan is to build the various ranges up gradually, with the first Chinese made models coming out late in 2005. The famous old names are retained, though all now come under the Hornby International banner. The major markets being catered for initially are Italy, Germany, France and the United States. However, between them the ranges made models covering other countries such as Austria, Japan, Switzerland, Australia, South Africa, Sweden, Denmark and others, so there is some way to go before all possible models are released for all possible markets. Enthusiasts in Great Britain are well looked after, because there is a good following in Britain for French, German, Italian and US models (plus to a lesser degree models from other countries, with Switzerland and Austria next in popularity). British modellers seem to have a more international outlook on railways than most other countries. For example, it is not easy to find a German model shop selling British model railways, but in Britain there are a great many outlets where German model railways are sold and some model railway shops specialise in German models only. The same applies to the railways of most of the other countries mentioned—the keen modeller of French, German or US railways in Britain can buy almost everything available in those countries from British retailers or distributors. The Hornby International ranges will only add to this happy state.

The following for overseas models among British enthusiasts is due to at least three factors. First there is more overseas travel today, so enthusiasts can actually see and travel on the railways of countries they visit—and there is a plentiful supply of overseas videos and DVDs to act as reminders and useful visual references. Second, overseas models, notably Rivarossi, always had fine detail and smooth performance when British outline models were less sophisticated than they are today. Third, the overseas models have always been to H0 (1:87) scale, which is the correct scale/gauge ratio for 16.5 mm track, and some prefer this ‘purity’ of scale and gauge. Layouts based on overseas railways are seen at most British model railway exhibitions and there are clubs and societies in Britain for enthusiasts of the railways of almost every country. Three of the biggest societies, with substantial membership, are the SNCF Society (France), the German Railway Society and the British Region of the National Model Railroad Association of America (NMRA), all of them producing club magazines.

To give some further idea of what you may expect to see coming from the Hornby Group in future, some notes follow on the companies and brands that are now in the Hornby International group. The illustrations of Rivarossi, Lima, Jouef and Arnold models are from the Hornby files or from models in the author's collection. Their reproduction does not imply that the models have any priority in revived production or may appear in the forms shown. They are included to show typical past examples of these ranges.

Rivarossi

In recent years China has become the leading producer of models for the US and British markets. But back in 1950–80 major production for American model railway distributors was centred in Italy and Austria. Foremost was Rivarossi, who made a huge range of superb H0 locomotives and stock which were greatly superior in detail, finish and performance to anything then made in the United States. Originally they were sold under the brand names of American companies, for example H0 models as AHM, and N gauge ones as Atlas. But eventually they were sold under the Rivarossi name (Figs 1.23–6). Notable was a fine model of the massive Union Pacific 'Big Boy', the biggest steam locomotive of all, which has been produced for many years, and is always a good seller.

Figure 1.23. One of the excellent Rivarossi diesel locomotives, the Alco Century C420 in Lehigh Valley colours, with a gondola car, also by Rivarossi, example of H0 production at its best.

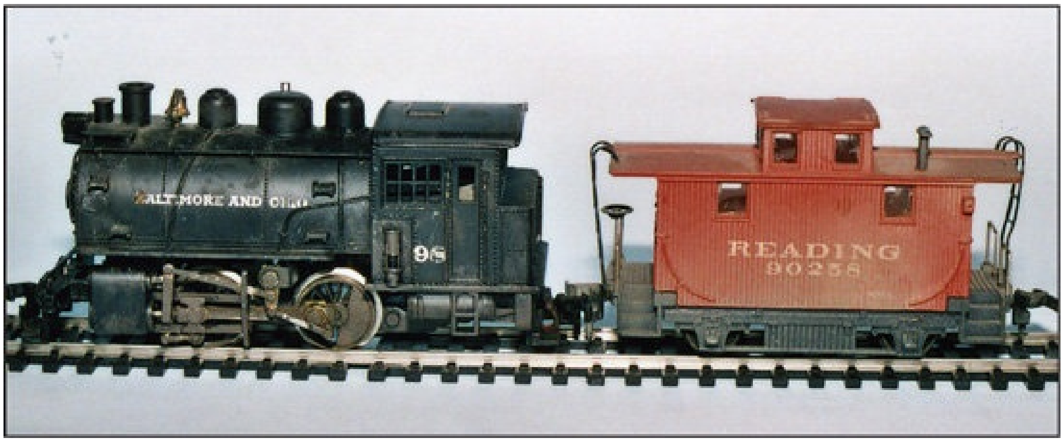


Figure 1.24. Smallest US loco in the Rivarossi H0 range, the C16 ‘Little Joe’ which switched (shunted) the waterfront at Pratt Street, Baltimore, for years. Attached is a four-wheel ‘bobber’ caboose by Rivarossi.

Figure 1.25. The tender version of ‘Little Joe’ was the C16a 0-4-0. Forty years on, the author’s weathered model runs as well as ever.

Figure 1.26. Rivarossi model of an old-time Edison tram in H0, originally in the Pocher range.

In Britain the Rivarossi name became known in the mid-1950s, when Rivarossi's Italian and US-outline models were among the first to be imported after the war. Over the years Rivarossi built up an H0 range of great distinction, concentrating on 'thoroughbred' trains such as the Venice–Simplon Orient Express and the elegant Wegmann (German) train of 1935, which was hauled by a streamlined 4-6-4 tank engine. A LMS Royal Scot and train in H0 will be long remembered by British modellers.

Parallel with the H0 range was a fine N gauge range, again covering both European and American subjects, and a quite large 0 gauge range also reproducing key European and American types.

Associated with Rivarossi was Pocher. In the early days it made more specialist models, such as the delightful vintage Milan trams (Fig. 1.26) and the old-time 4-4-0s and rolling stock of the Virginia and Truckee Railroad. Later these became Rivarossi models, and Pocher produced non-railway models, such as large-scale super-detail classic cars.

Lima

Lima came to prominence in the 1970s when the company started making British-outline models, at first in the H0 scale favoured in Europe, but soon switching to 4 mm scale, 00 gauge, to match other British models. The early British-outline H0 models are still sought after, more than thirty years since their production, by some British modellers who favour H0 over 00. The Lima 00 range became well known, quite extensive and well respected (Figs 1.27–8). Lima was busy indeed in the 1980s and 1990s, producing H0 models for many markets, including Australia, South Africa, Scandinavia, Germany (Figs 1.29–30), France and the rest of Europe. The catalogue of European H0 models alone in 1990 ran to 148 closely packed pages and even included a 'fine scale' track system. In addition Lima introduced a quite extensive 0 gauge range in the 1970s, including a selection of British models at keen prices, which attracted a lot of modellers to 0 gauge at the time. There were also French, German and Italian 0 gauge models. Much more extensive than the 0 gauge output was the N gauge line, which included a generous selection of British models but also covered French, German, Italian and North American prototypes. Early in the 1990s

Lima merged with Rivarossi, which then became a subsidiary of the Lima S.p.a. group. There was a bit of brand changing to rationalise the ranges, some Lima models becoming Rivarossi, an example being the Lima US-outline models, which were switched into the much more extensive Rivarossi US range.

Figure 1.27. ‘Warship’ class diesel-hydraulic locomotive from the Lima 00 gauge range.

Figure 1.28. Class 27 diesel-electric in early green livery, from the Lima 00 gauge range.

Figure 1.29. Federal German Railways class V80 diesel by Lima with a local passenger train on an H0 layout built by the author.

Figure 1.30. German Düwag tram by Lima in H0 with Kicker advertising.

Jouef

Joeuf was the major French manufacturer of model railways and was sometimes described as the equivalent of Hornby. It was for many years part of the big French toy group Jouets de France. Working in H0 only, the Jouef company concentrated mostly on French railway models (Figs 1.31–2), though in the 1960s it made a range of rather basic British-outline models (in H0) for a short period. In the late 1970s it returned to British models, notably a BR Class 40 diesel and Mark 3 coaches to a high standard in 4 mm (00) scale. A few models were made for the German market, too (Fig. 1.33). But the strength of the range has always been in the excellent selection of French models, including the classic Pacific and 141R steamers, the TGV and famous railcar types like the Picasso and the high-speed Bugatti railcar of the early 1930s, the shape of which inspired Sir Nigel Gresley when he designed the A4 streamlined Pacifics a year or two later (Figs 1.34–5). Also notable in the Jouef range has been the selection of building kits covering French railway and local structures, which give true character and atmosphere to any French layout (Fig. 1.36).

Figure 1.31. SNCF BB 9300 class electric locomotive modelled in H0 by Jouef.

Figure 1.32. SNCF C 61000 diesel shunter in H0 by Jouef. The real thing saw service from 1950 till 1985.

Figure 1.33. German Federal class 260 shunter in H0, one of relatively few non-French models in the Jouef range.

Figure 1.34. Jouef H0 model of the elegant class CC 72000, the SNCF's most powerful diesel.

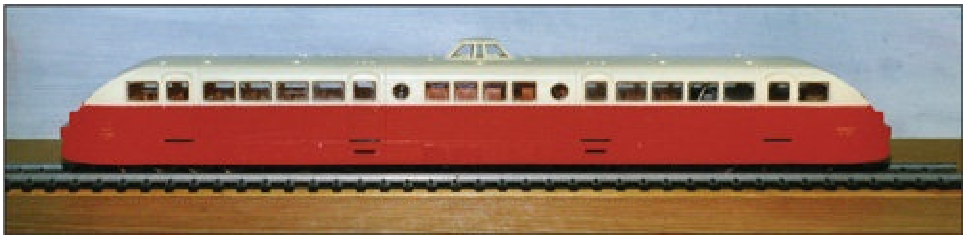


Figure 1.35. The Bugatti high-speed railcar of 1933, a classic modelled in H0 by Jouef.

Figure 1.36. Normandy farmhouse, one of several excellent building kits in the Jouef H0 range, including stations and goods sheds.

Since Jouef was taken into the Lima group in 2001 there has been some confusion, as models have appeared under both Jouef and Lima branding and as Lima-France models. In addition there were quite a lot of French models in both the Lima and the Rivarossi ranges. Under Hornby this situation has been resolved and all French models are now Jouef.

Arnold

Arnold is a famous name among N gauge enthusiasts, for this was the company that first produced a motorised diesel locomotive to the tiny 1:160 scale back in 1960. It was crude, too short and toylike, but it proved that N gauge was a practical manufacturing proposition. By 1962 the first 'scale' locomotive had appeared, which ran well and looked good—a Prussian T3 0-6-0 tank (Fig. 1.37)—and by this time the sprung 'claw' coupling had evolved, the type that is still the N gauge standard. From then on the Arnold range grew prodigiously. The 1999–2000 catalogue, for example, ran to 168 packed pages and included a big US-outline section (Fig. 1.38), trams (Fig. 1.39), Swiss, Dutch and Austrian prototypes, and a huge German range (Fig. 1.40). In 1999, too, Arnold had started a TT (1:120 scale) range with some wagons and a superb model of the DB Kleinlok shunter. The Arnold N gauge range has always been comprehensive, with excellent track, lineside accessories and railway buildings. When Arnold was taken into the Lima group (Fig. 1.41) production was moved from Germany to Italy. At the same time the N gauge models of Lima and Rivarossi were merged into the Arnold range, so that all N gauge models in the group were under the same brand name.

Figure 1.37. One of the most impressive models in the Arnold N gauge range is the famous Swiss ‘Crocodile’, its running as good as its looks. Alongside is one of the first Arnold models, a T3 0-6-0 tank engine of 1963.

Figure 1.38. One of Arnold's N gauge range of US models, the Alco S2 switcher (shunting engine) in Union Pacific livery, with an open gondola from the original Lima.

Figure 1.39. Another smooth-running Arnold model, a well detailed model of the Düwag articulated tram familiar in many German cities, here in Bochum colours.

Figure 1.40. Arnold Deutsche Bundesbahn V65 shunting locomotive in N gauge, with an Eaos bogie open wagon in SNCF finish.

Figure 1.41. Posed on its box, a Lima N gauge SNCF BB 25000 electric, subsequently released in the Arnold range.

Electrotren

This is a leading model railway maker in Spain. It was never part of the Lima group and was taken over by the Hornby group some months earlier quite independently.

Further reading

This can be only a brief overview of a long and complex history. Models produced under the Hornby name since 1920 run into hundreds, with a huge number of variations. Detailed coverage by company is to be found in several specialist works which include all models by number, type and name, including details of production dates and changes. Among books recommended are *The Rovex Story* (in three volumes), by Pat Hammond (New Cavendish Books), and *Hornby: the Official Illustrated History*, by Ian Harrison (HarperCollins). Hornby models of all periods are also well covered in *Ramsay's British Model Trains*, compiled by Pat Hammond (Swapmeet Publications), which also gives price guides.

Scale and gauge

Though there are many scales and gauges in the model railway hobby, the present-day Hornby range is produced to the most popular scale and gauge in Great Britain. This is a scale of 4 mm to 1 ft (or 30 cm), a ratio of 1:76 to full size. The gauge is called 00, which is a width of 16.5 mm between the rails. 00 gauge is today—with the exception noted below—unique to models of British railways and came about as a result of a compromise which put Britain's model railways out of step with the rest of the world.

In the 1920s British enthusiasts developed, as a practical proposition, the idea of models exactly half the linear scale of the then smallest gauge generally modelled. This was 0 gauge, scaled at 1:43.5 reduction, equivalent to 7 mm to 1 ft in Britain. Half of gauge 0 was therefore 3.5 mm to 1 ft, or 1:87 scale reduction. In practice this meant models one-eighth the volume of 0 gauge, since the reduction was in three dimensions.

It became apparent early on that H0 suffered from limitations, particularly when it came to modelling outside-cylinder locomotives. Because the UK loading gauge is restricted in width (and height) compared with the railways of most other countries using standard gauge, the wheels, axleboxes, etc. come close to the outer edge of the locomotives and rolling stock. Reduced to model form, wheels, coupling rods, valve gear and cylinders were all wider than scale because of manufacturing limitations and tolerances (as is still sometimes the case today). A secondary problem was that the bulky electric motors of the day were too big to fit in the boilers or cabs of smaller types of locomotives. Few of these problems arose with most overseas models, since the loading gauge was more generous and, even when axleboxes, wheels and motion were over scale, the widths of the bodies still exceeded the chassis width and maintained the correct appearance. Hence there was no need to change H0 gauge in those countries.

In Britain, however, a section of the trade took the advice of leading modellers, who suggested increasing the scale of the models to make them wider and thus compensate for the over-wide chassis detail. The 16.5 mm H0 gauge was retained for the track but everything else increased from the 3.5 mm to 1 ft of H0 to 4 mm to 1 ft, or 1:76 scale. To distinguish the 'new' gauge/ scale from H0 it was called 00 gauge.

The situation is that British models in the Hornby and other ranges are to 4 mm (1:76) scale, 00 gauge, whereas overseas models, including those sold in Britain, are to 3.5 mm (1:87) scale, H0 gauge. 00 and H0 gauge are the same, 16.5 mm. In terms of bulk, models for both 00 and H0 are physically of similar size because most overseas full-size trains are bigger than British ones. The actual scales of 1:76 and 1:87 are not far apart, so quite a few accessories such as structures (houses, bridges, factories, etc.) suit both scales, as do some figures, cargo items, cranes, trailers, and so on. They are sometimes marked as scaled for 00/H0 (or H0/00), which means they are suited to either scale. The terms '00/ H0' and 'H0/00' are also quite often used in reference to models or layouts in these two popular scales, which constitute about 80 per cent of the model railway market. Therefore more models, train sets and accessories are available for these scales than for any other.

One last point is that the terms ‘H0 scale’ or ‘00 scale’ are often used, in talk and print, as a shorthand way of describing the two different scales. Actually ‘1:87 scale’ or ‘1:76 scale’ would be more strictly correct, but ‘H0 scale’ and ‘00 scale’ are more easily understood.

In Britain 00 gauge as made by Hornby reigns supreme. There was dissent early on, however. At the scale of 4 mm to 1 ft a track gauge of 16.5 mm (the H0 track gauge that was also called 00 gauge in Britain) works out at 4 ft 1 1/2 in, as against the 4 ft 8 1/2 in. of standard gauge. Most modellers are happy to ignore the discrepancy. But as long ago as 1938 a few modellers decided to adopt a more accurate track gauge for their 4 mm scale models. They chose 18 mm as the gauge. Equivalent to 4 ft 6 in., even this was still inaccurate but less noticeably so. It gave a little more room to accommodate underframe widths. Post-war this 18 mm gauge became known as EM (for ‘Exact Measure’ *and* ‘Eighteen Millimetres’) and was later widened imperceptibly to today’s 18.2 mm. In the 1960s some enthusiasts rejected 18.2 mm gauge as yet another fudge and adopted 18.83 mm, the exact of 4 ft 8 1/2 in. Hence there are today three different gauges all stemming from the same origins: 00 gauge (16.5 mm), EM gauge (18.2 mm) and P4/S4 (18.83 mm). It is possible to convert many 00 models to run on EM or P4/S4 track, in what is generally termed ‘fine-scale’ modelling.

Most modellers are happy to work in 00 gauge. EM and P4/S4 are beyond the scope of this book and have quite a specialist following. They are mentioned here because you will come across the terms in magazines and model shops. Also outside the remit of this book are several other scales and gauges, namely gauge 1 (1:32 scale), gauge 0 (1:43 scale), TT/3mm (1:100 scale), gauge N (1:148 scale), gauge G (1:22.5 scale) and narrow-gauge models, all of which you will encounter in the hobby.

Back in the 1940s the now defunct British Railway Modelling Standards Bureau (BRMSB) drew up recommended measurements for tunnels, loading gauge, platform height and all the other dimensions that need to be considered when working in 4 mm scale, 00 gauge. These dimensions are drawn and listed here by Arthur North, and Fig. 1.42 (a) should be helpful to anyone building tunnels, stations, etc., to get the clearances correct. It is essential at all times when building a layout to get the clearances right so that rolling stock does not hit the platform edge or sideswipe stock on adjacent tracks. That is why modelling standards are established.

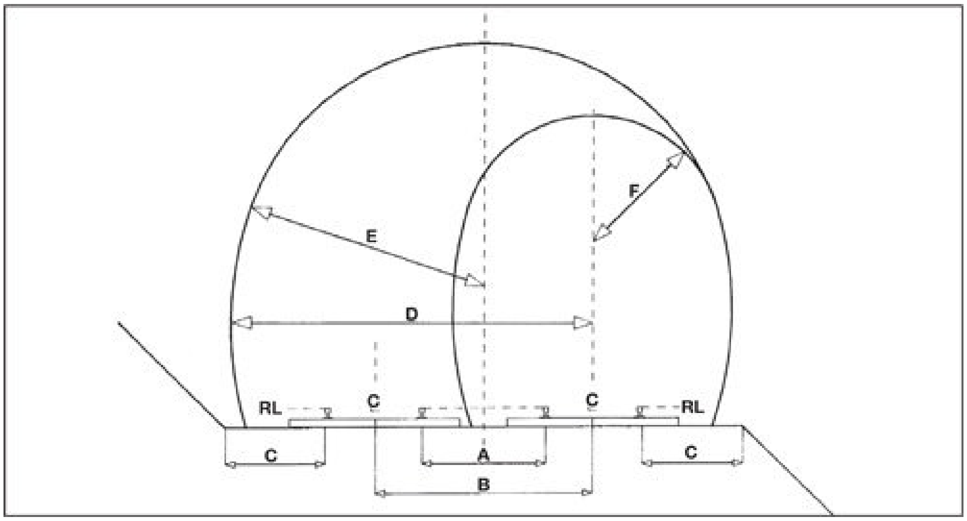


Figure 1.42. (a) Structural clearances for 00 gauge model railways drawn up by the BRMSB in the 1940s. (a) Tunnels. Dimensions A–F are given in Fig. 1.44 (c). RL rail level. Drawn and collated by Arthur North.

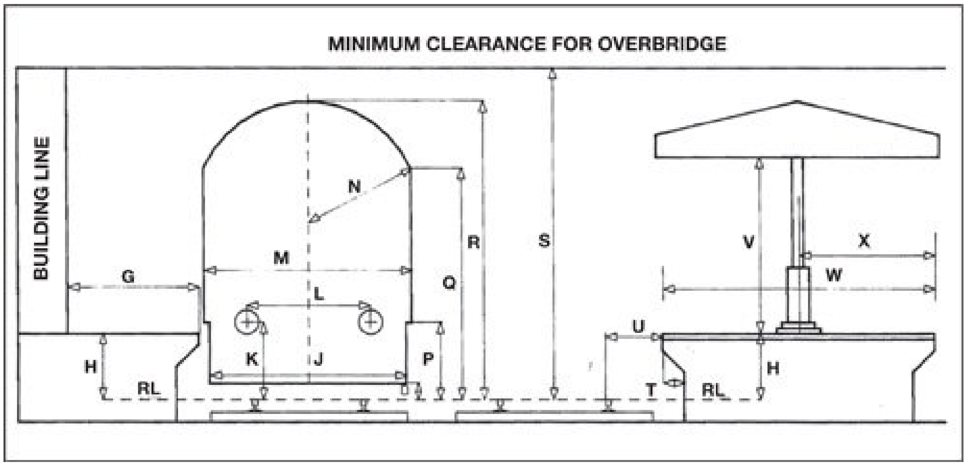


Figure 1.42. (b) Structural clearances for 00 gauge model railways drawn up by the BRMSB in the 1940s. (b) Platforms. Dimensions G–X are given in Fig. 1.44 (c). RL rail level. Drawn and collated by Arthur North.

Reference letter	Full size (ft)	00 gauge (mm)
Gauge	4.71	16.50
A	6.50	31.50
B	11.15	50.00
C	5.30	21.25
D	19.50	78.00
E	13.00	52.00
F	6.75	27.00
G	6.00	24.00
H	3.00	12.00
J	9.00	36.00
K	3.50	14.00
L	5.65	22.50
M	9.50	38.00
N	5.50	22.00
O	0.75	3.00
P	3.50	14.00
Q	10.50	42.00
R	13.50	54.00
S	13.50	60.00
T	1.00	4.00
U	2.40	11.00
V	8.00	32.00
W	12.50	50.00
X	6.25	25.00

Figure 1.42. (c) Structural clearances for 00 gauge model railways drawn up by the BRMSB in the 1940s. (c) Dimensions A–X, actual and model. Collated by Arthur North.

Figure 1.43. Ring binders with useful articles and cuttings, plus books, photographs, video-tapes and DVDs, are among the reference collection you can build up.

Research

If you have started railway modelling you will already have an interest in the subject. But as you progress you may find yourself held up by lack of information. Part of the fun of the hobby is accurate depiction of the real railway in miniature. The best layouts are those that are truest to reality. Taking a simple example, you may be attracted by the old Great Western as a historical modelling subject. To approach it the right way you would want to gather as much GWR information as possible. How many locomotive types were there? When were they built? What were the periods of the various Hornby GWR models, and so on?

Well, there are hundreds of books about various aspects of the GWR, and some key reference books cover the locomotives, coaches, wagons and equipment in great detail. You'd need to assemble as much data as possible. You can't afford all the books, but you can collect quite a lot of information over the years. Public libraries enable you to borrow, and second-hand books may be found cheap at model shows. There is a constant stream of magazine articles on the GWR. You can make photocopies and file material of reference value, even if it's information you do not actually need yet.

It is a good idea to get a ring binder to keep all the information you gather. Over the years I've filled four binders with GWR locomotives and rolling stock references, and another two on other GWR matters. I've acquired many GWR books, but over a number of years—you can't collect all the information in one fell swoop. If you have an interest in other companies or periods, start ring binder files for them as well. You need to think ahead even if the information doesn't seem immediately useful. For example, I collected cuttings about GWR auto-coaches for about ten years before any manufacturer produced a model of one, so that I could then use the information to add extra detail if ever they did. In another category are modelling references such as Hornby catalogues, track plan books, track planning and instructional CDs and other video/IT aids like DVDs and track-planning computer programs (*see* the appendix).

Research covers a great deal. The activity includes visiting museums and preserved lines where you can see steam (and early diesels) displayed or operating. You can get DVDs, videos and much else. It is a good idea to take a pocket notebook on any visit to a preserved line or museum so that you can make notes or sketches of anything of interest. Related to this is photography, and if you have a camera, even a cheap, simple one, take it with you. Of course, if your interest is the modern scene you'll take the notebook and camera on your journeys. Postcards and photographs of trains can be purchased and kept in files or photo albums.

Related to research is inspiration. Visit any model railway exhibition advertised in your district. You'll see layouts to inspire you and will get a good idea of modelling standards. Also at shows are traders, bookstalls and second-hand stalls where models (often bargains) can be bought. There may well be a model railway club near you, too. Not everyone wants to join a club, but if you do you'll certainly get a lot of help and ideas. Most clubs have a club layout (or more than one) which is a team effort and is usually larger than any project you could build at home. You can join in these projects and get invaluable experience and enjoyment.

Adding to your reference material and your inspiration are model railway magazines. Surprisingly I still come across enthusiasts trying to build a layout who have never seen or read a magazine. At least seven model railway magazines are published in Britain alone, and many more the world over, some of them also available in Britain. Model magazines carry layout ideas, product news, club news, layout coverage, historical data and much else. Some of the British magazines available are listed in the appendix. Depending on your interest, there are magazines, too, covering full-size railways, historical, modern or both.

Research, in fact, is almost a hobby in itself! You can never know too much when you collect lore on both model and real railways. Note that the word ‘prototype’, which you’ll often see in model magazines, in this context means not the first example to be built but the real thing as compared with the model. Hence the term ‘prototype locomotive’ means the actual full-size locomotive.

Get the atmosphere

You have to be well into middle age to remember active steam on British Railways— or even the era of black or green BR diesels, come to that. You have to be quite elderly to remember the pre-BR age (before 1948) of the ‘Big Four’ rail companies (SR, LMS, GWR and LNER). Yet a large number of Hornby models represent those eras. If you are a young modeller you will not experience the atmosphere of the old days. Then there were goods yards galore, busy freight depots, long coal trains, coal merchants’ sidings in every goods yard, parcel vans in the streets, manned mechanical signal boxes, water cranes, grimy loco depots and much else. Until the 1950s the railways were very much a part of everyday life.

So don’t judge modelling potential by the much reduced rail activity you see today, when most goods yards and rail-served factories, etc., have disappeared. If you want to model the old steam and early diesel era successfully you need to soak yourself in the atmosphere of those days. This comes under ‘research’, of course, but for modellers wanting to get close to what the old days were like I would particularly commend the Middleton Press series of books which covers specific areas and branch lines, with photos and old maps to show track arrangements, the Oakwood Press series, which covers many long disappeared branch lines in a similar way, and the magazine *Bylines*.

Tools

Whatever level of activity you reach in the hobby, you'll need a basic tool set. You may not do a lot of practical model work, but you'll want to do some even if it is not much more than cutting and trimming scenic material. But most of us get involved in kit building, locomotive detailing, wagon detailing, lineside detailing, and more besides. You can buy quite elaborate and well equipped tool sets covering everything you need. But just as easily (and usually more cheaply) you can make up your own tool set over a period of time (Fig. 1.44). If you are doing so, here is a list of useful tools, accessories and adhesives to have.

Figure 1.44. A selection of important small tools for kit building, detailing and conversion work.

Essential tools:

- Needle-nose pliers
- Small craft knife (or scalpel)
- Large craft knife (or scalpel)
- Spare blades for them
- A selection of small rat-tail files and flat files
- Fine glasspaper
- Emery boards
- Small Archimedes drill and a selection of drillbits (or pin drill)
- Electric power drill
- Mini-drill (small power drill)
- Spare bits for them
- Bradawl
- Small hammer
- Razor saw
- Small hacksaw
- Selection of screws and screwdrivers
- Selection of track pins
- Wooden cocktail sticks
- Plastic cocktail sticks
- Cotton buds
- Small screwdriver set
- Model oil
- Track cleaning rubber

Adhesives:

- PVA glue
- 'Universal' type clear glue
- Plastic cement
- Plastic modelling putty
- Liquid plastic cement

Optional tools:

- Xuron track cutter (for track laying work)
- Large pliers

It is worth getting a small toolbox to hold this equipment, though some of it, such as the power drill, screws, hacksaw, screwdrivers and white PVA glue, may already be in your domestic tool set. Keep tools clean, dispose of blunted blades safely (always replace blunt blades on craft knifes or scalpels), and return tools to the box so that they are not mislaid or forgotten.

Paints

As with tools, you'll need some paints and brushes for modelling work. There is a huge choice available. The 'traditional' paints were (and are) oil-based and there are several ranges available, Humbrol and Revell being the most common. The manufacturers also produce brushes, but art shops have these, too. From art shops Reeves' pony-hair brushes in the smaller sizes, Nos 0, 1, 2, 3, 4, etc., are particularly good value and durable. Oil-based paints need to be cleaned with white spirit or brush cleaner sold in the paint ranges.

A good alternative to oil-based paints are modern acrylics. Humbrol and Tamiya are the best of these for modellers (Fig. 1.45). Acrylics are water-soluble, making cleaning up easy, and if you are not happy with, say, your weathering efforts, you can wash them off and start again. However, once acrylics dry they are no longer soluble. Apart from the paints specifically for model making, you can get acrylic paints in art shops, such as the Inscribe range, which is particularly good. Most modellers get a mix of both oil and acrylic paints, but in either case get matt clear varnish, as it is often needed to 'kill' the high-gloss finish of some models. For example, many model cars, buses and lorries are too glossy and look much better with a coat of matt clear varnish—as do some older rail models.

Figure 1.45. Acrylic paints from three widely available ranges: Humbrol, Tamiya and Inscribe.

Obviously, ensure brushes are cleaned, and paint tins or tubes sealed after use. With care most paints will last for years. As with tools, keep the paints in storage boxes or trays. If you are doing a lot of painting you may also need masking tape. Some oil-paint ranges also offer spraycan versions of some shades. Your paint selection may include company colours, as necessary—and there are some ranges of specific railway shades, covered in model magazine advertisements—but you certainly need shades such as dark earth, browns, black, greys, white, foliage green and other ‘natural’ colours for scenic and weathering work.

Spares box

When you start building kits and models you invariably find odd pieces left over, as some kits have optional parts. Locomotives may have more add-on parts supplied than you need. As a general rule, never throw these parts away. Keep them all. One day they will be useful for other models, or conversion work. After a few years you’ll find you have quite a collection of useful kit parts (Fig. 1.46).

Figure 1.46. Cheap plastic storage boxes are ideal for keeping spare parts, and the small drawers allow the parts to be separated into categories, such as doors, windows, wheels, and so on.

Figure 1.47. Visiting model railway shows and exhibitions will give you a good idea of the standards of realism and atmosphere to aim for. They are perfectly illustrated by this BR steam-era scene on a Hornby demonstration layout, where scenery, structures and weathering combine to convey true ‘Steam Age’ atmosphere. A Stanier Black 5 with a semi-fast train passes a J52 shunting engine which is taking on water.

In addition, collect any oddments that look useful, such as used ball-pen refills, wire rod, plastic rod, old bits of tubing, and so on. They make exhaust pipes, vents and much else. Model shops sell plastic card sheet in various thicknesses, and also plastic strip. Get some for stock. Collect any good-quality card from domestic cartons, etc., all for future model use.

If you make card kits collect up the leftovers from them. Items that don’t lend themselves to box storage, such as card and plastic sheet, can be kept in card folders or large envelopes. Similarly put any spare transfers (US decals) in folders, and any useful adverts or company names you see in newspapers or magazines. Many of the factory names on my layouts come from these sources. You can buy miniature advertisement sheets, too, and it is convenient to keep them with your transfers. In short, be a ‘human magpie’ and save any items you come across that might have modelling potential.

Chapter **2**

The Hornby range

The Hornby model railway range is the largest on the British market depicting British prototype models, which is not surprising considering the long history of the name. It is so comprehensive that it would be possible to build a complete 00 layout using nothing but Hornby products, for even scenic items, structures and lineside accessories are available as well as locomotives, rolling stock, track and controllers. In practice, most modellers will supplement Hornby items with others, particularly when it comes to scenic backgrounds, road vehicles, card cut-out structures, figures (beyond the selection by Hornby) and a few other items which are not in the Hornby range. Some non-Hornby products are mentioned in this book and seen in some of the photographs; they are pointed out where possible so as not to confuse any beginner as to their origins.

If you are a complete beginner, or a relative newcomer to the hobby, the best way to see the full extent of the current Hornby range is to visit a model shop, see the models on display and buy the current catalogue, which is around 150 pages long and illustrates every item currently available (or coming soon). Every item has a catalogue number and where possible in this book I have given it for specific models or products used. For example R2441 is the A3 Pacific *Flying Scotsman* in the Hornby ‘National Collection’ series covering locomotives at the National Railway Museum, York. These numbers from the catalogue may be useful if you are ever seeking out older models or ordering by post, as there is no confusion. Over the years Hornby has produced literally thousands of items, each uniquely numbered so that you could, for example, find out from old catalogues what model variations were available in past years or may now be discontinued.

Figure 2.1. The high standard achieved by Hornby models is shown in the superbly detailed and finished Gresley coaches, which have received wide acclaim. The versions in early BR crimson and cream livery are shown (R 4178A, R4179A, R4181A), but they are also available in the LNER teak finish.

Figure 2.2. Even small details like coal and timber loads (R8592–6) are now included in the Skaledale range, sized to fit different types of wagon, with the bonus of adding weight for smoother running.

The model railway hobby has a wide scope; some want to build realistic layouts and operate miniature trains in prototype style; others find the Hornby range very collectable, and build up huge collections of locomotive variations or releases, some of which come to have great scarcity value with the passage of time but may never leave their boxes or may be used as display pieces only; a third group may combine the two, building operating layouts where the models are hard worked but also collecting select models of locomotives and stock they admire. I come into this category, mainly building layouts but having, too, all the Hornby SR types, and some GWR types that I remember seeing in my childhood. A few of them, like the ‘Terriers’, I run on layouts, but most I just keep to admire.

The annual Hornby catalogue (Fig. 2.3), now exceeding fifty editions, has become a valued collectors’ piece in its own right, so any true enthusiast will keep them year by year. Another useful Hornby publication is the *Hornby Track Plans* book (Fig. 2.3), now in its tenth edition, full of layout ideas, wiring information and some handy tips. Also produced is *The Collector*, the official magazine of the Hornby Collectors’ Club (Fig. 2.3). This is packed each issue with background articles, modelling tips and products, members’ layouts, book reviews, and updates on all Hornby releases. Also available through the club are various special editions of models which may not be obtained elsewhere. For more details see the appendix. For those with PCs there are also two ‘Hornby Virtual Railway’ CD-ROMs and a new one called *Step-by-step Guide to Railway Modelling*. The HVR CDs allow you to plan layouts on screen, combining all the necessary elements from the Hornby range. You can even ‘ride the rails’ with a cab view ahead once you have completed the layout plan!

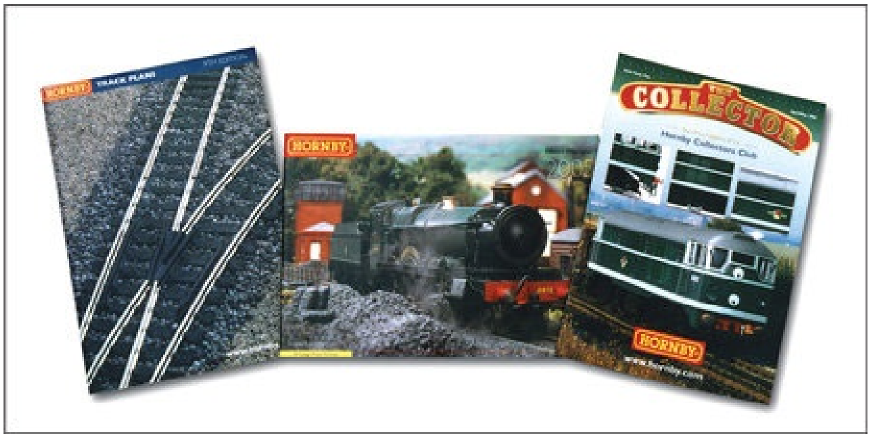


Figure 2.3. Three key Hornby publications, the catalogue flanked by the *Track Plans* book and the *Collector* magazine of the Hornby Collectors' Club.

Figure 2.4. One of the attractive lower-priced models in the Hornby range is R2325, the J83 0-6-0T, which is greatly enhanced in its latest form, with excellent livery application and a realistic weathered finish.

Every reader of this book will have specific interests when it comes to purchasing models, so I won't try to influence your choice of motive power or stock. Suffice it to say that the standard of finish and performance of the current Hornby range are as good as it gets in most cases, certainly with the 'Super Detail' locomotives and stock of the past few years. If you are building small layouts where shunting is the main object, as on the Westwood Sidings layout in Chapter 7, I will tell you that I consider the Hornby 'Terrier', J94, and the more recent Class 08/09 diesel (Fig. 2.5), to be the best available shunters available in British 00 gauge (from all that I have tried) for the slow, steady, smooth running you need in a reliable miniature shunting locomotive.

Figure 2.5. Top-quality slow running performance and extensive detailing are features of the Class 08/09 diesel shunter (R2417–9). Opening cab doors, opening roof hatch and fully detailed cab interior are built into this model, which comes in several different liveries. This is the BR green era version (R2419) of the late 1950s and early 1960s.

Figure 2.6. R2370 'The Royal Train' is one of a number of train packs available reproducing famous trains, and of special appeal to collectors.

Many beginners start off with a train set they have been given as a present. This is always a good way to start, as the set has in it all you need to get trains running straight away, which is the best way to feed your enthusiasm. Train sets can also be economical, as the price of the set is usually less than all the items would be if bought individually. If you choose shrewdly every item in a train set can be used when you develop a more serious layout. For example, all the contents of the Rambler set (R1035) and the Smokey Joe set (R1036) could be used in the Westwood Light Railway layout in Chapter 7, and you would only need extra points and track to complete it. For the larger layout or the collector, the train packs are good value, mostly enabling you to build up a complete train, such as the ‘Northumbrian’ (R2435) and its supplementary coach pack (R4228) which together give you the full-length (and very impressive) train. Train packs do not include track and should not be confused with train sets, which do.

Figure 2.7. Limited edition models, made in short runs, have been popular with collectors in recent years. These come with numbered certificates. Here are R2499, the Class 50 as No. 50007 *Sir Edward Elgar* in lined green livery, and R2498, No. 7036 *Taunton Castle* in BR (W) finish, both realistically weathered by the factory, produced as limited editions of 500 each in 2005.

Figure 2.8. The tiny but perfectly modelled ‘Pug’ 0-4-0 saddle tank (R2453) and a few wagons of choice would be the perfect way to acquire stock suitable for a very small shunting layout.

Figure 2.9. The famous ‘Jinty’ 0-6-0T in LMS livery, and the Class 06 diesel shunter in BR blue are good shunting locomotives in the Railroad range.

Figure 2.10. The small GWR 0-4-0T loco and wagons is in a Railroad train set ideal for young modellers or beginners.

Figure 2.11. Some of the top new models in the Railroad range - A3 *Flying Scotsman*, A4 *Falcon*, and 9F *Evening Sta*r.

An alternative for the more serious modeller is to buy the equivalent of a train set, but targeting the specific items you need for the layout you have in mind. For example, if building the Westwood Sidings layout you would get the J94 'Terrier' or Class 08/09 in the livery of your choice, a brake van perhaps, and six to eight vans and wagons (to start with) in the correct finish for the period of the locomotive. Then you need just the points and track sections to suit the plan, plus a controller.

Railroad range

Launched late in 2007, this is an alternative and generally lower priced range of models created from Hornby's very large 'bank' of tools and moulds for miniature railway equipment of all kinds. Nearly all brand new recent Hornby models are in the 'Super Detail' class, and in some cases they replace earlier versions of the same models. Not all modellers, and particularly younger entrants to the hobby, need the 'Super Detail' models, but on the other hand the robustness, performance, and realism of the older models is still appreciated, and they remain designed and manufactured to a high standard. So they are perfect for newcomers - both young and old - to the model railway hobby. Many experienced modellers welcome them, too, as the basis for converting or extra detailing at a very reasonable price.

All the Railroad range locomotives work on the standard 12v DC system and in all other respects match full Hornby standards. In the range are train packs, wagon packs, steam and diesel locomotives, individual coaches and wagons, and operating accessories. Included are such old favourites as the earlier A3 and A4 Pacifics, the BR 06 diesel shunter, Class 47 diesel, the HST, operating level crossing, breakdown and circus train sets, and many more, all distinctively boxed.

Thomas and Friends

This is virtually a complete range in itself, based, of course, on the famous 'Thomas the Tank Engine' characters from the books by the Rev. W. Awdry (Fig. 2.12). In terms of operation and specification the models are no different from the other Hornby models, but they appeal to youngsters and some parents making layouts for children might choose ‘Thomas’ rather than the simpler standard train sets. It is worth pointing out that some of the accessories in the ‘Thomas’ range, such as the station, engine shed and water tank, would also appeal to more serious modellers for layout use. The full range is covered in the Hornby catalogue.

Figure 2.12. A complete ‘Thomas and Friends’ layout, built using a Trakmat and all six Hornby track extension packs, and buildings in the range.

Figure 2.13. A selection of the models in the ‘Thomas and Friends’ range, with Thomas (R351) in the foreground. The range is very extensive as this scene demonstrates.

Harry Potter

The Harry Potter books, and more especially the films of the books, featured trains in the story lines, and Hornby was quick to offer the appropriate models in the correct Hogwarts Express (Fig. 2.14) finishes seen in the films. Also modelled is ‘Platform 9¾’, and all the boxes are in Harry Potter livery. While these are aimed at the younger enthusiasts, more serious collectors have also taken an interest in these distinctively finished models.

Figure 2.14. R1067, the ‘Hogwarts Express’, comes as a set (with locomotive R2491, *Hogwarts Castle*, and coaches R4238–9 also available separately) is popular with fans of the Harry Potter books and films. A suitable station from the film, ‘Platform 9¾’, is also made by Hornby.

Live Steam

Also a range in itself, and covered in the catalogue, is the Live Steam series. This ingenious system has attracted wide publicity and has been a commercial success.

Live steam was previously mostly restricted to larger scales, but by using a heating element fitted in the boiler the problem of generating steam in a small-scale locomotive is successfully overcome. The basic set comes in a sturdy (and heavy) multi-layer box containing the loco (Fig. 2.15), an oval of 00 track (244 cm x 107 cm), a transformer for the

17 V d.c. track current (which heats the water) and a control box (Fig. 2.16) which duplicates some steam loco controls (in appearance), namely a regulator handle (speed and direction) and a wheel (steam regulator). There is also a voltmeter for the electrics and LED indicator lights. Other items supplied are gloves—essential, as the model gets hot—oil and water filler syringes, tools, oil and an instruction book plus a CD version of the same. The book is exemplary for its clarity, and following its logical and well illustrated sequence should ensure no hitches in getting the loco operational. You must use distilled water: Hornby offers this in one-litre plastic bottles, but you could use the similar product sold in car accessory shops.

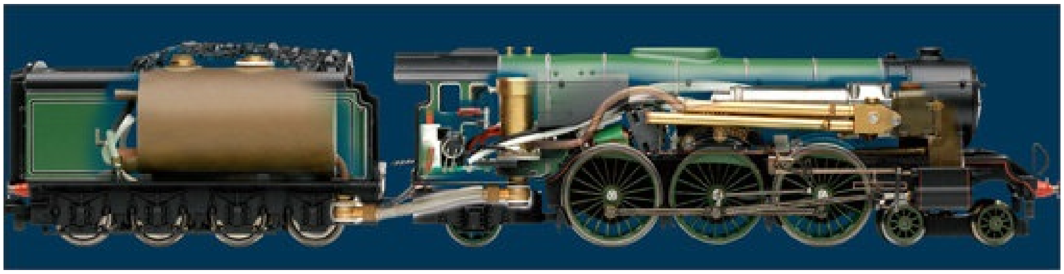


Figure 2.15. This cut-away view shows how the live steam system is fitted inside an 00 gauge Gresley A3 locomotive. The boiler is inside the tender and the superheater, steam chest, and cylinders are in the locomotive.

Figure 2.16. The live steam controller R8205 has controls modelled on real steam loco cab controls.

The A4 and A3 locos make no compromises in true scale appearance, yet pack in the ‘works’ very craftily. There is a boiler in the tender below the dummy coal (Fig. 2.17). A heater element in it generates the steam which is piped into the loco and over a superheater to drive the pistons, which are in cylinders concealed by the loco shrouding. Lubrication is via an oil filler under the chimney. It takes about ten minutes to raise steam from cold and a ‘fill’ of water runs about twenty to twenty-five minutes. When the loco is ready to go a red LED light turns green. The heating and various commands like opening and closing the steam valves are also transmitted electrically. If the boiler should run dry the heating is cut off automatically and there is an audible warning.

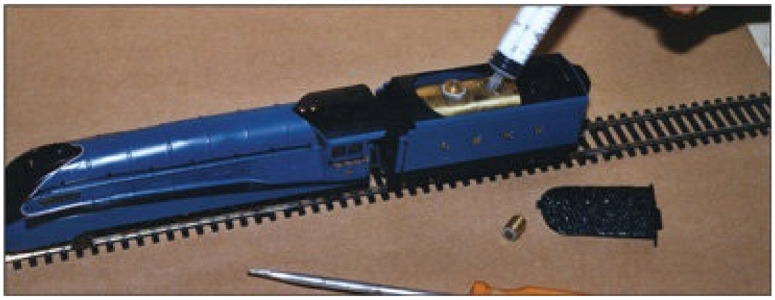


Figure 2.17. Using the water filler syringe to top up the live steam boiler in the A4 tender. The dummy coal load conceals this boiler after filling up.

In itself the system is first-class, but it is ‘stand-alone’ in that it cannot operate with electrically powered 00 models. Therefore it is not an adjunct to existing 00 models, except that all Hornby rolling stock can be used. Operation is very efficient. In theory you could use it in the garden in fine weather, but because the track has to be kept clean (for the electrical commands) you could not leave it outside all year round.

The steam-powered A4 Pacific (in various liveries and names) is followed by the Gresley A3 Pacific (including *Flying Scotsman*) and more engines are to come. To get the best out of this realistic form of motive power you need long runs with realistically long express trains. A choice from the larger-area oval-based layouts in the *Hornby Track Plans* book is recommended. For those with no space for a Live Steam layout, Hornby has produced a rolling road (R8203 or R8211, Fig. 2.18) which allows the locomotive to run on rollers and is useful for learning Live Steam technique, or for running just for the fun of it in minimal space. The rolling road can also be used with most 12 V d.c. locomotives.

Figure 2.18. The Hornby rolling road unit (R8203) can be used for stationary running or testing of both live steam and 12 V d.c. locomotives, the former being tested here.

Figure 2.19. The superb realism of the Skaledale range is well demonstrated in this view of the complete Home Farm series of structures in a scenic lineside setting. The stone walls are also Skaledale, and the sheep and cattle are from Hornby accessory sets.

Figure 2.20. Skaledale village shop and stone cottages.

Skaledale

Another success, also covered in the Hornby catalogue, is the Skaledale range of 4 mm scale buildings and accessories. These are all structures of typically English appearance, in fact most are modelled on actual originals. Initially the range covered non-railway buildings for purely scenic use, but these have been followed by a ‘Railside’ series covering railway structures of all sorts–stations, platforms, goods shed (Fig. 2.25), loco shed, bridges (Fig. 2.27), tunnel mouths (Fig. 2.28), coal office, various huts, and so on. Useful loads and small accessories (such as coal, ore, timber and AWS boxes) have also been produced, enabling the lineside, the goods yard and goods trains to be detailed in a realistic way (Fig. 2.29).

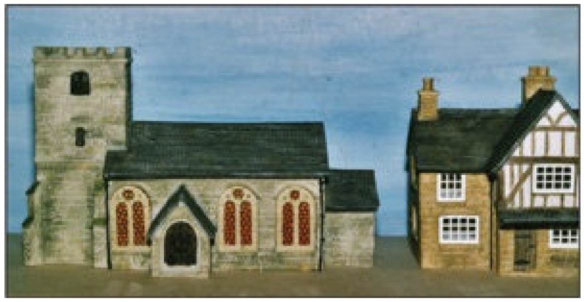


Figure 2.21. Skaledale church and house.

Figure 2.22. Skaledale village church.

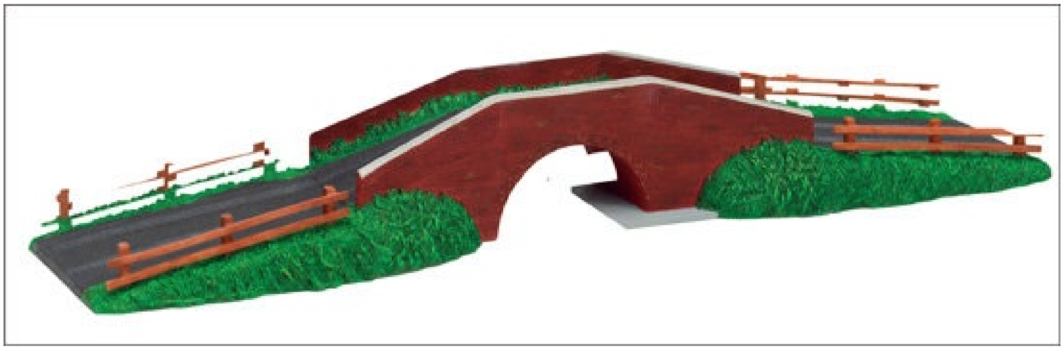


Figure 2.23. R8569 canal bridge and R8606 canal bridge ramps.

