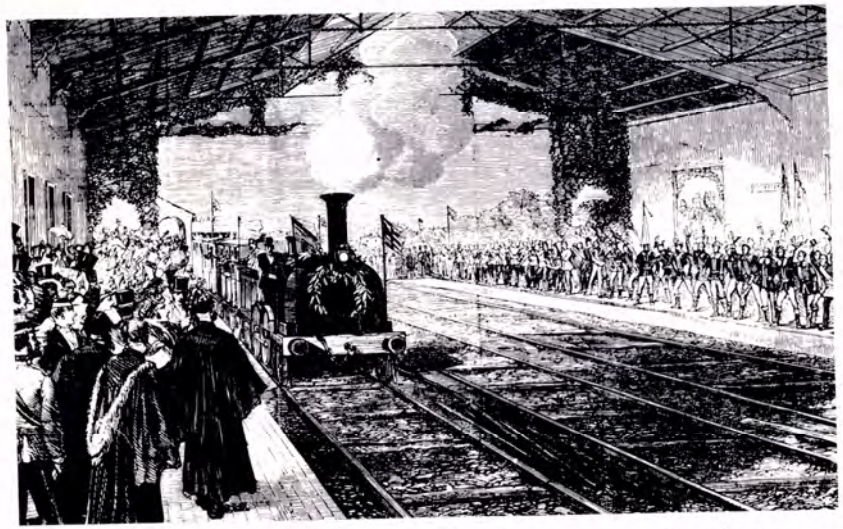
LIMA MODEL RAILWAYS 1979/80



BRITISH EDITION. OO SCALE, N GAUGE

THE FASCINATING



Until 1825 there were no railways in the modern sense. The highest speed man could attain was limited to that of the fastest horse.

Then suddenly the Railway Age was upon us, and in the span of one man's lifetime the world was criss-crossed by a network of 500,000 miles of rails, built faster than our modern motorways – and providing the fast and regular communications essential to a modern industrialised society.



THE COMING OF STEAM

The first steam locomotive to haul a load along a railway track was the work of a remarkable Englishman, Richard Trevithick. In 1804 his single-cylinder creation succeeded in moving twenty-five tons – a prodigious feat for the time.

Other experiments followed and in 1825 the first public railway to use steam locomotives, the Stockton and Darlington was opened.

Development was swift, and by the 1860s the railway map of Great Britain had assumed a shape that still forms a basis for the present system. While larger locos, the forerunners of 20th Century types, were beginning to come into service.

GREAT TRAINS OF THE STEAM AGE

In the early days of railways, steam reigned supreme. Over a long period, the powers of the steam locomotive were developed to a point which the pioneers can never have envisaged.

The 'Cornish Riviera Express', probably the Great Western Railway's most famous train was introduced in 1904, and reached its peak of elegance in the Twenties with the powerful 'King' class 4-6-0 locomotives hauling their distinctive chocolate and cream coaches. For many years this train held the record for the world's longest daily non-stop run – 225.7 miles from Paddington to Plymouth. An astonishing fact when the size of Great Britain is compared to that of other countries having extensive railways systems.

One of the most impressive mixed traffic locomotives of the Steam Age was the 'Hughes' 2-6-0, built for LMSR at Horwich and introduced in 1926. They became known as the "Horwich Crabs" because of their unusually high running plates (adopted later in many other loco designs) and valve gear.

These locomotives, designed by George Hughes C.M.E. remained in service through the war years until 1966. An example in this Class is now preserved at the National Railway Museum, York.

During the 1930s other new types of steam locomotives were designed and introduced, culminating in Gresley's 126 m.p.h. Mallard. However, these were the last achievements of steam and during the late '30s railways were turning to diesel and electric power to meet the new challenge.

DIESEL AND ELECTRIC – THE NEW SOURCES OF POWER

The reasons for the death of steam were partly economic and partly social.

Diesel and electric locomotives are more costly, but are available for work over much longer periods. A steam locomotive must visit the depot for attention every day. It takes a long time to reheat the boiler to raise a working pressure of steam. By contrast, a diesel loco can work twenty-four hours a day for a week or more. Its visits to the depot are shorter, and because diesel and electric locos can do more work, fewer are needed. Furthermore, higher average speeds are possible and more trains can be worked – with a smaller crew.

Today, the swing is to electrification as diesel begins to take second place and modernisation plans are being carried out all round the country's British Railways network.



Electricity has many advantages over diesel and steam. It is readily and instantly available can generate power from a smaller unit, and is fundamentally cleaner – an important consideration as we move into a pollution-fre age. The new electric locos, such as the powerf Class 87, which collects its power from the catenary system are a long way removed in

WORLD OF RAILWAYS

sophisticated techniques from their ancestors of the Steam Age.

While on the social side, the unavoidable dirt and grime connected with steam locomotive work of all kinds has become unacceptable today.



THE CHANGING FACE OF BRITAIN'S RAILWAYS

Amazing as it may seem, steam trains have not been seen in ordinary service on British Railways for over a decade. Even during the 23 years since the first diesel locomotives were adopted by British Railways and adapted for the 1955 modernisation plan, many classes have come and gone. Britain's railways are developing today at as fast a rate as ever they did.

The most powerful class built were the 'Deltic' Co-Co Diesels which work the principal expresses between Kings Cross, Leeds, Newcastle and Edinburgh. These famous trains were specially designed for high-speed service and were the first to be approved for 100 m.p.h. running on BR. Developed by English Electric to demonstrate the advantages of high horse power during the late 50s, the prototype Deltic is now preserved in the Science Museum in London.

The Class 33 locomotives are versatile workhorses. They cover freight and passenger workings throughout the region and some of the class are fitted for push-pull working in conjunction with SR multiple-unit stock.

Electrified lines have their variety too, the Southern Region with its network of third rail services presents a vastly different picture from the West Coast main line – electrified on the high voltage ac overhead catenary system, and with the latest Class 87 heading Inter City services at speeds up to 100 m.p.h. While some newly electrified suburban routes from London are a mixture of both systems.

A LOOK TO THE FUTURE

Since their very beginnings, the railways have fascinated enthusiasts the world over. The magic of steel wheels on steel rails still holds good, and today's upsurge in mass urban traffic suggests an even brighter future.

Speed appears to be a crucial factor, for experience suggests that a one per cent increase in traffic can be gained from each additional extra mile an hour of speed in passenger services. The introduction of the streamlined electric trains capable of 125 m.p.h. on existing track, and the 150 m.p.h. Advanced Passenger Train, will bring new and advanced technology to British Rail. While British engineers are already working on latest developments from around the world – the 75 ft. Japanese electric 'Bullet Train' travelling at a top speed of 130 m.p.h. is a good example. Hovertrains, remote guiding beams, magnetic force and nuclear power are all under scrutiny.

But however the railways develop, they are certain to provide just as much interest and excitement in the future as they have in the past. A prospect that all railway modellers can look forward to with keen anticipation.