Figure 2.24. A complete station using the Skaledale station structures and platforms, on a layout built by Nevile Reid. The Hornby R2344 Bulleid Q1 0-6-0 locomotive is running 'light engine' through the station.

Figure 2.25. Skaledale R8582 goods shed. The loading stage R8605 fits inside.

Figure 2.26. Skaledale R8605 loading stage with crane (not included).

Figure 2.27. Older Hornby structures can be used in a realistic setting. This beautifully made section of viaduct on a modular layout was built by Nevile Reid, using the R180 viaduct (two units) and conventional scenic modelling techniques.

Figure 2.28. Skaledale single-line tunnel mouths R8509 in stone and R8510 in brick.

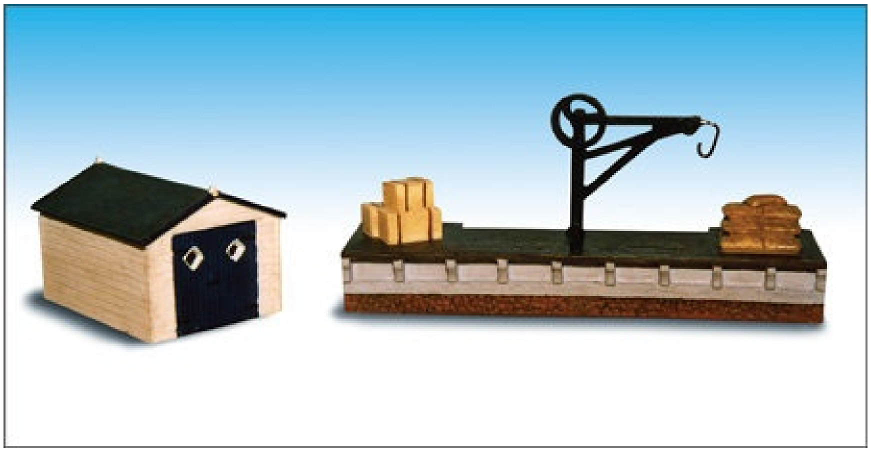


Figure 2.29. Skaledale R8552 domestic garage and loading bank with crane and consignments.

Figure 2.30. R8576 garden shed, R8587 coaling stage and R8603 coal merchant’s bins, all Skaledale models.

Skaledale models are moulded in polyester resin, which gives superb texture and colour rendering, so that stone and brick finishes not only look realistic, they even feel realistic! The process allows models to be produced quite quickly and for changes to be made. Hence some models are withdrawn and replaced by slightly different versions when new production runs are put in hand. This ensures variety and a degree of individuality. Most structure models in the past have had to be built from kits, but Skaledale gives you ‘instant’ ready-made buildings to a high standard of detail and finish, so appeal to the less skilled, or anyone short of time or the inclination for kit building. You can still give Skaledale models a degree of extra detailing, however. You can get inside some, so paper curtains inserted with tweezers are possible, as are other interior items like people. Names can be changed on shops and pubs, and advertisements added, and so on. I have also ‘cross-kitted’ some by adding kit parts to a Skaledale structure, an example being the Parry’s Produce warehouse (Fig. 2.31).

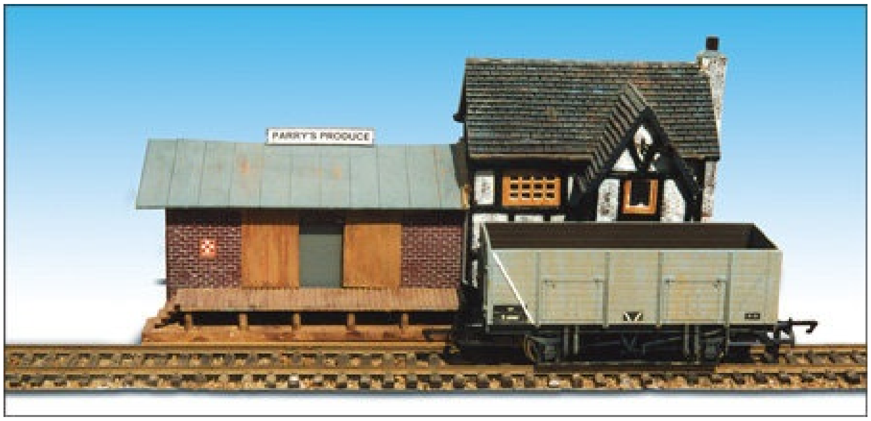


Figure 2.31. You can sometimes change a Skaledale model a little by ‘cross-kitting’ with spare parts from other structure kits. This is the Skaledale watermill with the mill wheel covered over by an added warehouse shed and loading bank, turning the model into Parry’s Produce, a country fruit, vegetable and feed trader served by rail.

Figure 2.32. An attractive village in a corner of a layout, built entirely from models in the Skaledale range, by Nevile Reid. The background buildings on this 00 scale layout are actually from the Lyddle End N scale range. Being smaller they give an enhanced impression of distance to the viewer.

Figure 2.33. Some Skaledale models are suited to specific regions, such as R8568, an oast house, as found in the Weald of Kent.

Figure 2.34. A parallel range to Skaledale is Lyddle End. Most of the models are similar, but Lyddle End models are scaled for N gauge (2 mm to 1 ft or 30 cm). While intended for N gauge models, they can also be used in 00 gauge for structures seemingly in the distance, giving the effect of perspective. On this platform Lyddle End station consists of the stationmaster's office N8000 and waiting room N 8001.

Figure 2.35. Holly Farm buildings in the Lyddle End range: N8015 two-storey workshop, N8013 barn and N8014 stables.

Figure 2.36. Some of the finely detailed coal mine models from the Skaledale range, plus some SkaleScenics trees and foliage can be seen in this view.

Figure 2.37. The effectiveness of the SkaleLighting system is well shown in this well illuminated Skaledale signal box in a 'night' scene on a layout.

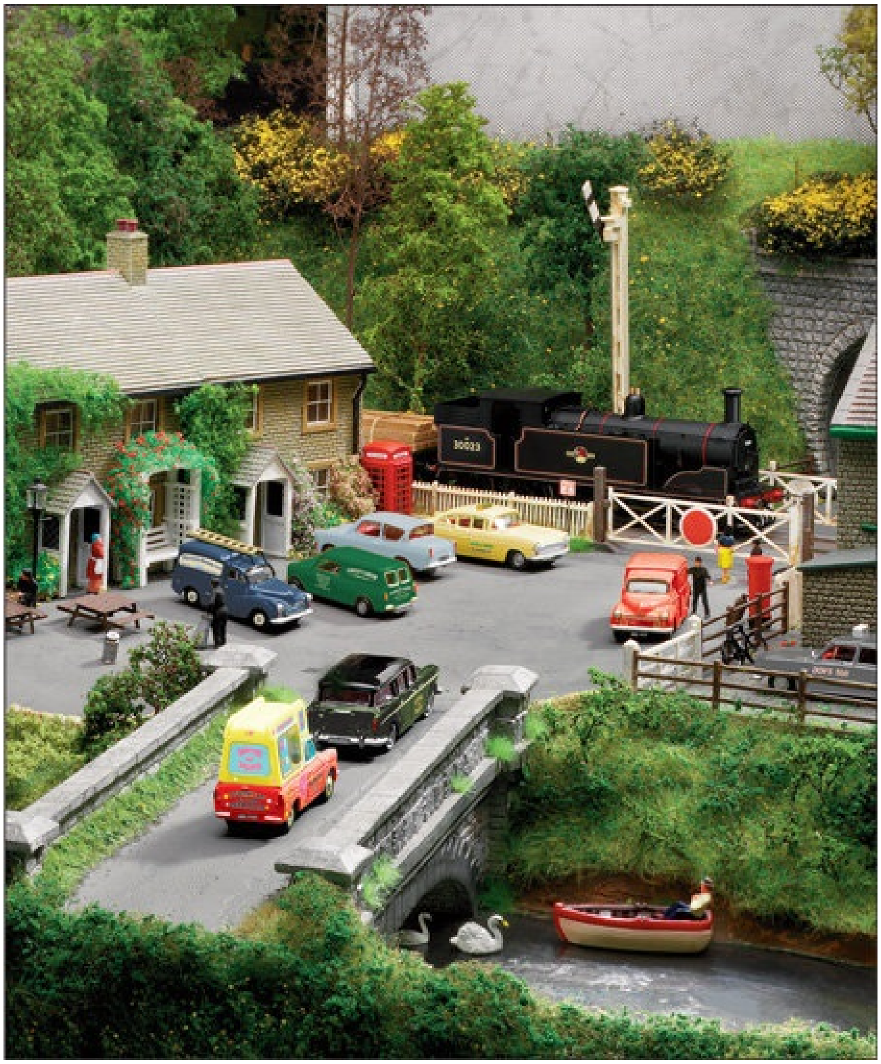


Figure 2.38. Some of the cars and vans in the SkaleAutos range, plus the telephone box and post box - from the Skaledale Street Life Collection.

Figure 2.39. All the trees, bushes, undergrowth, rocks, and reeds in this attractive layout view are made entirely from SkaleScenics material. The structures are Skaledale.

Figure 2.40. Some of the SkaleAutos models follow the Circus theme, ideal for use with the Bartello's Big Top Circus Train Set.

Obviously houses can be set in gardens on the layout, with walls and fences, and foliage can be glued on to depict creepers or ivy on the walls. On the Westwood Sidings layout I have put the ground frame cabin on a gantry bridge to make an overtrack signal box, so there is much extra potential in this range.

It is essential to point out that the Skaledale OO/HO range (and the equivalent Lyddle End N scale range that follows) is constantly changing. The production methods allows new models to appear at frequent intervals, in some cases replacing earlier models of similar type, and sometimes extending into new subject areas such as an extensive series of coal mine structures of great realism released in 2008. Useful new lineside models are being produced, too, such as a cattle dock and a stone station, goods depot, and loco shed, and many more, including street fittings such as road signs, street lamps, post boxes, a police box, bus shelters and more.

A very attractive new accessory is SkaleLighting which enables structures to be lit up inside for night scenes in a most realistic way, using a simple low voltage DC system. This system comprises sets of bulbs, sockets, plugs, fuses, and extension wire so that individual buildings can be fitted out according to size. It is simple to use with instructions included with each pack. It can be operated on layouts used in conventional DC or the latest Digital control. It is a good idea to paint the interior walls of any structure in matt black before SkaleLighting is installed to prevent any chance of an extra ‘glow’ through the walls.

SkaleScenics

A significant extension to the Hornby range is SkaleScenics which provides a good selection of ground coverings and foliage packs, plus trees and tree kits, all to a high standard and quality. Aside from some basic ‘Eco’ (generic) tree types for background and general use, there are highly detailed ‘Professional’ models of specific tree types, such as sycamore and walnut, perfect for foreground use.

Hornby have for many years offered some basic scenic material such as ground mats, simple trees, and scatter material, but the SkaleScenics range is a big jump forward, for the quality, realism, and variety offered here matches the best standards of specialist scenic accessory firms with competitive pricing and good packaging. The scope is actually even greater than you might suppose. For example the Poly Fibre Strands (R8847, R8848, R8849) can be used for bushes, hedges, weeds, general undergrowth, or, when teased out, as foliage for 'home made' trees as shown in section 4 of this book. This is quite apart from the tree kits in the SkaleScenics range in which Poly Fibre Strands are included with ready made tree trunks.

SkaleAutos

Already very extensive is the new SkaleAutos range of 1:76 (OO) scale model road vehicles covering private cars and commercials of all types. Included are delivery vans, BR vehicles, furniture vans and lorries, taxis, buses, circus vehicles, and many more. Some of the commercial types have company names related to the Skaledale building range, but all are suited for use in any model railway setting. They are die-cast and perfectly finished and detailed. Mostly they suit the 1950-70 period (later in some cases) so tie in well with the most popular BR modelling period. As with the Skaledale structure range, new models appear from time to tome.

As noted above, there are some pleasing and appropriate links with the Skaledale structures. For example there is a Skaledale taxi office, with a SkaleAuto taxi carrying the same company name, a Skaledale and District bus garage and a SkaleAuto AEC Regent bus in the company markings, plus several trade vehicles carrying the names of businesses depicted by Skaledale shops and garages.

The SkaleAuto models are beautifully detailed, finished and marked, even with perfectly lettered number plates (which are very small in 4mm scale!). As with railway models, the more experienced enthusiast can add some weathering, though this does not need to be overdone as cars and lorries rarely look very dirty. In addition, some recent SkaleAuto models are being produced in lightly weathered finish, an example being the Land Rover. One trick which works well, especially with delivery vans, and lorries, and gives the impression of a well used vehicle, is to paint over the body work (not the glazing) with matt clear varnish as sold in most model paint ranges. This takes the 'as new' shiny finish off the model and makes a good contrast with the glossier cars.

Lyddle End

The Skaledale 00/H0 models were well received from the start, and this prompted Hornby to make another range, broadly based on the Skaledale models but scaled for N gauge, which is 1:148 (British) or 1:160 (all others), roughly 2 mm to 1 ft or 30 cm. While there is no Hornby N gauge range of model trains, there are ranges made by others, and the Hornby N gauge structures, known as the Lyddle End range, suits all N scale models. The Arnold N scale range is now part of the Hornby group, so Lyddle End goes with it too.

Chapter **3**

Building a layout

Before you can run the trains you need a baseboard that is strong and suitable for the job, with the track laid and wired up ready to go. In this chapter we cover this important part of the hobby.

Designing a layout

Space for a layout

Newcomers to the model railway hobby soon find out that layouts and models, even in the relatively small 00 gauge, take up more space than they imagined. For example, 6 ft x 4 ft (180 cm x 120 cm), typical for an 00 gauge layout, is roughly the area of a single bed. If you live in a small house or apartment you may find you've not got that sort of space available for a model layout. This leads to a common excuse for not proceeding further: 'I haven't got room for a layout.'

Well, everybody is in a different situation here. You may have a whole loft, basement or spare room that has space for a large layout, in which case you are one of the fortunate few. On the other hand you may live in 'digs', in a small bed-sit where space is limited indeed. If such is the case, you need not be excluded from layout building. It is quite possible to build a nice, operable little layout only 4 ft 6 in. long and 6 in. wide. Westwood Sidings, to just that size, is featured in this book to prove it. True, it's a modest goods yard shunting layout, but that has the virtue of endless activity for a shunting engine moving wagons to and from the various warehouses and 'on line' customers. So you won't get bored with it at all, and you can lavish a great amount of scenic detailing on it. You may well find it more satisfying, and a deal easier to build and operate, than a giant main-line layout.

For another problem with layout building, which specially catches beginners out, is too much ambition! You see imposing layouts at model shows and exhibitions, and naturally they capture the imagination and you want to build something similar. Relative newcomers who have the space available sometimes set to with great enthusiasm but never finish, because large layouts require a lot of work, modelling experience, and time and expenditure to complete. The big layouts you see are usually built by a team of people, some with specialist knowledge of scenic work or wiring, etc., and even so the layout may have taken years to build. Hence if you are a relative newcomer to the idea of layout building it may be better to start with something small and simple which can be extended later as you gain experience, and if you get more space later on.

Here it is worth mentioning another category of enthusiast. There are a lot of model railway fans who admire the finely detailed Hornby locomotives and rolling stock now being produced. You buy them, then realise you haven't really got space for a layout big enough to run them on—after all, a full-length express train in 00 gauge might be 12 ft to 14 ft long. You may not have time to build such a layout even if you have the space. So the models end up unused in the cupboard or gathering dust on the mantelpiece.

One answer here is to build a very small layout indeed, not much more than a diorama, really, but highly finished scenically so that your fine-scale locomotives can run up and down. I built such a layout, just 4 ft long and 4 1/2 in. wide; I call it the 'Tuning Fork', because that's what the track layout looks like—a Hornby Y point in the middle giving two parallel tracks or sidings (Fig. 3.1). Big engines can only run up and down but small locos can actually shunt wagons from siding to siding (Fig. 3.2). This doesn't sound much but in practice it is immense fun, very quick and easy to set up, totally portable, light and was quick to build. It took just one weekend, using 6 mm MDF. When not in use it is propped in a corner or stowed in a cupboard.

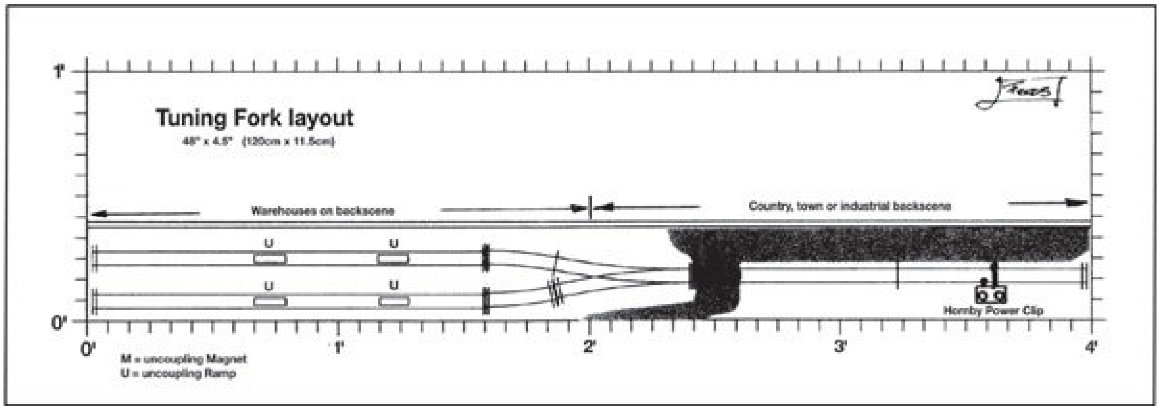


Figure 3.1. Track plan for the little 'Tuning Fork' as built, though it could be built 6 in. (15 cm) shorter or longer if desired.

Figure 3.2. The smallest layout in this book, the ‘Tuning Fork’ is only 4 ft long and 41/2 in. wide, yet it still allows pleasing shunting and the chance to do some easy scenic work. Here the driver of the Mechanical Horse takes a breather while he waits for the J94 locomotive to shunt across the road crossing. Scenic background is from Bilteezi sheets and odd catalogue illustrations.

Slightly bigger, at 4 ft 6 in.i x 6 in., is Westwood Sidings, built specially for this book. I developed it as a goods yard (Fig. 3.3), but if you are a fan of big express locomotives an alternative is the same track plan developed scenically as Westwood Loco Depot (Fig. 3.4). Here instead of goods traffic you can parade your favourite locomotives, supposedly coming in for cleaning, servicing or overhaul (Fig. 3.5). Different locomotives are placed on the 'fiddle yard' (see below) track and run in on to one of the sidings, then return to the fiddle yard, supposedly after servicing. Some variety can be given by the shed pilot, any favourite shunting engine which might run in with loco coal wagons, wagons for ash removal, fuel tankers or store vans.

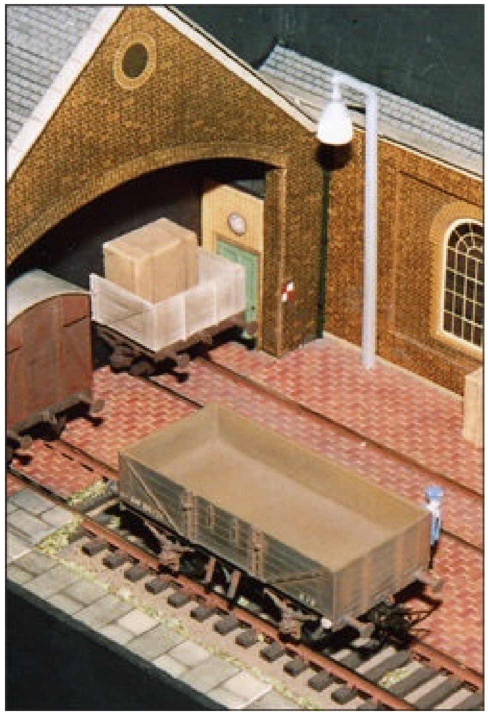


Figure 3.3. How the Westwood Loco Depot layout could look, using card kits for the background ‘loco works’ setting. This is actually a similar layout, called EasthamWorks, built by Graham Weller.

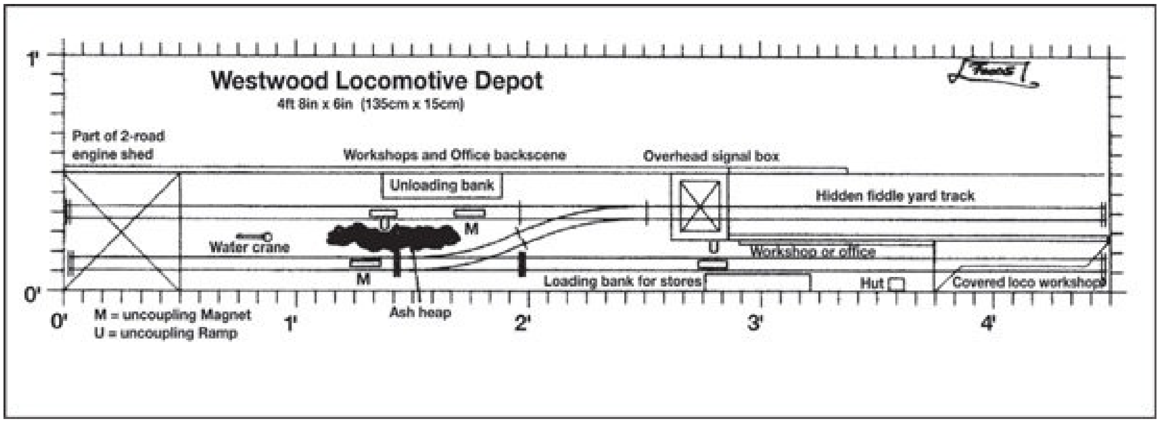


Figure 3.4. The Westwood Sidings layout is described in Chapter 7, but here is the same track plan marked with structures for a locomotive depot, Westwood Loco Depot.

Figure 3.5. An alternative use for the little Tuning Fork layout is as a test track or a scenic setting for running the larger engines in your collection. Here a weathered LMS 8F 2-8-0 gets some exercise.

Whichever way you do it, Westwood is a workable and interesting layout despite its small size. If you can set it high, say on a kitchen worktop, and sit low so that you observe it at eye level, you'll be surprised how big and realistic it looks. All layouts look good at eye level, if you can operate them that way, for you are then seeing the models just as you would watch real trains from the trackside. At eye level you certainly appreciate the realism of models.

More layout types

Moving on from these minimal, but practical, layout ideas, there are other small-area layouts worth considering.

Inglenook Sidings

This is a famous concept by the late Alan Wright. The only space he had for a layout was the 4 ft 6 in. of wall each side of the chimney breast in his parlour. So he built a small layout to fit, hence the name. This is just a very simple arrangement of sidings fed from a head shunt, as the track plan shows (Fig. 3.6). But with a small locomotive and about eight wagons the various ways of shunting them into selected orders is almost infinite. Alan Wright used a 'tiddlywink computer'. Tiddlywinks were numbered, and each wagon was given a matching number. The wagons had to be shunted each time into the order that was arrived at when the tiddlywinks were drawn randomly. This will keep you going all evening, and hundreds of enthusiasts have built their own versions of Inglenook. You can develop it scenically into a realistic setting. While the minimum length is 4 ft 6 in. with two points to give three sidings, as shown, there is nothing to stop you making a longer or wider version, say 6 ft long, with more sidings if you have more space.

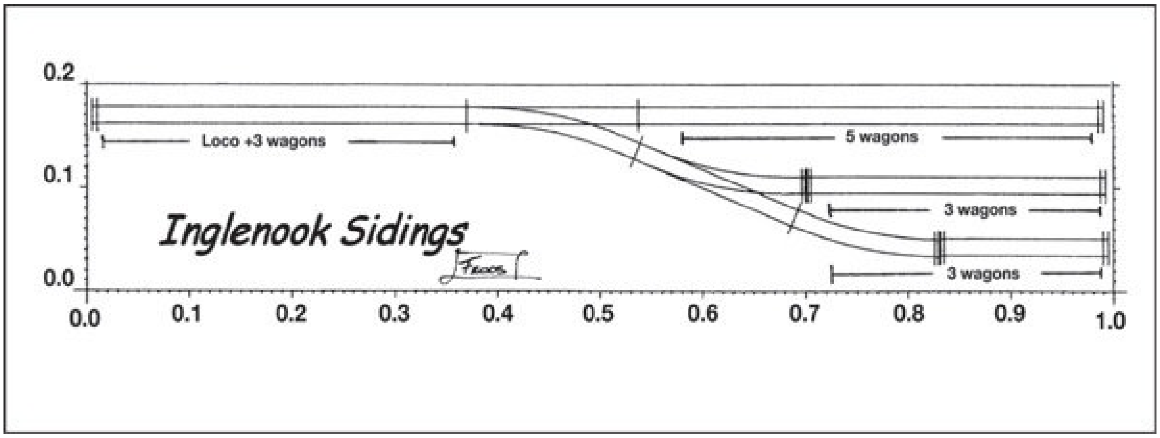


Figure 3.6. The basic Inglenook Sidings track plan drawn out for Hornby track and showing the siding capacities. Scenic work can depict a goods yard.

Wright Lines

An earlier small layout by Alan Wright brings us to the popular oval layout theme. If you look at it, the concept is really a continuous version of the Inglenook, for it still has the sidings to shunt, but with the added bonus of the chance to run trains round the circuit for fun. As such it is an ideal starter for a junior modeller. The Hornby 'Smokey Joe' set (R1036) plus Track Pack B will quite literally give you all you need for a Wright Lines layout, and its building would follow the techniques shown in this book. The beginnings of the building of a Wright Lines layout are shown later in the book to give an idea of how it will look. I modified Alan Wright's idea, however, to give an extra point and track leading off the board. This is to allow for future extension, always a good idea with an oval layout. Once any basic layout is built it is always nice to be able to expand it on to another board at a later date if more space becomes available.

Fiddle Yard

This is a term you'll often see and some of the plans drawn in this chapter all have them indicated. In case it is new to you, the fiddle yard represents the link to the rest of the railway system. Your small layout can depict only a tiny part of a much bigger plan. The fiddle yard, usually hidden by scenery or structures (Fig. 3.7), represents the rest of the branch going to the main-line junction or the nearest big goods or marshalling yard. This way you get 'coming' and 'going' traffic, just as on a real railway where trains you are watching disappear from sight or come into view.

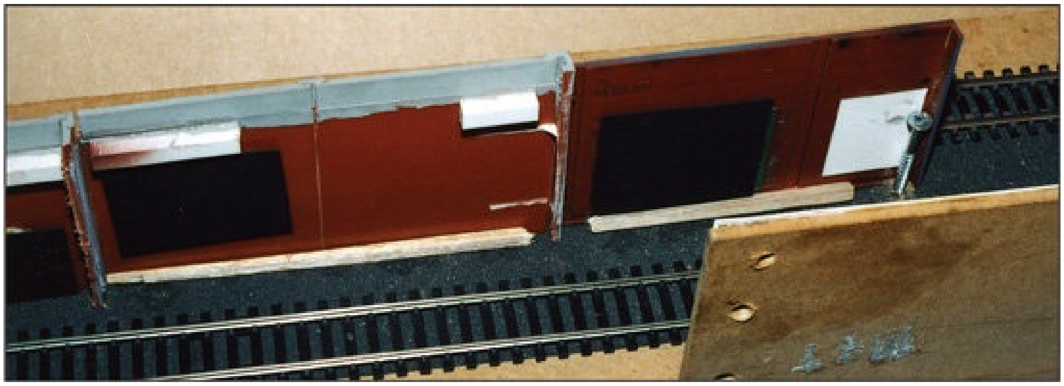


Figure 3.7. The simplest fiddle yard of all is the track disappearing behind the scenery. Here it is on the Westwood Sidings layout, running behind the low-relief bakery and drinks warehouse. On the hidden trackage wagons are changed over by hand. As it is out of sight of the front of the layout there is no need to weather the track or neaten up the backs of the structures.

Usually the fiddle yard can also be used for a future extension on to a second baseboard, and some very large layouts have been built up over the years simply by adding yet another module with more scenic development. The Westwood layout could be extended onwards in exactly that way. Extensions of this layout could be straight along a long wall, but they could equally well be at right angles to make an L-shaped corner layout, as shown in Fig. 3.10(c). Another modular idea is also shown, with four sections making a larger square layout.

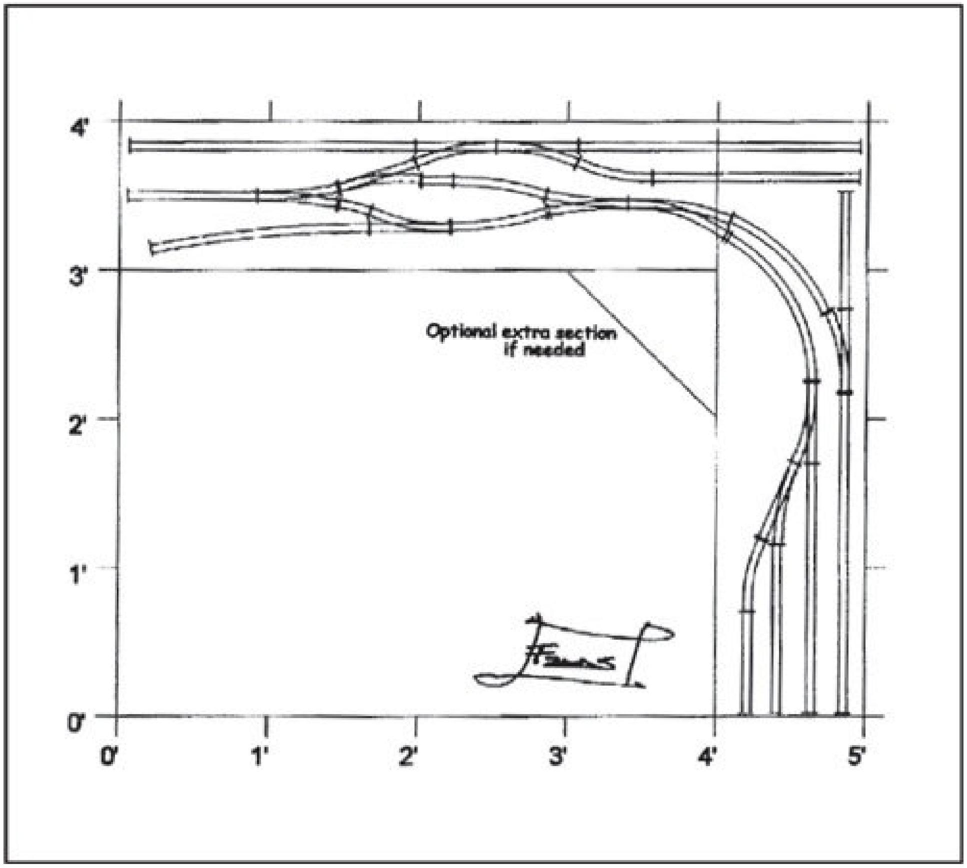


Figure 3.10. (c) You can extend round a right angle, maybe using a bit of the return as well.

Your sort of layout

Aside from the considerations of space and time, your choice of layout will be influenced by your special interests. You may like the idea of an attractive GWR branch line theme, a busy industrial setting, a loco depot, a harbour branch or (space permitting) a main-line setting with big through stations. The choice is huge, and the model railway magazines offer layout ideas in every issue (and show you how others have done it). There are several books of plans available, including *Hornby Track Plans*, now in its tenth edition. If you want to explore and see the possibilities of modular layout building, some excellent schemes are given in it, with a fiddle yard included in one of them as shown in (Fig.3.7).

Track planning aid

A very useful Hornby accessory is R619, a set of track planning symbols, plastic miniatures of all Hornby track units at 1:4 scale (Fig. 3.8). They clip together, so, using this pack, you can try out layout ideas and variations to see how they work out before going on to build the full-size layout.

Figure 3.8. Hornby R619 track planning aids.

Building a baseboard

Newcomers to the model railway hobby, youngsters in particular, often start running a train set by laying the track on the floor, or on a table if they have one big enough. Such layouts can be only temporary and have to be taken up afterwards: very boring. There are further disadvantages. Dust and fluff can be picked up from the carpet; constantly joining up track and taking it apart means wear on the rail joiners, and can twist them, or the track itself. Even worse, models on the floor are always in danger of being trodden on or kicked, however careful you are. So the next need is for somewhere that can take the track layout in a permanent manner. At this point some inexperienced young modellers (or their parents) go wrong. It is easy enough to buy a big sheet of 6 ft x 4 ft or 8 ft x 4 ft chipboard, hardboard or plywood at a DIY store, take it home, lay it on trestles and pin the track on top. Problems soon arise, though, for without lots of bracing such big sheets start to warp, distort the track and derail the trains. Apart from that, they are unwieldy things to move about, and in the case of chipboard they are very heavy, too.

A much better arrangement is to make a proper baseboard framing on which a suitable surface material can be screwed (Fig. 3.9). The framing keeps the baseboard stable and makes a much better surface for the track as well as the scenic work you may want to do later. Obviously the size of a baseboard varies with the space at your disposal, but it is a good idea to make the framing and the board in sub-units that can be bolted together rather than as one huge construction. If you are working with a layout area 6 ft x 4 ft or less a single unit is just about feasible, but bigger than that break it down into sections as shown in Fig. 3.10 (a–b). This will make it much easier to take the layout down if you move rooms or house, need to redecorate or eventually want to extend it. You can unbolt the sections and reassemble them if you move house.

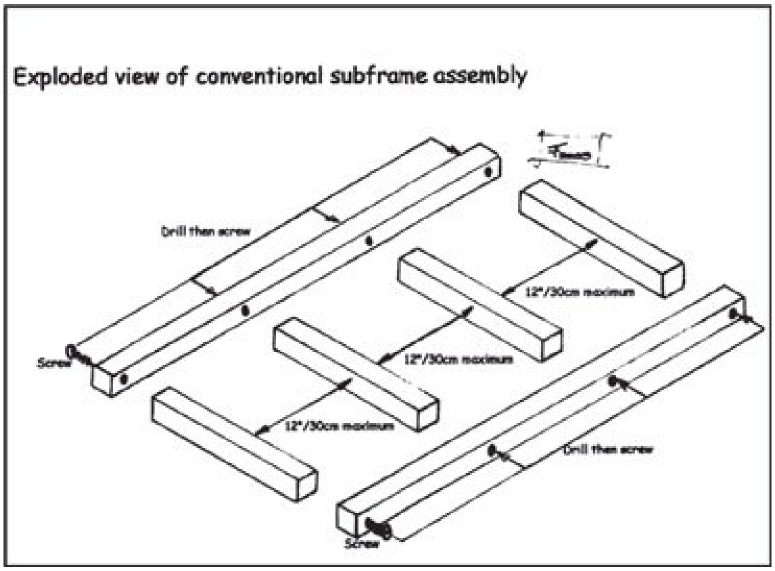


Figure 3.9. The most usual method of making a baseboard, with framing below and board forming the top surface.

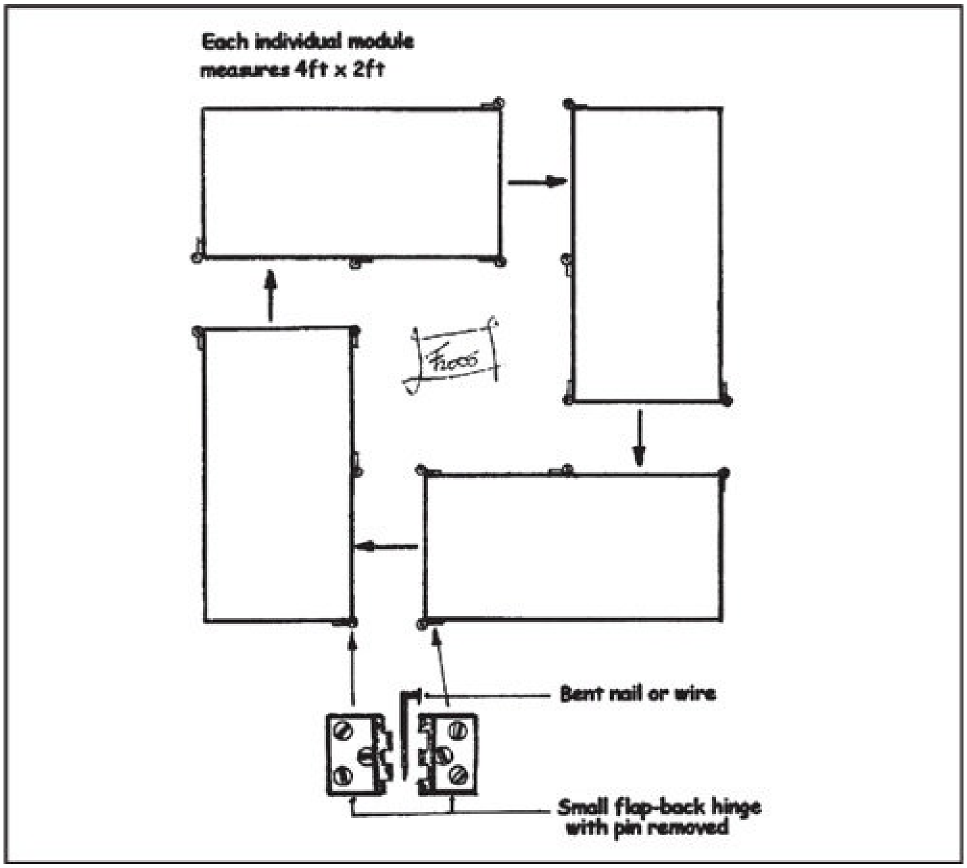


Figure 3.10. (a) Large baseboards are better made in sections or modules bolted together …

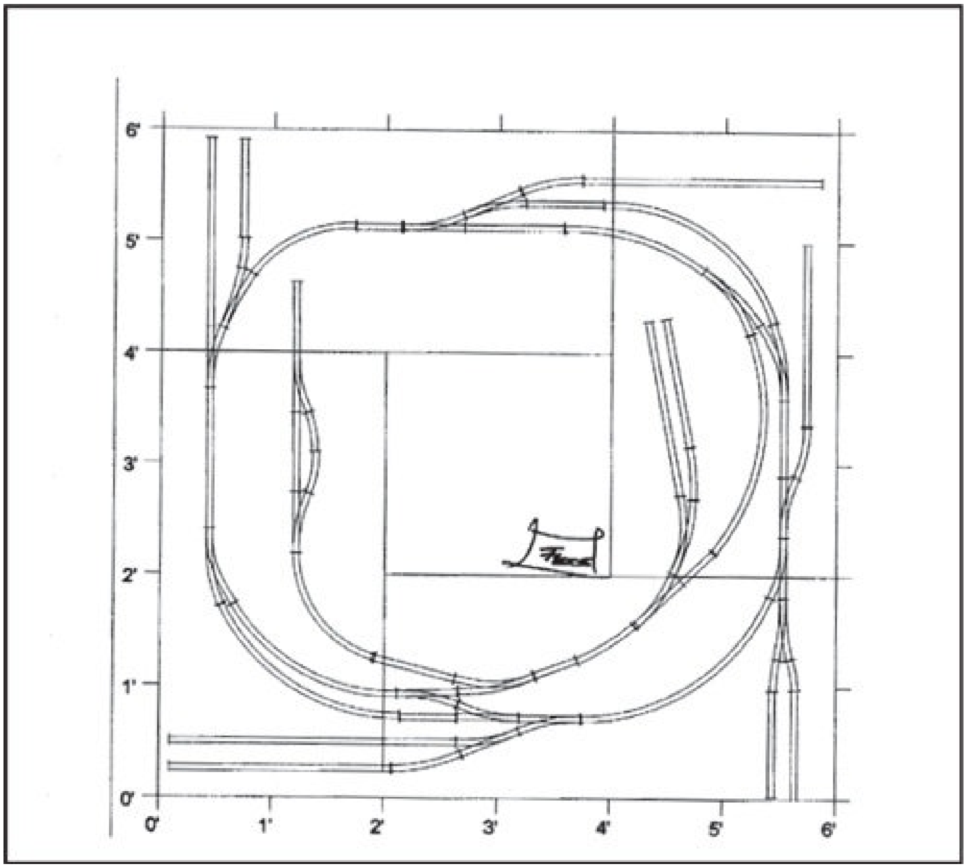


Figure 3.10. (b) … but avoid pointwork at the joins!

Ordinary nuts and bolts (coach bolts) sold in DIY stores can be used to join sections of a large modular layout. Holes are drilled through the end frames at common centres so that the bolts can be pushed through (Fig. 3.11). An alternative is to use hinges with the pivot removed. ‘Loose pin’ hinges are available nowadays, or you can knock the pins out of ordinary hinges, using a nail as a removable pin (Fig. 3.12).

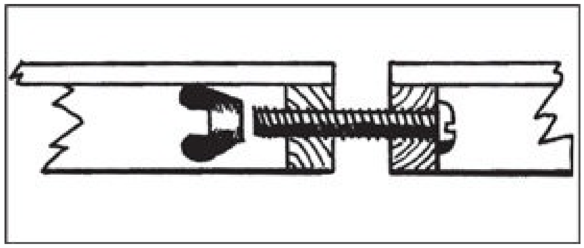


Figure 3.11. (a) If there's room, wing nuts are convenient …

Figure 3.11. (b) … for the coach bolts that join two sections of baseboard.

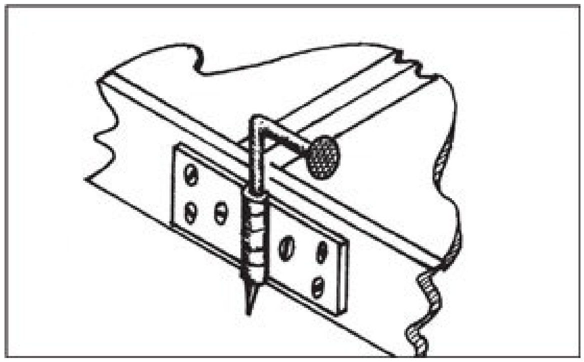


Figure 3.12. (a) A good way of joining adjacent baseboard sections or modules is to use ordinary butt hinges with the swivel pin removed (saw through it with a razor saw) and a nail substituted. This is inserted in the knuckle and locks the baseboard sections firmly together. Pull the nail out to separate them again.

Figure 3.12. (b) For most layouts you need only the smallest (25 mm or 30 mm) hinges.

The base

Framing and support

Many modellers use nominal 2 in. x 1 in. (50 mm x 25 mm) planed whitewood for the framing, as sold in all DIY shops. But if you are making a small shelf-type or corner L-shaped layout you can use nominal 1 in.^{2} (25 mm^2) planed wood throughout, which is both lighter and cheaper to buy. I use the word 'nominal' because the wood is actually smaller in most cases— typically 19 mm^2 is the nearest you get to 25 mm^2, but it works just as well. Follow the illustrations to see how it can be cut and assembled.

You need minimal tools, no more than a power drill, hacksaw, screwdriver, screws and some PVA wood glue. You don't need more than basic woodworking skills. But it is best to assemble the framing on the floor (or outdoors on the path), to ensure each section goes together flat without any built-in 'warp'. When assembling the sub-units a spirit level is useful to ensure the baseboard is on an even keel and not on a slight slope.

When you buy the 19 mm^2/25 mm^2 or 25 mm/19 mm x 50 mm planed wood from the DIY shop, select the straightest lengths you can find. There are usually some warped lengths in the rack. The conventional and most straightforward way of making the framing is as shown. For a larger baseboard the 4 ft x ft section is commended, with sections bolted together to form the full area. If you are making a shelf-type small layout, or a corner L-shaped layout, you can vary the sub-frame dimensions to suit—for example 4 ft x 1 ft, or 4 ft 6 in. x 9 in., or 5 ft x 8 in., or similar.

If you are making a bigger baseboard it is better to use 25 mm x 50 mm wood for the framing. For example, to make a 4 ft x 3 ft or 5 ft x 4 ft oval layout the construction should be as shown in Fig. 3.13. To make a neat strong job, the cross-pieces can be cut away to make halved joints where they meet. Figure 3.13 also emphasises that you do not need to cover the entire framing with the surfacing material (softboard, Hobbyboard or MDF). A flat surface is needed only where track, goods yards, stations, etc. are to be sited. This means you can put in rivers, ravines, ponds, harbours, gullies, etc. that dip below ‘ground level’ when you come to scenic work. In the project shown the centre is to feature a harbour basin, crossed by a bridge at the rear, with a beach on the nearer edge. The Hobbyboard has been cut and arranged over the framing to allow for this. It emphasises that layout planning should also take into account any special scenic requirements when the baseboard is being built.

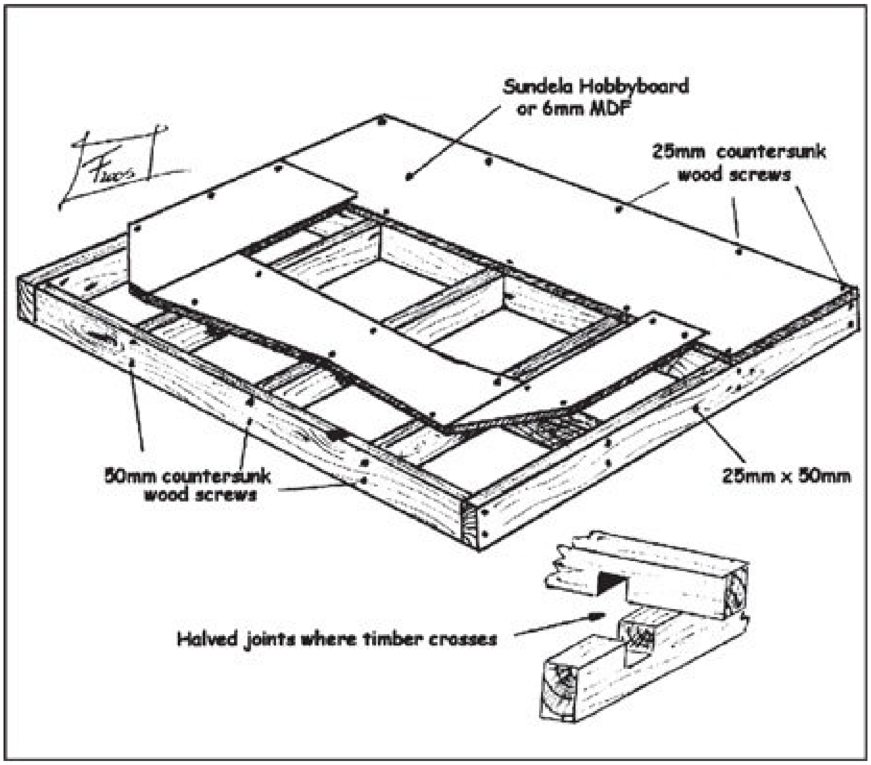


Figure 3.13. Construction method for a large baseboard.

Simpler framing

If you are building a small layout of the portable variety that is operated mainly when placed temporarily on the kitchen table, kitchen worktop, a bed or a bookcase, you do not need such sturdy construction, as the layout is propped up in a corner or stowed in a cupboard when not in use. A quick and effective method I've used is what I call (for want of a better name) 'criss-cross framing' because that more or less describes its way of assembly. Instead of fitting the cross-bracing between the longitudinal members, it simply goes across the top (Fig. 3.14). The dimensional idea of a 12 in. (30 cm) grid is retained as far as possible, but there is great flexibility in both spacing and dimensions to suit particular requirements. There are several advantages with criss-cross framing:

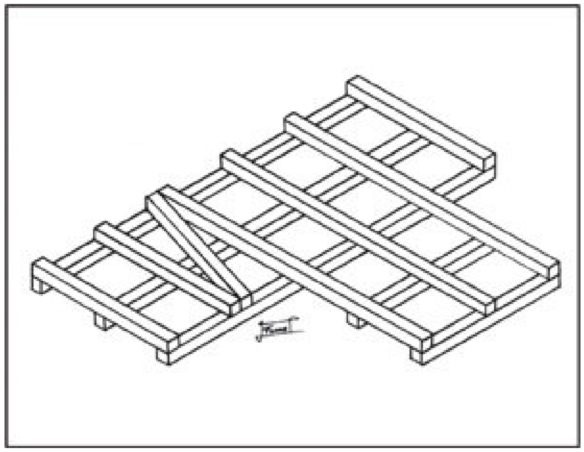


Figure 3.14. Simple 'criss-cross' framing construction.

- It's quick to do—just saw all members to length.
- You can actually use a mix of wood sizes—say 1 in.^{2} (25 mm^2) for the longitudinals and 2 in. x 1 in. (50 mm x 25 mm) for the cross-members. As a general rule use larger wood the bigger the layout. For small layouts 25 mm^2 x 19 mm^2 wood suffices.
- You can add extra longitudinals and cross-members at will and vary the grid spacing to suit.
- You can add such pieces retrospectively if you change the scenic set-up on the board later, requiring more support in certain places.
- Though you have to take the same care to keep the assembly flat—work on a really even floor—you don't have to worry too much about assembling the cross-members in a regular square grid. They can be put across at an angle if required.
- There is no rule about the width of cross-members. If a projecting piece is needed, just make them longer as required.

These features are shown in Fig. 3.14.

Assembly is by glue-and-screw. It is quickest to screw down from the top, since the whole lot can be laid flat and you can literally move along the grid with a power drill putting in the screw holes with great rapidity. A further refinement is to put the screws in from underneath, so that if you want to remove or reposition cross-members later on you can do so without disturbing the layout. For example, you might want to cut a hole in the softboard top to build a lake or valley when you get round to altering the scenery. With the screws inserted from underneath a cross-member can actually be moved a few inches to one side and repositioned if it gets in the way of the hole you want to cut.

The other quick way of making small baseboards is what I call the 'MDF quick fix'. This is suited to MDF, which is quite rigid, especially when cut in narrow strips. See below for more on MDF. But using 6 mm, 9 mm or even 12 mm thick MDF up to about 12 in. (30 cm) wide and up to about 6 ft (180 cm) long it can be used with just longitudinal strips screwed to the edges and centre line to make a rigid and quite light board (Fig. 3.15). I have built several small portable layouts using this method. When a backscene board is screwed to the back (into the rear longitudinal support) extra rigidity is assured.

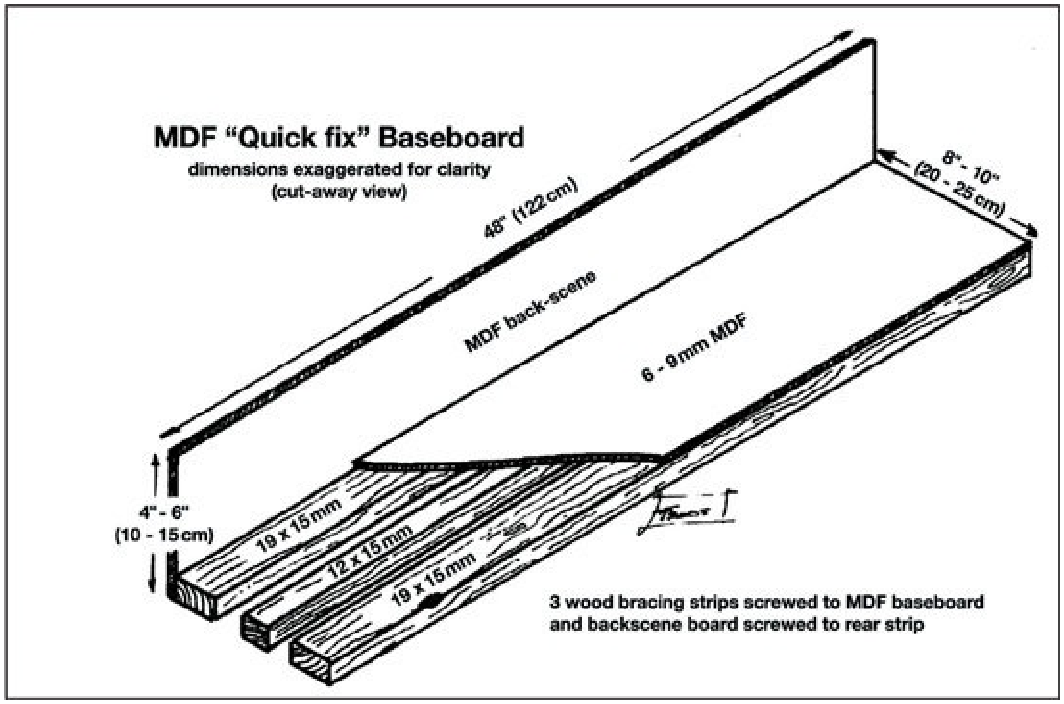


Figure 3.15. (a) 'MDF quick fix' baseboard construction for small, narrow shelf-type layouts. Both Westwood Sidings and the Tuning Fork in this book have simple baseboards made this way, using 6 mm or 9 mm MDF.

Figure 3.15. (b) The underside of a ‘quick fix’ baseboard.

The board

The actual baseboard top on which rails, structures and scenery are placed is most often made from Sundeala Hobbyboard, stocked by larger model railway shops. It comes mostly in 4 ft x 2 ft panels, so the framing sections could also be made to this size. Timber suppliers sell larger sheets of Sundeala. A cheaper alternative is MDF board, sold in all DIY stores. The 6 mm thickness is ideal. Get the DIY store to cut it to the size you want, as there have been health warnings about the dust from this material. If you have to cut or drill it, it is best done outdoors, and you should wear a protective face mask.

Sundeala is soft enough for track pins to be pushed in with pliers. With MDF you may have to drill a pilot hole for each pin, using a ‘pin vice’ hand drill through the hole in the sleeper.

It is well worth checking to see if your DIY shop has an ‘offcuts’ bin. It is often possible to find in these bins suitable offcuts of MDF a few feet long, suited to small baseboards, for a very low price indeed. Westwood Sidings, the layout in this book, is built on MDF offcuts which cost only £1. Avoid chipboard, hardboard or plywood. They are hard, heavy and not ‘user friendly’ for a baseboard surface even though some people use them!

Other methods

Here I have covered only the easiest ways of making baseboards, suited well to beginners and the less experienced. You will find more ideas in other books and magazine articles, including the use of plywood, foamcore plastics and pasting tables. All work well but are more easily used by experienced modellers. If making a baseboard is completely beyond your ability, it is worth knowing that a few specialist companies can make baseboards to order, or supply them as kits of parts for home assembly. An example is Model Baseboard Manufacturers (phone 01233 861217).

Some small layouts may not need to have separate supports. Such sizes as 4 ft 6 in. x 9 in. or 4 ft x 1 ft can be placed on a bed, a table or small trestles for operation, then put away again afterwards (slid under the bed or stood in a corner). Anything larger, or layouts left permanently in place, must be properly and rigidly supported. Figure 3.16 shows the most usual way of doing it with braced legs. Usually 3 in. x 1 in. or 2 in.^{2} battening is used for the main uprights, and 2 in. x1 in. or 1 in.2 for the bracing. No elaborate jointing is needed, just two screws at each join. It is best not to use glue, since there may be a future need to change the legs and braces if the layout is rebuilt or moved to another site. The number of legs will vary according to the type of layout. For example, a 4 ft x 3 ft 'table' may just have the braced legs at each end (with the side bracing meeting in the middle), while a 6 ft x 1- 3ft 'wall hugger' section may have braced legs at each end and another pair half-way along, as shown in Fig. 3.16. Normal table height is the usual choice, so that you sit down to operate the layout, but I have gone higher than this (around 4 ft) with no trouble. It is essential to get all joins neat and square to avoid tilting or rocking— a spirit level, plumb line or set squares help here. When the layout is placed against a wall it is useful to secure the uprights to the skirting with an ordinary angle bracket (Fig. 3.16). Figure 3.17 shows an alternative idea for a wall-hugger layout support so long as the sections are no more than 12–18 in. wide. It is a wood bracket, plugged to the wall and set at 2–3 ft intervals. You need to be a competent carpenter or handyman to make a good job of this, however, and it is important that nobody leans on the outer edges of the baseboard once it is all in place.

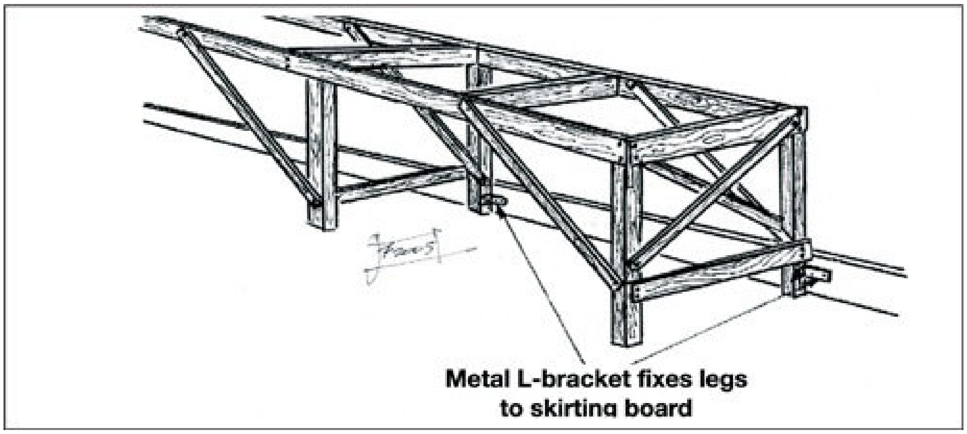


Figure 3.16. Bracing for the supports of a larger permanent baseboard.

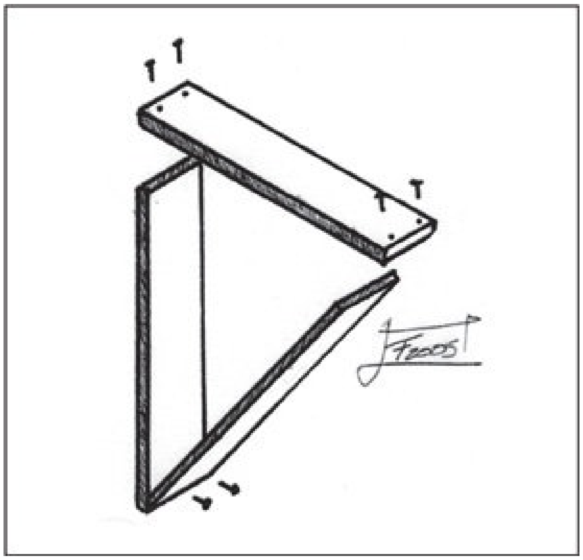


Figure 3.17. A suggested way of making wall brackets for wider shelf-type layouts.

Larger portable baseboards can be built with folding legs (Fig. 3.18), and two or more modules with folding legs can be bolted together (Fig. 3.19), proving that even quite large layouts can be made portable if you are short of space. With the legs folded, the modules can be stored leaning against the wall or in any convenient corner. Another way to set up a portable larger layout is to use trestles. Folding trestles are quite widely sold these days, and two or three suffice to support a typical portable layout, depending on its length.

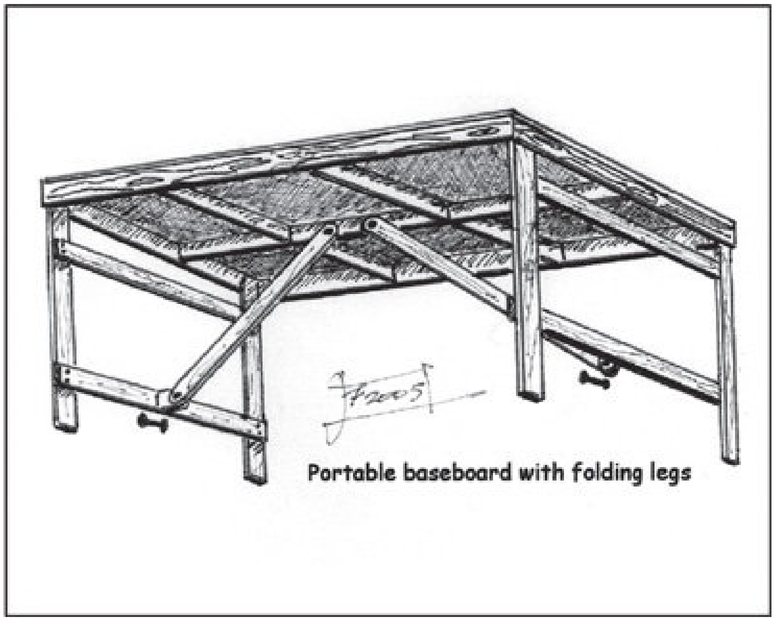


Figure 3.18. A large but portable baseboard with folding legs.

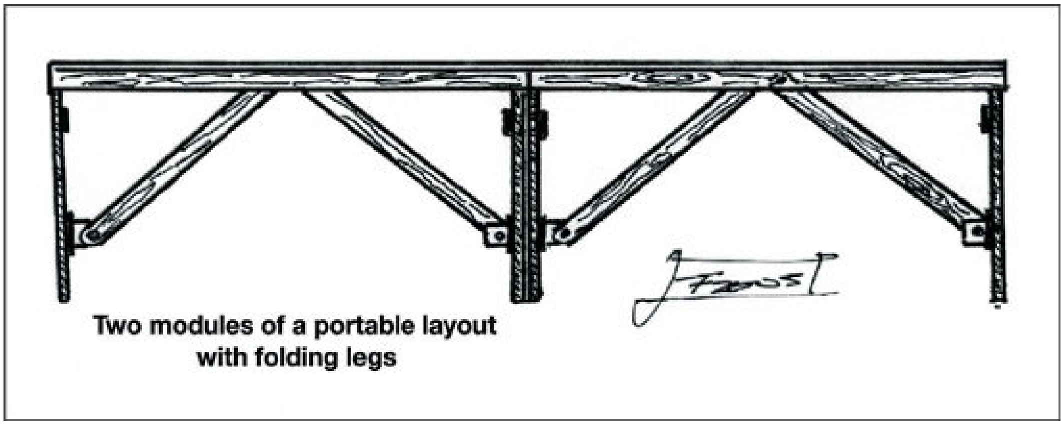


Figure 3.19. Quite a big layout can be removable if made up of sections with folding legs that can be clamped.

Gradients, real and miniature

The ideal route for a railway engineer is straight and flat. It is easier to build and maintain, and allows high speeds and long trains. Where the terrain allows, that is the sort of line that is built. But there are relatively few places where the land is flat enough for the trackbed to be laid directly on it. More often it is necessary to 'cut and fill', leading to the familiar sight of cuttings and embankments. The spoil from cuttings is used to raise embankments across the dips and keep the trackbed level even where the terrain undulates. The engineer will try to balance the cutting and the filling.

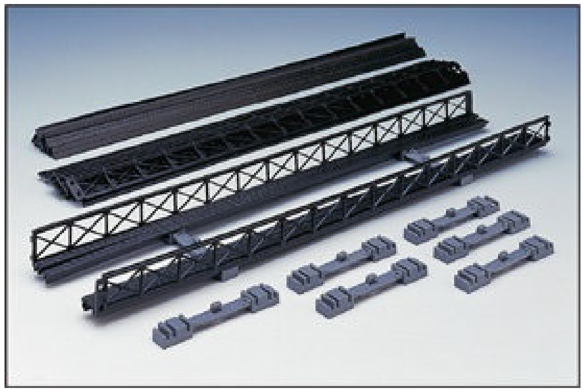
Few actual railways are completely on the flat. Some underground lines or short branches may be, but almost all railways include some unavoidable gradients. Engineers plan the route to keep it as gently graded as possible, and that will mean curving around contours, or digging tunnels, and so on. But any railway will climb or descend, however gently, to follow the overall lie of the land. A line running inland from a seaport will start near sea level. It may climb steadily for a long distance to get over a range of hills (or through a pass), then descend to reach an inland city in a valley.

When the gradients are gentle the traveller may hardly notice them. The only clue may be lineside gradient posts to indicate the grade to the driver. In fact any gradient affects performance. Once a locomotive has to climb it uses more fuel (or takes more power) to keep on the move at the same speed, and the length of the train may need to be restricted to enable it to do so. In extreme cases (a longer train or a faulty motor, for instance) it may actually lose power in the process of climbing the grade and reduce speed. If the gradient is exceptionally steep it may have a tough climb anyway. That is why banking (helper) engines are, or were, kept on standby at notorious gradients (the Lickey incline near Birmingham, for instance), to couple on to the front or rear of trains climbing the grade. Some terminus stations situated at the foot of a gradient needed pilot engines to give outgoing trains a helping hand as the locomotive struggled to get them moving.

The steepness of a gradient is expressed in at least two ways. If it climbs 3 ft vertically for every 100 ft or track, the gradient can be described as ‘3 in 100’ or ‘1 in 33’. This is usually the way of indicating the rise on gradient posts. The modern way is to express it as a percentage. A rise of 3 ft in 100 ft is a 3 per cent gradient.

On real railways gradients have always been made as lengthy as the terrain and route will allow, even if it means going round hills instead of climbing them. On main lines the steepest gradient is normally around 2 per cent, but it is often much less. The steepest gradient which an ordinary adhesion locomotive can take is about 7 per cent. Gradients so steep are generally found in hilly regions, on narrow-gauge railways or on industrial lines. One of the steepest in Britain was the Hopton incline (1 in 14) on the Cromford & High Peak line, where small 0-6-0 tank engines handled mineral traffic in very small trainloads and had to charge at the slope to get up it.

In miniature, gradients are usually built intentionally as part of the layout. A figure-of-eight layout is a typical scheme where gradients are required for one track to pass over the other. Several layouts of this sort are to be found in *Hornby Track Plans*, as well as in other books of layout plans. Hornby make gradients and high-level tracks easy to build by producing sets of inclined piers and supports tailored to fit Hornby track (Fig. 3.20). R658, inclined piers, provides seven piers at different heights to clip below the track to form a straight or curved gradient. There are grooves on the ends of the piers to allow R660 track side walls to be fitted. The piers go at twenty-four-sleeper intervals to reach a height of 80 mm in a length of 1,344 mm, but for a longer, gentler grade the piers can go at thirty-sleeper intervals to give a length of 160 mm.



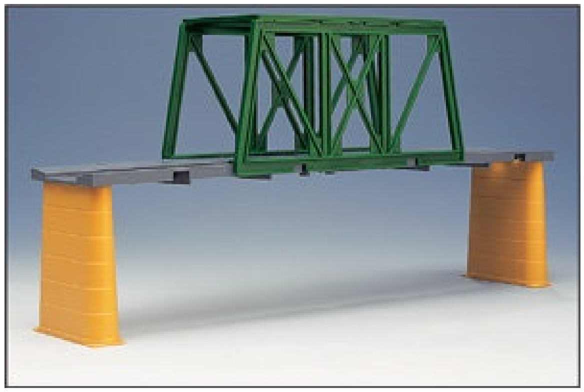


Figure 3.20. (a)-(e). Inclined piers, track support set and parapets from the Hornby range.

An alternative is R909, the elevated track support set, in which the supports have sloped sides, so that it would be possible, if desired, to glue scenic strips of walling or grass mat (cut to shape) to the sides of the supports and create a realistic effect. This is an option, for they can be used as supplied to give the effect of concrete supports, as also seen on inclined tracks. Once you've reached the top of the grade, R659 high-level piers (three in a set) will support the elevated track for any distance (using several R659 sets if necessary).

On most layouts ascending tracks (as in a figure-of-eight layout) pass over the low-level tracks below. Hornby's R657 girder bridge is intended for this, and the design allows it to be skewed or lengthened with a second section. If the track passes over a road, river or canal, there are alternative bridges in the Hornby range, R180 viaduct, R189 brick bridge (single span), R499 river bridge and R8008 'grand suspension bridge', an impressive 1,372 mm long. All bridges are at a standard height of 80 mm to match the inclined pier units. All the bridges clip together or are fully assembled, making installation easy, even for a complete beginner.

Used at their closest (twenty-four sleeper) spacing the Hornby piers and supports form quite a steep grade of 1:16. For gentler grades there is the alternative of making your own supports to suit the site, but length is always a limitation and you need a very big layout to be able to build long, gentle gradients.

Because the power of model locomotives and the weight of rolling stock differ in proportion from the real thing, it is possible for model trains to run up quite steep gradients. A grade of 1:60 is a good compromise to aim for, since it does not look unrealistically steep and does not have too much of an effect on performance. A practical problem is the smooth transition from the flat to the grade. If it is too abrupt it may cause derailment and/or uncoupling. Wedge-shaped ballast bases can be bought for the start of the gradient, though something similar can easily be fashioned from cork or ballast base.

Finally, of course, on small layouts you won't need gradients at all, and if you can avoid them, do so, like the railway engineer.

Making tracks

TrakMat

For those who want to take no chances at all—and this may include younger modellers, and their parents, inexperienced beginners or anyone with limited mobility—Hornby produces a well thought out TrakMat system which is linked with a series of Track Packs, each of which expands the previous set. The TrakMat is printed scenically to represent the ground cover and the ballasted track area. Roadways and sites for key structures (such as stations, loco sheds) are included, so you know exactly where to place buildings.

Each Hornby train set includes a TrakMat, and five track packs are available (Fig. 3.21) which if they are all used give a quite complex layout in a 6 ft x 4 ft (1,830 mm x 1,220 mm) area. Supplementary TrakMats, one featuring a turntable extension, allow expansion to 8 ft x 4 ft (2,440 mm x 1,220 mm) and, way beyond that, up to 181/2 ft x 51/2 ft (5,640 mm x 1,670 mm) if you have the space. Full details and illustrations for the TrakMat layouts are given in *Hornby Track Plans*, tenth edition, and all track and control equipment required is listed.

Figure 3.21. The Hornby TrakMat, with track and structures laid on it.

For these layouts, however, you need large flat ‘table top’ areas which in most cases means they are too big to stow away when not in use. If you have a play room, loft space, basement or spare bedroom this will not be a problem. You may need to build a properly braced baseboard to the required area, using the techniques covered in this section; some modellers of these large area layouts have put them on old table-tennis tables.

Tracks and track laying

Whether you use a TrakMat or build a smaller layout of your own design, the work required in track laying is the same. Hornby track conforms to international 00/H0 track standards, and it is known as Code 100, which means the depth of the rail itself is 1/10 in. (2.5 mm), a tenth of an inch, approximating in scale depth to real main-line track. This track will connect with virtually all other makes of Code 100 track, though the geometry of the track (lengths, radii, etc.) is not always the same. The full range of all available Hornby track units is illustrated, together with geometry, dimensions and radii, in *Hornby Track Plans* and in the Hornby catalogue (Fig. 3.22).

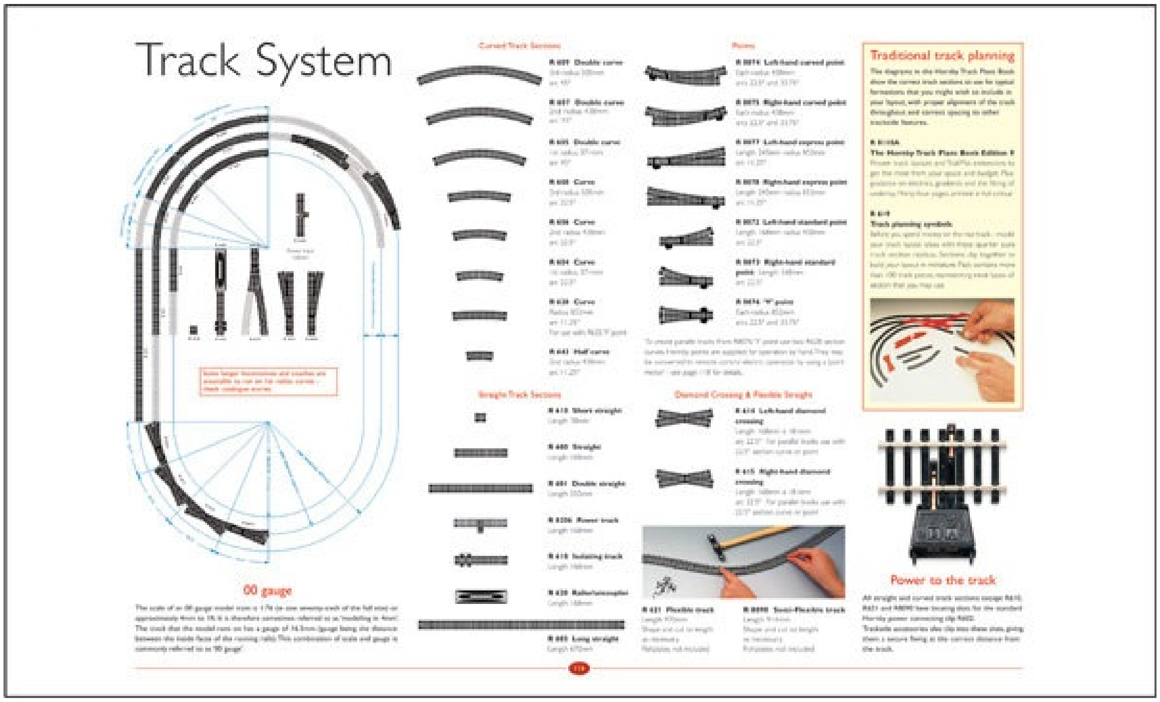


Figure 3.22. This master diagram from the Hornby catalogue shows the extent of the 00 gauge track range and its component geometry, though more details of individual pieces are given in the catalogue and in *Hornby Track Plans*.

Of special note is the fact that there are three radii of track: first radius, 371 mm (14.6 in.), second radius, 438 mm (17.24 in.) and third radius, 505 mm (19.88 in.), and these will lie parallel to give double or triple track on curves. Larger locomotives should operate, preferably, on second and third-radius curves. First-radius track is fine for branch lines or industrial lines with tank engines, short tender locomotives or diesels as motive power.

Also worth noting is the curve R628, 852 mm radius (33.4 in.), which is intended to be used with Y point R8076 to create parallel tracks, but this same curve has other uses in making gently curved sidings, etc. Additional to the sectional track, Hornby offers R621 flexible track (970 mm long) and R8090 semi-flexible track (Fig. 3.23). These are very useful for the most creative layout designs where you are getting away from formal oval layouts and want gentle transitional curves of the sort seen on real railways. The flexible track can be curved freehand, though taking it below first radius is not commended. The lengths can be cut shorter to suit your needs. When they are curved the inner rail extends past the end of the outer rail, and it is necessary to trim the ends level before joining (Fig. 3.24). They can be cut with a razor saw but it is even easier with a Xuron rail cutter, sold by larger model shops. Whichever way you cut them, you will need to clear any rough edges on the rail ends, using a small file. Semi-flexible track requires the same treatment, but it does not flex so freely or bend to such sharp radii. Rail joiners (fishplates) are not supplied with flexible track but are available in a spares pack, R910. It is worth having these in any case, because they can be used to replace any bent or buckled fishplates on the sectional track pieces.

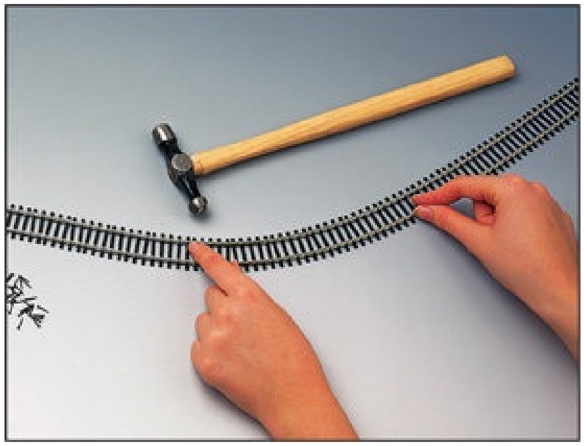


Figure 3.23. Laying flexible track in the way described.

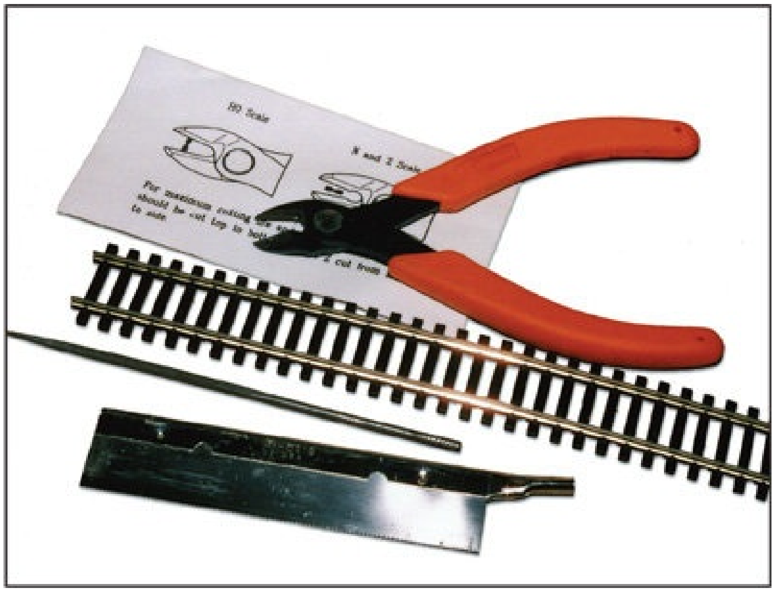


Figure 3.24. The Xuron track cutter is a swift and efficient way of trimming flexible track or you can use a razor saw, also shown here. Either way, a small file is needed to smooth the cut ends.

The track is fixed to the baseboard using track pins R207, pushed through the holes moulded in the plastic sleepers. On soft baseboard surfaces like Hobbyboard you can push the pins in using pliers, but with MDF (or plywood) baseboards it is best to drill a ‘pilot’ hole using an Archimedes drill to pierce into the surface, inserting it through the hole in the sleepers. Push the track pin in gently, and not so hard that it forces the sleeper down, for that may distort the track. Then a few taps with a small hammer will drive it home (Fig. 3.25). Take care not to hit the rails, in fact it would be worth getting a nail punch—they are inexpensive.

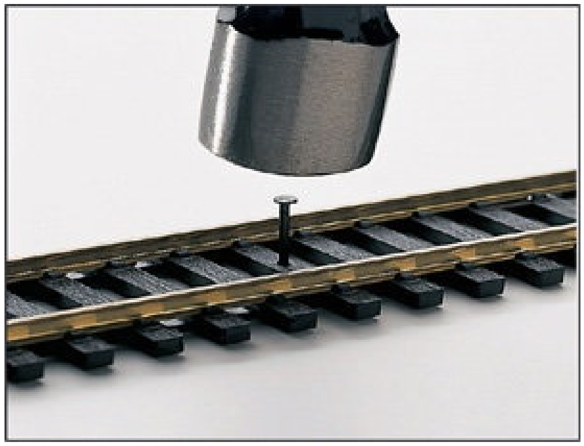


Figure 3.25. On softboard, the track pins can be pushed in easily through the holes in the sleepers. On hard surfaces such as MDF drill out a pilot hole using a small hand drill; then tap the track pin home.

While it is a simple matter to join up the track sections, this also needs care, first to ensure the fishplates are pushed fully home, then to check that both rail ends are actually in the fishplate and that one end has not risen above it. It is a good idea when track laying to have a wagon to hand which you can push over each join to ensure it is smooth. If it isn't you can correct it then, which is better than discovering bad joins only when all the track laying is finished.

The other task, for greatest realism, is to weather the tracks. Real railway track may be shiny when first laid, but it soon takes on a patina of grease, grime and rust from the effects of weather and the passage of trains. Track weathering is easy. Some paint manufacturers include 'track colour' in their range, but any earth-brown or dark earth colour is suitable. Paint both sides of the rail, and also roughly paint over the sleepers to get rid of the shiny black plastic look. Don't worry if you get paint on the rail surface. When all the paint is dry, use the Hornby track rubber R8087 to remove any paint on the rail top and achieve a shiny clean surface—necessary, of course, for electrical pick-up (Fig. 3.26). On real track, too, only the top surface is kept clean and shiny by the wheels of passing trains.

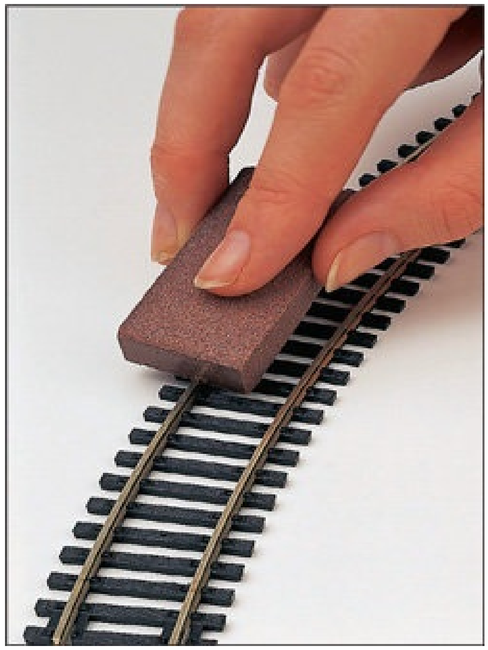


Figure 3.26. After the track has been weathered and the paint is thoroughly dry, use the Hornby track rubber to clean the top surface and restore the shine–and the electrical contact, of course.

It is easiest of all to weather the pieces of track before you lay them, but on a simple layout, like the small ones in this book, it is just as convenient to weather the track after it has been laid (Fig. 3.27). It is important to apply the paint quite gently and carefully. In particular don't allow any paint to run inside the fishplates or across the rail ends, as it can act as insulation and interrupt the electrical circuit. And on turnouts (points) take great care with the moving rails, allowing no paint to run under them at that particular spot—it may set and jam the points—and making sure no paint gets on any contacts, the inner faces of the moving rails and contact rails, or on the tie bar.

Figure 3.27. All track is greatly improved in appearance if weathered, either before or after laying.

Ballasting track

Track laid on bare boards, even when the baseboard is painted, does not look very realistic. If you look at real track, it is, of course, ballasted—that is, packed around, usually with stone chippings, to give it stability, some flexibility, and drainage when it rains. Ballast varies considerably in appearance. When freshly laid it looks a clean grey or brown, but it may become as dirty as the track with time, owing to the weather and the passage of trains. Ballast in goods yards and busy stations may get compounded with dirt and cinders, weeds and grass, even rubbish, so that it becomes densely packed down and almost black. There are several ways of getting this effect in miniature, and the main three are covered here. All have advantages to consider.

Bonded ballast

This is the way experts do it, and it gives the best effect. Most layouts you see at shows have track ballasted this way. In the old days the crude way of doing it was to paint glue along the trackbed, pin the track down while the glue was still wet, then sprinkle loose ballast over the glue so that it stuck in place. Though this could be effective, it was messy, and it meant that you could never reuse the track if you wanted to build a new layout, as it was glued to the baseboard and got damaged if you tried to prise it off. Don't be tempted or persuaded to do it that way.

The method known as 'bonded ballast' gets the same effect but in a cleaner and easier way (Fig. 3.28). First lay the track preferably on a cork sheet base, Hornby R8069 (cut the cork sheet to the width of the ballast area), then choose your loose ballast, such as Hornby R8036 or R8037, sprinkle it on and brush it into position around the track and sleepers. Now prepare two old cups or eggcups. Fill one with water and add a drop or two of washing-up liquid. In the second mix (about fifty-fifty) white PVA glue and water, stirring thoroughly. Using a large drinking straw as a pipette (or, indeed, using a real pipette) or an eyedrop applicator, lift some water and drip it over the first length of ballasted track. Repeat over several inches. The water runs through the loose ballast. Then do the same thing with the thinned glue, and drop it over the wetted area (Fig. 3.29). The glue also percolates through and around the ballast. Repeat until the whole layout is done. Don’t touch or move anything, and leave it overnight to set.

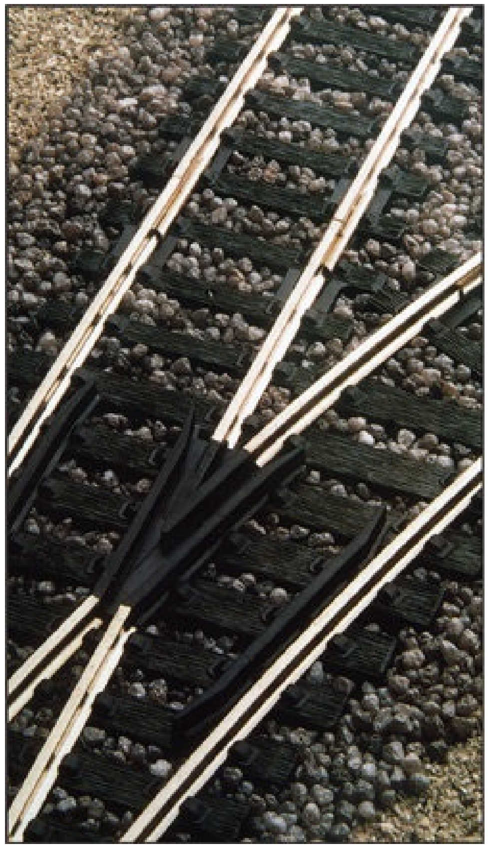


Figure 3.28. The 'bonded ballast' method starts like this, with loose ballast brushed into place around the track (which in this case will be weathered after ballasting).

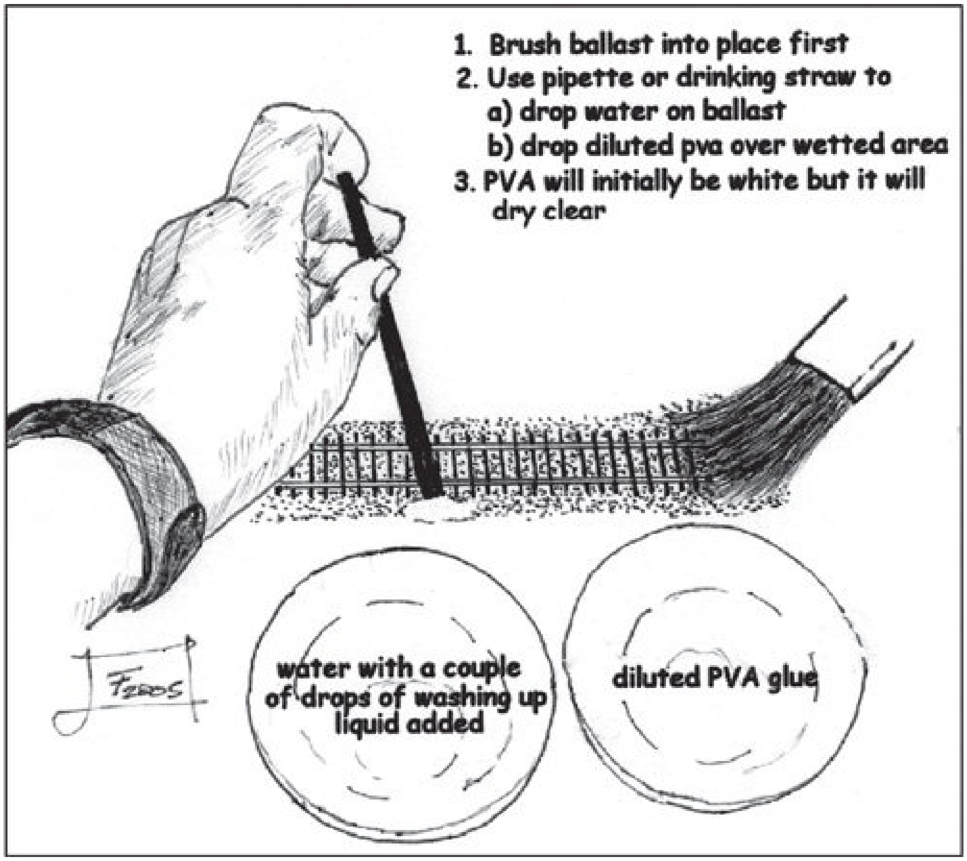


Figure 3.29. Using a pipette or an eyedrop applicator, water 'wetting' agent is dripped over the loose ballast, followed by thinned PVA glue applied the same way. When everything has set, the ballast is held realistically in place.

When all is dry, the glue will have set transparent, so it bonds all the ballast in place but the ballast looks ‘loose’, just like the real thing. If there is any unglued ballast, brush it away or go over it again with the water and glue. There are some major cautions. First, don’t let any glue run into the fishplates or rail joins, or into any power connectors. Second, be careful around points, as it is all too easy to glue the moving rails or tie bars ‘solid’ so that the points won’t work.

With everything dry you can go over the ballast to give it a bit of weathering or grime, such as blackening it to represent grease or soot where locomotives usually stand. If ever you need to lift the track you should find, with care, that the track and ballast lift as one, though you may get a little distortion on some sections.

Foam ballast

While the ‘bonded ballast’ method is perfectly practical, it does take time and care. The method usually suggested for beginners is to use foam ballast strip. This is in the Hornby range as R638 and, as R637, specially shaped to fit Y points. Using it is simple. The track fits into indentations for the sleepers (Fig. 3.30) in the top surface, and is pinned down through the ballast base in the usual way. It is important to do it gently, though. If you drive the pin too far in you may distort both the track and the ballast base. If you are worried that the track may ‘lift’ out of the ballast after a period of use, it is an idea to put dabs of white PVA glue under some of the sleepers so that the track stays firmly in the ballast.

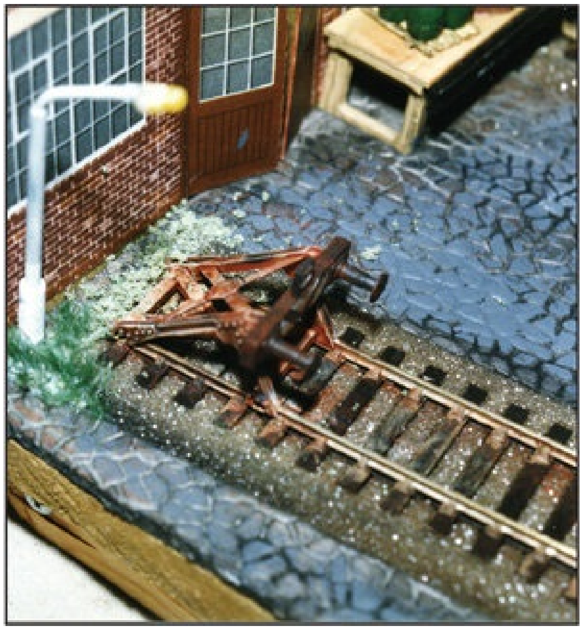


Figure 3.30. With foam ballast strip, the track is simply positioned in the ballast base and pinned down.

If you eventually change your layout all the track can be unpinned and reused, though the ballast strip may not be reusable. This is no great problem, as you simply use new ballast base on the new layout.

One visual problem with foam ballast is that if used just as it comes it looks rather 'new' and artificial. The secret of success here is to disguise the hard edges with scenic work, and to weather it with a brown/black acrylic wash to eliminate the obvious foam appearance. I have used this on several layouts with success.

Another problem sometimes encountered is deterioration of the foam ballast so that after a period of time it crumbles or disintegrates. I have never experienced this on any of the layouts where I have used foam ballast, including one built back in 1989, probably because they are stored out of direct sunlight and in an equable domestic temperature.

'Bogus ballast'

In recent years I have been using a system which I call 'bogus ballast' because it is not really ballast at all. On the camouflage principle, it suggests ballast visually but actually makes use of Hornby scenic mats, R8067 extra-fine granite mat and R8066 grey tarmac mat (which has a brownish tinge, despite the name). All we do here is cut strips of the material the same width as the ballast and pin it down under the track when laying, having first weathered the rail and sleepers with paint. The method is entirely 'clean' and the track can be lifted at will for alteration or replacement (Fig. 3.31). An added trick is to build up the scenic surfacing to conceal the edges of the ballast sheet and then add a bit of build-up by gluing loose ballast along the edges of the sleepers, on the outer edges but in between a few of them too. If anyone looks close at eye level they won't just see a flat sheet of matting but some unevenness. If you are modelling a branch or yard you can add some scenic scatter to depict grass and weeds growing between the sleepers (Fig. 3.32). Just dab in a few drops of PVA with a cocktail stick and scatter bits on top of the glue. It all adds to the illusion and seems to have fooled a few visitors viewing the layouts into thinking the whole lot was painstakingly ballasted whereas the 'ballast' strip was done at the time of laying the track.

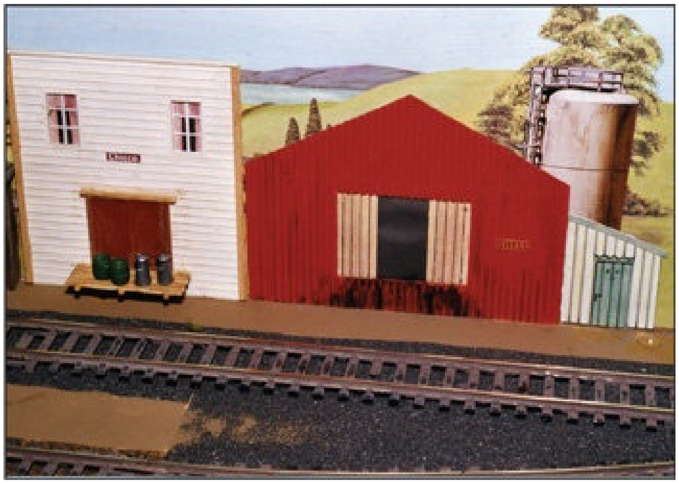


Figure 3.31. ‘Bogus ballast’ from strips of (in this case) Hornby grey tarmac mat pinned down with the track. But note that some loose ballast has been glued along the edges of the ballast strip (an optional trick) to confuse the eye into thinking real ballast has been used.

Figure 3.32. You can finish off the 'bogus ballast' treatment by adding junk, stones, weeds, clumps of grass, even tiny scraps of waste paper to the track area, all shown here, by which time the lack of actual modelled ballast is hardly evident.

The advantages are obvious. The scenic mats when cut into ballast strips are economical, as they do for many metres of track. The process is clean and non-messy. It is quick, and it is easy enough for anyone to do, complete beginners included. For curves, just lay the track section on the scenic mat and use a light coloured crayon to mark it out a few millimetres each side of the sleeper edges to get the correct trackbed width. Use R8067 for 'clean' ballast out on the main line and R8066 for dirty goods yards, engine shed areas and busy stations. The latter is used throughout on the Westwood Sidings layout in Chapter 7. Where you have parallel tracks, as in a goods yard or station, simply cut the mat wide enough to go under two, three or four tracks as required.

Wiring and control

Though this book is divided into sections and subsections covering the individual tasks and considerations involved in layout building and operation, in reality you often need to think about more than one problem at a time. Nowhere is this more true than when it comes to wiring and control. For when you lay the tracks, as already described, you need at the same time to determine where the power feeds will go as the track is laid. And you need to work out where to drill the holes to take the wiring out of sight below the baseboard, whether any sections need an isolating rail (R618, Fig. 3.33) and whether to use a power track (R8206) or the power clip (R602). These all need to be incorporated into the track laying so that when the track is down you can power the layout to run the trains.

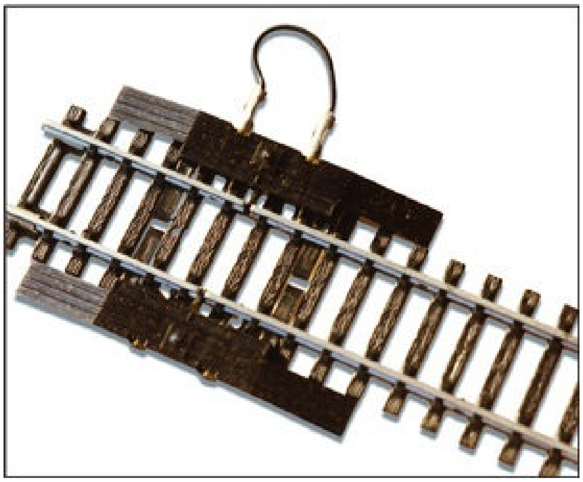


Figure 3.33. Very important for isolating sections (or installing a reversing loop), is the isolating rail R618, using a passing contact switch to activate it.

The same considerations apply to points. If you are going to operate points by the wire push–pull method described in this book, a slot must be cut into the baseboard exactly below the tie bar, and this means careful marking out, with the cutting to be done before track laying is done. Similarly if you wish to use the special point motor R8014 you need to cut either a slot in the baseboard below the tie bar or a hole to house the motor at baseboard level (Fig. 3.34). Again, this must all be done before the track is laid.

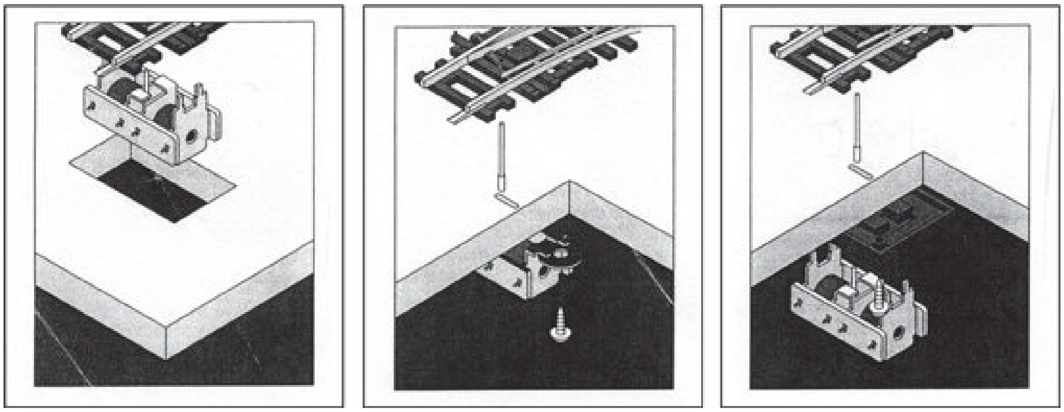


Figure 3.34. If you install point motors you need to cut the requisite slots or housings in the baseboard surface before you lay the track.