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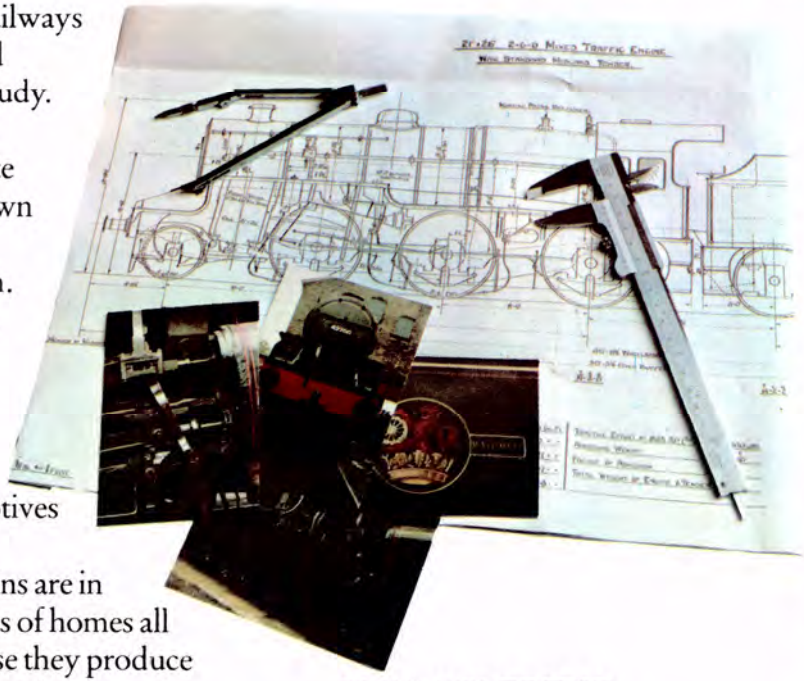
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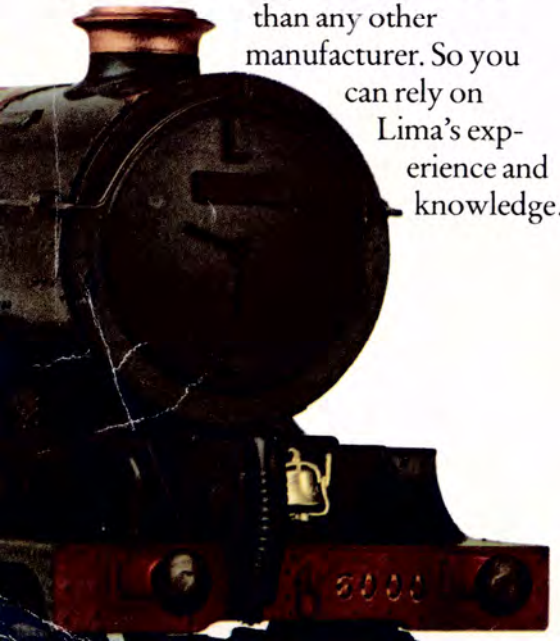
LIMA BRING YOU THE FASCINAT

The history of railways throughout the world makes a fascinating study. But how much more fascinating to re-create this history in your own home, with a Lima model railway system.

All the romance of the railways is yours in miniature – with the incredible range of Lima rolling stock, locomotives and accessories.



In fact, Lima trains are in use in literally millions of homes all over the world because they produce more model railways and accessories than any other manufacturer. So you can rely on Lima's experience and knowledge.



LIMA EXPERTISE

When you buy Lima you buy expertise.

Technical expertise, ensuring that your trains will always run on time – year after year.

Modelling expertise, so that every tiny detail is right, and your model railway really comes alive.

Plus an unrivalled choice of rolling stock and accessories, in three different scales. So your railway system can grow and develop into a lifetime hobby.

But perhaps most important, Lima expertise gives you the kind of value for money that makes your model railway a lasting investment.

LIMA CHOICE

When you're buying a model railway, it's important to choose the right gauge.

The gauge that is right for you, and for the space you have available in your home.

With Lima the choice is easy. Of all the major manufacturers, Lima is the only one which can offer you all three important gauges.



'OO' scale – the favourite with modellers and Lima offer a vast new range of British outline stock, all with British Standard Couplings.

'N' gauge – the mini-gauge. Superbly engineered micro models, ideal for those with limited space to set up their layout.

'O' gauge – maxi-trains. The giant size classic gauge. Uniquely effective out of doors. (There is a separate Lima catalogue for the 'O' gauge enthusiast).

LIMA REALISM

If a thing's worth doing it's worth doing really well – that's the Lima philosophy. So every new model is painstakingly researched, with no time or effort spared to get the right result.



ING WORLD OF MODEL RAILWAYS

Every loco and piece of rolling stock is designed from the original blueprints and photographs of the



real thing.

In close consultation with railway authorities, museums and historians throughout the world.

From the finely detailed scale drawings, skilled toolmakers prepare a hand-finished mould of hard steel. Then the production models are formed under pressure in modern high-impact polystyrenes.

Spray painting is used to colour and protect, while highly advanced machinery applies 4-colour transfers to all sides of the model simultaneously.

Finally, the body is checked, and each model is finished off by hand.

DOUBLE CHECKED TO STAND THE TEST OF TIME

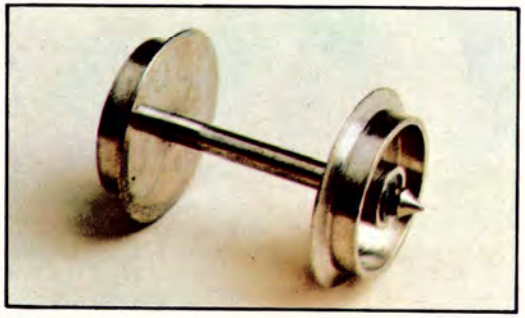
Before any Lima model leaves the factory it is individually tested to make sure that everything is perfect.

Then each loco performs its first real job of work – hauling a big payload of rolling stock under the eagle eyes of the testers.

LIMA ROLLING STOCK RUNS SMOOTHLY

Lima axles are made from toughened metal and have conical points to lessen friction and to give extra smooth running.

While each wheel is insulated from the axle to prevent the risk of short circuits.



A PIECE OF HISTORY IN YOUR HOME

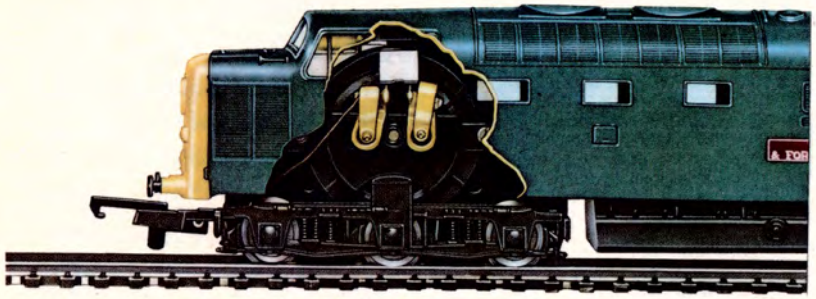
Lima models are made with the same love and care that was lavished on real life originals on which they are based – and it shows. Enabling you to re-create, in your own home, the great railways of the past and present, with a vividness that enchants both young and old alike.

With Lima, railway history really comes alive.

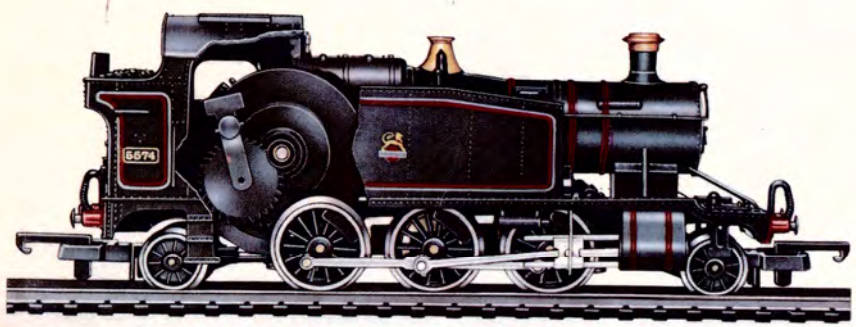
Whilst every attempt is made to ensure the complete accuracy of all items in the Lima range the manufacturers have altered/amended designs, specifications, materials, etc., as necessary, to enable them to produce such models by current production methods.



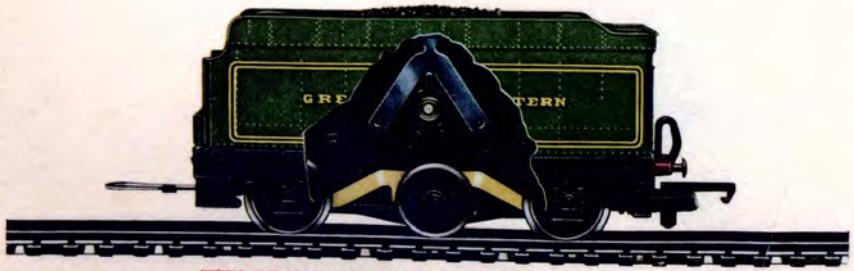
LIMA HAVE THE POWER



DIESEL DRIVE MECHANISM



TANK LOCO DRIVE MECHANISM



TENDER DRIVE MECHANISM



LOCOMOTIVES

The locomotive is the single most important factor in a model railway system.

It contains the power to haul big payloads efficiently through curve and straight to make your layout really come alive.

Every Lima loco is powered by a well proven 3 pole electric motor. This tough reliable unit runs at between 4 and 12 volts DC from either the battery box controller supplied in all Lima Train Sets or a Lima power unit/transformer (see page 45) which has variable speed control and forward and reverse action.

The motor has two permanent magnets, and there are 400 windings on each pole. Because the cogs and gears are made from self-lubricating plastic – no oil is necessary. The gear rotor axle rotates inside a bronze lining which is also self-lubricating and maintenance free.

The care that Lima lavish on all their products is especially apparent in the assembly of these famous motors which were first made in 1946 and have been continuously improved upon since.

ROUTINE SERVICING

Lima model railways incorporate the latest advances in precision engineering. So a little regular care is all that is necessary to ensure reliable, trouble-free running.

The tracks should be kept clean and dust-free by wiping with a soft cloth moistened with a little methylated spirit.

Be sure to check that the fish plates are correctly aligned and making good contact.

The drive wheels of the locomotives should be cleaned periodically by using a light abrasive paper (excluding wheels fitted with traction tyres).

Do not oil the carbon brush mounts, contacts, motor body or drive gears. (These should be kept clean by using a cloth moistened with carbon tetrachloride).

If you observe these few simple rules your Lima model railway will give you many years of trouble-free service.

OO SCALE

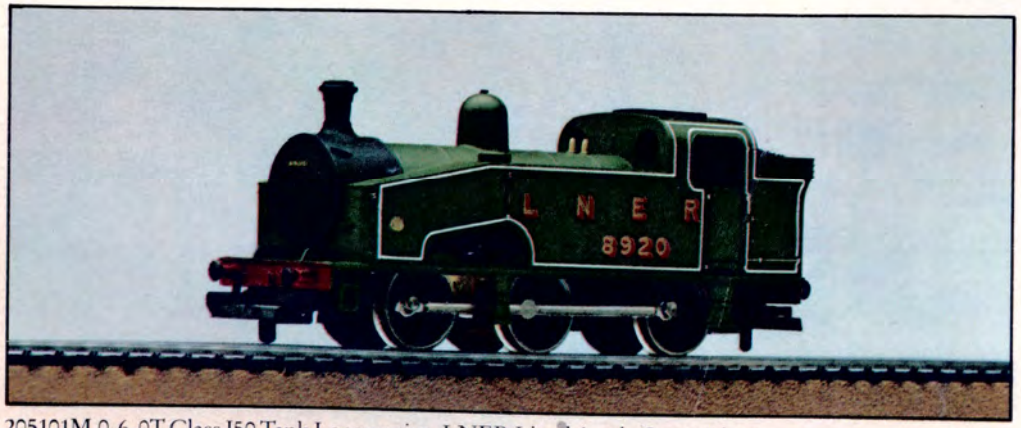
'OO' has become the most popular and widely used scale in the U.K., and Lima offers an enormous range of locomotives and rolling stock in this scale. The gauge (between the rails) is 16.5mm and the general dimensions are to 'OO' scale (4mm:1ft.)

Most other countries use the 'HO' scale (3.5mm:1ft) and certain items in the Lima range are based on this International outline. These wagons & locos are larger in real life than their British counterparts, but since their buffer beam heights are the same, the two systems are compatible when mixed. The track gauge for both 'OO' and 'HO' is 16.5mm.

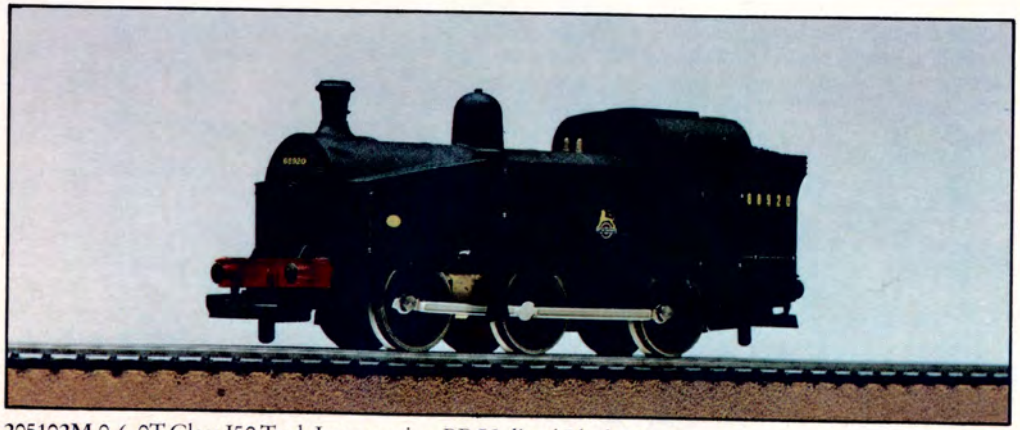
Items marked NEW are not necessarily readily available at this time.



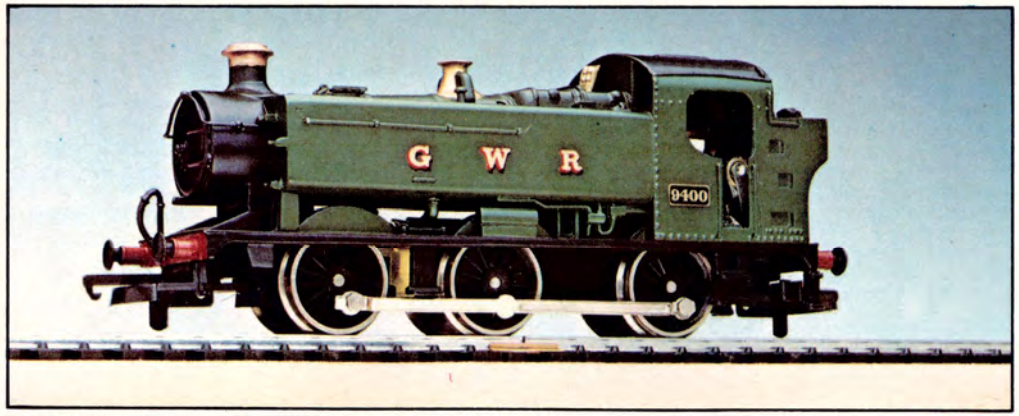
205101/20-6-0 Pannier Tanks were considered by the LNER to be the most suitable type of locomotive for short haul and shunting duties. The distinctive lines of the J.50 Class were designed by Sir Nigel Gresley in 1914 based on earlier saddle tanks produced by Patrick Stirling in 1874. Lima's model is of engine No. 8920 built at Doncaster works in 1924, re-numbered 68920 by B.R. in 1948, was finally withdrawn from service in July 1961.