Wiring

Many beginners take fright at the thought of wiring a layout. It is true that if you build a giant one with many tracks, routes, stations, yards and loco sheds the wiring can be complex. But on small layouts of the simplest oval kind, with just a few sidings, or shelf-type branch-line or goods-yard layouts (like Westwood Sidings), the wiring is quick and simple. The basic principles are shown so admirably in the tenth edition of *Hornby Track Plans* that the key diagrams and notes are reproduced here, even including the problem of a return loop (p. 25 in the tenth edition), a configuration which is popular on layouts but needs special wiring to prevent short circuits.

Hornby power supply and wiring

On a plain oval circuit with no points you can place the (one) power clip anywhere. If you have one or more sets of points on your circuit, then you have to place the power clip where it will feed power into the single-track end of each point (Fig. 3.35).

All Hornby points are the 'self-isolating' type, meaning the power flows only in the direction in which the point is switched. If you were to put the power clip on the siding in Fig. 3.35 you would get no power to the main line when the points are set, as shown, for main-line running. Nor would the siding ever be isolated.

If the power clip is correctly placed at the single track end of the point, then the power to the siding is automatically switched 'off' when the point is set for the main line (Fig. 3.35). You can leave one locomotive standing in the siding while you run another one on the main line. If the main line is an oval circuit with just one siding, then in practice the power clip can be placed anywhere on the circuit (because the power from the clip flows both ways round the oval).

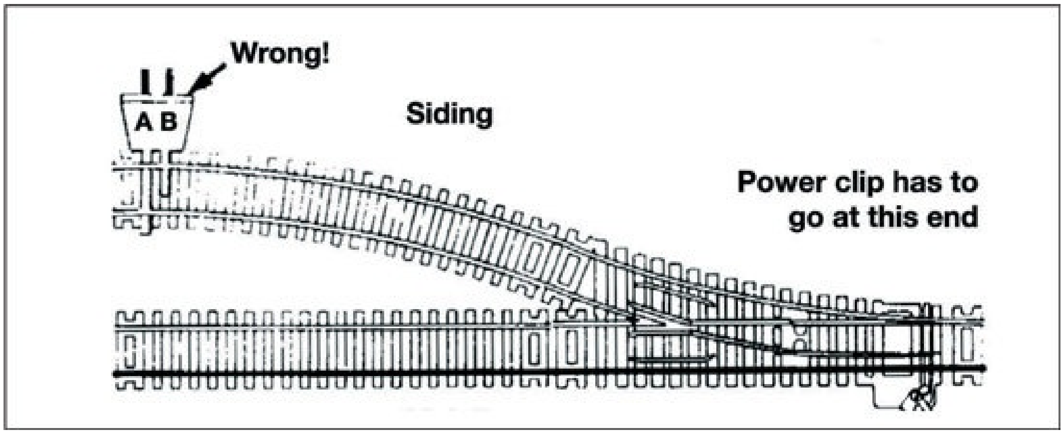


Figure 3.35. The power clip has to be attached at the single track end.

One popular configuration has two points connected to make a passing loop (Fig. 3.36). With both points switched to the main line (as shown) you can hold a train stationary in the loop—and vice versa. A power clip has to go somewhere outside the passing loop at either end.

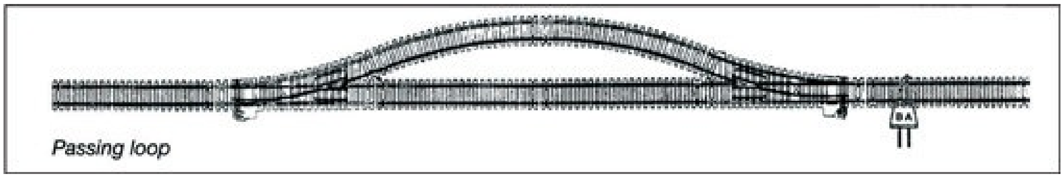


Figure 3.36. Two points form a passing loop.

Self-isolating points mean you can operate more than one train with just one standard controller and one power clip. You can switch control from train to train by switching the points. But you can't run more than one train at a time. For that you need a second channel of control; either a second standard controller and transformer; or an HM 2000 controller/transformer that has two control channels built in. More can be added if you need them.

With either system you need two power clips, one for each channel of control, each clip positioned to power a certain part of your layout. You might, for instance, have two parallel oval circuits under separate control. Or you might want separate control in a group of sidings.

You get trains to cross over from one section to the next by switching the points so that the power from one section connects through to some part of the next section. In other words, you have the possibility on some sections of track to control a train from either control channel (either power clip). For instance, in Fig. 3.37 the points are set so you can power track 1 and track 2 from either controller. What you don't want is power to the same piece of track from both control channels at the same time. There are two main rules to follow:

- When moving a train from one section to another, you must always switch one channel full off (using the switch on a standard controller, not just the control knob) before you engage the other channel. Otherwise you will get electrical interference between the two channels that will cause trains to run erratically.
- For the same reason, when you want to run two trains together, one in each section, you first have to make sure the points are properly set so one section is fully isolated from the other—and that always involves switching at least two points. In Fig. 3.37, for instance, you would have to switch both crossover points the other way, in the direction of straight-ahead running.

When you design your track, you have to be sure that, like the crossover configuration in Fig. 3.37, the sections can be electrically separated at both rails (by setting the points). Remember—one point on its own breaks the current on just one side of the track. So you have to have two points to make the complete break, and they must be arranged to ‘face’ each other like the crossover illustrated in Fig. 3.37—each point the opposite way round, so it isolates the opposite rail. Otherwise you have a condition called ‘common return’, where one rail is always connected from section to section whichever way you switch the points. If you then operate the controllers in both sections at the same time, the running of your trains will suffer electrical interference. If the polarity of your two control channels is different (because you are running trains in opposite directions) you may well get a short circuit. As you will see from the plans, the junction between control sections is most often made with the kind of crossover illustrated in Fig. 3.37.

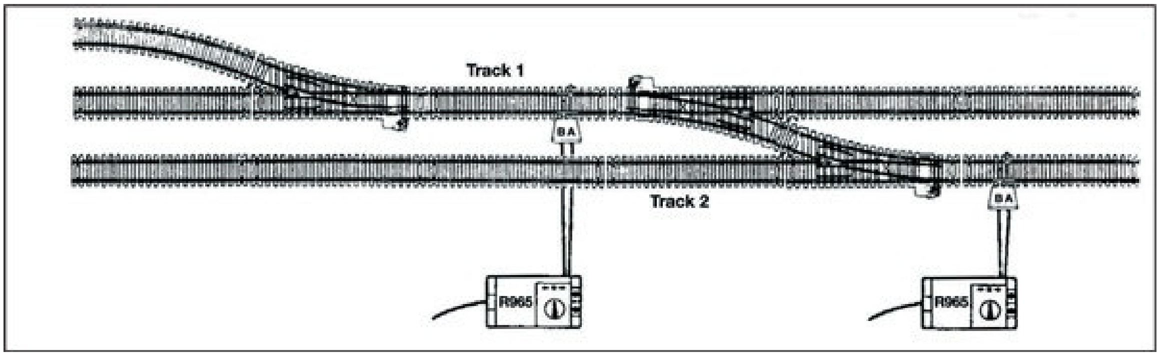


Figure 3.37. Crossover, with points set so that either track can be fed from either controller.

The two points that isolate one section from the other do not have to be close together, as they are in this example. You can have any length of track between them, though note that this track will get used only when you are operating solely on one channel (transferring a train from section to section). When two trains are running, it is out of action.

Not all cases of ‘common return’ are obvious. Figure 3.38 shows an example that won’t achieve proper separation between two control sections, even though the points do ‘face’ each other. In most cases you will have no trouble finding satisfactory positions for your power clips. But some track configurations do need extra connections.

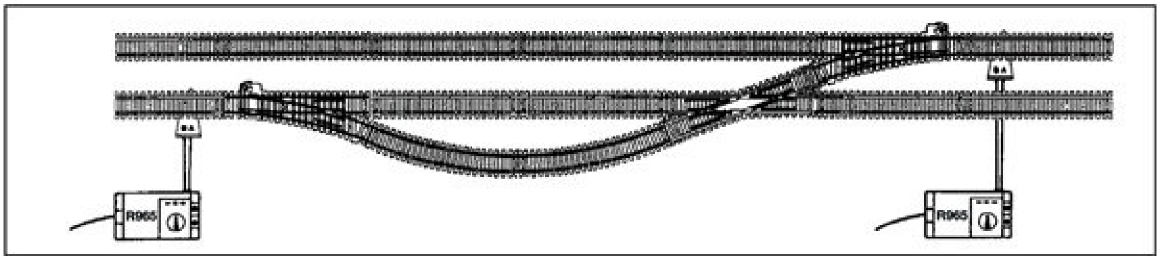


Figure 3.38. Passing loop plus crossover equals common return.

Examine the plans in *Hornby Track Plans* and you will see a number of instances where extra power clips are used to make a direct connection from one point on the track to another. Some such arrangement is always necessary to get the power to all parts of a ‘head shunt’ configuration like the one in Fig. 3.39. The letters A and B correspond to the letters you will find stamped on the power clip—one socket marked A and one marked B. In this example, you connect one end of the wire to the socket on one power clip, and the other end to the B socket on the other power clip. Maybe, as shown in the example above, you won’t have the space to fit your power clip in the normally required position (between the ‘toes’ of two points). In that case you can use two power clips, as shown, with one control channel wire to each (Fig. 3.40).

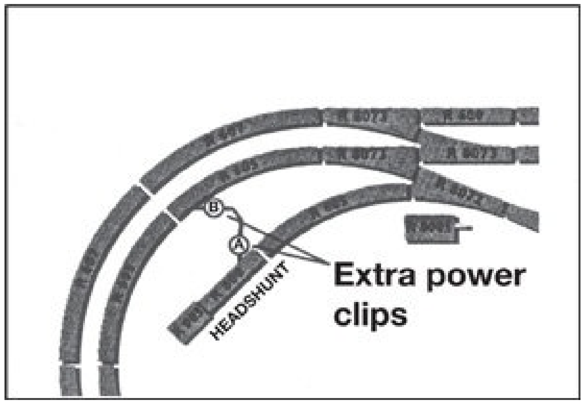


Figure 3.39. Head shunt power supply.

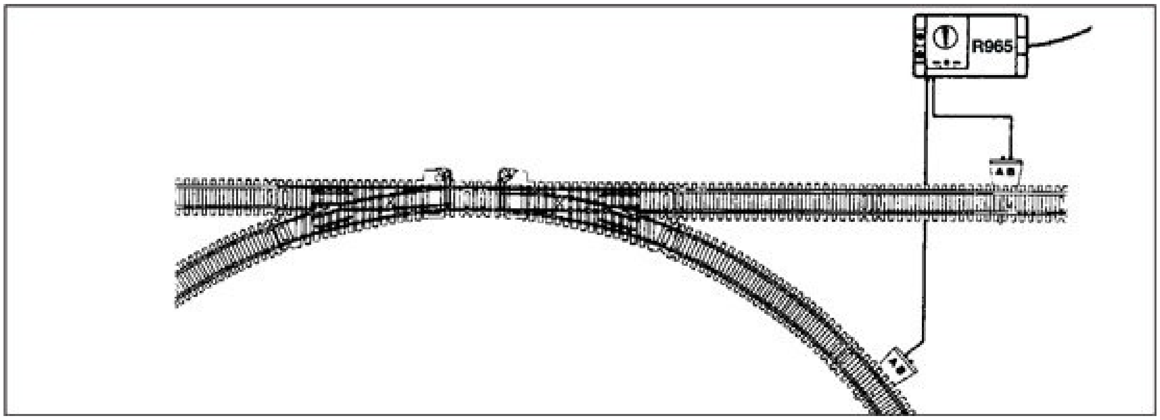


Figure 3.40. If there’s not enough space to fit a power clip between the toes of the points, use two clips with one control wire to each.

An isolator rail lets you switch the power on and off to a particular section of track (Fig. 3.41a). The Hornby isolator rail R618 is in effect an R600 standard straight with an isolating break in each rail. On one side you plug in a Hornby ‘on/off’ lever switch R047. On the other side you close the isolating break with a bridging wire (supplied). Operating the switch now makes and breaks the electrical connection in one of the two rails. You can use an isolator rail in this way to isolate the end of a siding, so you can hold two locomotives in the one siding and drive them separately.

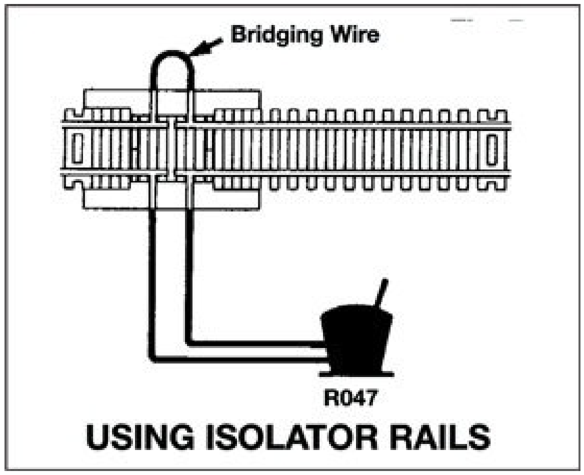


Figure 3.41. (a) Switching the isolator rail R618.

A ‘return loop’ track like the one in Fig. 3.41(b) is electrically impossible unless you use isolator rails, because otherwise the rail on one side gets connected with the rail on the other and you get a short circuit. Trace your finger round the loop and you will see how. The solution, shown in Fig. 3.41(b), is to have two isolator rails in the loop, switched by a Hornby ‘on/on’ lever switch R046 which switches one isolator ‘on’ as it switches the other ‘off’, and vice versa. First, you drive the train into the section between the two isolator rails. Then you stop the train, switch the ‘on/on’ switch the other way, change direction at the controller and change the point. Now you can drive the train forward out of the loop.

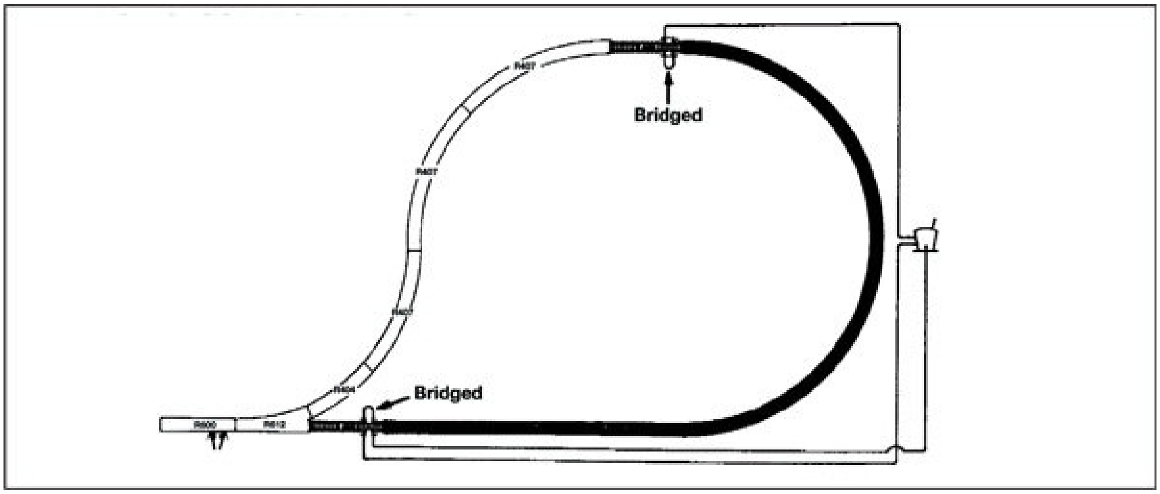


Figure 3.41. (b) A return loop is possible only with isolator rails, otherwise you get a common return.

A further wiring option, not covered in Hornby's wiring notes, is what might be called the 'one engine in steam' option suited to small layouts where only one locomotive can move at a time anyway. Here only one controller is used, but it is linked to two power feed clips or leads arranged as in Fig. 3.42. The wires from these are brought to a 'chocolate block' connector and joined, with two wires leading from it to your single controller. This follows the rules of feeding the power to the single track end of the point, as described previously. A loco in the stretch C–C can run into siding A when the points are set straight ahead. When both points are set to form a crossover, the loco can run into siding B. If the lower points are then set straight, the loco can run back into siding D. Because the points are self-isolating, if they are reset to crossover, the loco can stay 'dead' in siding D while a second loco can run from C–C into either A or B, depending on how the upper points are set.

This wiring arrangement can be adopted on most small layouts with two running tracks, and no extra wiring is needed if extra sidings are added running in each direction, as indicated at E, for example. The Westwood Sidings layout in Chapter 7 is wired exactly as shown in Fig. 3.42. Obviously care is needed when connecting the wire in the 'chocolate block', so that the same leads from each track are joined together, otherwise it won't work!

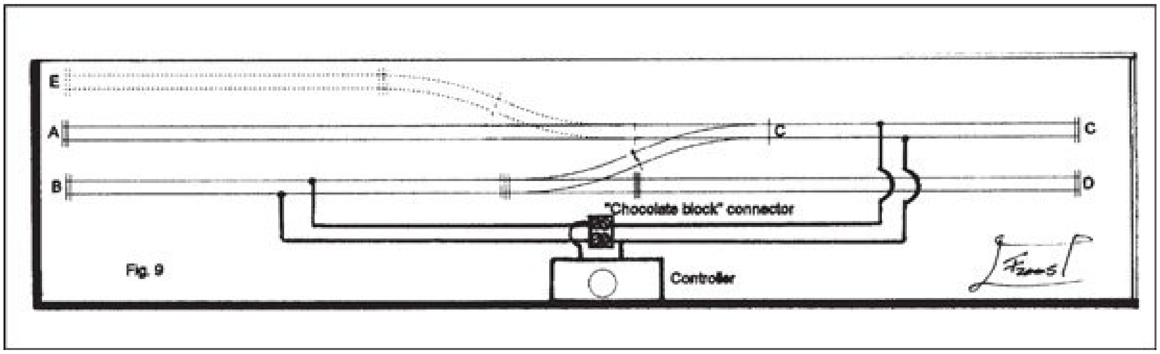


Figure 3.42. As some real railways allow only one engine in steam at a time, on this small layout only one loco can receive current.

Power connectors

As already noted, Hornby produces a power track (R8206), a straight incorporating a terminal, or a power clip (R602, Fig. 3.43), and this clips in between the sleepers wherever you want it. Both are easy to use, but another option which is neat and discreet—in that the power connection is virtually invisible—is a non-Hornby product sold in some large model shops. This is the power feed connector, basically a fishplate (rail joiner) with power leads soldered to it (Fig. 3.44).

You simply remove the fishplates from adjacent track sections where you want the power feed to go, and substitute the fishplate with the soldered-on feeds, as shown here.

Figure 3.43. The standard Hornby power connecting clip. Most track sections have locating slots in the sleeper base to hold it firmly in place.

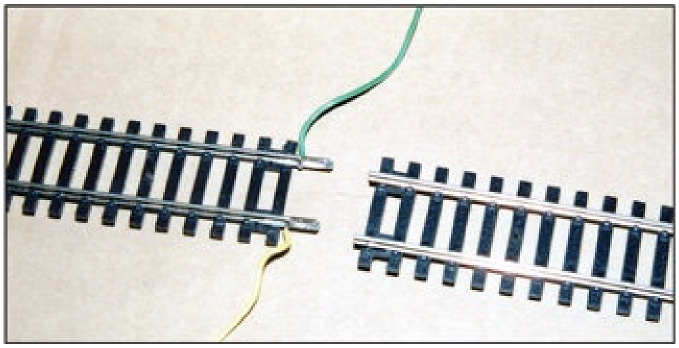


Figure 3.44. The power connectors make an easy and virtually invisible way of fitting power leads to a layout. The fishplates must be removed from the rail ends first.

Under the baseboard

Once the wiring is done, it is usual to drill holes in the baseboard adjacent to power feeds or any other wiring, such as isolating rails, and take the wires through the holes to where your controller and lever switches are located—often at a corner or the end of the layout (Fig. 3.45). If the wires won't reach, they can be extended by cutting extra lengths of wire and joining them with 'chocolate block' connectors (Fig. 3.46). For neatness these connectors can be screwed under the baseboard or on the framing. A simple way to keep the wiring neat and stop it hanging down (where it might snag something) is to secure it under the baseboard or along the framing using parcel tape or Duck tape (Fig. 3.47). This can be removed easily if you need to get at the wiring again later.

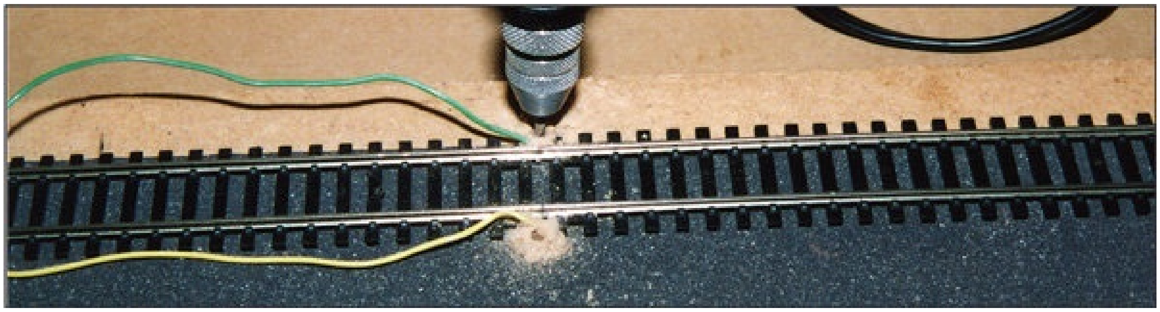


Figure 3.45. Whichever sort of power connector you use, small holes can be drilled adjacent, using a mini-drill, so that the power leads can be taken to the controller out of sight. In this case the Signal Box power connectors are being used, but the procedure is the same with the Hornby power clips or power track.

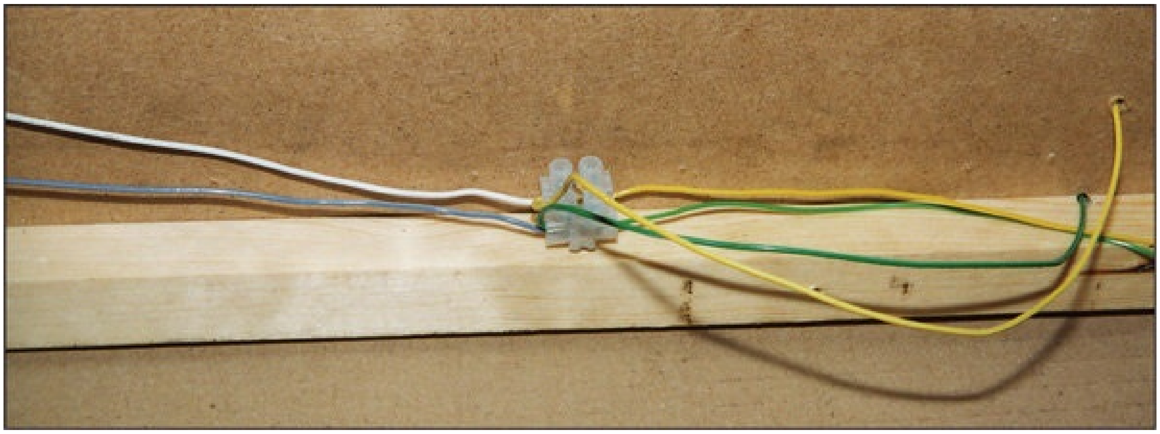


Figure 3.46. When more than one pair of power leads is to be taken to the controller a neat trick is to join them via a ‘chocolate block’ terminal connector below the baseboard. This can be screwed to the baseboard framing, out of the way, as here, having been joined up as in Fig. 3.42.

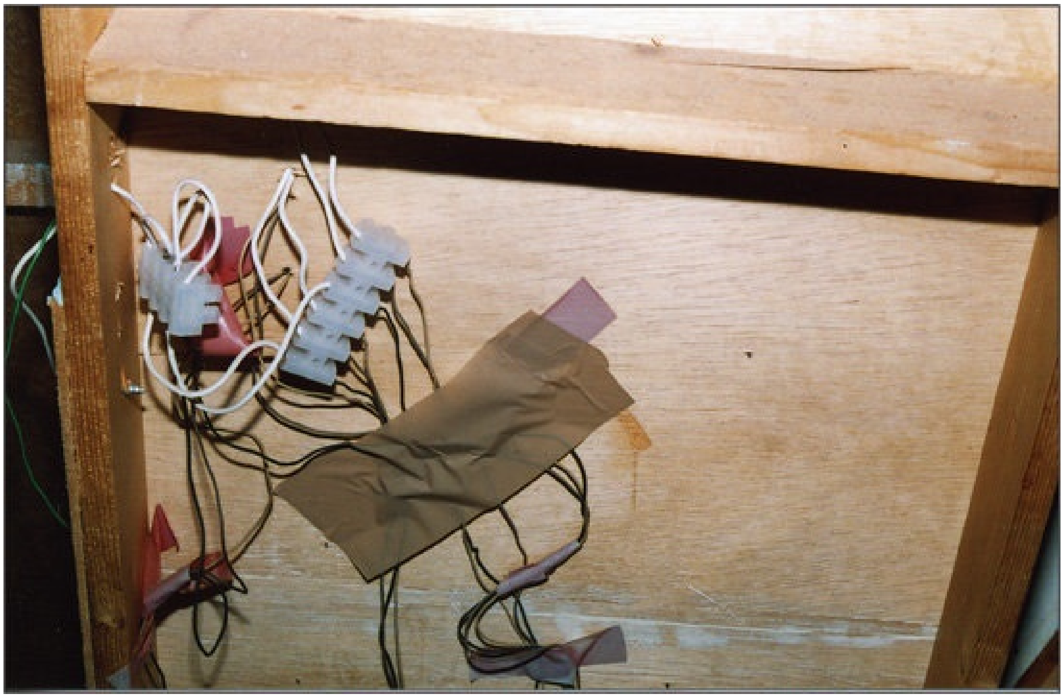


Figure 3.47. On layouts where there is a lot of wiring things get more complicated. Where point motors are used on top of the baseboard, all the wiring is taken to ‘chocolate block’ connectors and parcel tape or Duck tape is used to hold it in place.

Chapter **4**

Scenics and structures


SKALEDALE

In this chapter we'll look at the ways of making realistic settings for the trains to run in, once your baseboard has been built and the track laid.

Back scenes

Apparent depth can be given to any layout by means of a back scene. The back scene is important because it covers the same function as a back scene on a stage, film or television set. Your layout may carry nice scenic effects, of course, but a layout occupies a finite space, typically a table or shelf-shaped baseboard. Beyond the baseboard area we suppose the adjacent terrain to extend on to the horizon just as real scenic views do. But this cannot be done on a small model railway baseboard, so the back scene is used to suggest that behind the model railway the landscape continues.

Some skilled modellers paint their own scenic background, and this can certainly be done if you have artistic ability. If you cannot paint your own, printed ones are available from several model railway firms, among them Faller, MZZ, Bilteezi, Peco and Townscene. Most are available in large and small sizes to suit different model railway scales, and there are a variety of scenes, including mountains, fields, forest, seaside, industrial townscapes, village streets, city centres, and yet others. If you haven't tried making a back scene before, the simplest method is the one described and shown here.

The back scene can be painted on stiff board of any desired height, but for a small layout use a height of at least 6–8 in. (150–200 mm). You can use plywood, MDF or the smooth side of hardboard (Fig. 4.1). Suitable small strips of these materials are often to be found cheap in the offcut bins of DIY stores. The backscene board is first cut to the desired length and screwed in place along the framing of the back edge of the layout. Then mark an ink line along the point where the backscene board meets the baseboard top. This is to ensure that the background is level and is positioned so that it actually lines up with baseboard level.

Figure 4.1. A basic back scene. (1) Mark a datum line on the back board, which is screwed temporarily in place.

The backscene board is removed and laid flat on the worktop. The entire board is then painted down to just above the datum line in ‘sky’ colour. You could use ordinary light blue or grey-blue paint for this, but a quick and inexpensive way is to use a sampler pot of emulsion from a local DIY shop (Fig. 4.2). They are cheap and you can get ‘sky blue’ or similar pale blue/grey shades. The paint can be applied straight from the pot, but if you have some white poster or acrylic paint, squeeze some into the sky-blue paint on the board and work it in with horizontal strokes. It does not have to be uniform: real clouds are often ‘streaky’. When the board is covered, including the edges, set it aside to dry.

Figure 4.2. A basic back scene. (2) Paint the board sky colour with emulsion or acrylic paint down to the datum line.

If you are painting your own scene, apply it now over the ‘sky’ base. If you are using a printed back scene, cut it to length (Fig. 4.3). Some scenic sheets include the sky. In that case it’s not a bad idea to cut it away. When you glue the scenic sheet to the backboard it is all too easy to trap air bubbles under the paper. Such blisters won’t be noticeable amidst a scene depicting buildings or country greenery, but in the sky area they stand out only too prominently and look very unrealistic. Some back scenes (such as Bilteezi) do not show any sky, so only the outline of the scene has to be cut away.

Figure 4.3. A basic back scene. (3) Cut the scenic image from the printed sheet, and cut away the sky portion too, if there is one. Sections of different sheets can be cut and butted together so long as they match in height and style.

The ground scene that remains can be glued to the sky-colour painted back board using white PVA glue. Ensure the glue is spread right to the edges and that no gaps are left to form air bubbles. The scenic sheet is lined up on the datum line, then pressed down using an art roller (Fig. 4.4). If you do not have an art roller, use an empty milk bottle or a coffee jar instead. A rolling pin would be ideal. Make sure any air bubbles are eliminated when you roll the back scene flat. You can ‘cut and mix’ to get variety. Most back scenes can be cut and rearranged in segments carefully butted together, to achieve a degree of individuality. Some parts, like cottages or clumps of trees, can be cut out separately and glued over the background hills to give further variety.

Figure 4.4. A basic back scene. (4) Spread an even coat of white PVA glue on the back of the printed image and lay it on the back board. Use an art roller or a similar round object, to smooth it flat and expel air bubbles underneath.

With the backscene board screwed back in place you get an immediate impression of extra depth, even before any of the foreground scenery has been added. On a small layout with a narrow baseboard, the back scene may constitute the bulk of the scenery on the layout, as on the Westwood Sidings layout in this book, where the background represents warehouse ‘flats’.

Contoured landscapes

Model layouts look impressive when the trains run through contoured terrain such as you might see it from the window of a real train. There are several ways of imitating this in miniature. The most basic way is shown in Fig. 4.5 (upper). Here a profile board suggesting the outline of the hills is screwed along the back of the baseboard section. Draw and cut your own hillside shape here. Plywood or hardboard is commonly used, though some modellers use the thick reinforced cardboard often found nowadays in big cartons or used for packing household appliances. Further contour boards made of your chosen material are positioned to depict the hillside contours and are also screwed to the board (though you could use parcel tape or staples to attach it). The spaces between are filled with any light packing such as screwed-up newspaper, old eggboxes, shredded paper, whatever is to hand. This gives a roughly shaped base structure over which you can lay Hornby Modelling Rock (R8070), plaster-impregnated fabric which is wetted and positioned in layers to form a firm, hard surface when dry. Once this is done you can proceed to add the surface texturing and vegetation, trees, etc., as explained in a later section.

The second method of achieving the same sort of landscape base starts with the same hill profile boards (Fig. 4.5, lower). Essentially all you do then is cut a lot of strips 12–25 mm wide from old breakfast cereal boxes and make a criss-cross pattern to whatever gentle contours you need, having first put the profile board the shape of the hilltop along the back of the baseboard. Over the criss-cross you lay strips of scrim, a material used in dressmaking that you can usually buy at dressmaking or sewing material shops, e.g. Singer shops. You can do all this yourself, but you can make it even easier with packs of pre-cut strips and scrim for instant use. Over the scrim you simply paint (with an old paintbrush) a layer of modelling plaster. Only a thin application is needed. It all dries as a light, hollow shell. Add some brown or black powder paint to the modelling plaster when you mix it, to ‘kill’ the whiteness, so that chips or cracks later won’t show up stark white. Once the plaster is dry, paint it ground or grass colour and glue on ground scatter in the usual way.

Peco produces a variation of this idea called Landform in which the criss-cross support is pre-formed and the scrim is included. All you do is cut it to size with scissors, pin or glue the support in place and proceed from there—even easier. A further alternative, easier still, is to use sheets of Hornby Modelling Rock (Fig. 4.6) instead of the modelling plaster. This avoids the need to mix plaster and is a lot less messy. The Modelling Rock sheets need wetting before being positioned over the criss-cross strips, after which they are left to dry hard. Although Hornby calls it Modelling Rock (R8070) this material forms a hard surface which can be finished to look like any texture, such as rock, grass or scree.

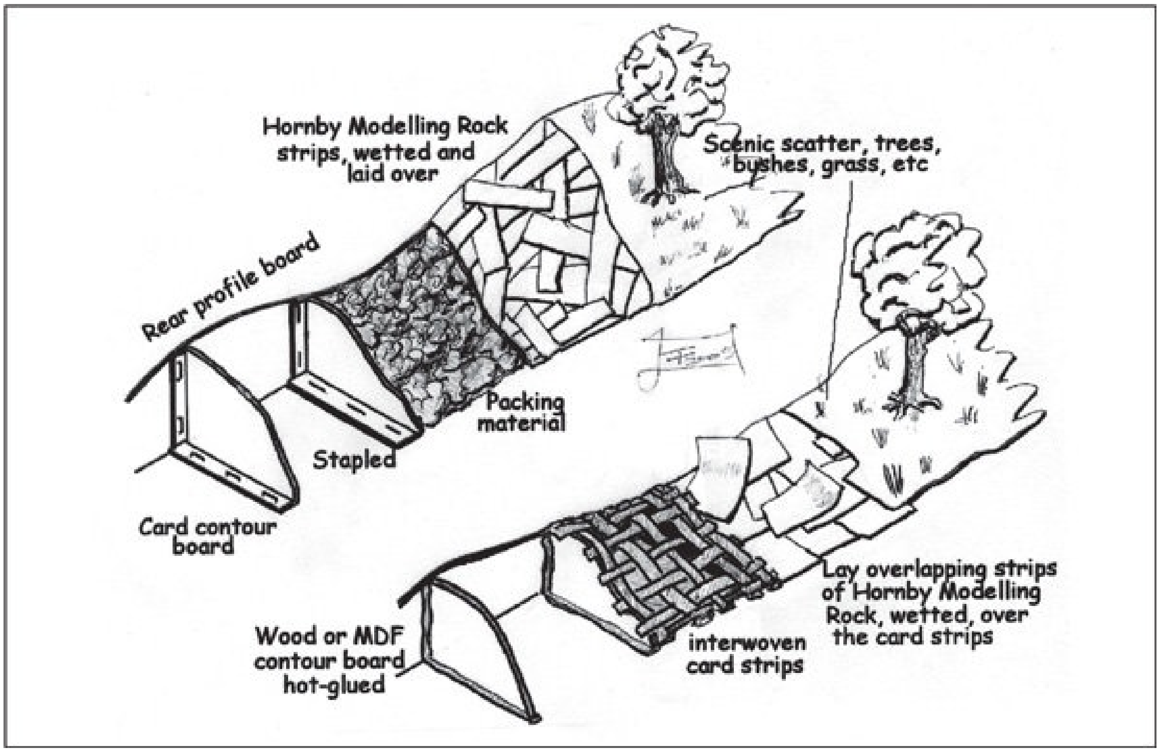


Figure 4.5. Alternative methods of making built-up landscapes as described.

Figure 4.6. Modelling Rock (R8070) is a quick and easy way to form landscape contours. It is a plaster-impregnated fabric which is wetted first. When dry it can be painted in scenic colours and textured with scatter material in the usual way.

Using expanded polystyrene

This technique uses expanded polystyrene foam to make up landscape shapes (Fig. 4.7). The material is sold in the form of ceiling tiles and in bigger sheets as insulation material from builders' merchants, but is available as scrap from packing. The advantage is that it is easy to cut, easy to glue (with white PVA) and very light. It is a potential fire risk, but when coated with modelling plaster the risk is greatly reduced, and the surface finish then matches terrain modelling in the conventional style. A large knife (such as an old kitchen knife or a Stanley knife) is best for slicing polystyrene. The granules make a mess, though, so cover the floor and table with old newspaper to collect the debris.

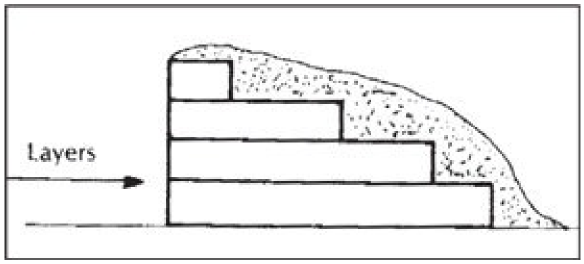


Figure 4.7. Another way of forming a cutting or a gentle hillside is to build up layers of polystyrene block cut roughly to shape. The final contours are achieved with a coat of patching plaster or modelling compound.

The principle is easy enough. Just build it up in layers to give a contour effect (Fig. 4.8). Pins, nails or glue secure the layers. When the glue is set, simply cover the stuff with patching plaster or modelling compound (Fig. 4.9). An alternative is to use Hornby Modelling Rock, dampened and pressed down around the styrene. Note that rock faces or strata can be depicted by snapping the material to leave a rough break, while large blocks of polystyrene may be cut complete to form cuttings, etc.

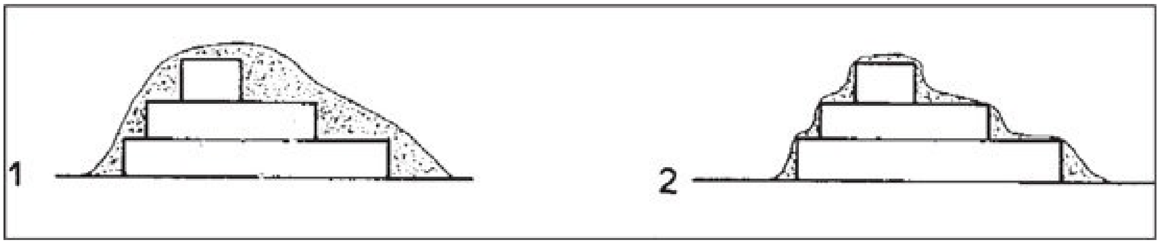


Figure 4.8. Smaller free-standing hills in the middle of a layout can be modelled ‘in the round’ with layers of polystyrene hacked to shape. (1) This one is contoured with a covering of patching plaster or modelling compound. (2) An alternative would be to drape sheets of Hornby Modelling Rock over it, giving a more rugged outline.

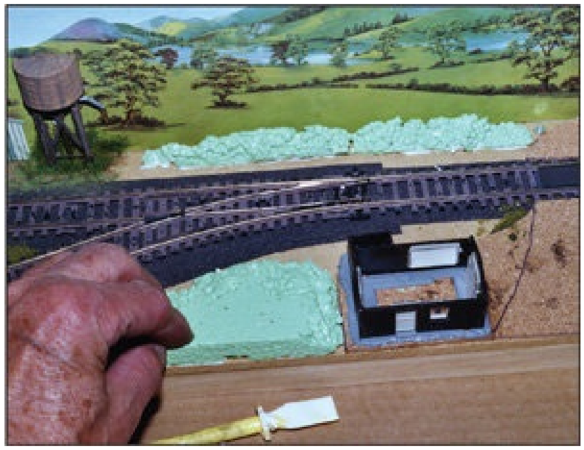


Figure 4.9. Small hills and banks can be shaped from polystyrene block without any plaster covering. The light green here is 'undercoat', to be painted and textured later.

Making rocky terrain

Rocks and mountains are popular on model layouts. They are spectacular scenic features, and they give an excuse for the steep gradients and cramped situations prevalent on many small layouts. They also provide an excuse for the tunnels giving access to hidden sidings and fiddle yards.

There is quite a wide interpretation of what constitutes rocky terrain. It doesn't necessarily mean high mountains. There are plenty of lowland areas where there are rocky outcrops (Fig. 4.10). More commonly, however, a mountainous area is modelled. To give an illusion of depth a scenic background depicting mountains can be used on a shelf layout, with only the foreground actually modelled in relief. Firms such as Peco (UK), Faller (Germany) and others all produce mountain back scenes. If you build an actual rock face, however, it is best to go for height and bulk to make it believable. A small mound, however rugged, will not be so convincing as a craggy cliff-like depiction of part of a mountain.

Figure 4.10. Cork bark is here being used to depict a rocky outcrop. It is also used in a near vertical position to depict rocky cliff faces.

Rock often appears only as an outcrop from a grassy surface. In its simplest form the rocky outcrop can be modelled from broken pieces of expanded polystyrene stuck into a wet plaster surface prepared as above. Or the rocky effect can be worked into the plaster covering as it dries (Fig. 4.11). A stiff paintbrush and a scriber of some sort can be used to form the rocky cliff surface as the plaster dries, cutting ledges and strata layers by horizontal working with the scriber.

Figure 4.11. Making a rock face above a tunnel mouth, using modelling plaster that has been pre-coloured with grey acrylic or powder paint.

Moulded rock sheeting is available and would be suitable for small surfaces, particularly of the vertical type. Cliff faces or cuttings, however, are very easily depicted by cutting and/or layering polystyrene blocks coated with modelling compound as required. A favourite material, much used for rocky faces, is Cork Bark, R8046 (small) and R8047 (large) in the Hornby range. It has a realistic striated texture that looks remarkably like a rock face. It is easy to use, and the large segments are big enough to be free-standing (Fig.4.10).

It is possible to mould your own realistic rock face. One way is to use crumpled kitchen foil and press it on to the modelling compound while it is drying. Removing the foil in good time before the plaster sets will leave a ‘rock face’ texture caused by the creases in the foil. Another is to cast resin, using lumps of coal or real rock to form the master surface in a rubber mould. The effect is very realistic if you can learn the technique.

Ground cover

Successful scenic work is an elusive skill that comes with practice. You need to be something of an artist to achieve complete realism in the sense that you need to approach the work rather as an artist does a painting. As has been suggested already, creating the scenic surroundings in which a model railway operates requires some of the techniques used by a theatrical designer to produce stage, television or film sets. Your model railway has a limited area, which means that you can model only a segment of actual land. The rest has to be suggested, as you are probably not modelling much beyond the boundary line of the railway property. A great deal of compression is used, such as scenic flats and back scenes, and there is compression in length on almost all layouts.

This all has to be accepted if you are going to fit a working layout into a relatively small area, but then the human eye also accepts, say, a stage set, where a house may be much smaller than in real life, and a painting of a house may only vaguely suggest brickwork rather than represent every single brick. The key word is ‘suggest’, for that is what most paintings and theatrical sets do. A few house fronts may suggest a city street, even though they are literally frontages with nothing behind them. An expanse of green with a few fronds of grass painted clearly at the front may suggest a meadow even though the artist has not painted every single blade of grass.

In scenic work the 'suggestions' start with the grass and the vegetation (Fig. 4.12). Even on a small layout there will be quite an area to grass over, and the easiest way is with grass mats or similar scenic mats representing cobblestones, asphalt, etc. A level goods yard or station setting, such as Westwood Sidings in this book, can be largely finished off with scenic mats, but hilly terrain, with cuttings, uneven ground, etc., is best surfaced with scatter materials, sometimes called flock powder. This is available in numerous varieties from model shops. The Hornby range includes a big selection covering several shades of green grass, browns, greys, 'stubble', and others, plus a grey ballast and coal. (R8020–51 are the numbers.) With flock powder the rough texture and colour substitute for individual blades of grass and suggest an expanse of grass. To do this successfully it is essential to concentrate on the texture and the colour. Flock powder (or 'scenic dressing', as it is sometimes called) comes in many colours and textures, from rough to fine. In the old days it was common to use dyed sawdust or dried tealeaves, but the problem is that they are too coarse to look like anything other than what they are. So today's flock powders are much finer.

Figure 4.12. An enormous amount of quite intricate detailing can be done in scenic work, as shown by this country lane and cottage garden. Flowers in the border, weeds and undergrowth, trees, bushes, fencing, a clothes line, runner beans and other plants, and beehives in the garden, all modelled here in 4 mm scale.

Figure 4.13. Laying hedging (R8044). It is glued in place using with PVA glue.

Colour is very important. Scenery has to follow a season of the year, and most modellers choose a spring or summer setting, when trees are in leaf and grass is at its lushest. But lineside grass is yellowish rather than bright green, tending to be darker in well watered areas. From the shades available you should find what you think is suitable. Like an artist, develop your powers of observation before you get too far into a project. Just go and look at real grass. It is something you take for granted, but if you stop and look you'll notice the sort of thing to remember when modelling it. See how it tends to grow higher against fences or walls, to spread out over footpaths if unchecked, to grow against the walls of buildings or between paving stones. Depict all this in your model. Personal research is always a great help to successful modelling, and reading books on grass, landscape and geology (there are plenty of them) will not be time wasted. Borrow them from a public library if you have none yourself.

Yet another option well proven over the years dates back to the days before modern scenic accessories were available in such variety. This method uses ordinary surgical lint. It is first dyed grass-green, using a suitable domestic dye as sold in department stores. The ground surface is prepared and painted green. When it is dry the whole area is painted over with ordinary glue. Allow this to get slightly tacky, then press the surgical lint, *flock side downwards*, on to the glue. When it is dry, pull the sheet of lint off. It leaves the flock behind, stuck to the glue. A realistic 'grass' texture results, usually a little lumpy in the characteristic way of wild grass. This is a favourite method of treating prominent foreground areas of grass, such as railway embankments.

Vegetation

Undergrowth can be represented in several ways. In fact it is a good idea to mix them, as real undergrowth is of several species. Readily available, also in varying colours, is what is known as ground foam. This is actually plastic foam 'minced' up into small pieces. It is very suitable for depicting undergrowth of the clover, thistle and plantain variety that tends to grow in clumps against fences and walls, and in between railway tracks. You can obtain other materials such as foliage and tree kits. There is always some left over and it is ideal for shredding into small pieces and for use as taller undergrowth.

A useful new material is called ‘moss-look liner’ (or some similar name), produced as green sheets for lining hanging flower baskets. It is *not* sold in model shops but is available from garden centres and the garden sections of chain stores. Very inexpensive, it can be teased out to depict tall grass, bushes, creepers or undergrowth to suit any site. It is glued in place, as is all other vegetation material, with white PVA glue. Finally there is the idea of using teased-out lengths of green garden string, either stuck into the ground plasterwork while it is wet or stuck into pre-drilled holes. This is a realistic way of depicting such growth as elephant grass or reeds.

Application

There are several way of applying flock scatter material. The conventional approach has been to paint the areas concerned in the base colour, such as green for grass or grey for a stony surface. Use acrylics or emulsion for this. If you use acrylic paint, wait until it is dry, then paint a layer of white PVA glue over it and sprinkle the scatter evenly. You can use your fingers, a spoon or an old tea strainer (shaken) to do so (Figs. 4.14 and 4.15). The alternative is to use emulsion paint of the base colour (e.g. green for grassy areas) and sprinkle the scatter material over it while it is still wet. When the paint is dry, excess scatter can be brushed off—or a portable layout can be tipped sideways over an open newspaper—and put back in the jar. Incidentally, scatter material is mostly sold in bags, but it can be stored and handled better if kept in old jam or coffee jars.

Figure 4.14. Applying ground scatter the conventional way.

Figure 4.15. Scatter material is most easily applied to large areas with an old tea strainer.

A better, ‘bonded’ technique has since been developed. The scatter material is sprinkled dry exactly where you want it, with different types mixed as required, such as stony patches in grassy areas (Fig. 4.16). Scatter to depict grass growing in or along-side railway track can be dropped between the sleepers. A brush can be used to ease the scatter into tight corners or between the sleepers. Now take an eggcup, fill it with tap water and dribble two or three drops of washing-up liquid into the water.

Figure 4.16. Using the ‘bonded’ method of scenic scatter application, the material is dropped into place loose and dry.

Take a second eggcup and fill it with water mixed about fifty-fifty with white PVA glue, well stirred. Using a drinking straw as a pipette (or a real pipette if you have one) gather up water from the first eggcup and drop it over the scatter material. Do this as many times as needed to cover an area a few inches long. From the second eggcup transfer, by pipette, some of the dilute PVA glue. It will spread through the wetted area, dry transparent and hold all the scatter material realistically in place. Repeat all over the scenic area and leave overnight to set (Fig. 4.17). Shake off any excess—there won't be much—and the job is done. This technique is demonstrated on the Westwood Sidings layout. It is quicker, easier, and less messy than the older methods.