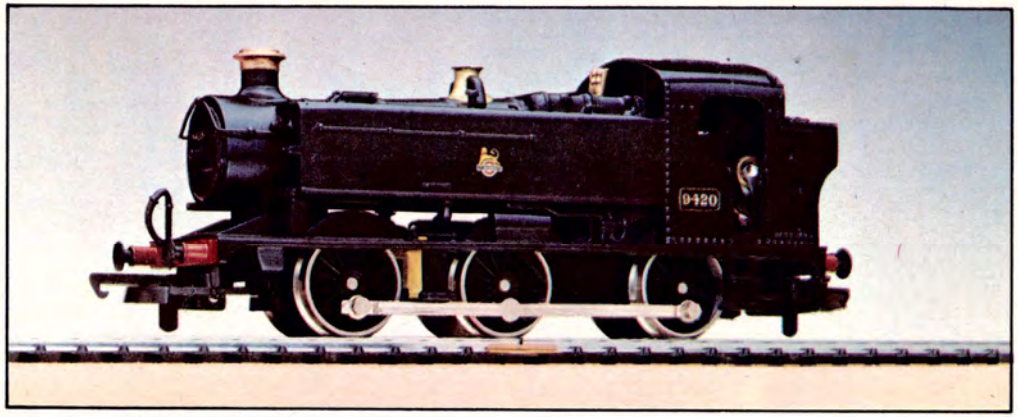
205101M 0-6-0T Class J50 Tank Locomotive. LNER Lined Apple Green Livery.



205102M 0-6-0T Class J50 Tank Locomotive. BR Unlined Black Livery.



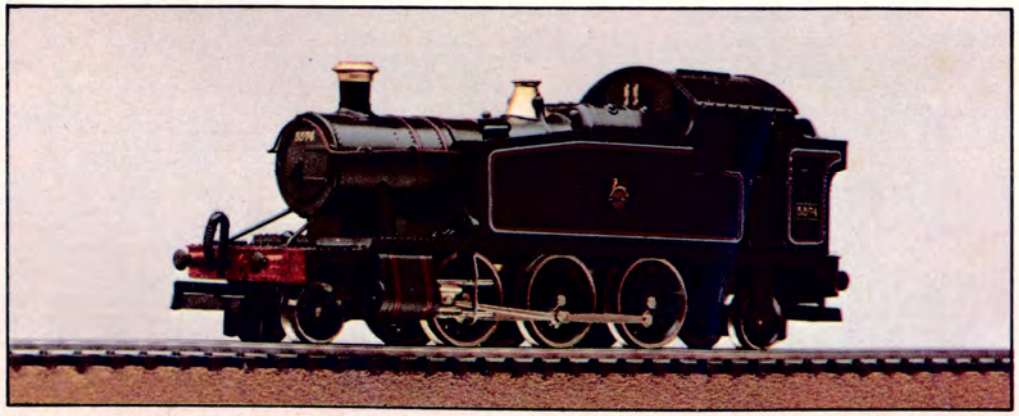
205117M 0-6-0T 94 xx Class Tank Locomotive Original GWR Livery. NEW



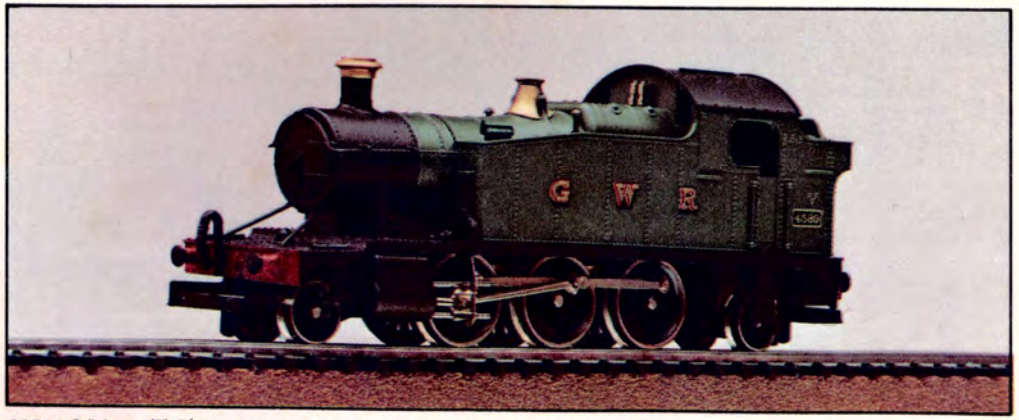
205118M 0-6-0T 94 xx Class Tank Locomotive BR Unlined Black Livery. NEW

205117/8 Last in the line of pannier tanks produced for the G.W.R. at Swindon the 94XX class was intended for heavy shunting work and passenger traffic. Designed by F. W. Hawksworth and built in 1947 engine No. 9400 had all-welded tanks and an incredible coal capacity of 3½ tons. It was withdrawn from service in 1959 and is now preserved at the Great Western Railway Museum at Swindon.

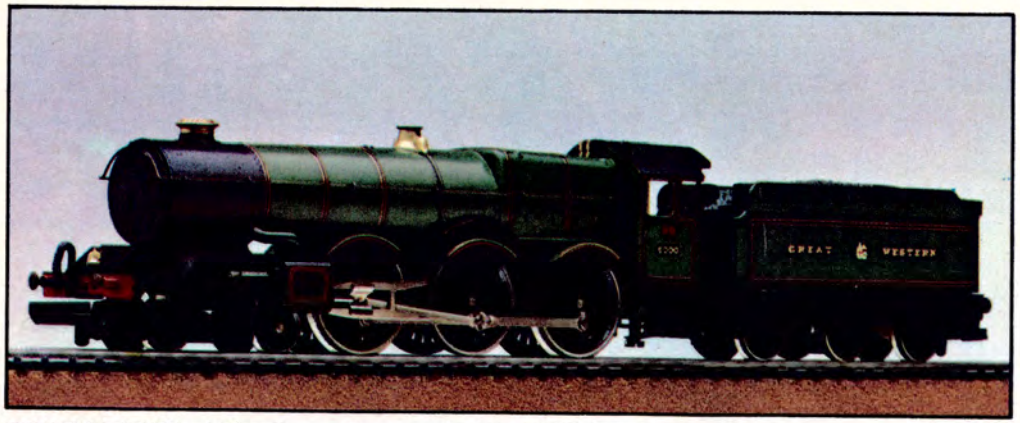
205110/1 One of G.W.R.'s Standard Tank locomotives for cross country and branch line passenger works. The 45 xx Class was designed by G.J. Churchward and 175 were built at Swindon Works between 1906-1929. These small Prairie tanks weighed 57 tons, produced a pressure of 200 lbs and had tractive effort of 21250 lbs superheated.



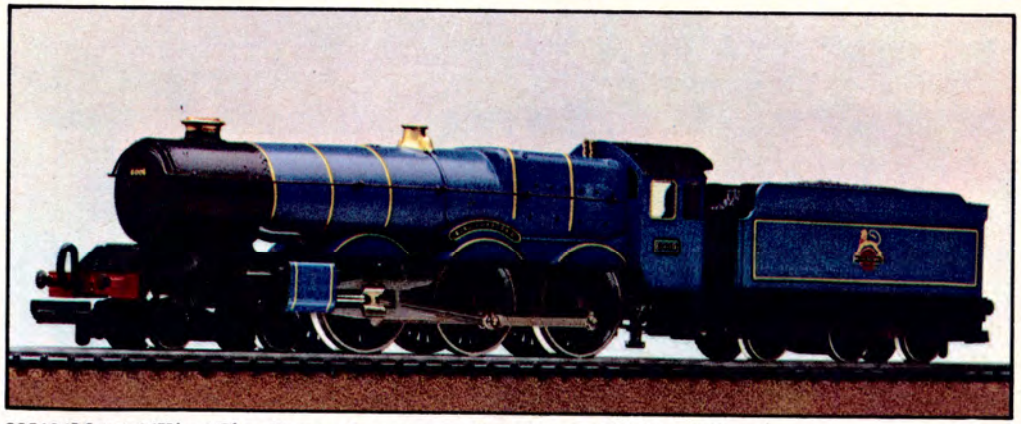
205110M 2-6-2T Class 45 xx Prairie Tank Loco. BR Lined Black Livery.



205111M 2-6-2T Class 45 xx GWR Prairie Tank Locomotive in Original Livery.



205103M 4-6-0 'King' Class Express Locomotive. No. 6000 "King George V" in Lined GWR Green Livery.

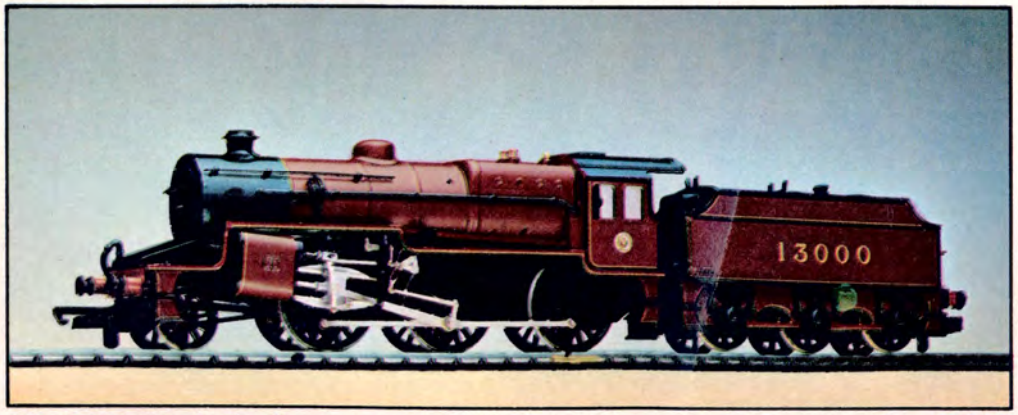


205104M 4-6-0 'King' Class Express Locomotive Experimental BR Lined Blue Livery No. 6009 'King Charles II.'

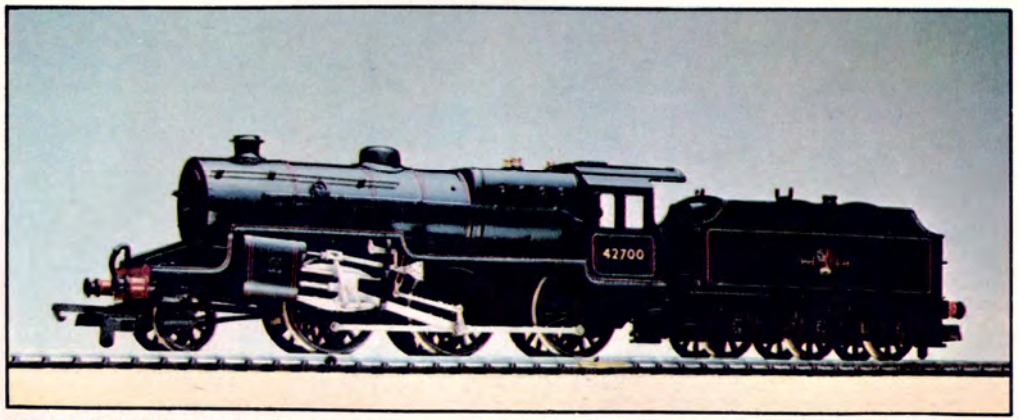
205103/4 Possibly the most famous of all G.W.R. locomotives, these magnificent express passenger engines were built by C.B. Collett at Swindon and introduced in 1927. The original No. 6000 King George V spent some time in the United States where its unusual bell was fitted. Withdrawn for preservation in 1962 this loco can be seen running over B.R. approved routes during its periodical steam excursions.



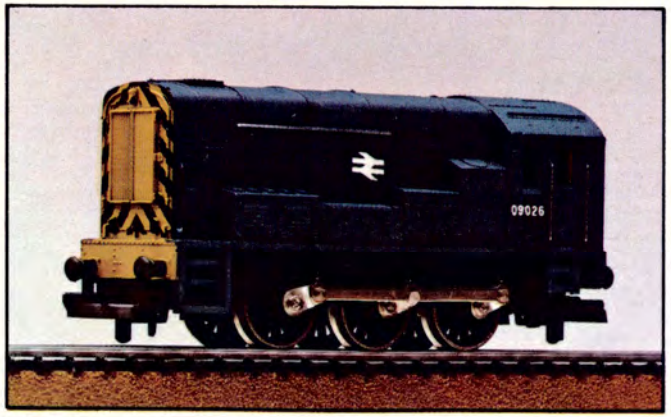
205119/20 These most impressive mixed traffic locomotives were introduced in 1926 and were designed by George Hughes C.M.E. Over 240 were built at Horwich and the design proved most successful. Their somewhat unusual valve gear and high running plate caused railmen to affectionately nickname them "Horwich Crabs." The angling of the cylinders was necessary to keep dimensions within the Midland loading gauge.



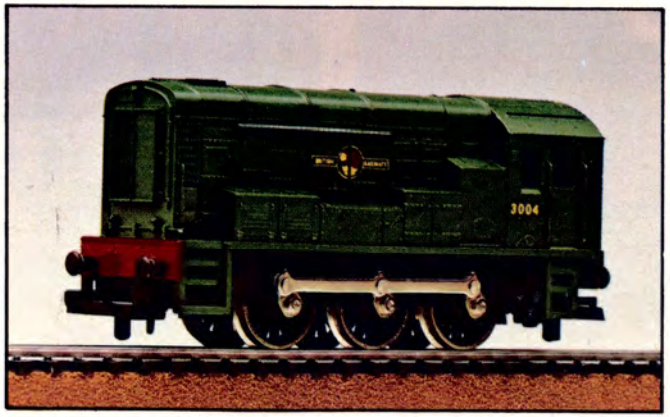
205119M 2-6-0 'Crab' Class Express Locomotive LMS. Lined Maroon Livery. NEW



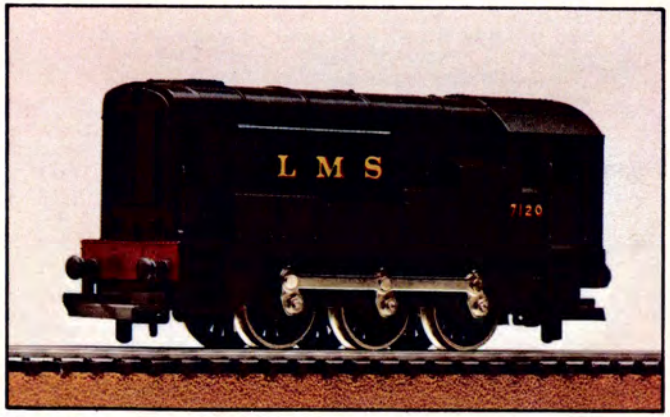
205120M 2-6-0 'Crab' Class Express Locomotive BR. Lined Black Livery. NEW



205107M 0-6-0 Class 09 350 BHP Diesel Shunter. BR Livery.



205108M 0-6-0 Class 09 350 BHP Diesel Shunter. Early BR Livery.