Figure 4.17. Water plus washing-up liquid is dropped over the dry material.

Trees

There are many model trees on sale, as any visit to a model shop will show. Hornby has some twelve different tree sets of the most straightforward type. All you have to do is drill a locating hole in the scenery and glue them in (Fig. 4.18). There are also kits from many manufacturers, usually offering trunks and foliage which can be glued together in different ways to vary the appearance. Several makers have packs of fibrous foliage material which can be used to make your own trees. This is not difficult.

Figure 4.18. Drill a hole, ‘plant’ the tree with a drop of PVA glue to secure.

If you search parks or gardens you may well find twigs of suitable size, shape and texture to form the basis of model trees, but if you do, ensure the wood is ‘dead’ and dry, not green and springy (Fig. 4.19). The alternative to park or garden twigs may well present itself every time you buy a bunch of grapes! Some grape stalks are green and soft, and therefore not suitable, but quite a number are hard and wood-like. The texture and colour look particularly realistic for miniature trees, unless you’re expert enough to want to differentiate the species, deciduous or evergreen, suited to your landscape.

Figure 4.19. You can make your own trees quite easily. At left is a suitable garden twig and on the right a grape stalk.

Start by collecting the stalks left over when the grapes have been eaten. From the main stem use scissors to cut typical trunk and branch shapes. When satisfied you can tease out the fibrous vegetation material and glue it in place (Fig. 4.20). Add extra texture by dropping a little clear varnish or clear water glue over the foliage area and sprinkling finegrade scenic scatter on it to give a leafier effect. If you are using twigs instead of grape stalks proceed in exactly the same way. The fibrous foliage material can also be used to make realistic bushes, hedges or rough undergrowth.

Figure 4.20. The same two pieces five minutes later, with teased-out foliage glued randomly.

Finally, you can improve the more basic ready-made fir trees by covering them with clear varnish or white PVA glue and sprinkling on scatter material, as with the home-made variety (Fig. 4.21).

Figure 4.21. The cheapest, simplest trees available look rather like Christmas cake decorations. Their appearance can be improved by brushing on white PVA glue, then sprinkling grass scatter over them, as is about to be done here from the jar.

Using scenic mats

Many model rail enthusiasts, especially beginners or younger modellers, are wary of scenic work because it seems to be a messy business involving plaster, or looks too skilled and complicated on the expert layouts shown at exhibitions. But it need not be difficult to make scenic additions to your layout, even if you've never tried such a thing before, and a good way of getting some basic ground cover is to use scenic mats. In Britain the most widely available scenic mats are those in the Hornby range (R8064–9, Fig. 4.22), which depict, in number order, light-green-grass, dark-green grass, grey tarmac, extra-fine granite surface and meadow-green grass, plus thin cork sheet. Several other firms produce similar items.

Figure 4.22. A large open area, in this case a station yard, being represented by a scenic mat, the grey tarmac mat (R8066) in this case, secured with white PVA glue.

Experts tend to look down on scenic mats and say they look ‘toylike’. Ignore them. The mats look ‘toylike’ only if they are glued or pinned perfectly flat to the baseboard and everything else—track, structures, accessories—is stood on top. If you use them sensibly they can save much time (and money, come to that, for they are reasonably priced) and are clean and easy to use.

Of course, scenic mats are not the answer to all your scenic needs, for you still need to model cuttings, cliff faces or other steep or high features in the usual way. But where the ground is relatively level, as is usually the case around station and yard areas, scenic mats can come very much into their own. To take the easy one first, roads, car parks or yard surfaces can be depicted by cutting strips to suit your need from the Hornby R8066 (tarmac) or R8067 (granite) sheets or similar equivalents (Fig. 4.23). You can paint road markings on these as required once the roadway is laid in place, but if you are not too good at this, note that other accessory ranges include packs of road marking transfers to cover every requirement, including car parks. For country lanes or footpaths, etc. the cork mat can be used, but its appearance is improved if you give it a brownish-grey wash of acrylic paint to take away the ‘clean’ look of a fresh cork mat.

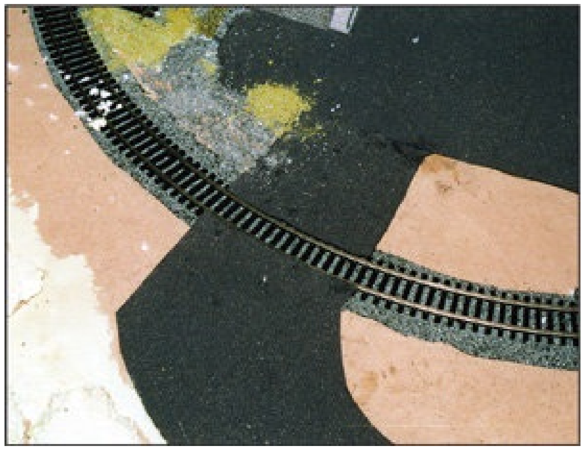


Figure 4.23. Scenic mat, grey tarmac again, being used on the Westwood Light Railway for the surface of the goods yard and the approach road over an ungated level crossing. The track ballast is extra fine granite (R8067).

The widest use of scenic mats is for depicting grass surfaces, for which the light, dark and meadow-green mats are available from Hornby. Also worth trying are the cobblestone, sett, roadway and paving sheets from Faller, Auhagen, Noch and others, for roads and yard areas. If you really need a smooth, flat, grass surface the grass mats are ideal as they come. Such areas as garden lawns, bowling greens, tennis courts, 'crazy golf' pitches, cricket pitches, football pitches, suburban road verges, recreation grounds and so on are usually flat and well tended, so the light-green scenic mat is ideal, cut to size and glued flat to the baseboard. An art roller or coffee jar should be used to ensure it is really flat, without any air bubbles that may later result in an unrealistic 'bump', say, in the middle of a miniature tennis court. You can use white paint for any sports field markings you need.

Most grassed areas, however, are uneven. Provided you have a suitable surface you can use grass scenic mats to represent them. On flattish land such as alongside the tracks in a station or goods yard you can use the mats cut to the required shape—but instead of laying them directly on the smooth baseboard surface, glue down a few scraps of card, styrene, sheet, balsa offcuts, etc., first (Fig. 4.24). When the grass mat is glued over this surface it will be uneven in a realistic way.

Figure 4.24. On the narrow Westwood Sidings layout the entire ground area depicts a level goods yard, so scenic mats are used extensively. The ‘bogus ballast’ below the track is from scenic mat R8066, and the cobbled roadway in front of the warehouses at the back is from Auhagen range, as is the strip of rough grass mat.

You can extend this to quite elevated surfaces. A lot of railway cuttings or embankments are neatly grassed in real life, and if you use styrene block or card formers to represent them the grass mat can be glued on as the top surface, quite roughly, so that it is not perfectly flat but realistically uneven. On these angular surfaces you can fasten the mat in place until the glue dries by pinning it with tacks or track pins.

Gently sloping or higher ground that is well grassed, as in downland areas, can be similarly covered with grass mat. An example is shown in Fig. 4.11, where the grass mat was cut to shape and glued over the scenery supports before the rock-face plaster was applied. For all this glue work with scenic mats use white PVA, as it will not attack the styrene or other plastics you may be using in the general scenic work.

Once the grass mat is in place it will look far too immaculate for true realism if left exactly as it is, unless you're modelling a lawn or sports pitch. The next task, therefore, is to go over the grassy areas to add a bit of undergrowth, rough clumps, bare patches, bits of tree stump or log, rubbish, rocky outcrops, trees, bushes, Skaledale walls, hedges—whatever your idea of scenic development calls for. Add patches of rock from cork bark or coarse ballast, even rough garden pebbles; scrape the grass mat surface gently with a blunt knife to roughen it a little. You could even try pouring clear gloss varnish into dips to look like puddles or waterlogged areas. The possibilities are limited only by your imagination.

The photographs show aspects of what can be done. It is worth pointing out that if you build a very small layout, such as Westwood Sidings, featured in this book, scenic mats may provide nearly all your scenery needs. Railway sidings areas are intentionally level, and on the Westwood layout the surface only needed to be covered by grass or paved roadway. The yard area was surfaced with printed card cobble and road-surface sheets (Fig. 4.25). The other areas were covered with grass mat plus some surface dressing for stones, bushes, weeds, etc. as described above. The rail ballast was depicted by Hornby R8066 tarmac scenic mat. All the scenic work on the entire layout was done with scenic mats or card—easy but convincing.

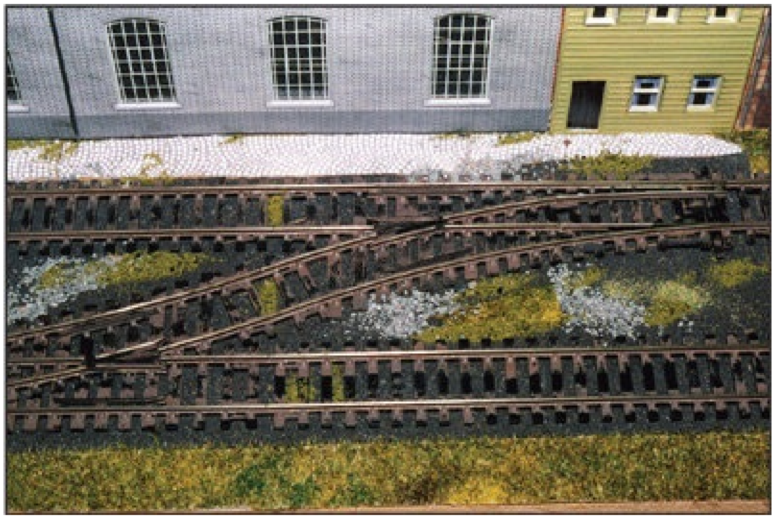


Figure 4.25. Scatter material applied over the scenic mats.

Modelling water

While most railway modellers, including those new to the hobby, have no difficulty in visualising the need to make realistic terrain for a layout, the reproduction of water in miniature is more of a problem. As a result, some modellers avoid settings with water, which is a pity, because it undoubtedly adds charm and interest to the scene.

In fact, there are several ways of reproducing water in miniature. The first is the use of the real thing, needless to say, and there are a few scenic kits on sale which feature fountains or watermills with a pump to circulate water between leakproof reservoirs built into the models. This is rather specialist, however, and, strangely enough, real water is not entirely satisfactory. For a start is it awkward, messy and inconvenient. But it is also too dense and viscous, because the density and texture can't be scaled down to model size.

The oldest alternative is to spread crumpled cellophane or clingfilm over a blue-green card base. Provided it is not creased, it gives a remarkably good impression of rippled water, but it does show up the dust if not kept clean. Some scenic specialists make sheets of plastic with a rippled water effect. Several firms make easy-to-apply resin or gel water-effect sets, ideal for modelling ponds, streams or waterfalls (Fig. 4.26). But there is an easy and effective method which fits any scenic situation and it is good for depicting still water, as in canals, locks or harbour basins. That is the one shown here.

Figure 4.26. Realistic Water in the Woodland Scenics range.

In essence it is no more than a flat, smooth, painted surface which is given several coats of clear gloss varnish—at least three coats and perhaps as many as eight, applied on successive days. The effect is surprisingly realistic, complete with reflections, even though the only ‘depth’ is the thickness of the varnish.

It is important to use a smooth, rigid sheet where water is to appear. Plastic card of at least 0.040 in. thickness is ideal. (Anything thinner will not be rigid enough.) A sheet of plastic card suffices for most purposes, such as a pond or small harbour basin, but for larger areas thin Formica sheet can be used. The procedure is simple. Start by installing the water surface sheet, ensuring that it is rigidly supported underneath so that it does not flex. For example, if you have to cut a hole in a flat baseboard to make a pond, glue the sheet of plastic card under the hole to form the water surface, then screw at least one strip of thin wood across the aperture below the plastic sheet so that it stays flat. Once the surface sheet is in position it can be painted ‘water’ colour. Of course, the colour of water varies. By the seaside or in open countryside it may appear blue. More often in rivers and harbour basins it is a deep blue-green, even bordering on black. In a shallow river or pond it may be a brownish muddy colour.

You might wish to feature a small wharf with a siding, so that cargo can be transhipped between barges and wagons, for example, a nice feature which might be incorporated in any layout. This little corner could be a canal or river, even a tidal inlet from an estuary, as found around many coastlines. The water surface sheet is painted as soon as it is in place, in this case with a mix of gloss dark blue and gloss dark green with just a touch of gloss black brushed in as well (Fig. 4.27). Two coats on successive days ensure that no white base or streaking shows through and give a dense colour. The scenic surroundings are then completed (Fig. 4.28). Cover the painted water surface with kitchen paper or old newspaper to ensure that no scenic material, such as glue, plaster or paint drops, ruins it. When all the adjacent scenic work is done you can return to the water surface, blow off any dust and paint it all over with clear gloss varnish. Leave it to dry overnight and apply at least two more coats on successive days (Fig. 4.29). (Quickdrying varnish would speed up the process.) If desired you can keep on applying up to about eight layers of clear vanish. When all is dry you can add details or features that go on the surface of the water: boats, sailboards, punts, canoes, ducks, swimmers—whatever suits your layout theme. A landing stage perhaps is glued on; even driftwood or floating tree branches can be glued on the water surface. Some items have to be adapted. A swimming figure may need to be cut off at head and shoulders, while a person paddling could be cut off at the knees and glued in place. All sorts of accessories applicable to a water setting can be purchased in the popular scales, including divers, swimmers, rubber inflatable boats and water-skiers. The only limit is your imagination and the supposed setting. Obviously water skiers would not be appropriate for a harbour basin but would be by a lakeside.

Figure 4.27. For still-water effect paint on plastic card.

Figure 4.28. If there is a quayside etc glue it in place at this stage.

Figure 4.29. Apply gloss varnish to finish.

Wharf and quayside

Linked with the modelling of water, as noted, is the depiction of a wharf, jetty or quayside (Fig. 4.30). This can be an attractive layout feature, especially when it incorporates a rail siding, and possibly a crane, so that the transhipment of cargo from rail to boat (or vice versa) is represented. A canal or harbour basin can be made by cutting out a rectangle at the edge of the front of a baseboard top. The water surface is depicted, with clear varnish, as described above. With the paint dry, cut a suitable edging for the basin sides. Useful for this is Faller embossed timber siding (item No. 612) but an alternative would be stone block (No. 604) or brick (No. 607), all available from larger model shops. The strips are cut to size and glued to the edges of the baseboard material.

Figure 4.30. A quayside can make an attractive feature where wagon or van loads can be depicted transferring to or from a vessel and making for interesting operation. This atmospheric scene includes track ‘buried’ scenically into the road, a nicely made sailing barge, coal bins and a boat on the jetty.

The next requirement is some rubbing timbers or baulks to stop craft banging against the basin walls. These can be cut from strip hardwood or balsa. The depth matches the depth of your basin walls, plus 3–4 mm. When glued vertically in place along the basin wall, at about 35– 40 mm spacing, the projecting top portion also serves as a bollard for securing the bow and stern lines of boats alongside. The jetty or quayside surface itself is best depicted with cobbled, sett or paving sheet as described earlier.

Buildings and lineside accessories

Adapting Skaledale

Very much part of the model railway scene, as of the real railway scene, are the structures of all kinds in the vicinity of the tracks. These range from buildings that have no connection with railway operation—such as houses and shops that happen to be near the line—to structures upon which the railway depends. These include stations, signal boxes, store rooms and huts for different functions, freight depots, locomotive sheds, loading banks, factories served by rail, and so on. When you build a layout you can have a lot of fun providing all the structures necessary for the layout to look realistic and plausible. Real railways exist for a purpose, to carry people or commodities from place to place, using the revenue (train fares, freight charges) to fund the operation. In miniature, of course, there are no real people or freight, though they are depicted in model form. But on a model railway layout we are re-creating life in miniature form, so it is a good idea to use buildings and other structures as creatively as possible to reflect rail operations.

Miniature buildings suitable for 4 mm scale come in a huge selection from many manufacturers. There are hundreds of plastic construction kits for all type of structures. Then there are many card kits, some pre-cut and others needing cutting out for assembly. Plus there are a few wood kits, and a growing number of models that are sold ready-made and suitable for instant use on the layout. Hornby’s Skaledale range comes into this latter category and it means that if you have not the skill, time or inclination to assemble plastic or card kits you can get a

Skaledale model and put it just where you want it on the layout. These structures are fine as they come, being fully finished and detailed, and even having realistic weathering. But even they can often be altered or given extra detail to provide more individuality.

Strawson's warehouse

An example of what can be done is shown with the Skaledale model of Strawson's warehouse (Figs 4.31–33). In the days of steam and the early diesel era little structures like Strawson's could be seen in goods yards all over Britain, in towns as well as in the country. They were used by traders who mostly received merchandise by rail for local distribution, though sometimes the traffic flow might be twoway, an example being in an agricultural area where local produce (potatoes, green vegetables, fruit, etc.) was brought in from local farms to be sent to city markets in railway box vans. In towns, by contrast, the warehouse might be receiving vegetables or domestic goods of all kinds for local distribution, and there might be more than one warehouse in a goods yard, each dealing with different commodities.

Figure 4.31. Modifying Strawson’s warehouse (R8521). was done by making a new door from a 40 mm square of buffcoloured card on which planks were drawn with black pen and ruler.

Figure 4.32. To show that goods are received or dispatched by road, a side door is added over the bricked-up window moulded on the side.

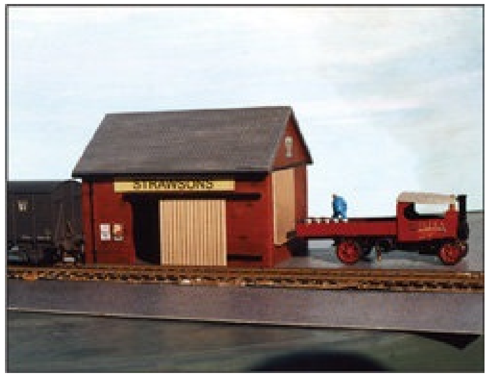


Figure 4.33. This simple work completes the changes. Now the warehouse can be sited in a siding and box vans can be shunted alongside for unloading.

The model warehouse is a good way to show this sort of railway operation at work. It is simply placed alongside a suitable siding in your layout's goods yard and the passing pick-up goods train shunts vans or wagons for Strawson's up alongside the door and collects any outgoing vans or wagons. With just this one structure, therefore, you have some railway-like operation which works even on the simplest layout. While the Strawson's warehouse model can be used just as it comes, you can add further interest with a few changes, not least adding another door on the side so that road vehicles can be shown collecting or delivering, further emphasising the interaction of road and rail in commercial activity.

A simple loading bank

Not everyone has the skill to make models from scratch (that is, from raw materials), but there are some very simple models that anyone with the most basic experience can make. An example is the loading bank, another structure that was once common in goods yards, and sometimes in sidings out in the country, too (Figs 4.34– 37). The sole function of this sort of structure was to make the transhipment of just about any commodity, from milk churns to parcels or crates of vegetables, as easy as possible in the days before fork-lift trucks and pallets made cargo handling more straightforward. On the model shown, the platform area was made by cutting a 140 mm x 30 mm strip from one of the plastic sheets of planking from the Wills accessory range. However, you could use thin balsa sheet scored to depict planking or thick plastic card similarly scored. Ordinary card is not a good idea, as it may warp later, spoiling the realism. The timber supports are from balsa strip (sold in model shops), though you could use matchsticks with the heads cut off.

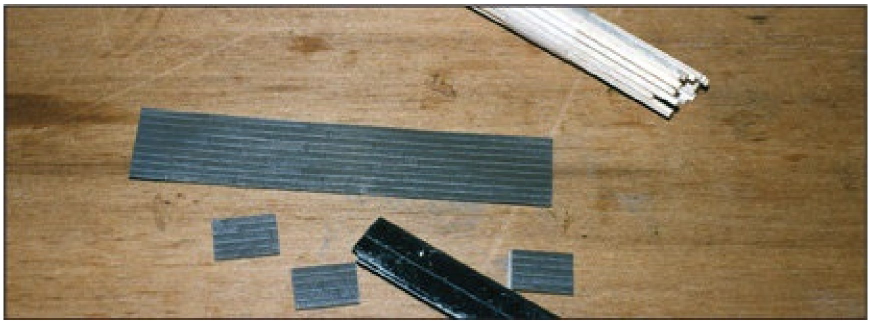


Figure 4.34. A simple loading bank. The sheet of planking is sawn to size. The three short pieces form the end and centre supports. The X-acto razor saw is used to cut the plastic and the balsa strip.

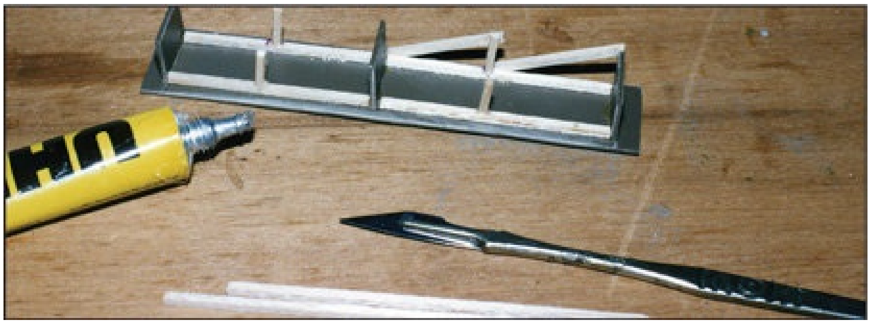


Figure 4.35. The end and centre supports are glued to the underside of the platform. The space between is filled out with balsa strip in typical bracing style. The platform can be made longer, shorter or wider, particularly if a specific site is to be filled.

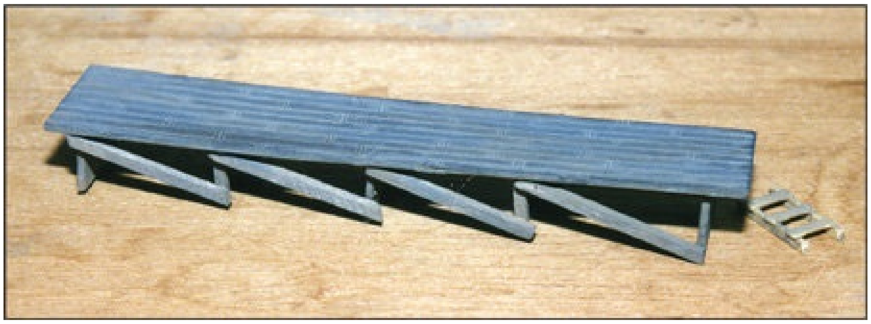


Figure 4.36. The wood supports are painted grey, as is the plastic top. Steps to fit the end, allowing access, are cut from the balsa strip and assembled with glue.

Figure 4.37. The loading bank is glued in place, with the steps in position at the end. A wash of dark earth-colour paint gives it a weathered appearance, and some sacks and crates, with a workman figure, are glued on top.

Plastic kits

As we have seen, Hornby produces an ever growing range of ready-made structures for 4 mm scale in the Skaledale series. This makes life easy for those who lack the time or skill to build kits, but on the other hand there are many who enjoy kit building. Kits can be altered to suit the site, and there is a huge choice of structures in that form from many makers—including Hornby—as is evident from a visit to any model shop. In practice most enthusiasts choose what suits them and, of course, Skaledale structures can be mixed in with kit-built structures sold for 00/H0 gauge. Almost everything you need—including stations in all sizes— can be had without too much trouble. Kits are easy to assemble, too. Anyone with basic modelling experience can do it.

The problem is that many modellers take kits for granted. They certainly look good just stuck together out of the box, and it is not difficult to get that far. But it can also be a let-down. Even on layouts at model railway exhibitions there are all too many badly or indifferently made structure kits. We have all seen shiny plastic roofs, daylight showing through a big model factory from side to side, and good-looking old buildings only too obviously perched on the ground with shadow showing underneath where the foundations should be! Without going into overmuch detail, the errors mostly noted are: unpainted plastic roofs and walls, badly applied glazing (or none at all), mould marks showing anywhere (and ‘flash’ too), ‘hollow’ see-through buildings, buildings not ‘bedded in’, walls painted in ‘solid’ colours so that the brick or stone effect is largely obliterated by paint, scenery visible through the backs of low-relief buildings, and lack of guttering, downpipes and other essentials.

Instead of assembling a kit straight from the box and fitting it on the layout, spend some time looking at it first to see what is or isn’t included. Some kits nowadays come with a weathered finish (which may include a painted brick effect) and all sorts of interior detail, though most are simply shells with all external detail but nothing inside. Most German-made kits are pre-coloured in that the walls are moulded in brick or stone colour and the roofs are slate or pantile colour, with a contrasting colour on the doors or window frames, but there are some older kits where all the parts are one basic colour.

Before assembly begins remove any flash, mould marks or other imperfections with a file, emery board or craft knife. The first important part is to get a realistic finish. What makes a building look good is (1) elimination of the plastic sheen, and (2) visible mortar/cement coursing between the bricks. You can do both these jobs in one (Fig. 4.38). Before you assemble anything, take each wall in turn and paint it all over in acrylic matt white or very light grey. Use a big brush for this and do the walls one at a time. As soon as you have applied the paint, wipe it all off again with a pad of kitchen paper so that only the light colour remains between the courses of bricks. On a few occasions, where a building is in yellow brick, you might want to use a dark grey for the coursing, but with grey/ red brick/stone the white or light grey is required. The faint smear of paint left when you wipe off all the surplus takes the shiny sheen off the plastic and it really does look like matt brick. If you do nothing else suggested here, try this and be amazed at the increase in realism!

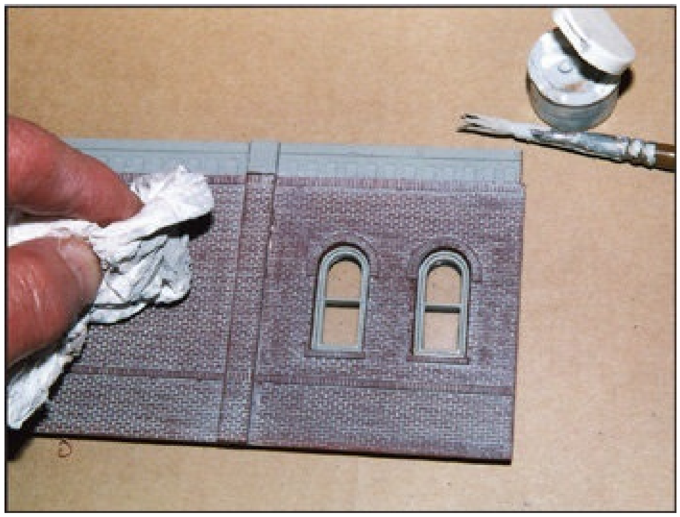


Figure 4.38. The mortar courses between the bricks are revealed by painting each wall section white or light grey, then immediately wiping the paint off with a tissue

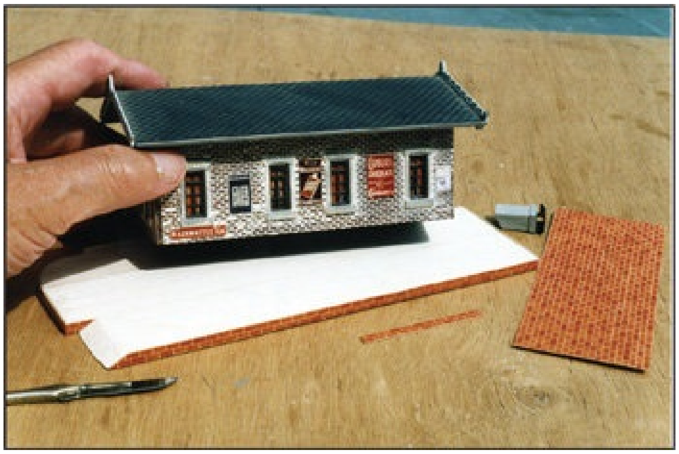


Figure 4.39. Most plastic structure kits can be altered and detailed to make the result more individual. This is a British style light railway station adapted from a German kit.

Figure 4.40. The light railway station in position, with weathered roof, lamps and drainpipes from accessory packs, plus suitable figures. The 'Italian' restaurant across the way is scratch-built from card, with accessory pack drainpipes and guttering, door and windows from the spares box, and chimney from a ballpoint refill.

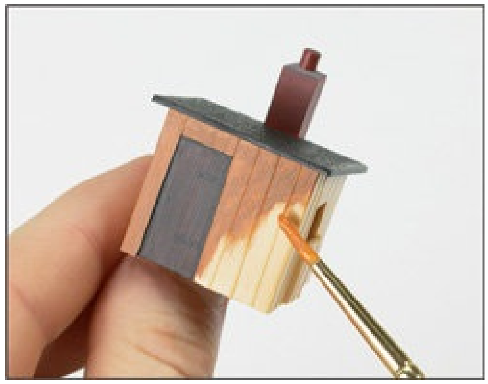


Figure 4.41. Small structures and buildings from plastic kits that are not supplied already weathered look far too shiny and new to be entirely realistic. They can be improved greatly by careful painting with matt acrylic colours, as is being done with this platelayers' hut. The technique, applicable to all buildings, of gluing scatter material round the base to represent weed and grass growth makes it look naturally 'bedded in'.

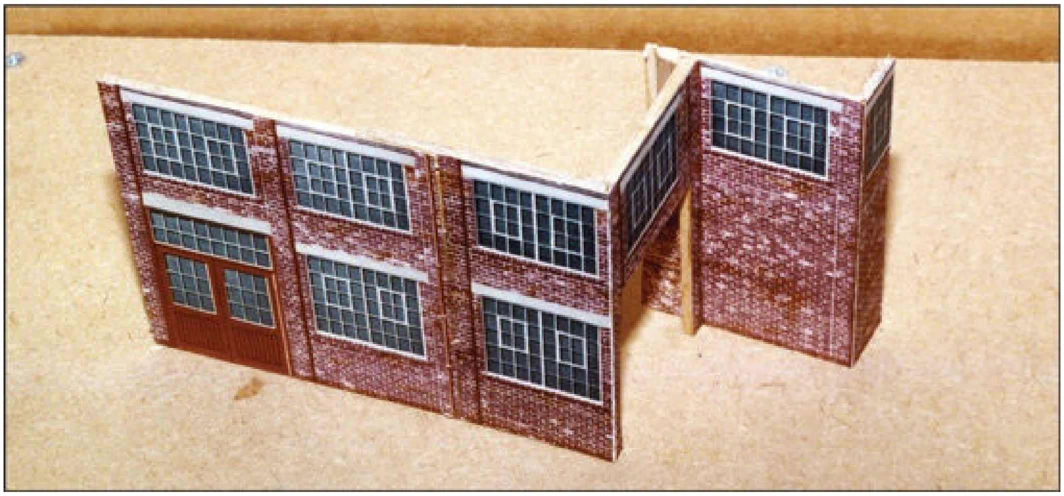


Figure 4.42. Card kits are very adaptable. This Bilteezi factory has had its walls cut out and rearranged so it can be 'canted' in low relief against the back scene. All the walls are glued to sheet balsa to give rigidity, and the main shutter door has been cut away so that a railway siding can be run into the building for wagons to load or unload. A flat roof is still to be added.

Roofs can be given similar treatment. In this case use matt black or dark grey and put a generous wash all over the roof mouldings, then wipe it all off again. The black will run into the crevices between the tiles and remain behind when you wipe the paint off. This, again, will eliminate the plastic sheen, make the roof detail stand out and give it a realistic weathered look. You can use ordinary enamels for this, but it is much better to use water-based acrylics, of which the Humbrol type can be commended because it comes in well sealed pots and keeps well without drying out. The acrylic paint is soluble so you can quickly wash it off and start again if dissatisfied with your first effort. Also you can clean the brushes in water afterwards—so long as you don't let them dry out. Only when all the walls and roof parts have been weathered should you get on with actual assembly. Weathering afterwards is much more difficult.

Detailing may well be needed outside. Most kits come with roof guttering and downpipes, but some do not. In the latter case you'll need to add them, and if you check out your model shop you'll find accessory packs by Wills, Ratio, Faller, Auhagen and others which provide a generous supply of pipes, guttering and other useful bits.

This brings us to interior detail. If you open up the doors in a card kit or set doors open in plastic kits this will reveal the interior. Most models are hollow inside and you can often see right through them. So cut floors, interior walls and floors for the upper storeys from card. You need spend no big money on this. Scrap card will do, from cereal packets or the back of a writing pad. You can draw planking on them if you like but it does not need to be precise so long as it gives the impression. After all, when the building is complete you cannot see much of the interior, but you must be able to see 'solid' interior walls rather than light showing through from one side to the other. Many kits these days include printed curtains (and shop window displays), but if not you can use coloured paper. If the window glazing is poor or over-thick, use clear plastic sheet instead, again often found as scrap, such as on the front of some cartons. Some kits have thick black paper liners, too, which are necessary only if you plan to light the interior. If you don't use this lining you'll find that the bulb inside glows through the plastic, with loss of realism, but if you don't plan to illuminate the layout this is one measure you can ignore.

Finally, the other big let-down is lack of a bedded-in effect. However nicely the model has been put together it looks ridiculous if it is only too obviously just placed in position. The trick here is either to allow a recess it can fit into—for example, leaving a gap behind the card paving of a street—or to run white PVA glue round the base area when the structure is put in place and sprinkle grass scatter or ground form in the glue so that it looks like the grass or weeds that spring up round the foot of most buildings.

Card kits

In addition to plastic structure kits there is a big choice of card kits from several makers. These vary from ordinary cut-outs—where all parts must be cut from a sheet and folded, and strengthened or braced before assembly—to those printed on stout card which are die cut so that all parts can be pushed out of the card sheet and need only to be tidied up with a craft knife before assembly. An example of basic cut-out type models is the Bilteezi range, while Superquick and Metcalfe typify the die-cut type. All types are ready coloured, but much can be done in the way of extra detailing. Typically, card cut-out models may have the downpipes just printed on, or may lack them altogether. Here again, you can use the plastic detailing sets to provide them. On the card kits with printed downpipes, glue the plastic downpipes on top of them. On most card kits you can alter doors and windows to be open as you go along. Printed-on windows can be cut out and replaced with clear plastic glazing. Some card models come with clear glazing in any case. Because the cut-out type models are on thin card they need bracing with balsa strip on the inner corners, and thick card or balsa backing on large areas of wall to prevent warping in the course of time. Most model shops carry a selection of card kits, and sometimes they are on sale at exhibitions, too.

Low relief and flats

Some kits in both plastic and card are sold in ‘low relief’ form. This is a great spacesaving idea. Buildings tend to be bulky and take a surprising amount of room. On a narrow baseboard you may not have space enough for a full building, but as a layout is like a stage set you need only show what is visible from the front of the layout. ‘Low relief’ is the term for this sort of model: just the facade, maybe only 1 in. (25 mm) deep, or even less, placed against the back scene. It creates the illusion, if done well, that the whole building is there.

Apart from kits sold as ‘low relief’ you can convert any plastic or card kit to low-relief form simply by sawing through the roof and walls at the depth required, then assembling only that portion of the kit to install on the layout. There is a worthwhile economy, too, for you can use the left-over rear walls to make another low-relief frontage (Fig.4.43).

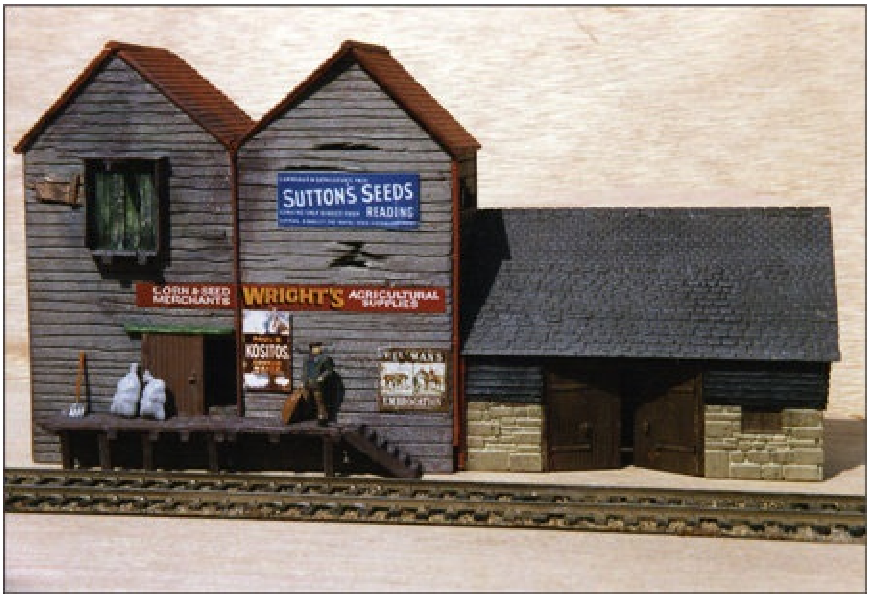


Figure 4.43. Low relief and cross-kitting are both illustrated here. This rail-served seed merchant's is made of walls from a Kibri kit, the front half of a Wills barn and Wills roof sheet and drainpipes, plus a wooden loading bank. The building is low-relief, less than 2 cm deep.

Figure 4.44. Shiny plastic fencing straight from the pack is unrealistic. It can be improved by painting with acrylic greys, browns or blacks, adding a touch of liquid detergent to the water to give better coverage.

Figure 4.45. Humans need weathering too! Several firms make sets of 00/H0 figures, including. Hornby. Their appearance is improved if they are given a coat of matt clear acrylic varnish.

Figure 4.46. Top scenic expert Roy Hickman demonstrates here the high degree of realism and detailing that can be achieved. These back gardens feature 4 mm scale sheds, chicken coops, greenhouses, cold frames, clothes on the line, vegetable plots, hedges and trees.

Figure 4.47. A canal lock and narrow boat always attract attention on a layout. Roy Hickman models the scene perfectly, with fine trees and vegetation. Hornby has produced a canal bridge in the Skaledale range.

Figure 4.48. The view upstream. Hornby have made canal scenes like this in 00 scale much easier recently by introducing a lock, canal sections, canal basins, a butty boat, canal keeper’s cottage, and accessories, in the Skaledale range.

Similar in idea to a low-relief structure is the scenic flat. There may be enough room on the back scene to fit in only a structure front behind the railway. So just the front wall of a plastic or card kit can be used, cemented to the back scene. Examples can be seen on the Westwood Sidings layout in Chapter 7. It is easy to do, though you need to make a good choice of frontages to keep everything in proportion.

Cross-kitting

Another way with kits is to use walls, roofs and other parts altered (if necessary) and assembled from more than one kit. This will give a 'different' look to the resulting structures. Typically you may use a flat roof on a factory instead of the hipped roof in the kit—to take a simple example—and the original factory roof can then be used elsewhere. Your imagination is the only limit to what you do in this direction. Some very clever adaptations indeed have been effected on some layouts. Cross-kitting is more colloquially known as 'kit bashing'.

Details and lineside

The model railway hobby is truly neverending, for when you have built the layout and done the scenic work there is still a vast amount of detailing you might need to add. A partial list includes fencing, signals, water cranes, coaling stage, coal spilled on the track, gradient posts and notice boards, telegraph poles, pallets, luggage trolleys, freight of all types, skips, sand bunkers, discarded packing material, waste paper, dustbins, fallen tree trunks, rusty lengths of rail dumped by the trackside, and a lot more. Much will depend on your layout theme, and your own imagination, but suffice to say that model shops have a big selection of all these fascinating little accessories. Hornby has several items in this category, too, such as the Trackside Accessory set R874, not to mention wood stacks, AWS boxes and other Skaledale items.

It is worth remarking finally that scenic work is something you can always improve on as you gain more experience and skill. Layouts can do with 'refreshing', too, from time to time, so you can replace your original trees, hedges, fences, or even buildings with newer better ones as time goes by.

Chapter **5**

Locomotives and rolling stock

Hornby locomotive, coach and wagon models are all finished to a high standard. Depending on the model, you can sometimes make detailed changes or even add details to give some variation and individuality. An idea of the possibilities is given here, plus some guidance on basic maintenance.

Detailing steam locomotives

All the latest Hornby model steam locomotives are intricately detailed beyond the wildest dreams of model enthusiasts of even ten years ago. In fact Hornby models have been increasingly well detailed since the 1980s, though it varies with the model in the case of earlier releases still available. The range also includes simpler or cheaper models, for beginners or juniors, which have only limited detailing (Fig. 5.1).

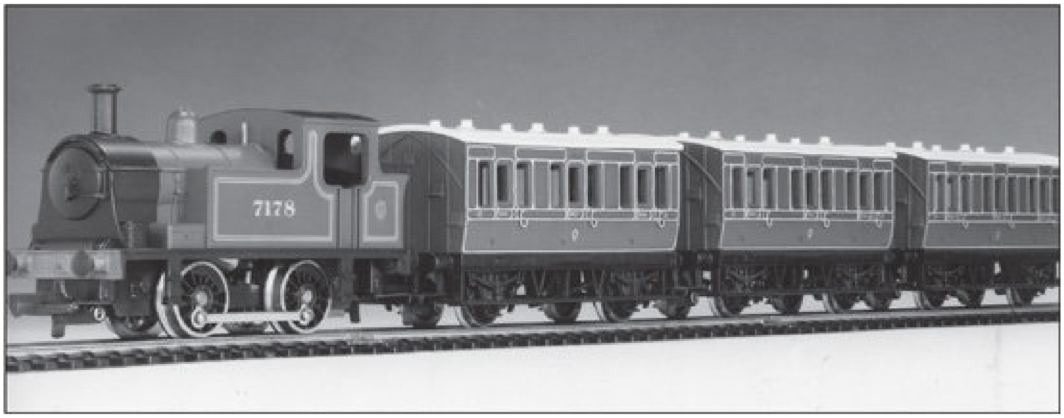


Figure 5.1. Hornby have always produced simpler models suitable for young enthusiasts or beginners. A famous 'junior' loco for many years was R355 'Nellie', also produced in other finishes such as Caledonian Railway shown here. This loco is no longer made, but modern equivalents are R782 'Smokey Joe' and others. The coaches shown here are still available in other liveries.

Between these extremes are many models which have a good degree of detail but could benefit from improvements. In addition to all this, many full-size locomotive types featured variations within the class, certain engines having different fittings, colour scheme or markings. There would be modifications anyway in the course of time as the locos saw service. Such individual variations are only rarely reflected in models as purchased, because the manufacturer produces the standard design. Only the more recent releases reflect class variants.

The typical detail limitations to look for on a model include any of the following:

- Handrails and handholds moulded in relief instead of being fitted as separate lengths of wire.
- No crew. All too many model locomotives are seen at work on layouts with no visible human figures in the cab!
- No lamp irons, brackets or other small fittings.
- No cab or footplate steps.
- No representation of the brakes or other chassis fittings.
- Wheels of an incorrect pattern.
- Wrong style of numbering or marking.
- Unrealistic moulded representation of coal in the bunker or tender.
- General lack of small details which add character to individual locomotives, an example being the fireman's shovel resting on top of the coal.
- No weathering or grime effect in the finish, though in recent years even this has been remedied by the release of versions of most locomotives in a weathered finish.

Some of the best models available today are, in fact, so well detailed—even to the provision of crew figures—that only the eighth, ninth and (sometimes) the second and tenth of these shortcomings would need to be remedied (Fig. 5.2). But some models do need working on to remedy some or all of all ten points listed. No two models need exactly the same degree of work. Some may need only the plastic handrails replaced and footplate crew added. Hornby has long provided crew figures with some but not all locomotives. Even so, they need painting before being positioned in the cab. But the various accessory makers produce locomotive crew figures in metal or plastic which suit any model.

Figure 5.2. Recent Hornby locomotives, such as the GWR 'Grange' class shown here, are highly detailed as they come, but you may still wish to add, on this model, front and rear lamps, crew figures, fire irons and possibly some real crushed coal glued in the tender. Hornby locomotive detailing set R573 contains fire irons, lamps, route discs and crew.

Very common is the need to replace plastic moulded handrails with real wire ones, which greatly increase realism. A good example is the J83 0-6-0 tank engine. Here the various plastic rails can be carefully shaved off with a craft knife and replaced with wire bent to shape, or in some cases with No. 56 or Bambi office staples which make ready-formed handrails. Use a 'pin vice' or Archimedes drill to pierce holes in the body moulding and cement the ends of the replacement rails in place. Wire or plastic strip can also be used to depict lamp irons where they are missing, and plastic strip can be used for rainstrips on cab roofs (where relevant) and for other detail variations. Model shops sell all sorts of other detail parts for locomotives, including wire handrails, handrail knobs, safety valves, ejector pipes, brake shoes, lamp irons, loco lamps, balance weights, fire irons, chimney domes, and yet more. Some Hornby models come with extra detail parts, such as headcode discs or other pieces. A good example is the Hornby 'Terrier', which comes with optional condensing pipes and dome for representing variations within the class.

The Hornby Terrier is a good example of how far extra detailing can be taken (Fig. 5.3). Aside from using the detail parts supplied, there were so many variations in the real class that you could detail thirty or more models differently and still not exhaust the potential! For example, many locomotives were given long full-length coal bunkers in the course of their working lives. In model form it would involve sawing off the rear of the existing bunker, cementing in side panels of card or plastic card and then putting the rear back on (Fig. 5.4). Many of these locos, too, had the sandbox removed from the splashers, another possible variation. With the Terrier another improvement would be to carefully saw the buffers off and glue them back about 1 mm lower: the 'sit' of the model will be much better.

Figure 5.3. The Hornby 'Terrier' locomotive in two contrasting guises, both altered from the standard model. At left is the GWR version and on the right is SR W12 before it carried a name.

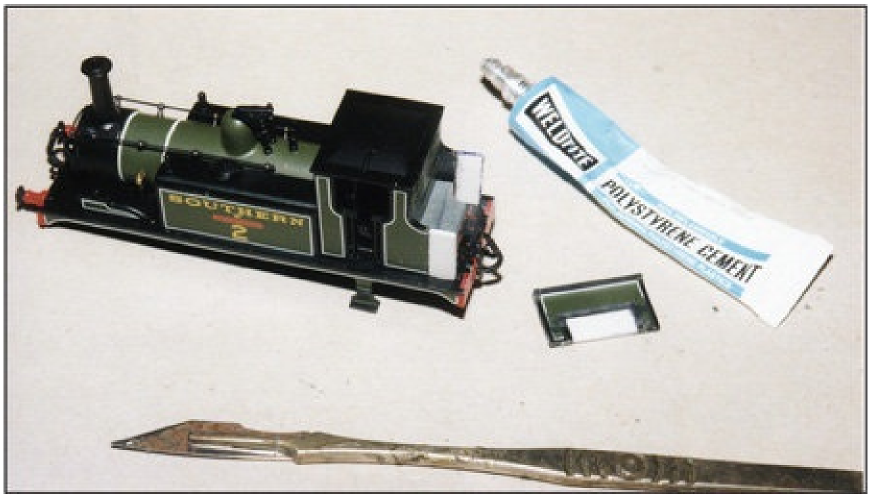


Figure 5.4. The Terrier W12 under coversion.

Some examples of what can be done with the Terrier, and other models, are shown here (Figs 5.5–6). Obviously you need to make good the paintwork over any detailing or changes. You may wish to change the loco’s number (and sometimes the name too). Transfers and nameplates for the purpose are sold by model shops. Whatever else you do, realism is always greatly increased by gluing real crushed coal over the moulded plastic coal in bunkers and tenders.

Figure 5.5. Quite a drastic, but simple, conversion is shown here. This is the well known Hornby ‘Smokey Joe’ tank engine with the original cab sawn off and replaced with the cab from the Dapol ‘Pug’ kit. This changes it to resemble a typical industrial 0-4-0 saddle tank.

Figure 5.6. Cutting back the cab on the Hornby J52, plus small detail changes, gives you the interesting earlier version, the open-cab J55. Lamp irons, lamps and Hornby crew figures are added and the loco is given a ‘smoky’ black finish and new markings.

Though some top-link express locomotives were kept as gleaming clean as a brand-new Hornby model, most locomotives became weathered and dirty to a greater or lesser degree once they were in service (Fig. 5.7). As noted, Hornby now make ‘weathered’ versions of most models. Otherwise you need to add some weathering, rust and dribble effects yourself by judicious painting, but don’t overdo it. Even a fairly clean locomotive may well have dirty running gear. For weathering use acrylic paints (browns, ‘earth’, ‘rust’ and black are best for the purpose). They are water-soluble, so you can wash off any unsatisfactory application until you’ve achieved the effect you want—so long as you do it before the paint dries.

Figure 5.7. This Hornby Fowler 4F has small detail changes, including coal rails added to the tender, real coal and fire irons on top. It has been given closer coupling to the tender, crew figures in the cab, a new number and a grimy finish.

Detailing diesel and electric locomotives

All comments about Hornby steam locomotive models also apply to diesel and electric models. The latest diesels, like the Class 31, Class 08 and Class 50, are detailed to the highest standard. On all of them you may wish to add enginemen in the cab, and on the early version Class 31 you need to fit the headcode discs supplied with the model (the headcode of your choice). But that is all. In addition there are weathered versions available.