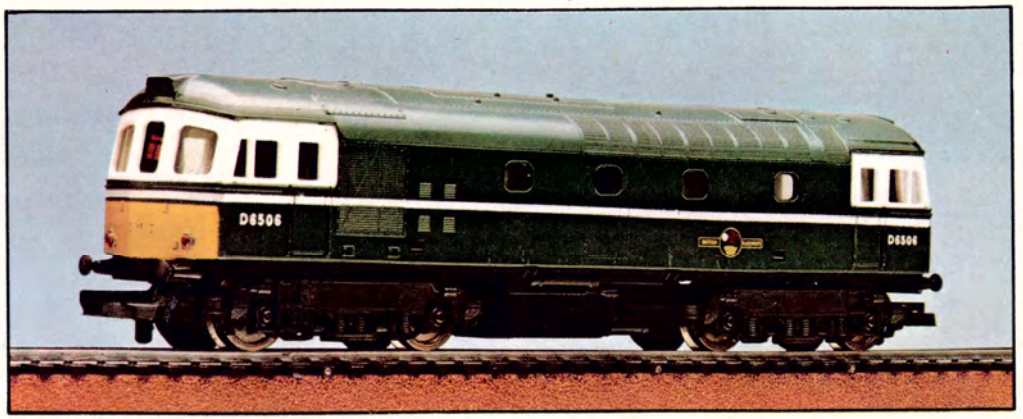
205109M 0-6-0 Class 09 350 BHP Diesel Shunter. LMS Livery.

205107/9 Manufactured by the English Electric Company at Derby works in 1945 these diesel electric units formed the basis for many more shunters built by various regions of B.R. Of the 120 built most are still working today on a variety of duties. These engines produce a tractive effort of 35,000 lbs, a vast improvement over the 10,500 lbs effort of the original 132 h.p. units built by the Hanslet Engine Company in 1932.





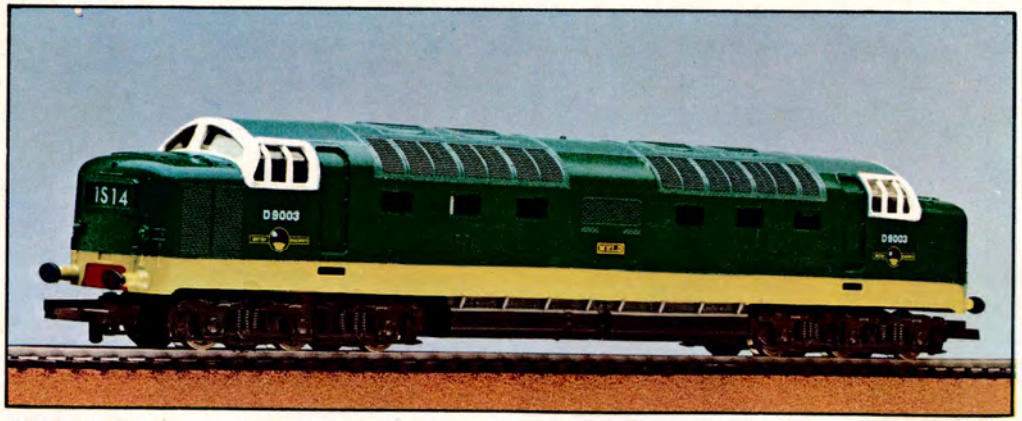
205114M BR Class 33 Bo-Bo Diesel Locomotive in BR Livery of the late 1960's.



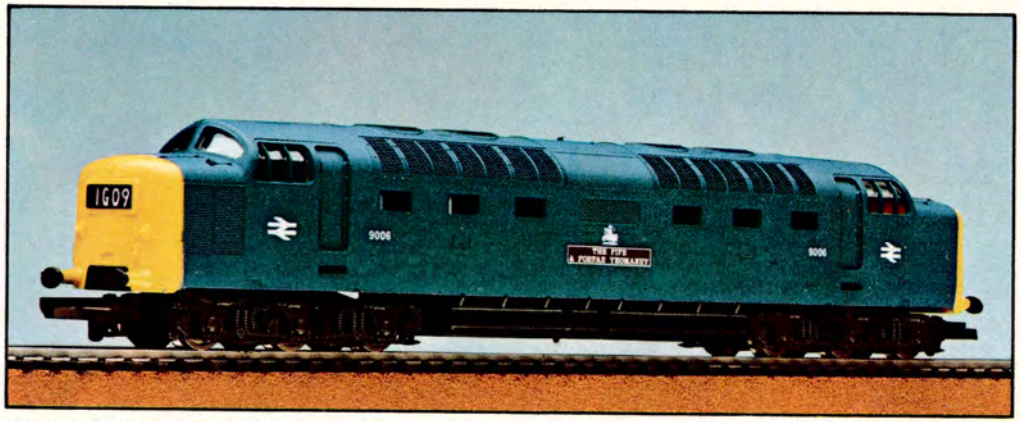
205115M BR Class 33 Bo-Bo Diesel Locomotive in original Livery.

205114/5 Based on the earlier Class 26 these diesel electric Bo-Bo's were manufactured by the Birmingham Carriage Company, and in 1960 the first engines were allocated to the Southern Region. These medium sized locomotives weigh 73 tons, have a fuel capacity of 800 galls. and reach a maximum speed of 80 m.p.h.





205105M BR Class 55 'Deltic' Co-Co Diesel Loco. Early Livery. No. D9003 "Meld".

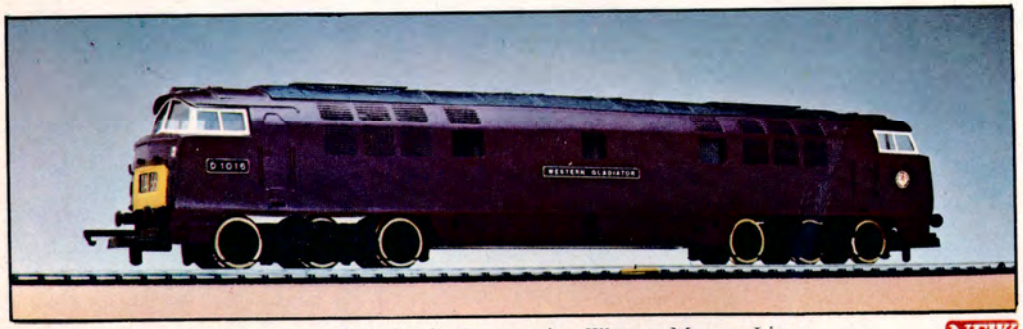


205106M BR Class 55 'Deltic' Co-Co Diesel Locomotive. No. 9006 "The Fife and Forfar Yeomanary".

205105/6 Considered by many to be the "King" of diesels the Class 55 "Deltic" was introduced for main line working on the Eastern Region in 1961. Currently running between Kings Cross and Edinburgh these engines carry the name and insignia of famous Scottish Regiments such at "The Fyfe and Forfar Yeomanry." Manufactured by the English Electric Company these most impressive locomotives are capable of a maximum speed of 100 m.p.h.

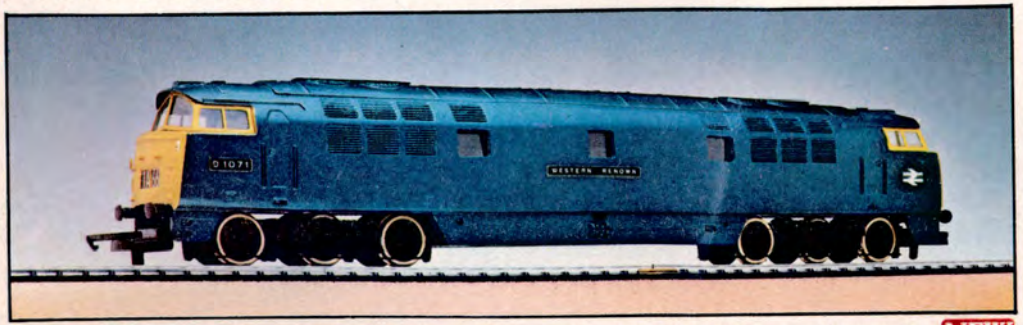




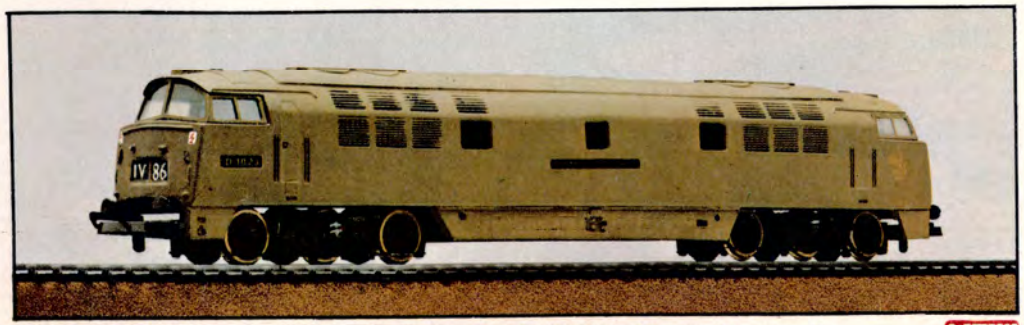


205121M Class 52 'Western' Diesel Hydraulic Locomotive. Western Maroon Livery. No. D1016 "Western Gladiator." NEW

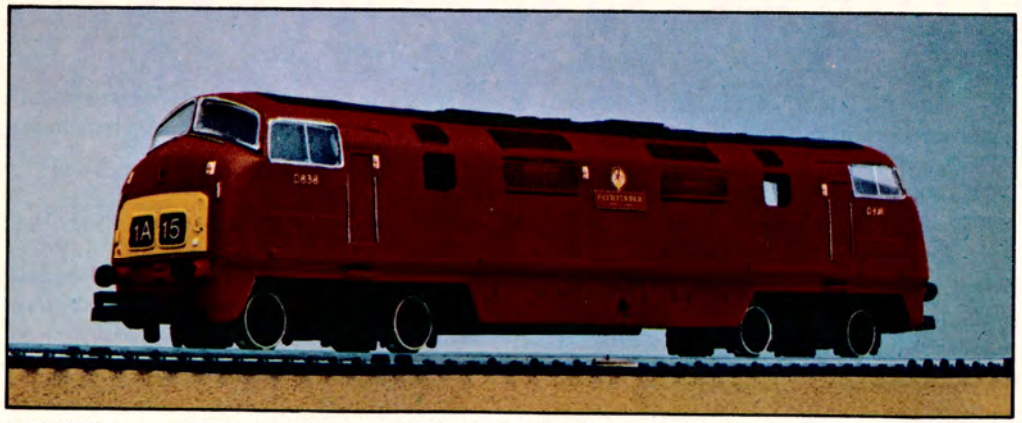
205121/2 Designed by the British Transport Commission and built at B.R.'s workshops at Swindon and Crewe the Class 52 "Western" diesel-hydraulic entered service in 1961. Based on the earlier Class 42 "Warships" they were given a re-styled body design and their two Bristol Siddeley Maybach engines were up-rated to 1350 b.h.p. to give the greater tractive effort felt necessary for the then increasing passenger traffic. These locomotives have now been withdrawn from service.



205122M BR Class 52 'Western' Diesel Hydraulic Locomotive. No. D1071 "Western Renown". NEW



205126 Class 52 "Western" diesel-hydraulic Co-Co No. D.1071 "Western Renown." NEW

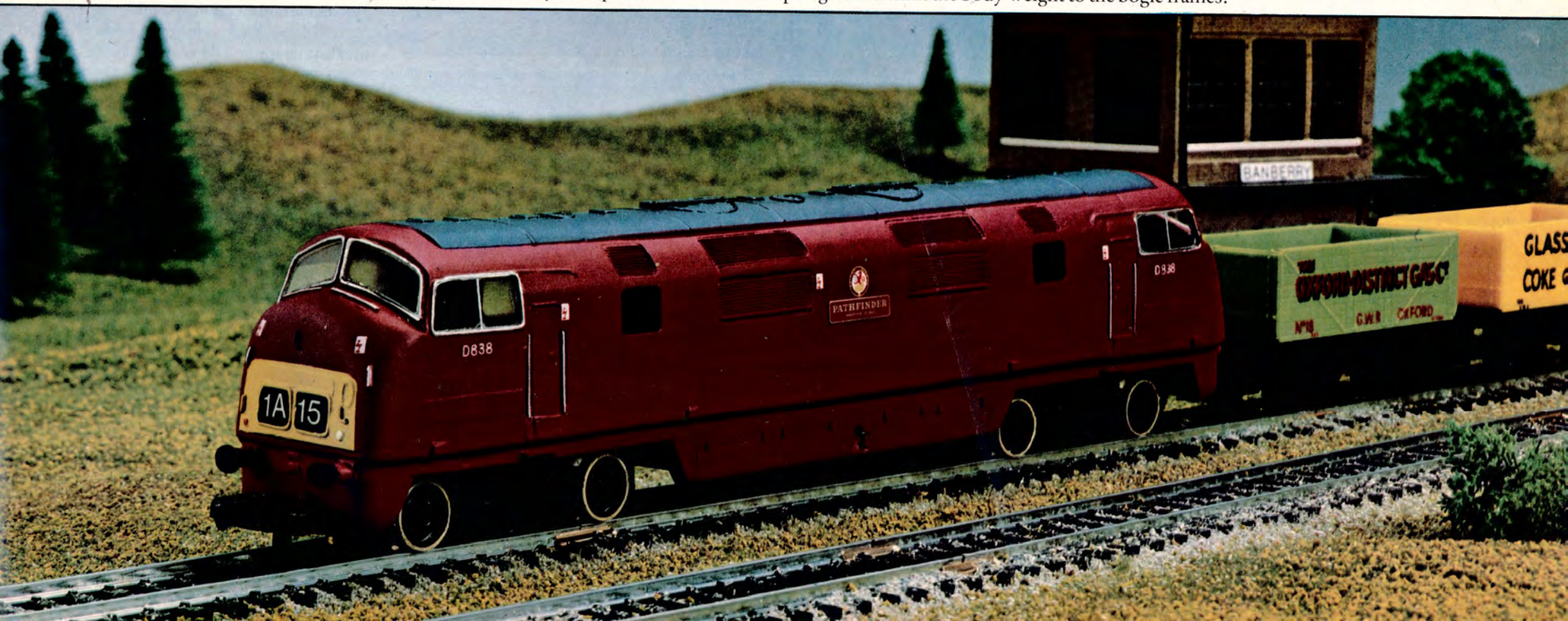


205128 Class 42/43 "Warship" diesel-hydraulic Bo-Bo No. D.834 "Pathfinder." NEW



205127 Class 42/43 "Warship" diesel-hydraulic Bo-Bo No. 801 "Vanguard." NEW

205127/8 Built at the Swindon works between 1958 and 1960 the 'Warship' Class 42/43 diesel-hydraulic Bo-Bo's were British Rail's first really successful diesels. Powered by two Bristol-Siddeley Maybach MD650 engines producing 2200 b.h.p. with tractive effort of around 52,000 lbs, they were capable of speeds up to 90 m.p.h. An unusual feature is their bogies which are without axle-boxes, bolsters or central pivots and they incorporate laminated coil springs to transmit the body weight to the bogie frames.