Earlier diesel and electric models by Hornby are not necessarily so intricately detailed, and you may want to add headcodes, handrails, screen wipers, crew figures, and so on. You may prefer to add ‘wear and weathering’ to give grimy bogies and belly tanks, and smoke stains on the roof around the exhaust outlet and the grilles of diesel locos. An example of what can be done is shown in Figs 5.8–9.

Figure 5.8. The nose of the detailed Hornby Class 25 shows flush glazing, added etched screen wipers, wire front handrails and slimline couplers fitted.

Figure 5.9. The Class 25 with extra detail is given weathered bogies and exhaust stains on the roof.

The Hornby Class 25 is an accurate and attractive model of a popular medium-size locomotive type which can find a home on any BR era layout up to 1989, when they were withdrawn. The model looks good as purchased, but a few minutes comparing it with photographs of real Class 25s will show that improvements and changes are possible. In particular, the nose doors of most early Class 25s were welded shut after a few years in service, with hinges and fittings removed. The model has plastic ridges depicting the nose handrails, the screen wipers are moulded on the windscreens but not painted, there are sandboxes but no sandpipes ahead of the wheels, the cab interior is detailed but is in plain white plastic and needs painting realistically, there are no guard irons on the bogies, and there is no driver in the cab. There are no brake or heat pipes on the buffer beams, the wheels are clean, and the body and chassis are in gleaming ‘ex works’ finish.

Detail corrections and additions are easily made, and study of the real thing will show how a patina of dirt, oil and weathering is rapidly acquired by a locomotive in service. While these effects on the Class 25 are typical of what can be done to all model diesels and electrics, there are variations for different periods and different classes. For example, when Class 25s changed to the blue livery in the late 1960s the toeholds recessed into the body sides were plated over for safety reasons, and the horizontal grilles on the body sides were also plated over. For the earlier green version of the model this change is not required. There are further modelling options. For example, the large couplers can be sawn off and replaced by smaller ‘slimline’ Hornby couplers of the latest type which are much less conspicuous. The glazing sections can be removed and all the windows can be refitted from a Flushglaze accessory set which will give better-fitting ‘glass’. This is the least necessary change, however, and can be omitted.

Detailing and weathering rolling stock

All the points made about locomotives apply also to rolling stock. Check out all your rolling stock models. There are simple changes you can make. For example, coaches are sold empty, and most of those you see running on layouts are empty too! You can really liven up the appearance by installing some seated passengers (Fig. 5.10). Care is needed to remove the roofs—some are more difficult than others—but adding just a few passengers sitting in the window seats will make your layout look busy. Similarly add guards in guards' vans. While you are about it, add passengers and crews in any buses on your layout, and drivers in some of the lorries.

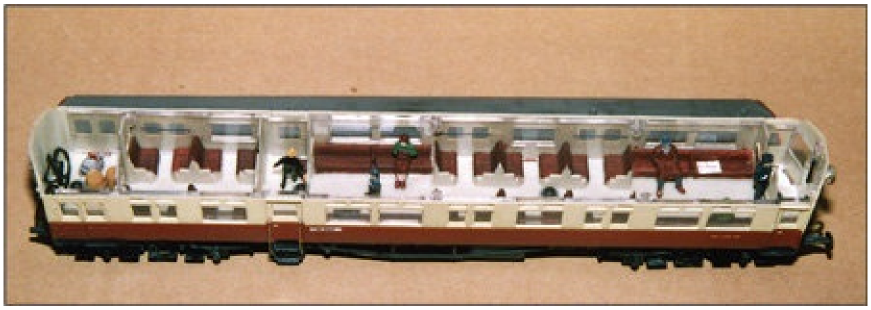


Figure 5.10. Don’t let your coaches run empty! The author’s Hornby auto-coach has the seats painted, six passengers, a guard, plus a bicycle, mailbag and parcels in the luggage compartment.

Figure 5.11 Hornby LMS brake van altered with card insert to depict ballasted body.

Figure 5.12. The card is painted black to match the chassis colour, and the plastic handrails at each entrance have been cut away and replaced by wire ones from No. 56 office staples. These are also used to add a safety bar across the entrance. A guard figure is still to be added. Note the added brake pipes.

A few wagons are sold with loads, but most are empty as new. Adding loads makes your layout look purposeful. The Skaledale range has loads of coal, minerals and timber sized to fit the wagons in the Hornby range. Don’t glue these loads in place, incidentally, for you can remove a load of, say, coal, to indicate that the wagon has delivered its cargo to the local coal merchant.

Some ready-made loads are sold in model shops, and you can make your own removable loads. A favourite age-old trick is to cut some balsa sheet or block to fit inside a wagon. This is painted black for coal or grey/brown for mineral/sand loads. Then smear the top of the wood with glue and sprinkle coal, granite chips or sand over the wood as desired. Garden twigs can be gathered, cut to length and glued together to make log loads for flat wagons, and long matchsticks can be trimmed down and glued together to make timber loads for open wagons, usually propped over one end and sloping down to the other.

Weathering on coaches needs to be only lightly done, for coaches are generally kept reasonably clean. Some light ‘soot’ effect on roofs, and a bit of grime (e.g. earth-brown or dust colour) on bogies and buffers is all that is needed. Wagons were always much dirtier (Fig. 5.13). A few, from overhaul or the paint shops, were clean but most were either dirty or even decrepit, with mud, dirt and dribbles on the side, rust on the frames and very grimy running gear. Don’t overdo it, but make an effort to duplicate this effect in miniature. Hornby has released versions of many wagons in weathered form, most effectively done. If you are unsure of your weathering skills, these are good models to get.

Figure 5.13. Both the Hornby ex-SR vans here are differently weathered, and as they are the brown ‘fitted’ type they have had brake pipes added at the ends. The locomotive has the crew added, real coal in the bunker and light weathering.

Locomotive and track maintenance

On a real railway system, considerable effort is spent on servicing the locomotive fleet. Apart from routine servicing and cleaning, often overnight, so that the engine can be at work again on the morrow, there are periodic major overhauls where the loco is taken apart, completely cleaned and reworked, and reassembled, to emerge once more in sparkling fresh paint to take its place on the roster.

All this has its equivalent in miniature, for model locomotives also need servicing and cleaning if you are to get the best from them and ensure they have a long working life. In fact current Hornby models are remarkably fine designs with a high standard of finish and mechanical reliability at whatever price level you buy. What has advanced considerably in recent years is electric motor design. Today several types of motor are in use which vary in appearance. A recent development is the modern five-pole motor in some models that is designed to be replaced when it wears out. The instruction sheets of models with this motor explain how. The motor is available as a spare part, and if you cannot fit it yourself see your Hornby dealer for help.

It is possible to keep a model locomotive in service for many years if it is looked after properly, and there are cases of models which have run hundreds of real miles over a period of years and still manage to look as good as new. If you purchase a model of a favourite locomotive you want it to run well and run whenever you put it on the track. As with a real railway, any locomotive which does not perform properly is a waste of resources.

The starting point for ensuring good running is, in fact, cleanliness of the track and the locomotive. Dirt is the curse of miniature railways, in particular the 12 V d.c. two-rail variety. After a period of time a patina of dirt and oil forms on the running surface of the rails and forms a partial insulation barrier, reducing the amount of current getting through to be picked up by the wheels. If you find a locomotive running sluggishly check that the track is clean before assuming it is faulty. An essential purchase is a track rubber (such as Hornby item R8087, Fig. 3.26) which is used before every running session, lightly rubbed over the tops of the rails. This is one of the most important things to remember. Connected with it is another: frequent checking of rail joiners to ensure they are tight and not buckled.

From the track and its connections we pass on to the model locomotives, for cleanliness here makes all the difference to performance. It is a well known fact that most of the problems which arise with model locomotives are not due to mechanical or electrical faults but are caused entirely by dirt. Consider what happens. All layouts are affected by dust and other domestic debris such as fluff from carpets and hair from pets and humans. The layout itself may have loose particles of ballast or flock powder on it. They may not have been loose when the layout was built, but they break off later. There is light oil on the locomotive gears when it is new, and, as we have noted, a layer of grease and carbon builds up on rail surfaces, caused by oil from the locomotive ‘arcing’ between wheel and track due to the electrical pick-up.

These conditions lead in no time to dust, fluff and hair getting picked up and wrapped round axles and gears, all of which will eventually jam the drive. A similar problem arises with the pick-ups on all two-rail models. Many have either sprung wire or sprung metal brushes bearing on the backs of the wheel rims. The current is picked up by the tyre and flange from the track and carried to the motor by the contact brushes. If fluff and dirt build up between the wheel backs and the brushes the pick-up eventually isolates itself and the locomotive no longer runs.

Finally, there can be a build-up of greasy grime on the tyres of the loco wheels, just as on the rail surface, and once again an insulating effect arises. The cure for all these problems is regular cleaning. It is a good idea at least once a month to set an hour or so aside for routine cleaning. You will need tweezers or some sort of probe (such as small screwdriver or a needle), fine emery paper, tissues, a cotton bud or plain old rags such as a piece from an old shirt. The latter is actually preferable, because a cotton bud can leave fibres behind that cause more trouble.

Up-end the locomotive. It is useful to have a ‘cradle’ to hold it in. In many cases you can use the foam packing in which models are now packaged, but another idea is to cut a suitable recess in a block of sponge rubber in which the top half of the loco will fit so that the chassis is exposed to view. Now check all the pick-ups and use the tweezers or a needle to clean any fluff or dirt from the pick-up ends. Check all visible moving parts, such as axle bearings, side motion bearings and any exposed gear wheels, and gently remove any hair or fluff. You can carry out such an inspection as often as you like, and if a locomotive starts to run in an erratic way (or fails to run at all) carry out this inspection and cleaning first—it may be the only problem!

Next look at the wheels. If the track has been kept clean you may see no significant dirt there, but if dirt has built up on the treads it can be carefully scraped off with a small screwdriver. Don't scrape too hard—the key word is 'gently'—as it is important not to scratch the surface of the wheel, be it a plastic bogie wheel or a metal-tyred wheel. If the black grime proves recalcitrant, put a little white spirit on a cotton bud or piece of rag and rub it gently round the wheel tread. Ensure any loosened grime is wiped away with a clean cotton bud or piece of rag.

A problem that does crop up concerns traction tyres which some models still have. For a start, buy a supply of spare tyres. Hornby stockists should have them (or can get them to order). Where a traction tyre is heavily worn or grimy it is best replaced. A cotton bud with white spirit can be effective, but be careful, because white spirit affects some types of rubber or plastic and can cause them to perish. If in doubt—replace! Don't run a model without its traction tyres. The locomotive will certainly run, but as the tyre fits inside a groove the locomotive will often 'limp' if the tyre is missing. Try to choose models that don't have traction tyres whenever you can.

Maintenance can be carried out on the motor and drive in some cases. But there is much variation here. Recent models often have motors that are entirely sealed except for access to the carbon brushes. There is little you can do in that case, or need to do other than change the brushes when necessary. Typical is the 'pancake' type ring-field motor found in many models by Hornby. With this sort of motor the usual procedure for changing worn carbon brushes is shown in Fig. 5.14. If any fault develops in this sort of sealed motor it is usually merely replaced in its entirety. This is what would happen if, for example, teeth were broken or missing from the plastic drive gear wheel. So if cleaning and brush replacement do not cure any running problems you would need to see your dealer or send the model back to the service department of the manufacturer.

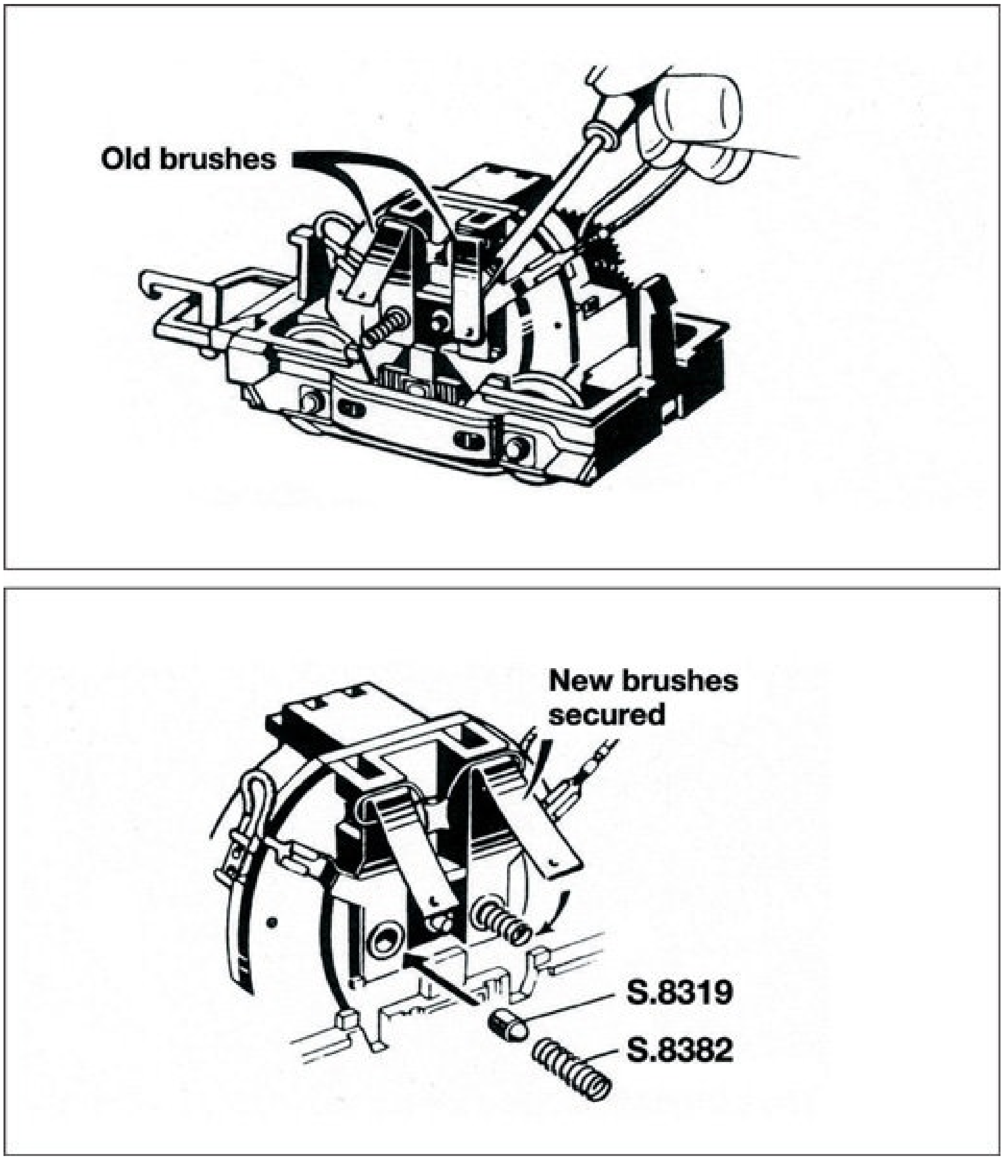


Figure 5.14. Maintenance diagram showing how to change the carbon brushes on the Ringfield ‘pancake’ motor found in many Hornby diesel and electric locomotives. The S numbers are the spare part references.

The body must be removed, of course, to give access to the motor. Even this must be done with care. If there is an instruction sheet check to see whether there is any special procedure. Sometimes buffers or handrails must be unclipped first, for example, and often there is a screw to remove. Keep loose parts safe until the body is replaced. One thing for certain is that if you find yourself having to exert undue force, stop and look again, because you are probably doing something wrong. Generally speaking the body comes off easily if you follow the instructions.

Some old Hornby locos had open-frame motors of the type shown in Fig 5.15. They have long been out of production but some enthusiasts may have old models, or acquire them second-hand. In most cases this sort of motor can be removed for cleaning (Figs 5.16–18) if desired by removing the securing screws. The wires must also be released. Whether or not you remove the motor, check the armature spindle bearings for hair and fluff and remove them. On this sort of motor the split commutator gets severely carboned after long running and if it is not cleaned the armature slots get clogged with carbon. The soft carbon brushes too wear down and need replacing (Fig. 5.17). The two brushes are held in place by a wire spring clip. Ease the clip to release the brushes and insert new ones (Fig. 5.18).

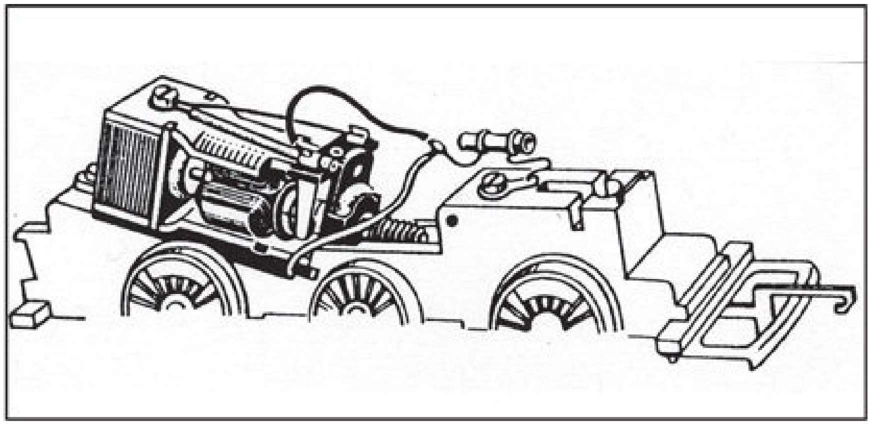


Figure 5.15. Though long out of production, some old or second-hand Hornby locomotives will be found with the early type of open-frame motor.

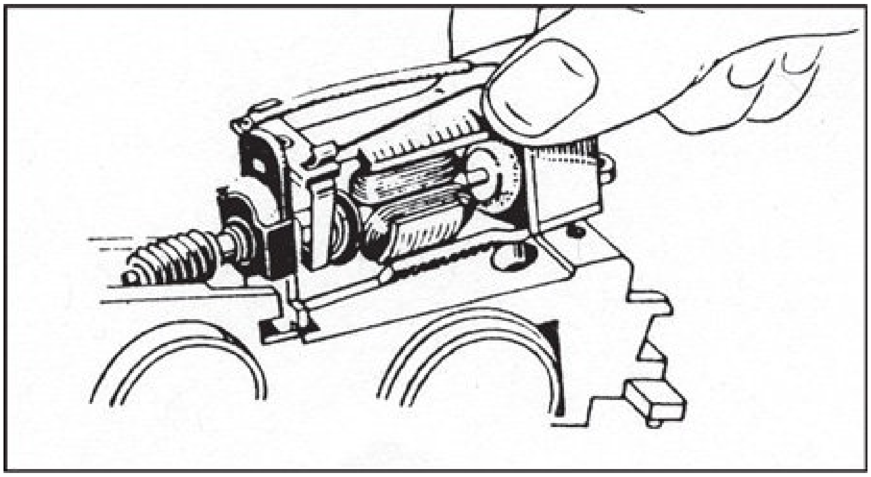


Figure 5.16. The motor can be removed for cleaning by undoing the securing screws.

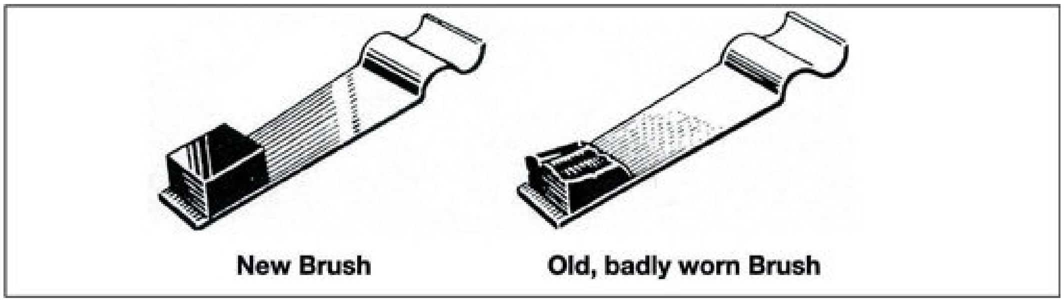


Figure 5.17. Worn carbon brushes on this type of motor need replacing. Shops specialising in Hornby spare parts should have them.

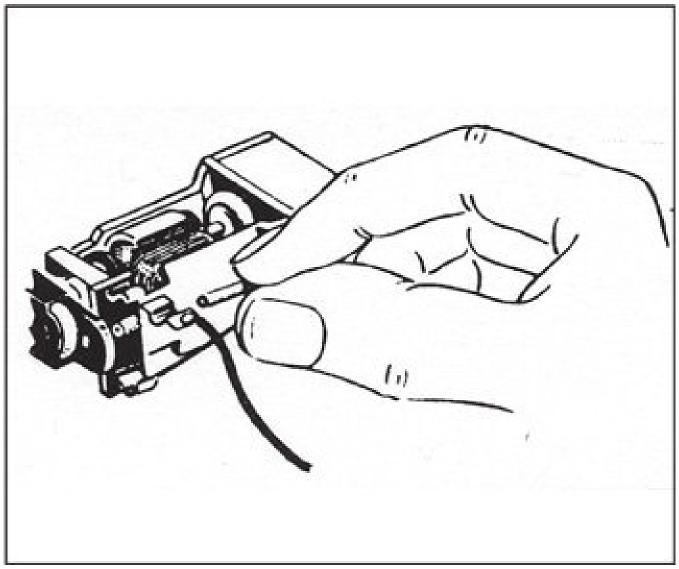


Figure 5.18. A wire spring holds the carbon brushes in place and must be put back when the brushes are renewed.

When the carbon brushes are removed, access to the commutator is available. Use a clean rag to wipe off the black carbon round the commutator. If this is difficult a spot of white spirit will help. Use a pin or the tip of a craft knife to clean out the carbon from inside the slots of the commutator. The commutator spindle can be hand-rotated to do this. When all is well reassemble, ensuring that the carbon brushes are correctly fitted and all wires are properly attached. The age of separate commutators is really at an end, and as mentioned it is common these days for a motor to have non-replaceable brushes. On the latest models from Hornby the entire motor is replaced after about 500 hours of use (that's a lot of running) and the commutators are integral (Fig. 5.19).

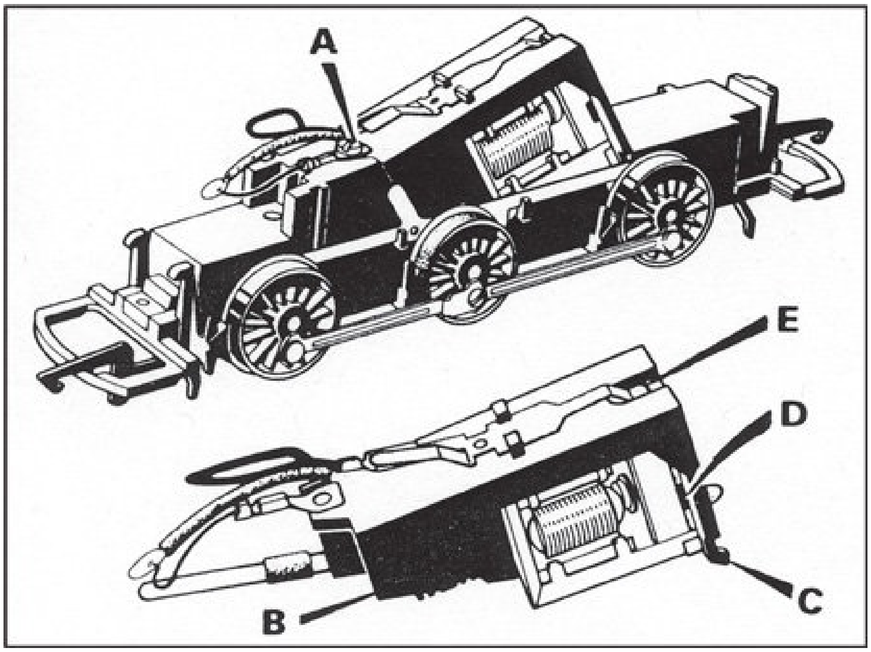


Figure 5.19. Later-type Hornby chassis with replaceable motor. To remove the old motor unscrew at A and remove the motor assembly B by pivoting at lugs C. Insert the new motor via indentation D, then ensure contact with bronze claw E.

Getting back to the chassis, there remains lubrication. Special light oil is available, from Peco and others, for oiling locomotives. The Peco tube of oil has a thin applicator, but if you use other oils you can make an applicator from a cork with stiff wire pushed into one end (Fig. 5.20). There are some necessary oiling points for conventional motors. On a ‘pancake’ motor oil is needed on the motor spindle, visible between the carbon brush apertures. Light oiling is also needed on axle bearings, coupling rod bearings, gear chains and any other moving parts.

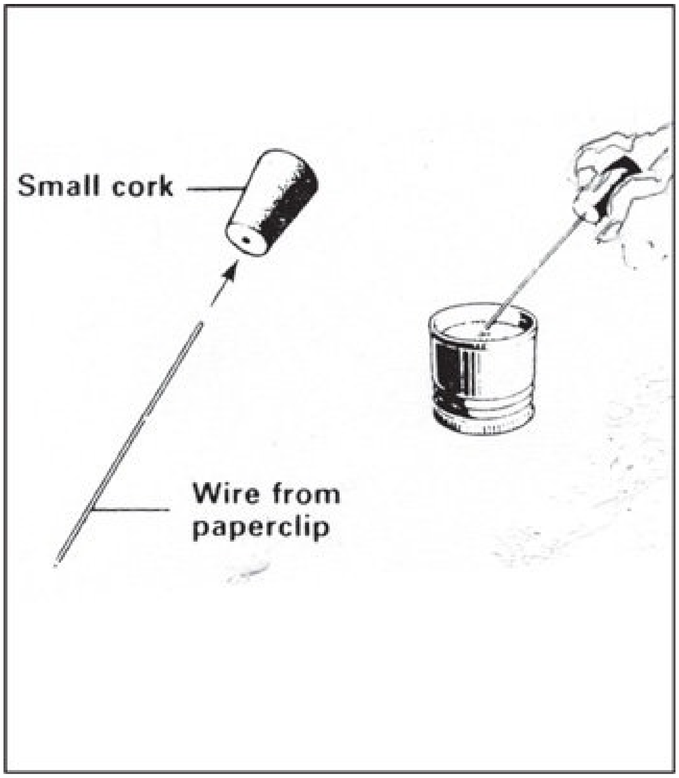


Figure 5.20. Making a simple oil applicator.

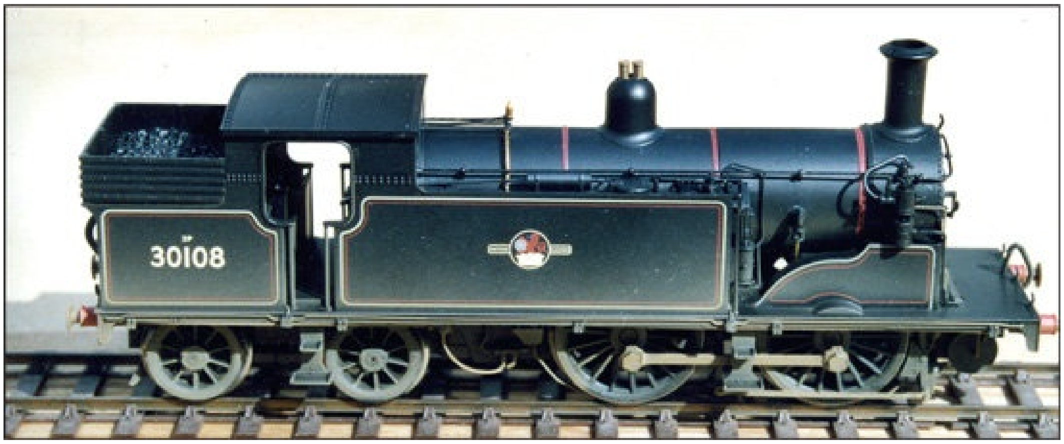


Figure 5.21. All the latest Hornby locomotives in the high quality 'Super Detail' series, such as the M7 0-4-4T, shown here in its weathered BR version, are fitted with an advanced design of sealed long-life 5-pole motor which requires no maintenance.

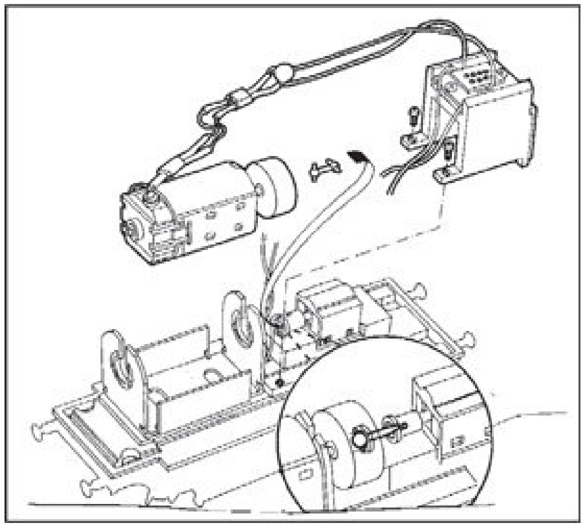


Figure 5.22. This 'exploded' view shows the sealed long-life 5-pole motor in the form in which it is mounted (in this case with a flywheel, too) in the Hornby Class 08/09 diesel shunting locomotive. It drives the wheels through a shaft to the gearbox (inset in close-up).

Make a final check of the motor and chassis before assembling the body back in position. It is worth remarking here that if any small details on it break, ensure they are cemented back quickly before they get lost. See that the body really is correctly back in place, not distorted by being forced on, or in any way not correctly attached. Great care is needed at all times when cleaning or maintaining locomotives and track.

Chapter **6**

Control and operation


L N E R

In this chapter we look at the key aspects you need to consider to get the best out of layout operation.

Couplings and uncoupling

Most real trains in Britain and the rest of Europe are coupled with hooks and links. All modern stock has a screw incorporated in the link so that the couplings can be tightened up till the buffers touch. In the old days most ordinary goods wagons, and some shunting locomotives, had only loose couplings, just a three-link chain, giving rise to the once familiar clanking when a trainlength of buffers banged and couplings strained on the rebound. Some modern coaches have knuckle couplers (or similar) as we shall see below.

Reproducing the real coupling methods in miniature, and certainly as small as 00 gauge, presents problems. If the real couplings are scaled down to 1:76 size they become fiddly to hook up, as we cannot scale ourselves down. More important, model railway curves are mostly sharper if reduced to scale than real curves. This means that if locos and wagons with buffers and miniature couplings run round them the buffers tend to tangle with each other, and this causes one wagon to derail its neighbour. The problem is known as ‘buffer locking’.

Model railway makers from the earliest days had to overcome this problem and they did so by using automatic couplers that had twin functions. (1) They held adjacent stock far apart enough to stop the buffers locking and allow the models to run round sharp-radius train-set curves. (2) They allowed automatic coupling when locos or rolling stock were pushed together, and the same function could be used to effect automatic uncoupling, so obviating the need to fiddle with tiny couplings with human-size fingers.

Several different types of automatic coupling were developed, but the most widely used in Britain is the tension-lock coupler developed by Tri-ang (Hornby’s predecessor company) in the 1950s. The design was made freely available, with the result that virtually all makes of 00 model railways use it. Hence all makes of 00 gauge rolling stock and locomotives are compatible (though some are slightly less compatible than others in that the bars vary in thickness). In general, the average modeller is well looked after with the Tension-lock coupler. It is simple, efficient and works well with a sprung ramp which does not require any form of wired remote operation so long as the ramps are judiciously placed. Against these desirable qualities, however, is the undeniable fact that this hefty coupler is visually obtrusive, though Hornby and others have introduced a smaller, less conspicuous version which still works with the original larger ones.

Tension-lock couplers

The tension-lock coupling consists of a curved horizontal bar on which rests a pivoted hook, claw downwards. The bar has a curved face, and when the hook of the adjacent coupler meets the bar, it rides up until the claw drops over and engages the bar. This happens with both facing couplers, of course. If the two couplers are stopped over a sprung uncoupling ramp the hooks are forced up clear of the bars and the train can be drawn apart (Fig. 6.1). If the train passes over the ramps non-stop the couplers are not forced apart simultaneously, and the train remains coupled.

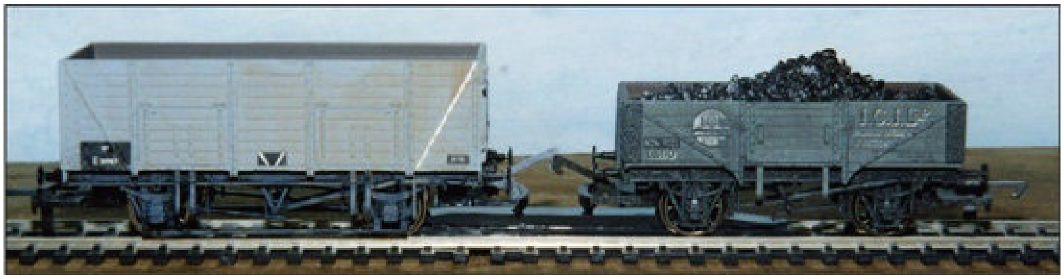


Figure 6.1. Two wagons at the moment of uncoupling over Hornby ramp R617. The raised hooks allow the wagons to be separated.

While it might seem more desirable, for the sake of realism, to use scale three-link and screw couplings, you need very large-radius curves to do so without the problems of buffer locking and constant derailing. As already stated adjacent vehicles can move and jerk relative to each other, and on the tighter curves typical of model layouts buffers can catch behind those on the next vehicle, so that they become derailed. Tension-lock couplers prevent this because they hold the vehicles apart with buffers clear of each other, and they also prevent the jerking and snatching of wagons with scale couplings.

Despite this, there are some 'purist' modellers who remove the tension-lock couplers and do, indeed, fit scale three-link or screw couplings to the buffer beams of locomotives and stock. In scale terms it looks superb, but one way of reducing the buffer-locking problem is to glue a wire or plastic rod bar across the pair of buffer faces, the length of the distance between buffer centres. This stops adjacent buffers slipping behind each other. If you want to try it yourself there is nothing to stop you. Most adherents of scale couplings use a wire 'shunting hook' to hook up and uncouple, but it is an intricate task and it is all too easy to derail the stock while you are trying to uncouple it. Those who find this frustrating sometimes go back to the ease of use of Tension-lock couplers!

That said, the latest 'super-detail' locomotives from Hornby have scale screw couplings fitted to the buffer beam. They look good, but these couplings are 'cosmetic' only, to give perfect scale appearance. The locomotives still depend on their smaller-type tension-lock couplers for actual operation.

Because the latest smaller tension-lock coupler is narrow, there is space either side of it, allowing the pipes and connections on the buffer beam to be modelled much more fully. On bogie vehicles, dummy brake and heating pipes may be glued each side of the coupler shank so long as they are arranged not to impede the coupler when it swings.

Tension-lock couplers join up at any point where two vehicles are pushed together. For automatic uncoupling it is necessary to place uncoupling ramps in the required positions. Hornby makes an uncoupling rail with the ramp built into the sleeper base (R620) and there is a separate uncoupling ramp available (R617) which simply clips into the sleeper base where required. Ramps can therefore be added as necessary.

For uncoupling away from a ramp it is necessary to lift both hooks and separate the vehicles by gentle application of the controls. Older Hornby couplers have a slot in the bar to facilitate this by lightly skewing the vehicles. An old ice lolly stick pushed under the drop arms, or a modified one with a vertical handle (Fig. 6.2), offers a simple method of separating tension-lock couplers by hand where there is no uncoupling ramp near by.

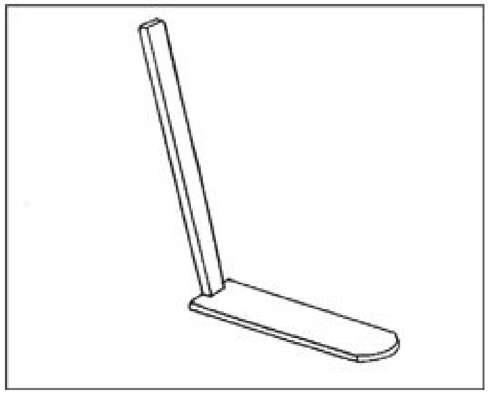


Figure 6.2. A home-made tension-lock uncoupler can be glued up from old ice lolly sticks or stripwood in this style. The horizontal bottom arm needs to be at least 1 1/2 in. (38 mm) long.

Uncoupling ramps are finished to resemble a board crossing in the track so they do not look obtrusive. But you need a ramp at every position where you might wish to uncouple, and in a goods yard you may find a lot of ramps are needed. A strip of clear plastic sheet about 11–12 mm wide pinned into the ballast or sleepers to give a ‘bow’ equivalent in height to the uncoupling ramp works in the same way, but is less conspicuous (Fig. 6.3).

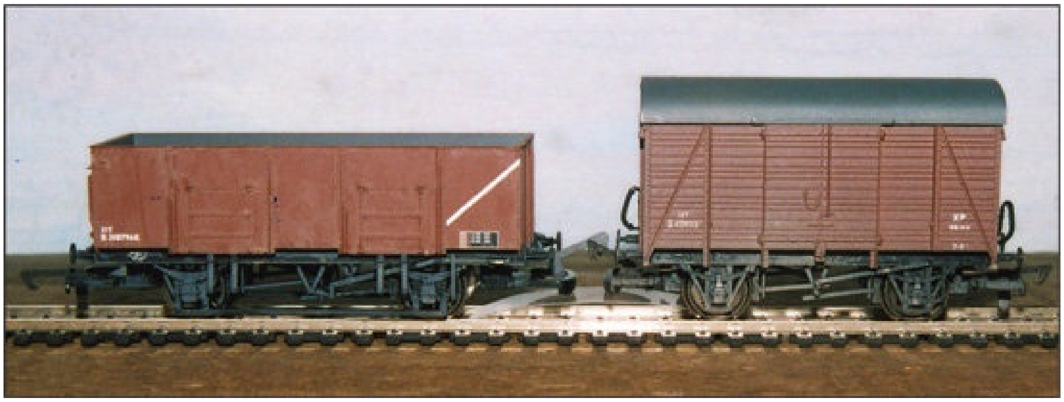


Figure 6.3. Clear plastic strip 11 mm wide and 80 mm long pinned below the sleepers and bowed to make an uncoupler ramp.

NEM 362

NEM 362 is a European model manufacturers' specification that means that the couplers on most new 00 (and H0) locomotive and rolling stock models are mounted on a standard fitting. What is known as a NEM 362 coupler 'box' is fitted, and the coupler clips into it. All couplers of any type have a standard shank, popularly called a 'swallow tail', because that's what it resembles in shape. The most recent type of Hornby tension-lock coupler has the swallow-tail shank and the latest 'super-detail' locos, coaches and wagons have the NEM 362 coupler 'box'. The coupler can be clipped in place or removed at will. This means that when one of the new 'super-detail' locomotives is displayed (rather than operated) the obtrusive tension-lock couplers can be removed. Similarly the coupler can be removed from the front end of express locomotives to make them look more realistic when at the head of a train.

In conjunction with the NEM 362 coupler 'box' is a close-coupling device in the form of an arc cut into the underframe or chassis. This is arranged with a spring mounting, so that when a train goes round a curve the couplers open out to ease the passage, but on the straight the couplers close up again to give virtual buffer-to-buffer spacing between adjacent vehicles, and thus enhance the realism to a worthwhile degree. Not all models have this feature, because there is not always space to fit it (on a short wagon, for example), but usually there are enough vehicles in the train with the close-coupling device to give effective realism.

One problem that sometimes arises on coaches or wagons with NEM 362 coupler boxes is that friction stops the box from centring when the train runs from curved to straight track. This could cause derailments. Kadee (see below) makes a dry graphite in tube form called Greas-em (item 231) which can be squirted on stiff coupler boxes to stop them jamming.

Alternatives

The NEM 362 mounting box allows any make of coupler with the swallow-tail shank to be fitted. There are various European makes of close coupler available, such as the Profi, but it must be said they are generally more expensive than tension-locks. Some makes—the Profi is one—allow ‘delayed uncoupling’. This means a wagon can be uncoupled over a ramp, pushed into a siding anywhere and left there. The locomotive withdraws, with everything having been done ‘hands off’, no further action being needed from the operator, save driving skill on the controller!

Kadee magnetic uncoupling

One of the options available is the US-designed Kadee magnetic uncoupling system, which is extremely popular. It is not a Hornby product, of course, but the couplers and magnets are available from larger model shops and can be fitted to, and used with, Hornby models.

In 1989 Kadee introduced a range of magnetic couplers (Nos 17–20) for the European H0 market to fit the NEM 362 standard coupler mounting that had been taken up by all European H0 makers in the 1970s and 1980s and by Hornby in more recent years (Fig. 6.4). This coupler has the swallow-tail shank like the various European couplers that fit the NEM 362 pocket, the idea being that modellers can fit any type of coupler of choice. In 1989–90 that included the Kadee for magnetic operation.

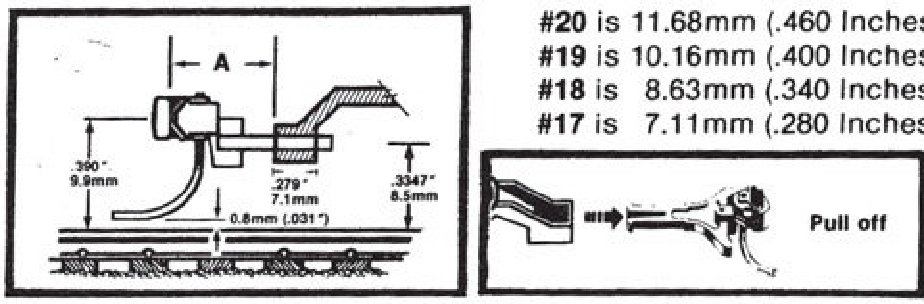


Figure 6.4. Kadee's diagram (from an instruction sheet) of the European magnetic coupler that will fit Hornby models. There are four different shank lengths (A) for which the length is given. No. 18 (medium) is the most often used, though No. 19 is useful if the layout has sharp curves. Also shown is the NEM 362 coupler box and the 'swallow tail' shank that fits it.

In recent Hornby models with the NEM 362 coupler mounting and swallow-tail shank on the tension-lock coupler, converting to magnetic is easy. Just pull out the tension-lock coupler and insert the Kadee No. 18 (Figs 6.5–6). On models where the tension-lock coupler is affixed by screw— such as the ex-LBSC brake van (R6266)— unscrew the tension-lock coupler and get a Kadee No. 18 coupler. Hold the end of the swallow-tail shank and use a mini-drill to drill a hole through the number 18 engraved on the coupler shank. Then screw the Kadee coupler in place, using the original screw (Fig. 6.8).

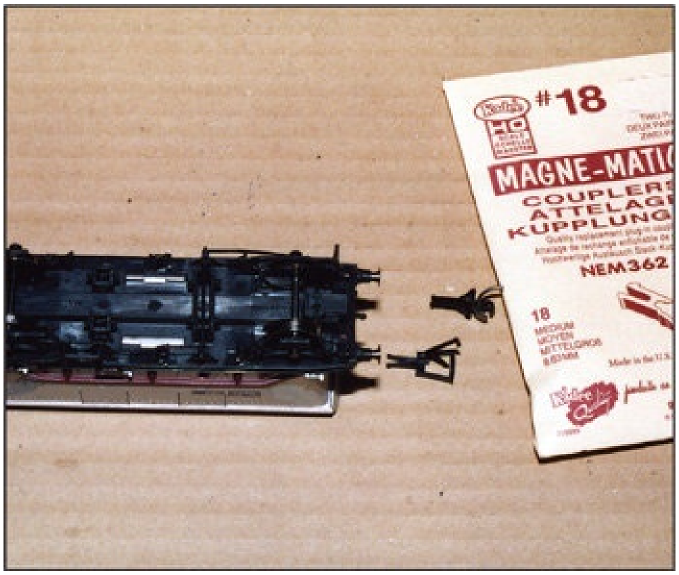


Figure 6.5. The latest version of the HAA hopper wagon (R6213) has the NEM 362 coupler box. This view shows the modern ‘slimline’ tension-lock coupler removed, with the Kadee No. 18 coupler alongside, both with the swallow-tail shank. A No. 18 coupler pack contains two pairs (for two wagons).

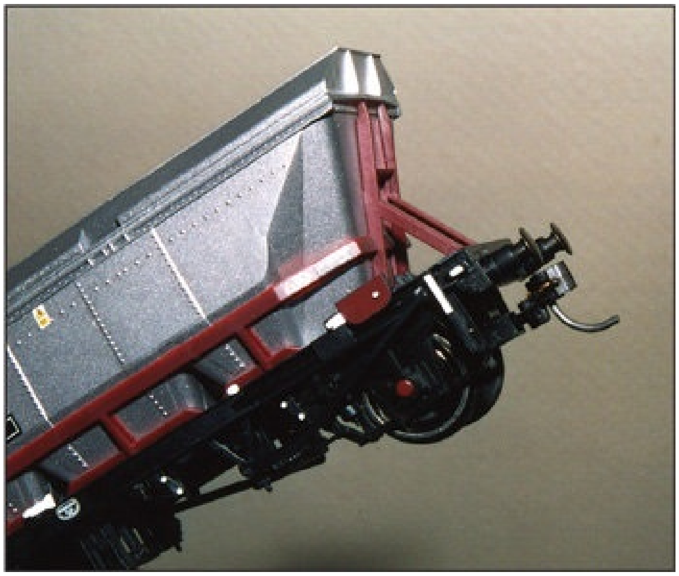


Figure 6.6. The Hornby HAA hopper wagon with the Kadee No. 18 magnetic uncoupler replacing the tension-lock coupler.

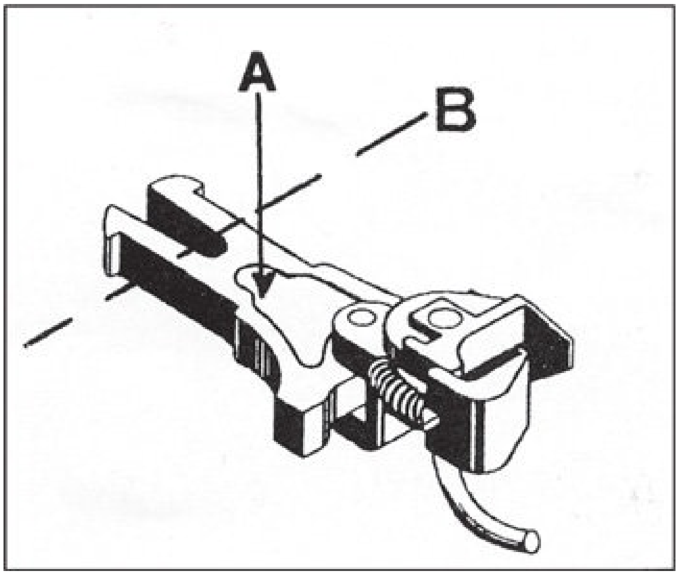


Figure 6.7. Modifying the Kadee No. 18 coupler to fit earlier Hornby models. Use a mini-drill to drill out a screw hole at A to fit to wagons with tension-locks secured with a screw. For locomotives with screw-fitted tension-locks, secure the coupler with the screw but trim off the ‘swallow tails’ by sawing or cutting at B.

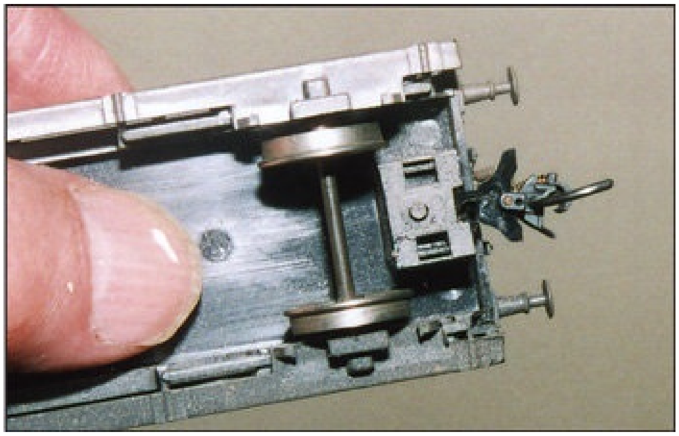


Figure 6.8. Kadee No. 18 coupler cemented into the socket of a Hornby GWR brake van (R6077). Many Hornby wagons have this socket.

On the slightly older models which have a socket to take a plug-in tension-lock, pull out the tension-lock coupler, trim off the last 4 mm (approximately) of the swallow-tail shank of the Kadee No. 18 coupler. Then smear the shank with a universal glue (such as Uhu) and push it into the coupler socket. Leave it overnight to set.

On certain locomotives, notably the Terrier, J94 and Pug, the tension-lock coupler is screwed into the underside of the chassis. To fit a Kadee No. 18 in its place, drill a hole in the shank and use the original screw to secure it (Fig. 6.9). In order to fit the coupler in the limited space, most of the swallow-tail shank must be trimmed off with a craft knife. The Kadee No. 19 coupler has a longer shank, and you may want to use that if your layout has the smallest radius curves, but in general the Kadee No. 18 is the one you would use most.

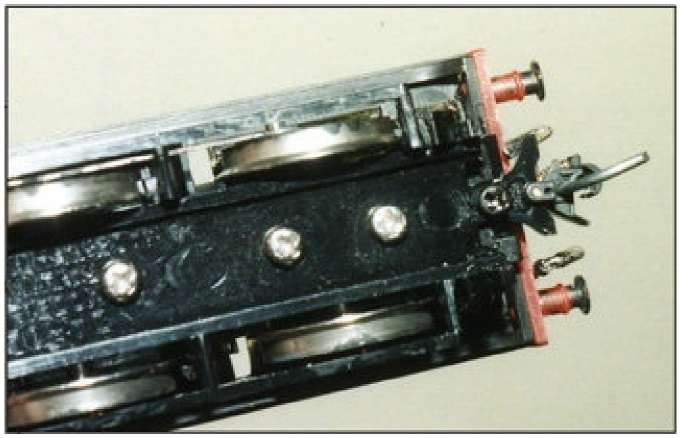


Figure 6.9. Kadee No 18 coupler screwed to chassis of the Hornby Terrier using the same screw (and hole) that secured the tension-lock coupler. Most of the swallow-tail shank has to be cut away.

Figure 6.10. Closer coupling is possible with magnetics, as shown here with the J94 (R2326) hauling the Hornby 20 ton coal wagon both fitted with Kadee No. 18s. Note also the use of foam ballast underlay.

Coupling and uncoupling

The Kadee couplers are of the knuckle or 'glad hand' type, similar to those used on modern coaching stock and a few modern freight wagons. Obviously they are a compromise in appearance because they do not resemble screw or link couplings, but then, neither do tension-locks. They are reasonably inconspicuous, however.

The couplers work by engaging when wagons and locomotives are pushed up together. Uncoupling is done by stopping the loco and wagon over a magnet set in the track. After it has stopped the loco has to be backed up a fraction, to take the tension off the couplers. Then the jaws of the couplers swing apart by magnetic attraction. The engine can push the wagon into or along a siding until it is positioned where you want it–say a goods shed or cattle dock. Then the loco can pull away, leaving the wagon behind.

Uncoupling magnets

Kadee produces four types of uncoupling magnet:

- *No. 312*, 50 mm x 8 mm permanent magnet with the top surface at the correct height when glued down to the sleepers on Code 100 track. That's what Kadee's instruction sheet says, but on some tracks, including Hornby, the magnet would be set too high. It is therefore best to cut away the inside segments of the sleepers (seven in all) and recess the magnet, with about five layers of thin card to bring the magnet top surface level with the rail top. With this magnet the coupler knuckles only open sufficiently for a vehicle to be left behind when the train is withdrawn, but it will recouple if the train subsequently propels the vehicle beyond the magnet.
- *No 321*, 50 mm x 13 mm permanent magnet (Fig. 6.11). Details as above, but the extra width means the knuckles are fully opened. A vehicle can be left behind as before, but if the train is eased back first, subsequent propelling is with the couplers still apart, so that the detached vehicle can be propelled as far as required and left there, or satisfyingly fly-shunted! This is the most widely used type, and in

practice is the sort you really need.

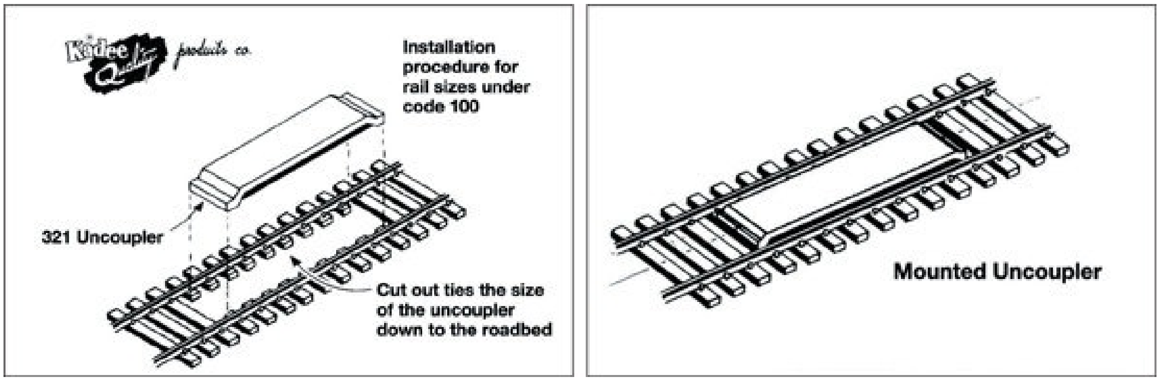


Figure 6.11. Kadee's information leaflet shows how the 321 magnet is set into the track. With Hornby track about seven or eight sleepers need to be (carefully) cut away between the rails, and the magnet is glued in on about five layers of thin card or sufficient to bring the magnet top just above the rail top.

- *No 308*, 50 mm x 38 mm x 5 mm (thick) 'under the track' permanent magnet. The Kadee leaflet suggests dropping the magnet into a recess in the baseboard, covered with thin card, and then ballasting over so that the magnet is completely concealed. The top of the magnet should be 8–9 mm below the rail surface for efficient full opening of the knuckles. Alternatively Kadee suggest that the magnet can be located in a cut-out in the baseboard and glued to a hinge so that it hangs vertically (and therefore ineffectively) but can be raised to the 'active' position when required, using a lever and a suitable length of string. The No. 308 information is given here for those who want to try it, but it is not really necessary.
- *No. 307*, another variation, is a full electromagnet to be worked from the 16 V a.c. auxiliary power supply and set in a cut-out below the tracks in the baseboard. I have never found the need to use it, but you may like to try it. For most purposes the No. 321 uncoupling magnet is the only one you need.

You need only one magnet in the head shunt in front of a fan of sidings. Your loco can uncouple the wagon over the magnet, and changing points will do the rest, as the wagon can be pushed into whichever siding you wish. The magnet resembles a crossing, and most users disguise its presence by putting a level crossing over the tracks in line with the magnet.

Coupler adjustment

It is essential for reliable and efficient operation to adjust the height of the coupler trip pins carefully. The recommended clearance is 1/32 in. (0.8 mm) above the magnets, but, depending on the flexibility of the coupler mount, you may have to increase this height by a slight amount to avoid the pins being pulled down to drag along the magnet, so upsetting the operation. Kadee coupler trip pin pliers (No. 237) are ideal for the purpose. Using them, small adjustments to the curvature of the trip pin can be made, and hence the height can be adjusted without applying force to the coupler mounting. One other accessory, useful if not essential when changing over to the Kadee system, is the coupler height gauge (No. 205) which gives an instant indication of correct height on any vehicle to which you fit Kadee magnetic couplers and shows how much ‘droop’ correcting you may need to do.

It is a good idea not to rush into fitting Kadee couplers just to get your fleet converted. Take one or two wagons or locos at a time and test them thoroughly for correct coupler height and correct operation. Weed out any vehicle that does not work as well as it should. Check any couplers that do not centre correctly and look at the springs on them. Missing springs or incorrect insertion of the coupler shank usually result in malfunction. Where springs are missing, replace them. Each coupler pack you buy has a capsule of spare springs included. Keep them safely until needed. The leaflet with each Kadee coupler pack shows how to replace missing or damaged springs. Because the springs are so small most modellers will find replacement (with tweezers) best done in good daylight on a big sheet of white card so that any springs you drop will be easy to see.

Some wheel sets cause a bit of a problem, for they are of a metal that can be attracted to the magnet. In practice I find this quite rare, and one solution is to change the wheel sets on that wagon. Actually older plastic wheels are useful, as they have no problem of magnetic attraction. In general, however, I have had no real problems with magnetic uncoupler operation with Hornby models.

Track radius

Kadee recommends that the uncoupling magnets are placed in straight track with, preferably, one vehicle length of straight track either side to ensure accurate lateral location of the couplers over the magnet. Couplers will generally join up on gentle curves provided there is no more than minimal lateral displacement, but this very much depends on the length of the locomotive and rolling stock. In general, short wagons and locos are more easily coupled on gentle curves, but try to plan the tracks (e.g. sidings or station roads) where coupling will take place as straight as possible. If you cannot achieve coupling on curves, the answer, of course, is to propel the vehicles (gently, to avoid buffer locking) to the nearest stretch of straight or gently curved track and do the actual coupling there. For shunting you need slow-running locomotives, and I have found the Hornby J94, the Terrier and the new Class 08 diesel to be excellent for magnetic uncoupling operation.

Alternatives

There are other types of magnetic coupler, most notably the Sprat & Winkle and the B&B. They work well and are inconspicuous, but in most cases they have to be made up, and set up very precisely, in order to work correctly. Whilst not so easy to set up and operate as the Kadee, they are certainly within the ability of more experienced modellers.

Point control

This subject was touched on in Chapter 2, as it must be considered when you lay the track. There are at least three options when it comes to the method of switching your points, or turnouts, as they are also called.

Point motors

Hornby points are actually designed to be operated from motors set below the baseboard, or alternatively set alongside or recessed into the baseboard (three choices). Hornby's own instructions give all the details. Adding point motors allows you to operate your points from a convenient bank of switches, most likely located alongside your controller. Switching the switch sends a brief pulse of power to an electromagnetic solenoid in the point motor which throws the point's operating lever one way or the other, depending which way you move the switch. You can fit R8014 point motors to any or all of your points, either alongside the point or below it. Space considerations will likely mean that some of your point motors will have to go underneath. Holes of some sort will therefore have to be cut in the baseboard. If there is any possibility that you will be fitting point motors at a later date, it is best to cut the holes in advance before you pin down the track.

For fitting alongside the point, you need point motor housing R8015, which comes with a trackside hut to conceal the motor. You can locate the point motor on either side of the track and at different distances, using the extension arm that is supplied with the motor housing. (The arm is not shown in Fig. 6.12.) Underneath the baseboard you have two main mounting options. You can fit the motor directly to the underside of the point. In that case you have to cut a hole in the baseboard to accommodate the body of the motor. Alternatively you can mount the motor on the underside of the baseboard and connect it to the point via the metal extension arm that comes supplied with the motor. You have to cut a slot in the baseboard for the extension arm. See Chapter 3 for further illustrations. The base that comes with the point motor housing can also be used as a baseplate for this style of mounting. The switch you need for each point motor is Hornby's 'passing contact' lever switch (R044).

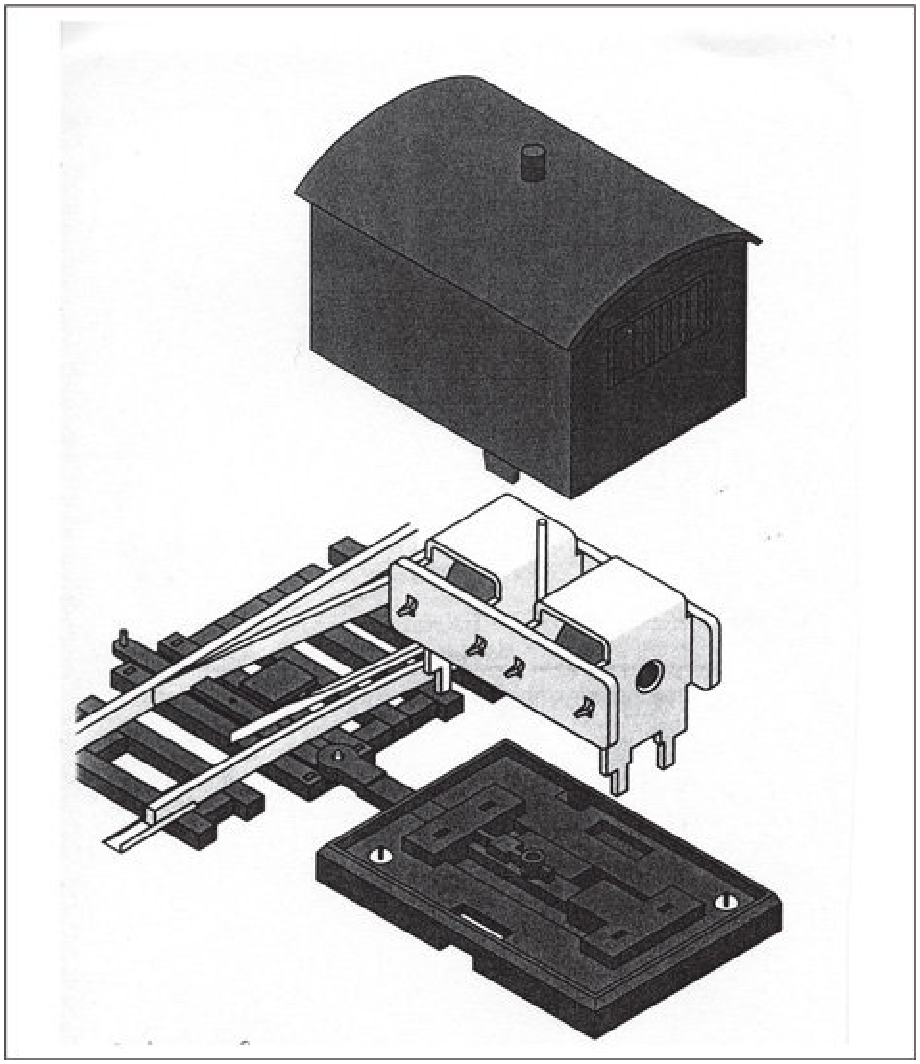


Figure 6.12. Hornby point motor and baseplate for trackside mounting, with lineside hut to conceal the motor.

All Hornby controllers include a power output for remotely operated point-switching motors and other electrically operated layout accessories. Semaphore signals, illuminated signals and turntables can all be powered from this output, with the appropriate Hornby lever switches. See the catalogue for details.

Hand operation

Hornby points are centre-sprung, which makes them positive and reliable in operation. As they come they can be flipped from side to side by a touch of the finger. Many modellers, especially beginners, are happy with this, but another idea is to use a coffee stirrer (freely available in cafés) to operate the tie-bar from the baseboard edge, an effective method on small layouts (Fig. 6.13). Some coffee stirrers have slots in them big enough to fit over the peg on the tie-bar. If you can't find one like that, just open out the slot with a drill. The virtue of a coffee stirrer is that it is more discreet than a finger—the great big hand from the sky—plunging down on the layout.

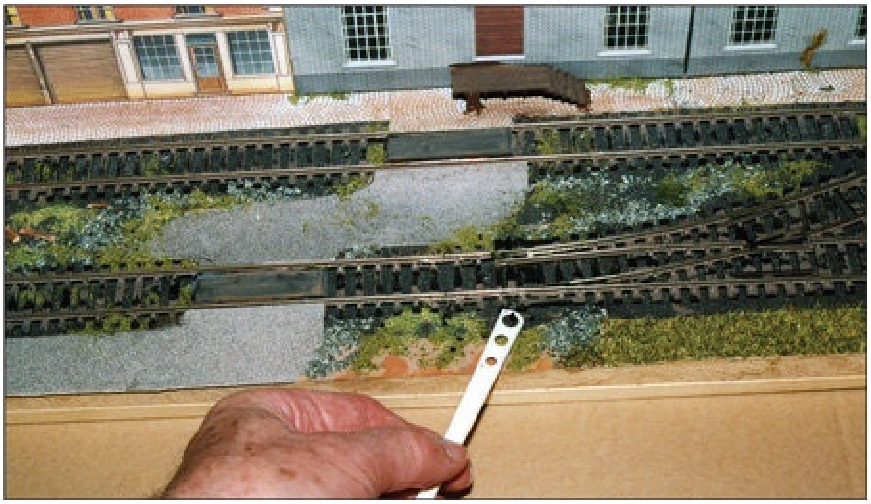


Figure 6.13. Hand operation of points near the edge of the baseboard, using a coffee stirrer.

Rod operation

The sprung nature of the Hornby point and tie bar allows an effective and simple method of operating by push/pull rod from the edge of the baseboard. Figure 6.14 shows how it is set up, though there are a few variations possible, depending on what sort of rod you use. Some rods or thick wires bend easily and the whole lot can be bent up to fit (Fig. 6.15). Other ways use the ‘chocolate block’ means of assembly illustrated. The advantage of rodding is that no electrics are involved. Those who prefer simplicity (and low cost) like this option. The choice of how you operate the points is entirely yours, and all three methods work well.

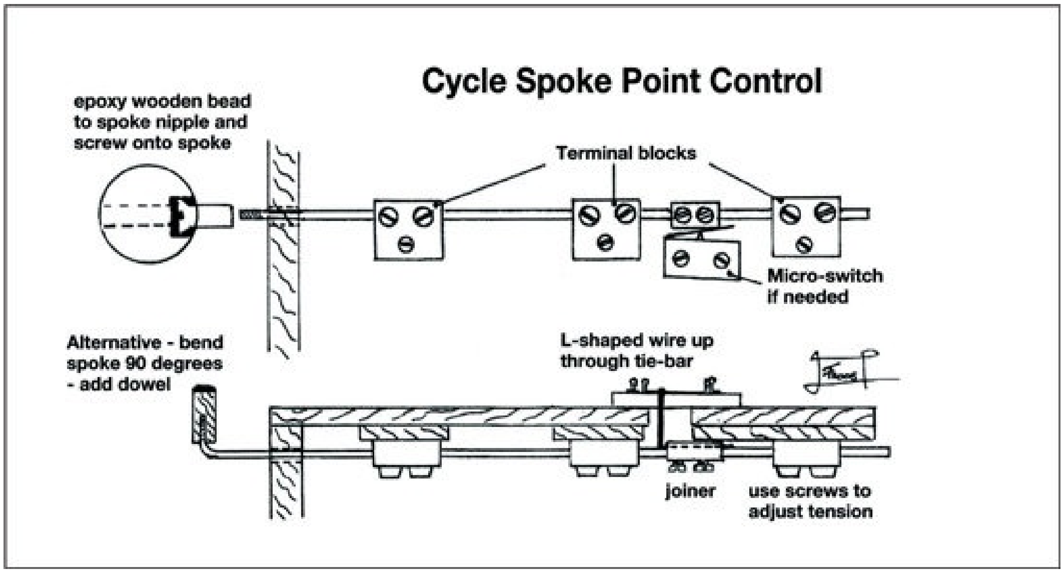


Figure 6.14. Using rods to operate a point, using electricans' 'chocolate block' terminal blocks to link bicycle spokes: (above) top view, (below) side view.

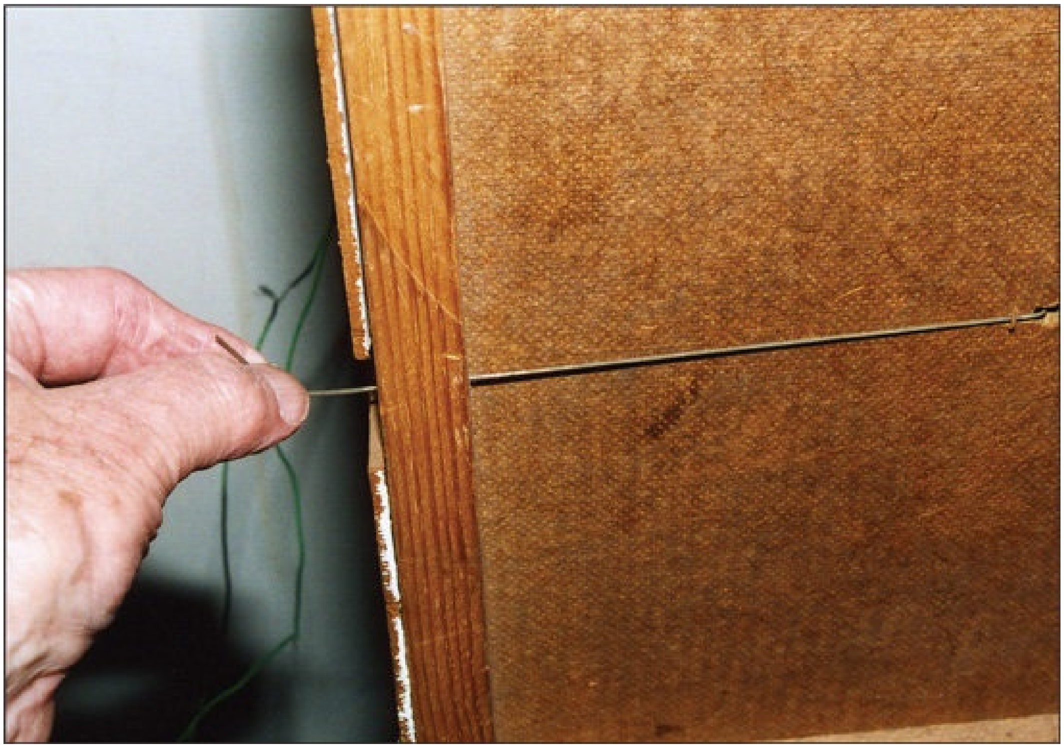


Figure 6.15. A simpler version of the rod control method, using brass wire that is more easily bent with pliers. It requires a right angle bend in the vertical wire where it emerges from the tie-bar hole in order to stop it falling out. The point is switched by pushing or pulling the rod from the edge of the baseboard. Note at the extreme right a U-staple pushed into the underside of the baseboard to ensure that the rod does not drop out. The rod is taken through a hole drilled in the baseboard framing – where the fingers are in this view from below.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DIGITAL

Figure 6.16A/B. The Hornby Select DCC controller on the **right** is the most basic unit, ideal for smaller layouts and ‘entry level’ modellers. It allows up to three locomotives to run simultaneously. The HornbyElite DCC controller on the **left** has much greater capacity with two control knobs and a larger LCD display. Note the key pads on both units.

Figure 6.17. The Access One infra-red hand held controller. equipment

Digital command control

Digital Command Control (DCC) has come very much to the fore in the model railway hobby in recent years and it is developing all the time. The old style of electric operation is for 12 V d.c. power to feed into the track and directly cause the loco to move. Its motor changes speed from the variation in current caused by turning the control knob. For most modellers this works well particularly on small simple layouts like the ‘beginner’ projects suggested in this book. It’s straightforward and nicely uncomplicated.

Modern DCC differs in putting constant a.c. through the track to provide power for the locomotive. Coded digital pulses, picked up by a decoder in the locomotive, are laid over the track current to control individual locomotives. Simultaneously the a.c. converts to d.c. to drive the motor of the loco. Depending on the system, you can control a number of locomotives (and functions such as point changing) simultaneously. Each loco has a decoder installed with its own ‘address’ which you can call up from the keyboard on the controller when you want it to move.

The bigger systems allow many locomotives and functions to be controlled. DCC is still developing, and specialist firms have produced related accessories such as linked software programs for the timetabling and ‘onboard’ sound modules giving steam, diesel, braking, whistles and other effects, even down to accurate engine noise for specific classes of diesel locomotives.

The latest trend is simplified DCC for smaller layouts which require ten or fewer locomotives.

By now DCC has been largely standardised, so that the various systems developed by different manufacturers use common terminals and decoder types. The German firm of Lenz has been a leader in this field, and its systems have set the standard others have followed. In addition the National Model Railroad Association of America (NMRA) drew up the suggested common standards referred to above, and the new Hornby Digital Command Control system, released in late 2006, matches all these international standards.

The key advantages of DCC include all of the following:

1/ Multiple train control with minimal wiring on all parts of a layout - with the old 12 V d.c. system all large layouts need complex wiring and sectionalising to operate properly.

2/ Independent control for each locomotive on the layout which makes double-heading easy, as does more complex movement such as use of a station 'pilot' engine or movements within locomotive depots.

3/ Lighting remains constant, such as in coaches and locomotive headlights. With the old d.c. system they go out when the train stops.

4/ Train movement is more realistic, with each model able to be given level 1-99 inertia setttings. Set speeds can be maintained, too, so that if, for example, a locomotive reaches a gradient it maintains speed automatically as it climbs. With d.c. you would need to increase power to stop it stalling.

5/ Point operation by power requires fewer wires and no separate switches as it does with d.c. However, as Hornby points (like some other makes) electrically isolate the route they are set against, they need to be made all ‘live’ when DCC is in use. To facilitate this Hornby are making small sprung conductor clips which when fitted to the points make them all ‘live’ whatever the route setting.

6/ Locomotive decoders are simple to code and program, and they are quite easy to fit in recent Hornby locomotives which are marked ‘DCC Ready’. Instructions are included with the model and the standard Hornby decoder which can be purchased as an accessory. However, Hornby has also released some locomotives with the decoder already fitted at the factory and these are marked as such in the catalogue and on the packaging and instruction sheets. Some digital train sets are available (one with a Pendolino train) complete with track and DCC control units so that a beginner can go straight to DCC operation without having to convert or fit anything.

The key units in the Hornby DCC range are shown here. There are two integrated control units. The Hornby Select is the ‘entry level’ unit, also included in the Digital train sets. It is supplied with a one amp transformer which enables up to three locomotives to run simultaneously. It can also be used with the alternative four amp transformer which enables up to ten locomotives to run simultaneously. The code number allocated to each locomotive or working accessory can be ‘called up’ by pressing the number on the key pad with the number being displayed on the LCD screen. The rotary knob controls locomotive speed and select and function buttons complete the control menu.

The Select unit will suit small layouts, but for larger layouts and more flexibility there is the bigger Elite unit. This has two rotary knobs allowing two track or two person operation, and a bigger memory which can store up to 254 locomotive address codes and 250 working accessory codes. You can also address favourite locomotives with abbreviated names. Supplied with an four amp transformer, it can be used to run up to ten trains simultaneously. The larger LCD screen shows more information, too, including train direction and speed, and function indications. The Elite also has a USB port for direct connection to a computer. Both the Select and Elite have an Xpress Net port, and both can have up to seven more Select units attached in tandem which gives scope for an expanding layout or more control positions around the layout.

The locomotive decoder is rated at 500 ma continuous and one amp maximum, and has an integral safety cut out to protect both the locomotive and the decoder from inadvertent damage. The decoder has a standard NEM 652 8-pin plug providing four on/off function outputs (two for lights), and it also incorporates back EMF load compensation (for constant speed) and 14, 28, or 128 programmable speed steps. This decoder must be fitted to the interface plug already found in ‘DCC Ready’ locomotives (instructions are given with the decoder). Certain older locomotives do not have this provision, however, but instructions with the Select and Elite units illustrate the work necessary to fit the decoder.

The other key unit in the Hornby Digital Command Control system is the accessory decoder which can control up to four solenoid-operated accessories, such as point motors. It takes all power and digital control signals direct from the track, so does not require a separate power system.

The Hornby Digital range is still being expanded with new developments. Important recent releases are the Sapphire (R8245) and Mini Sapphire (R8246) decoders with extra features and functions (including slow speed for shunting, extensive addressing and programming range, and a sound system interface), and the Access One infra-red hand held controller, wire free and connectable with both the Select and Elite controllers. There is also a new accessory decoder for point operation (R8247).

Digital sound

Digital technology has many apsects and much potential, and in the model railway hobby new ideas in digital applications are coming along all the time. One of the most exciting developments is sound which Hornby is now adding to a growing number of favourite locomotive types, both steam and diesel. Suitable circuits and a speaker, small but of great clarity, is fitted within the locomotive body and gives amazingly realistic sound effects. In the steam outline models the sound is synchronised with the movement and speed of the model. Thus the steam whistle can be sounded as the locomotive prepares to start then there is the sound of the loud ‘chuffs’ as the locomotive starts to move, easing into a steady beat as the operating speed is reached and the locomotive starts to run at a steady speed, followed by by an easing of the beat as the locomotive starts to slow down again. Diesel locomotives have the equivalent degree of sound effect, including the claxon horn sound, throbbing engine note, and change of pitch as the locomotive starts slowly and builds up to speed. The powerful class 60, first of the diesels to be released with sound, has a particularly striking sound system that duplicates very realistically the real life sound of these powerful locomotives.

A LokSound V3.5 decoder is at the heart of the sound-fitted locomotive models, and it responds to most of the leading DCC controllers including Hornby. In the simplest of terms the decoder detects speed step settings on the controller and provides the appropriate sound effect accordingly. The full procedure is actually more complex than that, but the locomotive can be operated in sound straight out of the box. A digital sound operating manual is supplied with every digital sound model and explains all the aspects of sound operation in a very straightforward way.

Simple operation

'Keeping it simple' is often the best way of working in model railway projects. Of course you cannot always choose a simple method, for some advanced activities are complicated whichever way you tackle them. Operating, however, is one aspect of the hobby that can be kept simple and is often the better for it. Some modellers evolve extremely complicated methods of operating, but there is no need to do so if you prefer an easier approach.

Shunting and sorting a goods yard is an example. A lot of modellers, having built their layout, shunt only in a random sort of way—wagons are pushed in and out of sidings in no particular order. On a real railway, however, there is a reason for every movement, and wagons are delivered for loading or unloading with the appropriate paperwork in the form of manifests or bills of lading. Some modellers simulate this exactly, with appropriate paperwork. But if it doesn't appeal to you there is an easy alternative which simulates the idea of a manifest. This is the 'tiddlywink computer', mentioned earlier, a clever conception by the late Alan Wright.

Alan realised that instead of random shunting on one hand, or complicated manifests on the other, there is a happy medium which gives the effect of having a manifest even though the system is essentially random. Alan's own layouts, the 'Wright Lines', were usually simple, and several of them, such as Inglenook Sidings, were compact freight yards. To see how the tiddlywink computer works in practice, let Alan Wright explain it in his own words:

> The 'Wright Lines' formula has been tested over the years and has always been a winner. On a small layout, it gives hours of operational interest without becoming too repetitive. And it is a good thing for clearing the mind of the problems of the day!
>
> In essence, the formula consists of a main line, two sidings, a locomotive and eight wagons of the same length or as near the same length as makes no difference. The length of the various sections of track is the important thing. By reference to Fig 6.18 you will see that the main line is just long enough to accept five wagons clear of the

uncoupling ramps. Each of the two sidings is just long enough to accept three wagons beyond the uncoupling ramps. The main line is just long enough to accept three wagons and the locomotive, all clear of the ends of the point blades. Trains are made up of five wagons and are shunted in accordance with the tiddlywink computer.

If using the formula on a continuous layout you must use some means of defining the main line such as signals or ‘limit of shunt’ boards.

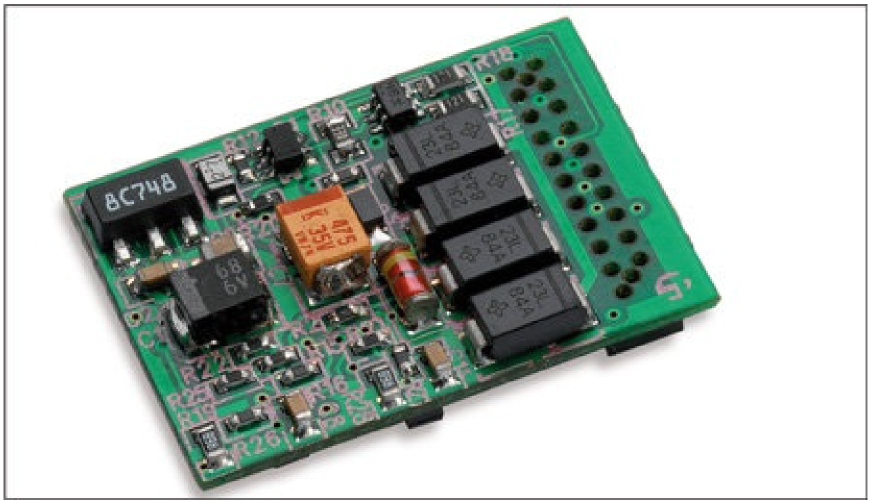

Figure 6.18. R.8245 Sapphire decoder supports 1 Amp continuous current with 1.5 Amp stall. Low speed gear for shunting operations.

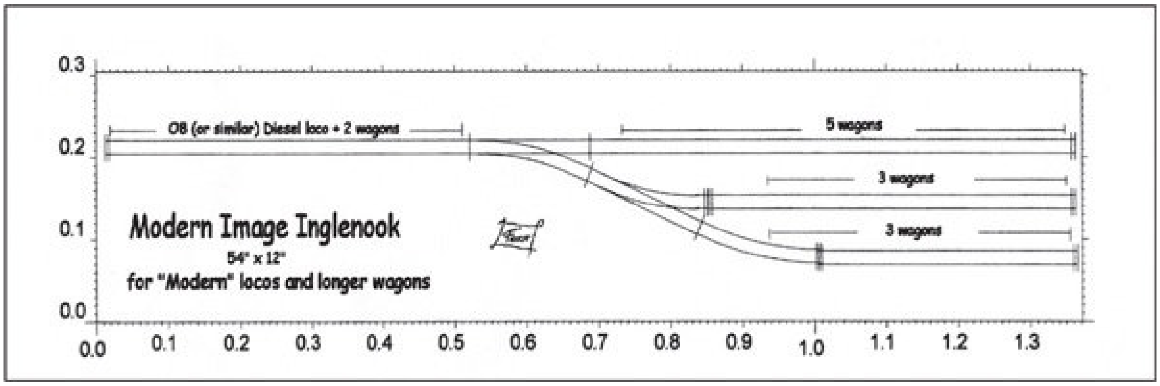

Figure 6.18. The Inglenook Sidings concept of the late Alan Wright offers big shunting operation in minimum space, with siding capacities indicated.

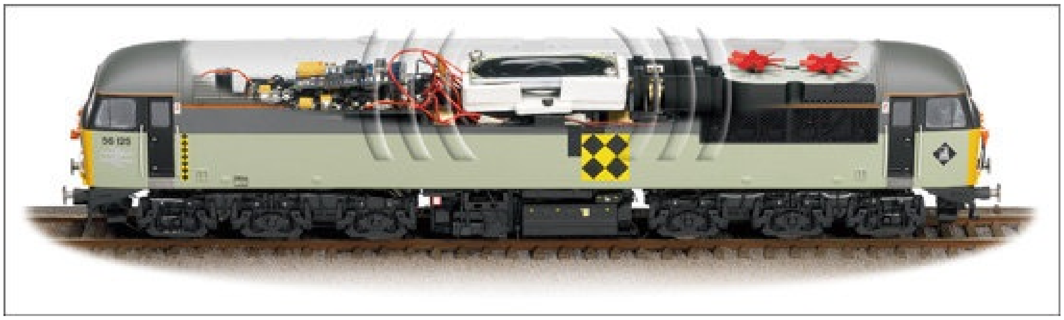

Figure 6.19. A Class 56 diesel digital locomotive with very effective and realistic sound system.

Figure 6.20. The first Hornby digital steam outline locomotive to be released with sound is the ‘Princess Coronation’ class Pacific *City of Sheffield*.

The 'tiddlywink computer'. The tiddlywink computer is simplicity itself. With eight wagons, eight discs or tiddlywinks are needed. They are marked with the names or description of the wagons in use such as 'tank', 'hopper', 'mineral', 'flat', etc. If more than one wagon of a particular type is in use then a further identification is necessary such as a dot of coloured paint carefully applied to an axlebox cover or a similar inconspicuous place. The disc would then be marked 'mineral blue', 'mineral yellow', 'mineral green', etc.

How does the computer work? Imagine that a train is standing on the main line and the remaining three wagons are scattered in the sidings. The eight tiddlywinks are put into a shaker, shaken, and then five are drawn out and laid down in the order in which they came out: that is the order in which the train is to be shunted. It will be realised that shunting the train will not be a simple matter because of the limited capacity in the head shunt and the sidings. At one exhibition at which I was showing my earlier 00 gauge layout Inglenook Sidings, a visitor said in a loud voice that there was nothing to shunting trains: after all, he was a shunter on British Railways and he knew! The controller was handed over to him and after a few minutes he returned it, admitting that he couldn't do it, and that shunting on the full-sized train set was considerably easier than on a model! In this, the basic formula application, it is possible to shunt and form the five-wagon train in over four million different ways.

On larger layouts. That then is how the computer works on a small layout. How does it work on a larger one? On my larger 00 gauge layout, the Wits End and Cheviotdale Branch, the system is also in operation. When a train is shunted up in the yard at Wits End, the tiddlywinks for those wagons are passed to Inglenook Sidings, where they are mixed with the discs for the wagons standing there. When the train arrives and sets back through the points into the sidings, the tiddlywinks are shaken up. Then the required number are withdrawn, the train is shunted, and then, when it is despatched to Cheviotdale Town, the appropriate tiddlywinks are passed on and placed with those of the wagons standing in the sidings there. And so the discs are shaken again and another train is made up.

What, though, if there are sidings on your layout which can only accept a certain type of wagon, such as a coal yard, which obviously wouldn't deal with insulated meat vans? When the train arrives and the discs are drawn out, should a non-acceptable wagon be drawn then further discs are drawn until a train can be shunted. Naturally, only the same number of wagons can be picked up and set down unless a shorter train is required. Also, on bigger layouts, you would not be restricted to five wagons. Sidings need not be limited to short ones. Variations on a theme can occur with the use of discs of two colours if you wish to segregate 'braked' and 'unbraked' wagons. The variety cannot be computed!

This then is the basic theory of the tiddlywink computer. It has worked without any form of failure on my railway for twenty years. Others may use cards, coloured paper strips, etc., and even real computers, but the tiddlywink computer is certainly very compact and convenient. Give it a try and see what you make of it.

From an article that appeared in *Model Trains International*

Chapter **7**

Practical layouts


L N E R
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So far we have covered the main work involved in the building of a layout and the other tasks such as track laying, wiring and operating. If you are newcomer to the hobby you'll be looking forward to building a layout of your own so that you can get your trains running in a realistic miniature setting. There are modellers, too, who would not count themselves as beginners, as they may have been collecting models for years. But they have yet to build a layout, because making a start is the hardest part.

With this in mind, this chapter features some simple but practical layouts that should be within the capacity of all. They are different from the layouts suggested in *Hornby Track Plans* and, in fact, are rather simpler than some.

Tuning Fork

The first layout here is very simple indeed, and some may consider it a working diorama rather than a 'proper' layout. But it has the advantage of being light and compact, easy to store and completely portable. You can set it up almost anywhere, and it won't take long to build. I built it in a single weekend. The minimum length if you have only small tank engines or diesel shunters would be 3 ft 3 in. (1 m) but if you want to use larger engines and have a bit more flexibility make it 4 ft long (120 cm) as per the track plan *see* Fig 3.1. Minimum width is 4 1/2 in. (13.2 cm) but 6 in. (15 cm) gives just a little more room for scenic development. The baseboard is a length of 6 mm MDF, built simply using the 'MDF quick fix' method described in Chapter 3.

You'll see from the track plan that it is simply a Hornby Y point in the centre with straight lengths of track making sidings and a head shunt, plus two R643 curves added to the Y point. The 'bogus ballast' method is used, with strips of R8066 grey tarmac mat pinned below the track, though the granite finish R8067 could be used instead. As this is a very simple layout the point is hand-operated only, though I put in a dummy point lever for realism, made of wire and plastic scrap.

Despite its simplicity, this track formation could be found quite often in real life. Old maps show plenty of examples from the days when railways served industrial plants and warehouses fifty or more years ago. Just one example was at Bridgwater docks, once served by an extensive rail network, where a couple of sidings just like the Tuning Fork layout served a brewery, with wagons bringing in coal and hops, and taking out vanloads of beer.

Scenic development is easy, too. I made it ‘industrial’, with a plain back scene featuring several warehouses as scenic flats, mostly scratch-built from card, or cut from card kits. Behind the head shunt I put a distant gasworks taken directly from a Bilteezi scenic sheet (Fig. 7.1). These were glued to a hardboard strip screwed along the back of the baseboard. Scenic development beyond that is no more than a roadway, rough grass and bushes, and typical junk and waste. There would be alternatives. My version can operate with the tiddleywink computer (Chapter 6), shunting wagons between the two sidings. I put in both a magnet and uncoupling ramps so the layout will operate with either tension-lock or magnetic couplers, but that can be your choice—either or both. If you only want to run trains up and down for pleasure, you could simply make a ‘neutral’ countryside back scene, or if you mainly collect locomotives and just want to parade them up and down the track you could put in some workshop-type backscene features.

Figure 7.1. Though the simplest layout idea in the book, the Tuning Fork still allows good slow-running locomotives like the Hornby J94 or Terrier to shunt realistically from siding to siding. Note the warehouses made as scenic flats on the back scene.

Multi-moding

This is a good point to mention ‘multi-moding’, a trick popular with those who have space only for one small layout. You may be a fan of more than one of the old railway companies (‘pre-grouping’ up to 1922, ‘pre-nationalisation’ up to 1948) and so collect models devoted to each. I have a collection of GWR locos and wagons, another of SR locos and wagons, and another of BR locos and wagons. The locomotives are shunting types in each. case. On the Tuning Fork layout I can set up any of these groups of models, with suitable road vehicles for each, as well, so I never get bored with seeing the same locomotives and wagons every running session (Fig. 7.2). You can do this ‘multi-moding’ on any of the other layouts suggested here, too.

Figure 7.2. The GWR version of the Terrier approaches the warehouse sidings. Note the guard in the brake van. Loco and stock are fitted with Kadee magnetic couplers, giving realistic close coupling.

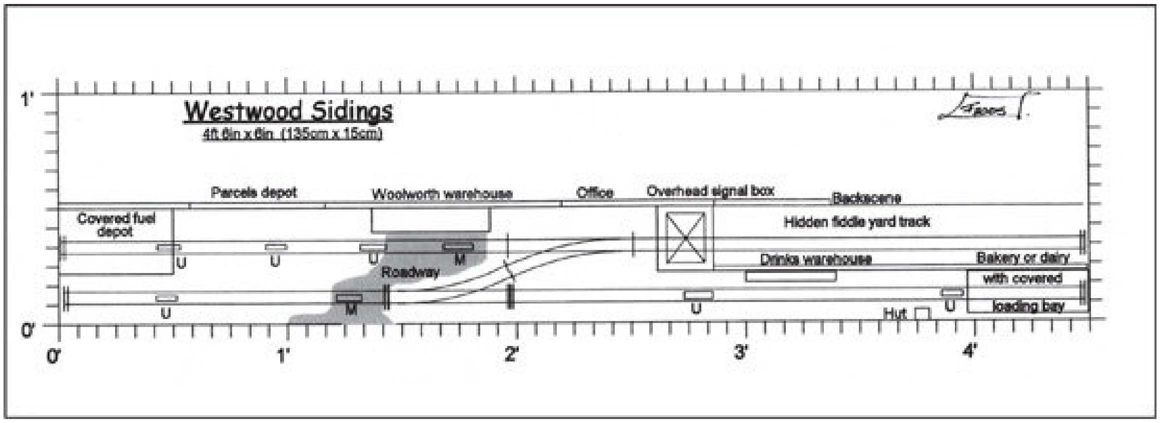


Figure 7.3. Track plan for the layout featured here. It can be made with either uncoupling ramps (U) for tension-lock couplers, or uncoupling magnets (M) for magnetic uncoupling, or both. Ramp positions are shown.

Westwood Sidings

If the Tuning Fork layout seems too simple, here is something slightly more complex, but once again it is based on the real thing. Westwood Sidings are typical of quite a lot of settings in the heyday of railways. There were industrial estates served largely by rail, such as Trafford Park (Manchester), Slough and Colwick (Nottingham) but there were many more. Some had their own operating company, with locomotives to handle the shunting, but some (including Colwick) had an arrangement with a main-line company (in Colwick's case the LNER) to operate their lines. These old industrial estates were designed with rail access, unlike modern 'business parks' which are linked only to road transport. Because the sites were often constricted and crowded, such a setting is perfect for a small layout if your space is limited. In addition to purpose-built industrial estates served by rail, there were railway-owned local goods yards of all sorts. Some were part of a station complex, but there were goods stations as well, devoted solely to freight and serving not only the railway company but local traders such as dairies, bakeries, breweries, coal merchants, local engineering works and others. Westwood Sidings, as built, strictly depicts a railway goods station and parcel depot dating from Great Northern Railway days, with the old name still up on the wall long after the GNR became part of the LNER in 1923 and nationalisation in 1948. The sidings serve a covered fuel depot, only the end of which is depicted, Woolworth's local warehouse, a large bakery with big daily output of Bermaline bread, and a local soft drinks distributor, Clark & Sons.

All these rail-served facilities are depicted on this narrow shelf layout, either as scenic flats on the background or as low-relief structures. The drinks distributor and bakery conceal the hidden fiddle yard, which is meant to depict the 'off stage' route to the big marshalling yard from which goods traffic is sent out to small yards round about, Westwood being one of them. On this little layout we can reproduce the sort of activity that survived until about fifty years ago before road transport became dominant. In those days of coal fires every neighbourhood had a coal merchant who received wagonloads (commonly in his own wagon) by rail and bagged them up for retail delivery by horse and cart or lorry. The same merchant might also handle oil for central heating and factories. On the layout I have built a covered corrugated shed for this (Figs 7.4–5), which means you do not need to depict the actual coal or oil storage gear, and the yard shunter merely pushes loaded coal wagons into the shed (Fig. 7.18), or the occasional tank wagon. We can suppose that the siding goes back beyond the area actually modelled. The end of the shed is open so that you can remove coal wagons shunted inside and take out the dummy coal loads. When the shunting loco hauls the wagon back out of the shed it is empty, as the real one would be. This is a pleasing trick that enhances operating pleasure.

Figure 7.4. Some model structures can be very simple. The covered fuel depot at Westwood Sidings is made from a cutdown card oatmeal biscuit carton with balsa strip bracing inside.

Figure 7.5. The model is completed by covering it with red corrugated card from a handicraft shop and a piece of roofing from the spares box.

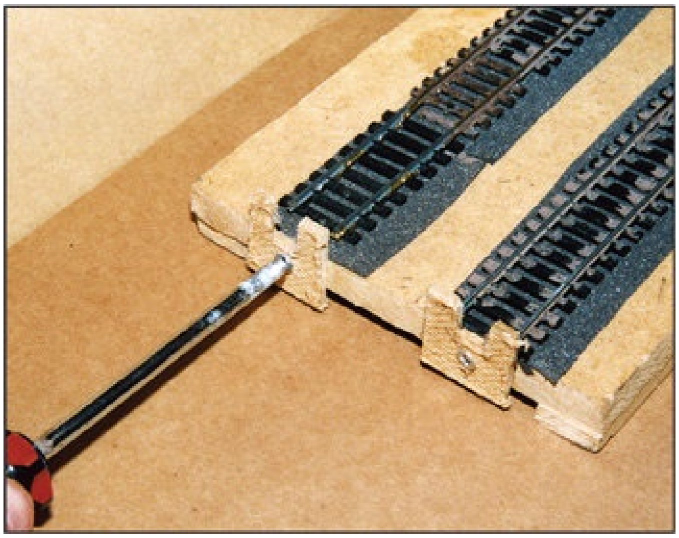


Figure 7.6. On small layouts you need every inch of siding length you can get, so buffer stops are replaced by hardboard ‘stop blocks’ about 30 mm square, with a cut-out for the coupler hook, and screwed to the baseboard end. They are later disguised with foliage to resemble ‘overgrown’ buffer stops.

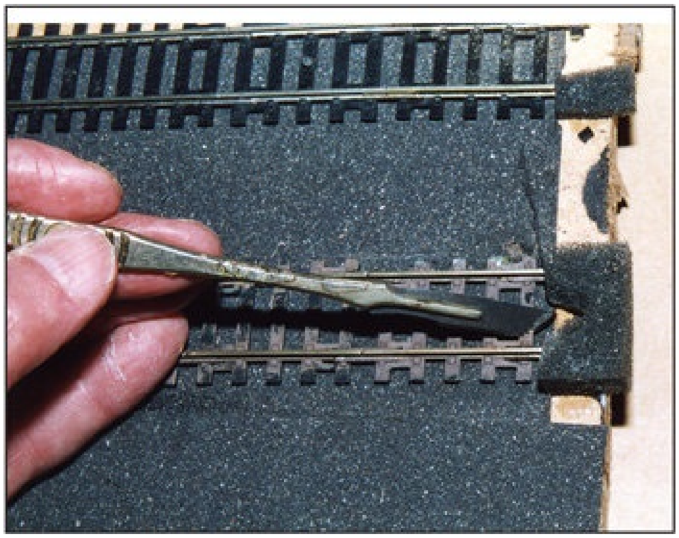


Figure 7.7. Buffer stops are not necessary in enclosed warehouses. Here a piece of foam plastic, with a notch to take the coupler hook, is glued at the end of the siding.

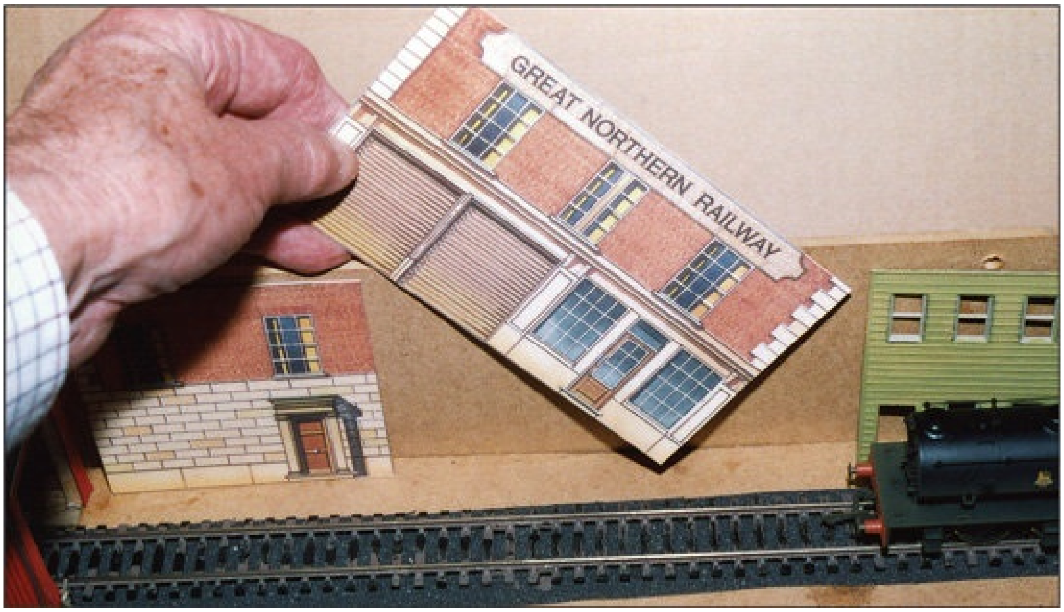


Figure 7.8. The back scene is a length of old hardboard. The warehouses are simply cut out from card kits and pasted on. This is the Bilteezi parcel depot trimmed to fit.

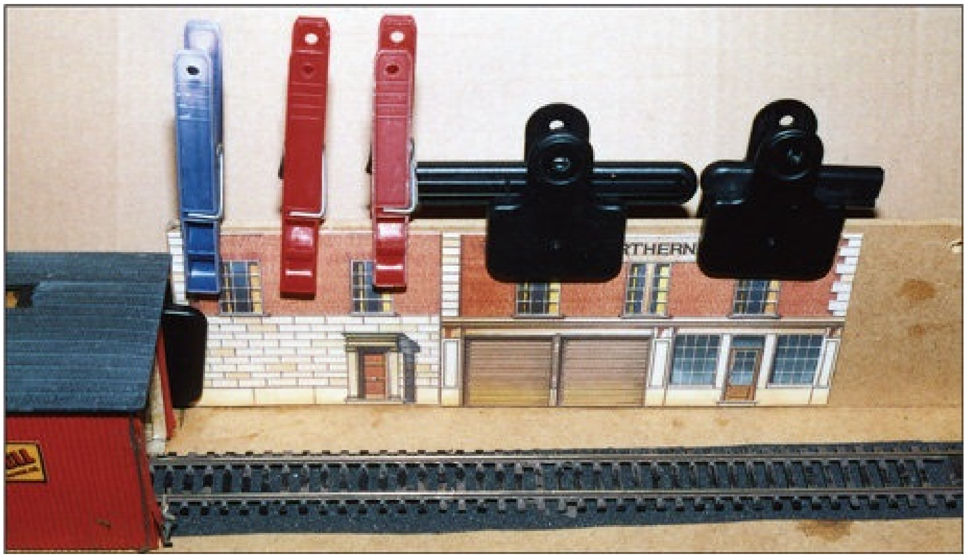


Figure 7.9. To ensure that the buildings dry flat without warping hold them with clothes pegs and bulldog clips while the glue dries.

Figure 7.10. The big warehouse is actually a wall from the Metcalfe loco shed kit with an adapted roof section, and houses fill out the rest of the back scene.

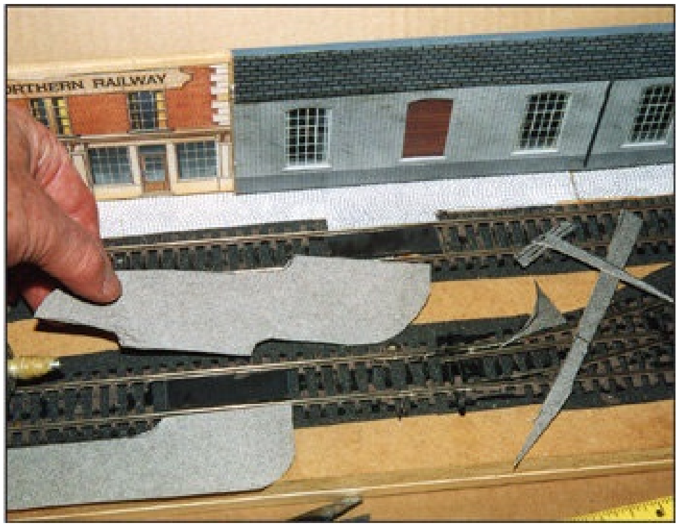


Figure 7.11. The roads and paved sections were cut to shape and glued in place. Uncoupling magnets are disguised as road crossings over the tracks.

Operation

For operation you make up a train out of sight in the fiddle yard. When serving the bakery and drinks distributor the loco needs to be leading. You might have three covered vans, one with a load of crated drinks for Clark & Sons, one with sacks of flour for the bakery, and the other empty to collect a consignment of bread. However, in the siding already will be three vans from the previous delivery. One will be in the covered bakery unloading bay, having brought in the last consignment of flour, the other will be by the bakery despatch department sliding door, having been loaded with freshly baked loaves, and the third will be at the small loading bank of Clark & Sons. So your incoming loco with its three vans has to pull the existing vans out and replace them with the incoming vans. If you try this yourself you'll see how much shunting and movement are needed to do it, and then you realise that though the layout looks simple the operation needs much thought and care and is very absorbing if you do it properly. When the incoming vans have been changed over for the outgoing vans in the head shunt, the loco pushes them out of the yard, under the signal box (Figs 7.12–14), back into the fiddle yard (representing the main goods yard) and that phase of the operation is over. Now your locomotive has a new train made up—a coal wagon, a van for parcel traffic and a van of goods for Woolworth's shops. As before there will already be three equivalent wagons in place. The locomotive pushes the incoming train into the head shunt, and now has to change the incoming wagons for the three already in place. You can only really do this one wagon at a time, and extracting the empty coal wagon, the van at the parcels depot and the van at Woolworth's warehouse is done by leaving the three incoming wagons in the head shunt, then coupling up and pulling out the three wagons already in the siding. You can only put the incoming wagons in place one at a time, so the loco, with the three outgoing wagons already attached, backs into the head shunt and picks up the incoming coal wagon only. This is shunted into the fuel depot (Fig. 7.18 again). The move is repeated for the parcel van, then again for Woolworth's van. After that the loco with the three outgoing wagons leaves the yard and heads for the fiddle yard behind the scene, where you can start the operation all over again.

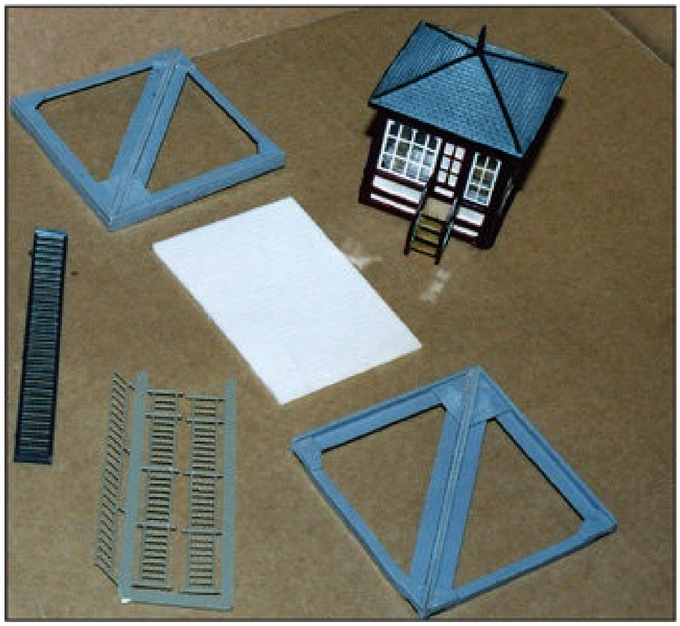


Figure 7.12. As a ‘visibility block’ to disguise the entrance to the fiddle yard, a Skaledale signal box on an overhead gantry was built. It uses panels from the girder bridge kit for supports, a piece of Wills planking sheet for the deck, and a long ladder and fences from another kit.

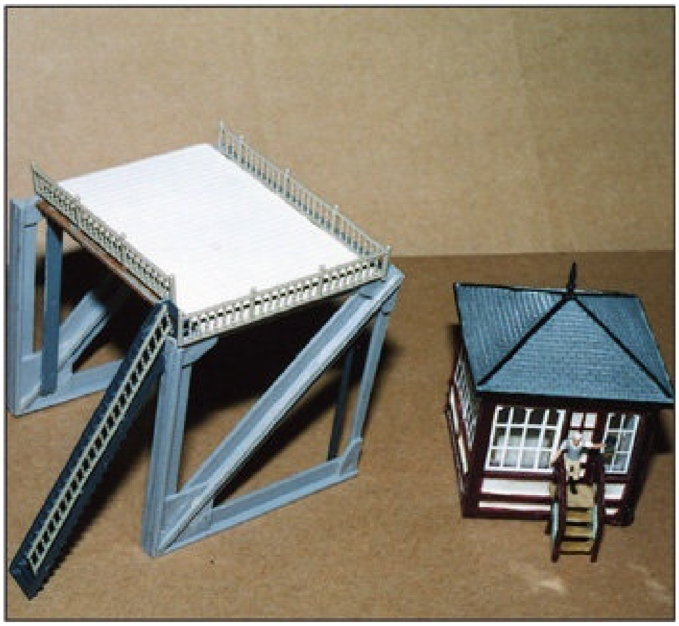


Figure 7.13. Assembly of the components is quick and simple. Trunking was added (rear support) for the control wires from the box, and a drainpipe was added behind the front supports, all from scrap plastic.

Figure 7.14. The signal box in place on the layout, painted, weathered and with a signalman installed.

I've gone into this operating sequence in some detail to show that this layout is not just a pretty scene for random shunting and running. You *can* do that, but on this layout you can duplicate real life quite well. In a real yard of this sort there would be designated shunting positions for every wagon—in this case six, though seven would be possible, for there is room for two four-wheel wagons in the covered bakery bay where vanloads of flour and other ingredients are delivered. So you would need a minimum of sixteen wagons to operate the layout with incoming and outgoing traffic—two coal wagons or two tank wagons for the fuel depot (alternating tankers and wagons as desired), two vans for the parcel depot, two for Woolworth's warehouse, four (or six) for the bakery and two for the drinks warehouse. In addition there is room for at least an extra van or wagon to be left at the buffers in the head shunt or in the bakery siding by the roadway for customers who do not have lineside facilities but can collect their consignment from the depot. For example, a building company might take occasional loads of bricks or cement, a timber merchant would receive consignments of deal, and so on. These would mean extra wagons (and dummy loads) as appropriate, and model lorries or horse drays on the roadway to collect from the wagons. So now you need about twenty wagons for this layout, plus, of course, at least one locomotive, but two to give variety. There is yet more to it. You can draw up a 'consignment list' that identifies the various railway customers and the wagons allocated to their traffic (using the actual numbers on the wagons) so that you can despatch the correct wagons and keep track of them, just as a real yardmaster would need to do. And incoming wagons would need to be marshalled in shunting order. For example, the wagons coming in for the fuel depot/parcels/Woolworth siding would need to be in reverse order so that the train, from left to right as you look at it, would consist of Woolworth van–parcel van–coal truck–locomotive, so that they could be shunted into place with fewest movements and in the correct order. This, too, is done in real life, for the wagons would be put into shunting order before they leave the marshalling yard on the transfer run to Westwood Sidings. In model form you do this in the fiddle yard, of course, as the big yard exists only in imagination.

Figure 7.15. The bakery with its covered unloading bay is made from DPM wall sections (which are flexible designs with panels that can be arranged to choice), and the Clark & Sons drinks warehouse was made of spare walls from a Walthers car showroom kit. Use your own imagination to adapt plastic or card kits for rail-served facilities of this type. Loading doors here are added from card.

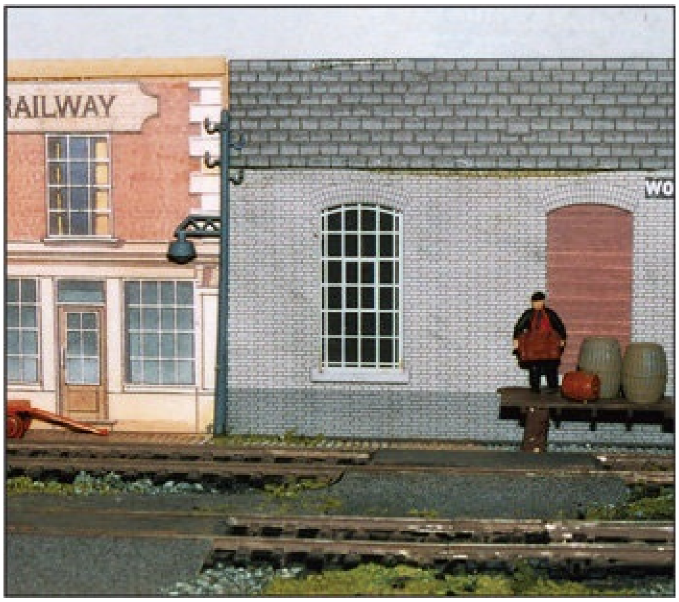


Figure 7.16. Lots of detail can be added. Here the warehouse has its Woolworth nameboard and a loading bank added. A combined telephone post and yard lamp has been added too.

Figure 7.17. A van has been left against Clark & Sons' loading door to deliver a consignment of drinks, while the J94 loco pushes two outgoing vans under the signal box and into the fiddle yard behind the scenes.

Figure 7.18. The J94 returns to the yard with a hopper-load of coal for the fuel depot. Before it can shunt it into the covered depot it has had to draw a van out of the parcel depot and an empty coal wagon from the fuel depot, and these are left temporarily in the head shunt.

Figure 7.19. Having positioned the hopper of coal in the fuel depot, the J94 runs into the head shunt to pick up the van and the empty coal wagon, then sets off back to the fiddle yard.

Figure 7.20. Richard Gardner makes big use of Hornby models on his large and superbly detailed Stokenham layout, an imaginary line set in the South Hams area of Dorset about 1980. The church and houses on the (hand-painted) back scene exist full-size, for the setting is a real place, although no railway ever got there!

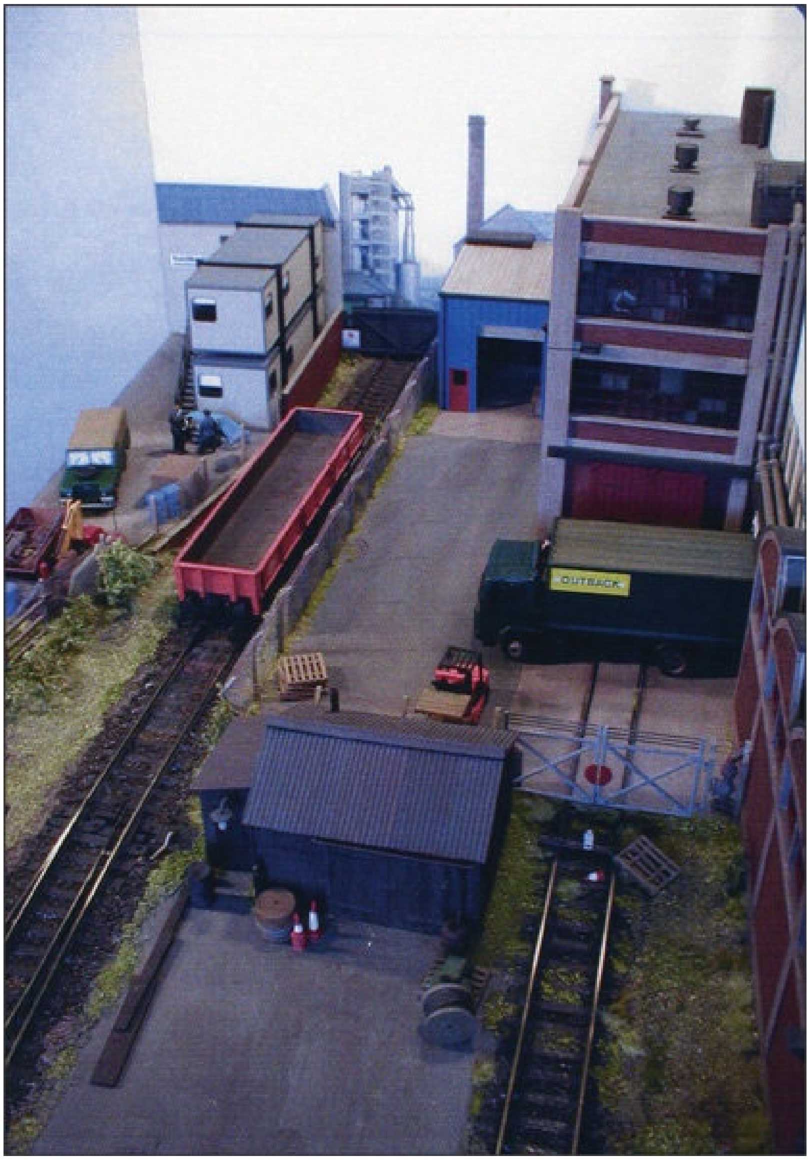


Figure 7.21. Excellent scenic and structure work, with Hornby stock and motive power, on Colin Peake's 6 ft 3 1 ft Padgate Lane wagon repair depot layout.

Imagination

Imagination is a necessary adjunct to model railway operation, because space limitations mean that only a portion of the real railway system can be depicted, even if you have a room-size layout. In the case of very small layouts, like Westwood Sidings, there isn't even space to fit in a run-round loop so that the locomotive can run round to whichever end of the train is more convenient. The viewer only ever sees the wagons arriving from below the signal box, with the locomotive already at the correct end of the wagons for its shunting moves. In our imagination there is a run-round beyond the signal box, and our transfer freight train, heading from the marshalling yard to Westwood Sidings, stops there, detaches its brake van, ensures the locomotive is on the correct end for shunting the siding, and either pulls or pushes its wagons into the yard, which starts where we see it, from the signal box onwards. On the return run it puts the loco on the correct end of the train, if necessary, and re-attaches the brake van when it gets back to the out-of-sight run-round loop, before it heads back to the marshalling yard. You don't need a brake van for this layout, but it's nice to have one, and it can still appear on the layout from time to time, particularly if that day's run requires only one or two wagons. That could be the case because you don't necessarily have to exchange every wagon every time. You can designate 'loading/unloading' times for each business served. For example, the bakery, the parcel depot, and possibly the fuel depot, might need shunting twice a day, the drinks warehouse might need only two vanloads a week, as might Woolworth's, or whatever frequency you decide. There are all sorts of operating ploys you can introduce. You could add a water crane alongside the head shunts and decree that the locomotive needs to fill its tanks after every fourth shunting session. So you run the locomotive alongside the water crane and leave it there for a bit, maybe while you have a coffee break yourself!

Just in case you think this exhausts the possibilities with this small layout, it is far from finished yet! You could if you wish 'multi-mode' the layout—which I will be doing—by having a set of GNR stock (Hornby

J52 and N2 in their GNR versions), an LNER set (with LNER J94 and J52) and BR set (with BR J94 and/or Class 08 diesel), plus a fourth set (which I have already) of ‘private operator’ J94 in colourful finish. For all these modes you will need rolling stock (not to mention road vehicles) to match the period, giving you an excuse to go on collecting appropriate models for some years yet! ‘Multi-moding’ is not the end of the matter, either, for if you get more space later (such as a 10 ft length of wall) you can put the existing Westwood Sidings layout on wall brackets, then extend it with, say, another 5 ft long module continuing the track on from the fiddle yard to run into another freight yard plus fiddle yard, doubling the shunting potential and giving you a very busy and attractive layout indeed.

Scenario

From all the above you will deduce that Westwood Sidings is not just a token layout. Every aspect of it was thought out before any track was laid. There was an obvious space limitation, suggesting a compact shunting layout as the best theme to choose. Inspiration came from Bridgwater Docks, Slough Estates, Hayle Wharves, Tewkesbury Goods and other small freight yard locations described in Middleton Press books and others. From these thoughts it was easy enough to evolve a simple layout and the desired scenic development. So the whole operation was in the mind and jotted down in note form before any model work was done. In other words, imagination was used again, coupled with inspiration from researching the real thing. Virtually every successful layout is evolved this way, with a complete scenario and reason for being worked out first. That way you have clear objectives, including period (or periods) to model, suitable locomotives, stock and scenics, and so on. It is much better to approach layout building this way, linked to available space, than just choosing any track plan at random, laying the track, then trying to find a theme that works. Boredom can set in if you start running trains with no clear idea of what the layout represents. The scenario and operating patterns described here for Westwood Sidings are the way to approach any layout you build.

To show that there can be more than one scenario for any simple track plan, however, the second plan (*see* Fig. 3.4) Westwood Locomotive Depot, is exactly the same as Westwood Sidings. But the scenario and scenics are completely different. If you are mainly interested in collecting model locomotives, this is a layout that suits. Long-time modeller Graham Weller built a very similar (but shorter) layout like it (called Eastham Works), with the entire scenic development done like a locomotive and wagon repair works. On such a layout big Pacific locomotives and others can be run up and down, supposedly entering the loco shed and machine shop for cleaning and overhaul, and loco coal wagons, etc., can also appear. In addition it makes a good test track for trying out new or overhauled models. If you have not got space for a big layout on which express trains can run, this little scheme is a great way of running impressive express engines in minimal space.

Making Westwood Sidings

There were no special tricks involved in making the Westwood Sidings layout, and only easily available scenic items and accessories were used, plus, of course, two Hornby R8072 left-hand points and straights to fill out the length. The picture sequence through pages 150-153 shows the key stages of building and operating the layout.

Dyserth

In the previous chapter Alan Wright's famous Inglenook Sidings concept was described. Dyserth can be built and operated in exactly the same way as Alan Wright did it, complete with the tiddleywink computer method of operating. When the Inglenook plan was first published, several sceptics said that nothing so basic would have existed in real life. A little research, however, proved them wrong and quite a lot of real track layouts have been discovered in all sorts of settings, including freight branches, factory complexes and even on old branch lines. Dyserth is a prime example. This was a branch, built in 1868–69, that ran inland from Prestatyn, in North Wales, nearly three miles. As well as passengers it served stone and limestone quarries, the mineral being used in Welsh steel plants such as Shotton. Because of this the branch lasted until 1973, but passenger services ceased in 1930 and parcel traffic in late 1951. There was also a farmers' co-operative with a loading bank, and a coal merchant at Dyserth whose coal was simply tipped out on to the ground from the wagons.

There were no run-round loops on the line, so all trains had to be pushed up to Dyserth by the locomotive, and on the return journey the locomotive was, of course, leading in the usual way. Trains were short, as small as three or four wagons and a brake van. In the diesel age the locomotive was usually a Class 25 (like the Hornby model), and before that a Stanier Class 5 (or sometimes a 'Jubilee' or 'Patriot') was usual. The big engine was needed because there were no coaling or water facilities at Dyserth, so a large coal and water capacity was needed, as in a Stanier tender, a fine excuse to use a Class 5 on a very small short layout.

As Fig.7.22 shows, Dyserth station sprawled over quite a large area even though it was tiny. To model a Dyserth-style layout you need to compress, and Jack Trollope has drawn a track plan that duplicates the Dyserth arrangement but in a much tighter, more practical area for a model layout (Fig. 7.23). The passenger stations at Dyserth (and down the branch) were simple wooden structures at ground level, with a gravel platform just one coach long. The passenger service was operated by steam rail motors— single-coach units like railcars. They were replaced by LMS auto-coaches with a push–pull tank engine.

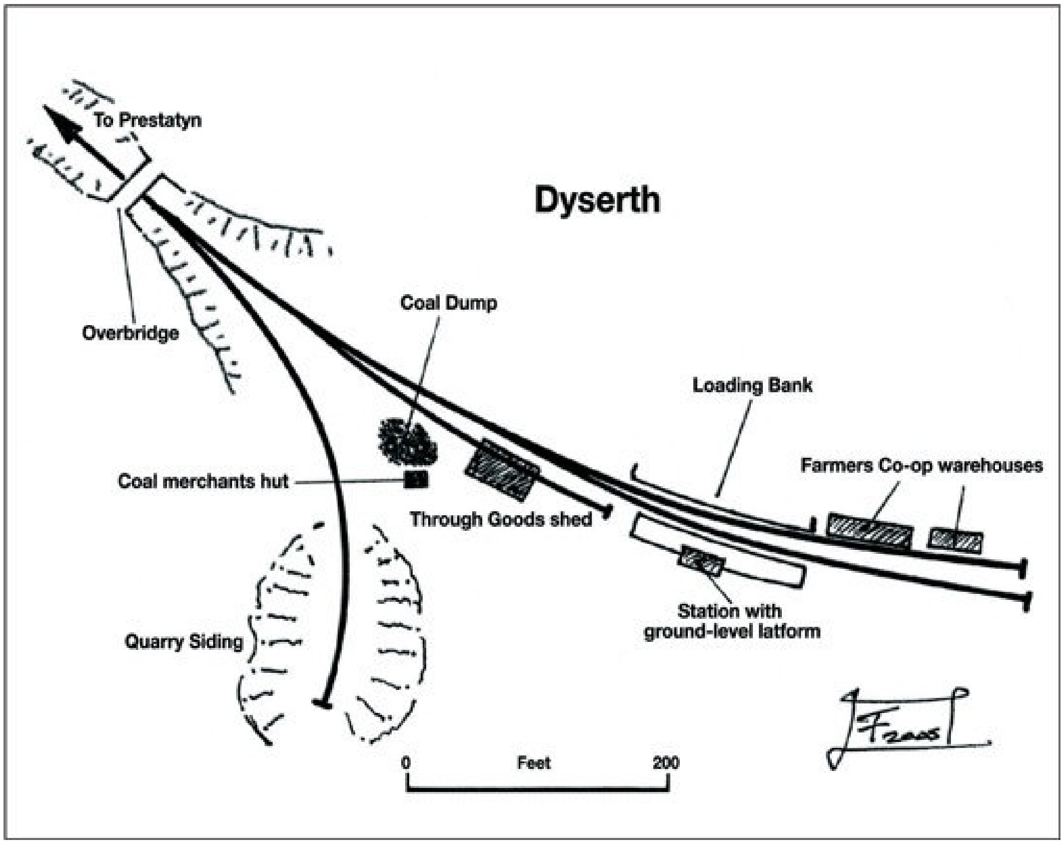


Figure 7.22. The actual track plan of Dyserth. Though a small and simple branch terminus it is still quite spread out and needs to be compressed in model form.

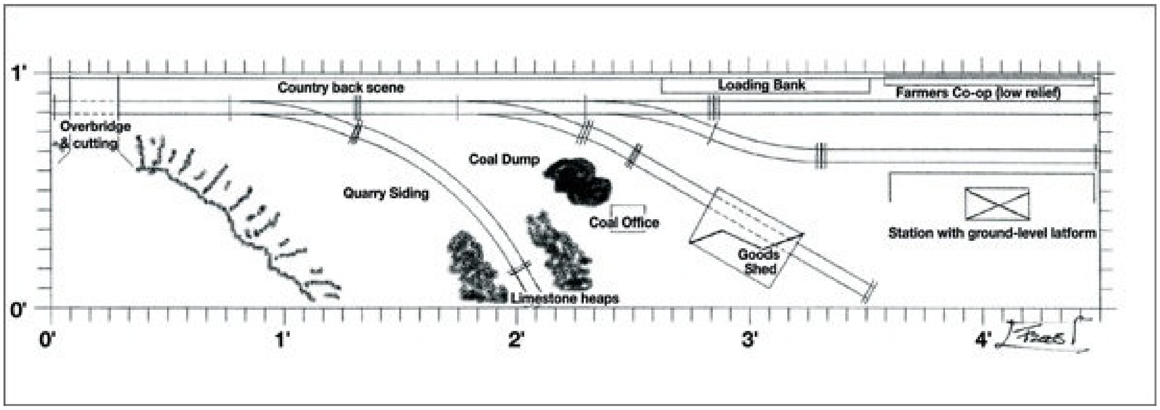


Figure 7.23. Track plan for Dyserth in a compact space, using Hornby track and standard points. It could be extended to a fiddle yard at the left end. Dimensions are marked in feet and inches.

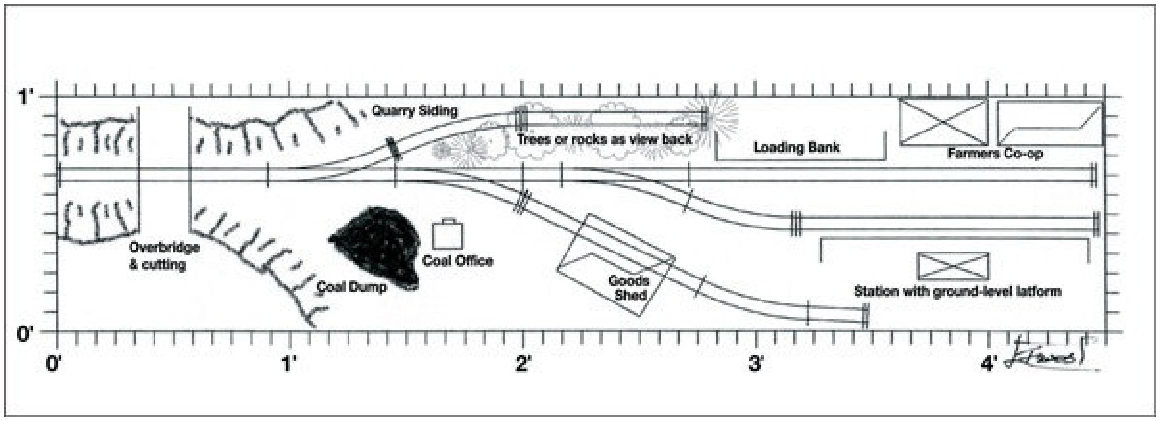


Figure 7.24. A bit of 'modellers' licence' moves the quarry siding to the other side and gives better balance. It can run behind trees to disguise the fact that it is short and that no actual quarry is modelled! If you build a freelance branch terminus based on the Dyserth prototype you can do it this way and give it a different name.

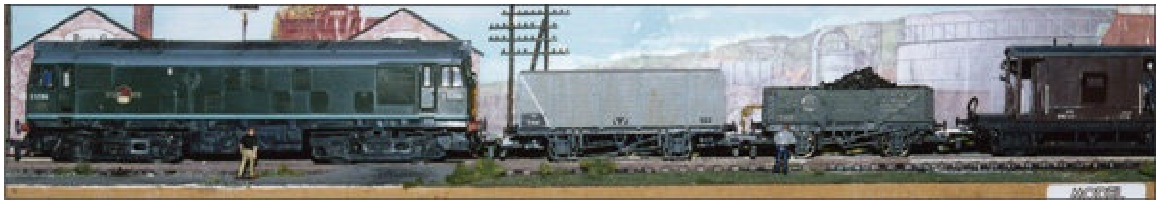


Figure 7.25. Trains on the branch were short, and the locomotive always pushed the train to Dyserth with the brake van leading. The Class 25 was the most commonly used locomotive in the diesel era, and this is how a typical train would have looked. This train of two wagons and a brake van is posed on the Tuning Fork layout.

Figure 7.26. The track is laid, with ‘bogus ballast’ from Hornby fine granite sheet, and the keen four-year-old owner of the Westwood Light Railway makes the first run round the layout to test that the wiring is satisfactory. The layout is built on 6 mm MDF with conventional framing as described in Chapter 3. It is light and is designed to sit on the dining table for operation, as here, and stand on its side in the spare room when not in use. Scenic development is still to come.

The Dyserth branch has a ready-made scenario, of course, as it actually existed, and quite a few modellers base their layouts on actual locations or ‘might have been’ situations—places the railway never reached but in miniature could plausibly be served. And it is quite usual to make entirely fictional layouts—such as Westwood Sidings—that exist only in miniature and the imagination. Taking the Dyserth track plan, and the fact that it actually existed, you could ‘imagineer’ the same track layout into a different setting. For example, a GWR version of Dyserth under a Cornish-sounding name, perhaps—would look good, with a Hornby 14xx 0-4-2T and auto-coach working the push–pull passenger service and the Hornby ‘Grange’ handling the short freight trains. But choose any other setting and company you might favour. For useful detailed coverage see the Dyserth Branch book in the Oakwood Press series.

The Westwood Light Railway

The last of our practical layouts is one being built (by his father) for an enthusiastic four-year-old, though it would equally well suit an enthusiastic forty-year-old. Layouts based on a train-set oval are ever popular, notably with youngsters, for it means trains can run round in a pleasing way to ‘play trains’ as an alternative to operating. Westwood Light Railway (WLR) is only a simple oval, but it is designed for fairly prototypical operation. The inspiration comes from the old light railways, at their peak (if they ever had one) before the 1920s, which largely served rural communities. The Kent & East Sussex Railway (K&ESR) is one of the most celebrated and has been kept running for modern visitors. It still conveys a flavour—albeit rather busier— of light railways in the old days.

On the track plan (Fig. 7.27) there is a fiddle yard track, partly concealed by hills and trees, depicting the run to the next stations on the line and the connection with the main line. Trains emerge from behind the hill to the terminus area depicted on the baseboard. There is a small K&ESR-like station (from the Skaledale booking office) on a short, low platform, plus two sidings which between them serve a mill, a general distributor (Strawson’s, Fig. 7.28) of foodstuffs and domestic goods, and a coal merchant. In addition there is room in the Strawson's siding for other wagons to be unloaded at the trackside for diverse customers, and a yard crane will be added later. Various Skaledale houses are used, the hills and contours are from foam styrene block and packing material, with some modelling plaster (Figs 7.30–31), and most flat areas are covered with scenic mats and scatter material. An option—which might be added later—is a tunnel near the fiddle yard junction which will break up the nature of the oval a bit, but needs to be built in well to look plausible.

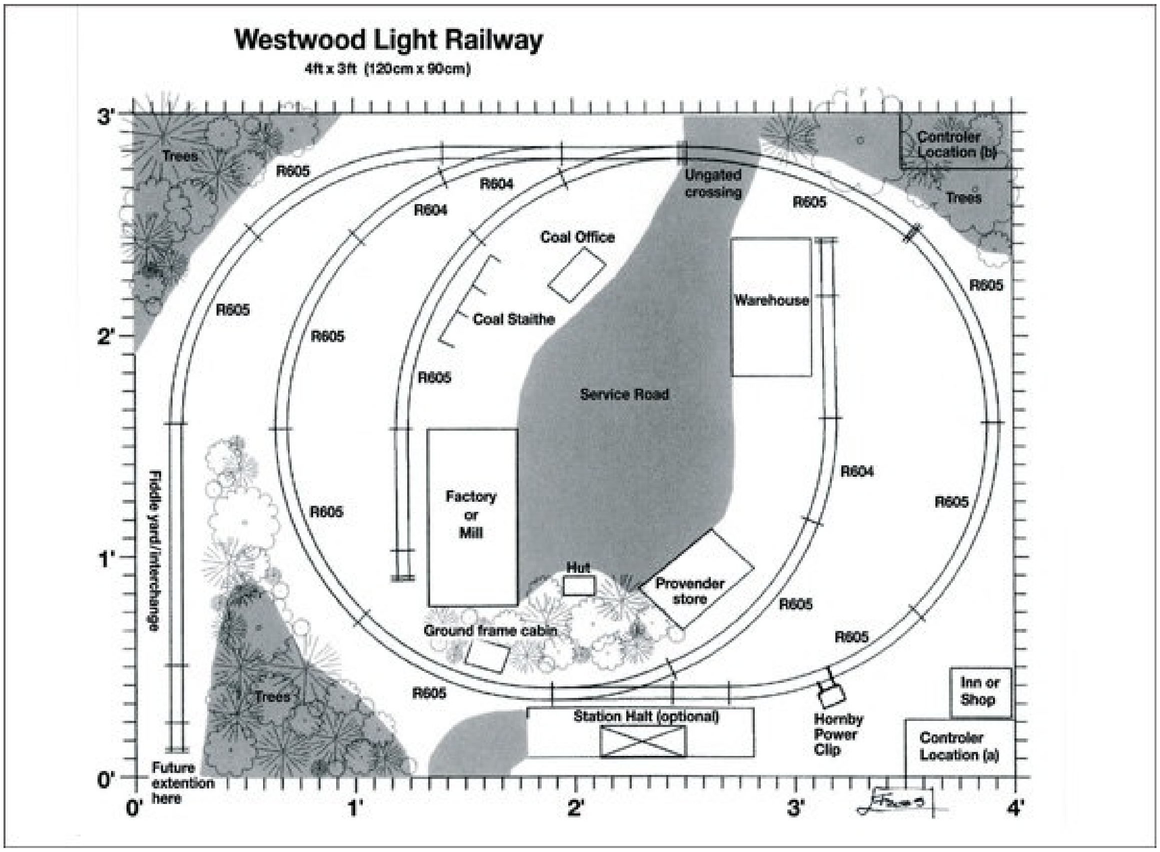


Figure 7.27. The Westwood Light Railway is just about as small as an oval layout can be in 00 gauge, yet it is very operable, with a small passenger halt/station in light railway style and two sidings serving local commerce. There is a line ‘to the junction’, actually a fiddle yard hidden by hill and trees, and on this corner you can add an extension or connection to another baseboard if desired. It is a good track plan for a beginner. There are two optional corner positions for the controller.

Figure 7.28. Westwood station sidings serve Strawson's foodstuffs business, among others.

Operating the WLR is much the same in its needs as Westwood Sidings, with at least four incoming wagons for the facilities served and four outgoing. You need either a four-wheel coach or a short bogie coach for the passenger service. On a real light railway several, if not all, trains would be ‘mixed’, with the passenger coach next to the engine and two or three wagons on behind. On arriving at the terminus the coach is detached and the locomotive hauls the goods wagons off to shunt the two sidings. That done, outgoing wagons are added behind the coach and the train returns to the main-line junction.

If you want to extend the layout later, either on to another board big enough for another oval, or down the wall of a room, just add the extension to the end of the fiddle yard siding. At least one famous modeller started off like that, with a tiny oval layout, and extended it over several years until it filled a basement—but the original small oval still sat there in the middle of it all. The late Alan Wright also started off with a nicely made layout that size—the Wright Lines—more than fifty years ago. It was the same 4 ft x 3 ft area, and the same concept, though the sidings were positioned differently. So this simple layout idea is well proven as an interesting project.

Figure 7.29. The first part of the Westwood line is given the scenic treatment, using the simple methods described. The Skaledale coal bins and office can be seen, along with the Skaledale farm barn, doing duty here as a mill or dairy.

Figure 7.30. The Westwood hills are made simply by using scrap polystyrene block glued and pinned in place then covered …

Figure 7.31. … with pieces of wet Hornby Modelling Rock to give contours and surface. They will be painted and covered in scenic scatter and vegetation.

Appendix


30108

Appendix

Magazines

- *British Railway Modelling*. Warner Publishing Group.
- *Continental Modeller.* Peco Publications & Publicity, website: (**www.peco-uk.com**). This magazine covers overseas modelling only.
- *ModelRail*. Emap Active, website: **www.modelrail.com**
- *Model Railway Journal*. Wild Swan Publications. This magazine covers the more advanced 'fine scale' scene.
- *Model Trains International*. Kristall Productions, website: **www.modeltrainsinternational.co.uk**. This magazine covers both British and overseas modelling.
- *Railway Modeller*. Peco Publications & Publicity, website: **www.peco-uk.com**
- *Hornby Magazine*. Ian Allan Publishing, website: **www.hornbymagazine.com**

In addition to the above, the railway news magazine *Rail Express* includes a model section in each issue.

Hornby Collectors' Club

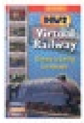
This club is open to all collectors and operators of Hornby model railways. It publishes the bi--monthly *Collector*, covering all Hornby model rail subjects. The UK subscription (in 2009) is £23 a year, payable to Hornby Hobbies. Applications to Hornby Collectors' Club, PO Box 25, Melton Mowbray, Leicestershire LE13 IZG.

CD ROMs

- 88122 *Hornby Virtual Railway 2*. Contains a full track planning program using Hornby track and accessories.
- 88122 *Hornby Step-by-step Guide to Railway Modelling*. Packed with hints and advice on laying out buildings, scenics, operating, etc.

Hornby Virtual Railway 2

HVR2 allows the creator to walk the rails, ride the footplate...or just to meander around the model railway world that has been created.



step-by-step GUIDE RAILWAY MODELLING

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NEW

The Hornby Step-By-Step Guide to Railway Modelling...

Hornby would like to thank the Editor and Staff of British Railway Modelling for their assistance in the compiling of this CD-Rom.

Hornby's new 'Step-by-step Guide to Railway Modelling' CD-Rom is the perfect resource to establish, evolve and complement your hobby skills - whether you are starting out, an enthusiast or an experienced modeller.

Railway modelling is a creative hobby that can provide satisfaction for a lifetime' but it can be particularly difficult and frustrating when getting started. The CD-Rom is designed to help guide the beginner or novice in the hobby to move beyond the train set and take his or her first practical steps to building a layout.

You do not have to be a highly skilled modeller in order to produce good layouts. It can be all too easy to become disillusioned by advanced modellers who may suggest you have to 'scratch build' all of your stock and track in order to be recognised as a 'true modeller'. Hornby's complete off-the-shelf 'ready-to-run' scale railway system is a good cost effective alternative to buying and building the equivalent models in kits and enables beginners in particular to get started in much less time.

This innovative CD-Rom, produced by modelling experts, adopts a simple step-by-step approach, providing advice, explaining methods and demonstrating techniques by walking you logically through key tasks and activities. The interactive CD-Rom is designed to help inspire and guide you towards your perfect model railway.

The CD-Rom includes:

Where do I start?

Careful planning is essential. This chapter introduces types of train set and circuit layout types, sizes, locations and budgets. Also included is a historical timeline highlighting how some modellers go about selecting a period of time upon which to base their models.

Baseboards and track

Getting the foundations right. This chapter explains types of baseboard, materials required and provides detailed step-by-step guides on 'Building Solid Top Frame Baseboards' and 'Laying the track'.

Buildings and scenics

Setting the scene. This chapter explains aspects of scenic and structural modelling starting with planning and observation. It goes on to provide detailed step-by-step guides on 'Construction', 'Shaping the land' and 'Scenic finish'. A guide to 'Buildings and structures' coupled with sections on building kits and 'adding life' helps complete the chapter.

Wiring the layout

Powering up. This chapter introduces wiring and starts with the importance of electrical safety. It continues with a simple explanation of electricity, types of circuit, signal and point operation and concludes with advice on using more than one controller and digital command control (DCC).

Taking stock

Getting your stock rolling. This chapter introduces ready-to-run models and locomotive kits and follows with advice on detailing including couplings, weathering and adding even more detail to your models.

System Requirements

The CD-Rom is designed to run on industry standard IBM PC and Apple MAC compatible computers. These are guidelines for the successful running of the software.

Minimum: PC Pentium II 300MHz, 64Mb RAM or 128Mb RAM, 200Mb Free Disk Space, 16Mb Graphics Card, 8 x CD-Rom, SoundBlaster 100 Compatible Card, Windows 98, 2000, Me, XP

Recommended: PC Pentium III 800MHz, 64Mb RAM or 128Mb RAM, 200Mb Free Disk Space, 32Mb Graphics Card, 16 x CD-Rom, SoundBlaster 128 Compatible Card, Windows 98, 2000, Me, XP

As is apparent throughout this book, Hornby has never been short of new ideas, and surprises even long-time modellers by the way they have in recent years pushed standards ever higher in OO (4mm) scale. The latest models are so perfectly detailed that they might have been mistaken for hand-made ‘museum showcase’ models as recently as only ten years ago.

One of the many ground breaking models is the delightful T9 4-4-0 light passenger locomotive of 1899, designed by Dugald Drummond, which was famous for many years with the London South Western Railway and its successors, the Southern Railway and BR Southern Region. One of them was for many years the Royal Train engine on Southern metals. This famous type breaks new ground for Hornby by being largely all-metal, exquisitely cast with lots of intricate detail which lends itself to metal production. The metal construction was chosen in this case because the graceful T9 was very small by modern standards and the all-metal approach was an effec-tive way of making it heavy enough to give a good performance.

The best selling Hornby OO locomotive of all time was the more modern ‘Schools’ class 4-4-0 express locomotive, designed by R.E.L. Maunsell and in service from 1930. Hornby produced their original model in the early 1980s, but the new version is an entirely new design with the latest standard of motor, detail, and finish. These new models do, of course, come in several alternative liveries, numbers, and detail variations. This ‘Schools’, along with the fine ‘King Arthur’ class, also by Maunsell, are accompanied by the superb range of Maunsell coaches which many consider the best ever ready-to-run coach models.

Figure 8.1. The passenger brake van C, a very distinctive type, is another model in the highly detailed Maunsell coach range.

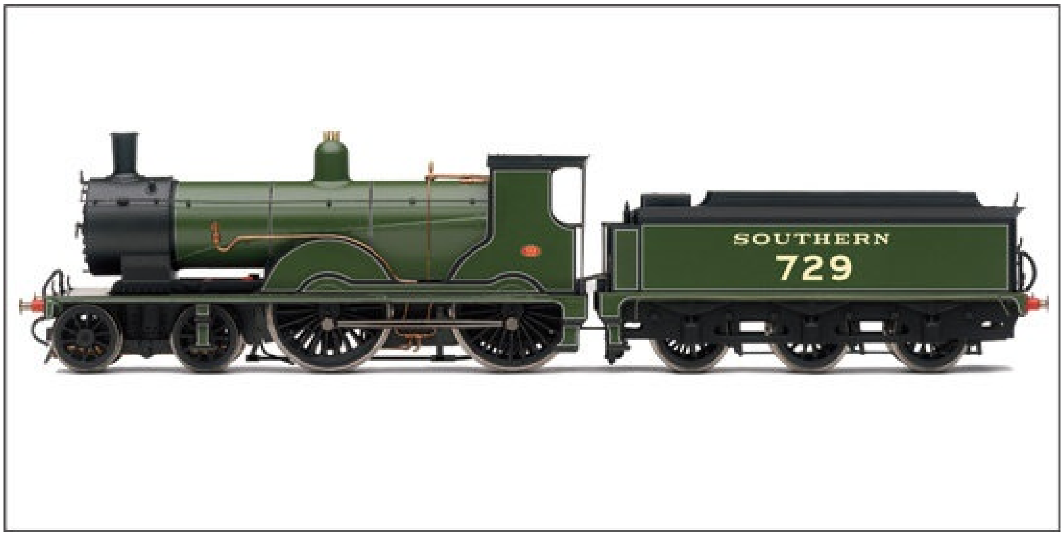

Figure 8.2. The classic T9 4-4-0 light express locomotive, nicknamed 'Greyhound' by steam rail enthusiasts, is the first Hornby model locomotive with a cast metal body.

New models are coming along all the time, of course, as the Hornby catalogue highlights each year. Diesel traction is never forgotten and recent additions are a completely new and re-tooled Class 143 HST and the popular Class 153 single unit railcar which is widely used across Britain on local services and are well suited to small layouts in model form.

Figure 8.3. A familiar sight on Britain's more lightly used lines is the single unit Class 153 diesel railcar, very neatly detailed and finished with full interiour fittings. This version is in Central Trains livery.

Figure 8.4. This all-3rd corridor coach is one of the superb series of Maunsell coaches which covers all variations and is produced in BR finish also.

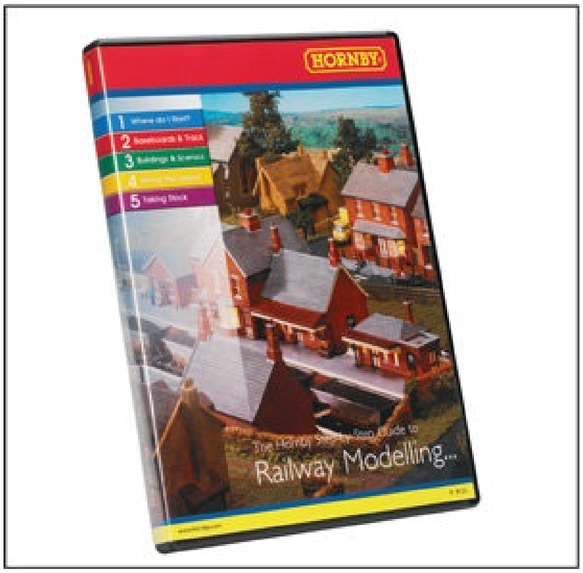

Figure 8.5. The Hornby step-by-step guide to railway modelling. An easy to use CD-ROM containing detailed instructions on how to create your model railway.


L N E R

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