CLASS 87 ELECTRIC LOCOMOTIVE & CATENARY SYSTEM



205125 BR Class 87 Electric Locomotive No. 87005, City of London. Suitable for running with or without the Catenary system.

British Rail's latest design of overhead electric locomotives, the Class 87 Bo-Bo's were introduced in 1973 and were based on the previous Class 86/1.

Built by B.R. their motive power is derived from four frame-mounted GEC 1250 h.p. traction motors producing a maximum speed of 100 m.p.h.

Based mainly on the west coast main line these advanced, pollution-free locomotives are the most sophisticated in operation today (with the possible exception of the High Speed diesel and the APT electric, which is only yet in prototype form).

THE CATENARY SYSTEM

The Catenary system can quickly turn an ordinary layout into an exciting system because the Catenary itself enhances the scenery and overall appearance. Many modellers use the Catenary purely as a scenic accessory without electric current and this is made possible by the fact that Lima have taken great care to produce Catenary accessories and parts of supreme quality and style.

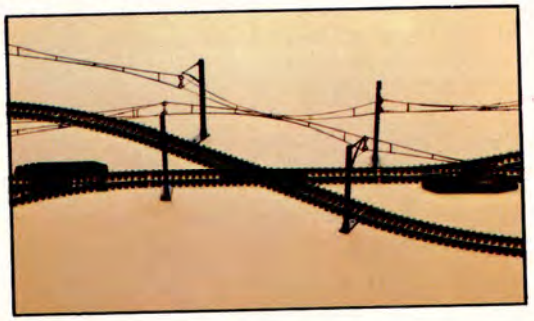
THE ASSEMBLY OF THE CATENARY

The Lima conductor wire connected to the Catenary is made from copper-covered steel, 0.7mm thick and the Catenary supports are specially produced to fit with each type of track unit, straight, curved, short or long. These support posts are designed to fit at the junctions of the track units.

Lima produce three different types of Catenary support post as follows:–

602950 – with short support brackets
602951 – with long support brackets
602952 – with electrical terminals

All the posts must be arranged on the same side of the track and if, for example, they are located on the outside of the track they must be of the short support type in order to maintain a taut overhead wire.





In Figs. A and B we illustrate the use of the Catenary at points and crossings, and in Figure B we show the use of various posts through a long stretch of track and curves which include points and crossings.

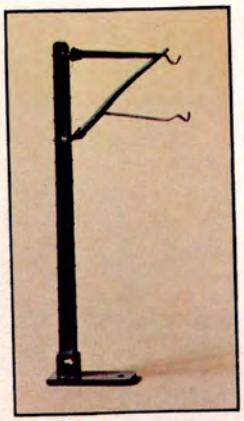
ELECTRIFICATION OF THE CATENARY

The Catenary is the system used to support overhead wires which carry one pole of the electric current to the locomotive (the other pole being supplied through the track). The overhead wires are supported by a series of insulated posts along the sides of the track and the current passes from the overhead wires to the locomotive through a 'Pantograph' housed on top of the locomotive.

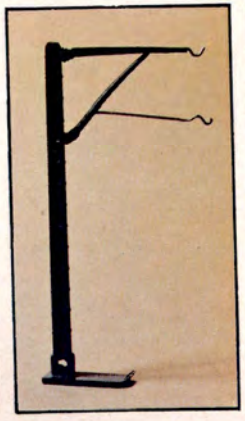
The basis of the system is the same principle as that used in real life railways today, and is particularly useful where two locomotives are to run on the same section of track.

To ensure good electrical contact between the Pantograph and the overhead wires the Catenary is constructed so that the wires are always exactly the same height from the track. In addition, the posts are placed along the track with alternating long and short supports so that the Pantograph zig-zags as the locomotive travels, thus ensuring good contact and avoiding excessive wear at any one point in the Pantograph conductor.

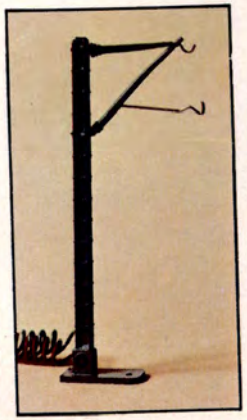
When two locos are used on the same track, one of the locos, fitted with a Pantograph can collect its current from one rail and the overhead wires, whilst the other loco will collect its current from the track.



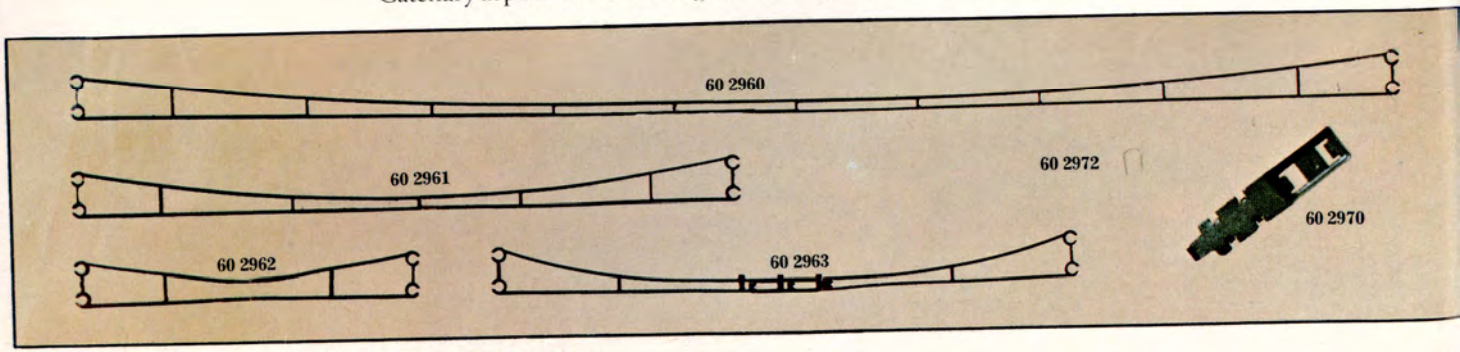
602950



602951



602952

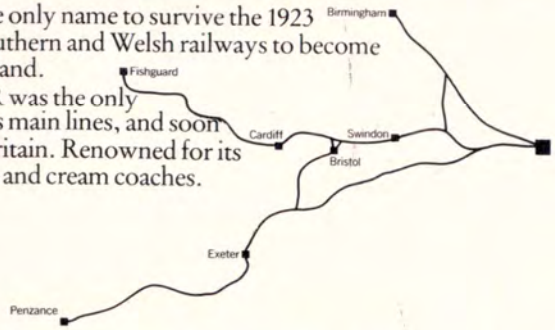


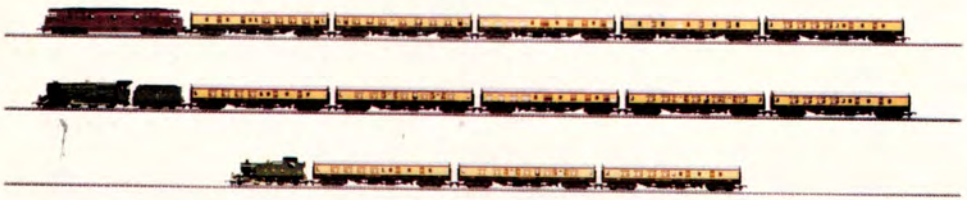
GWR COACHES

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The Great Western Railway was the only name to survive the 1923 Railways Act. It combined with the Southern and Welsh railways to become responsible for the western part of England.

With 3,700 miles of track, the GWR was the only line to install automatic control on all its main lines, and soon became known as the safest region in Britain. Renowned for its famous dark green locos, and chocolate and cream coaches.



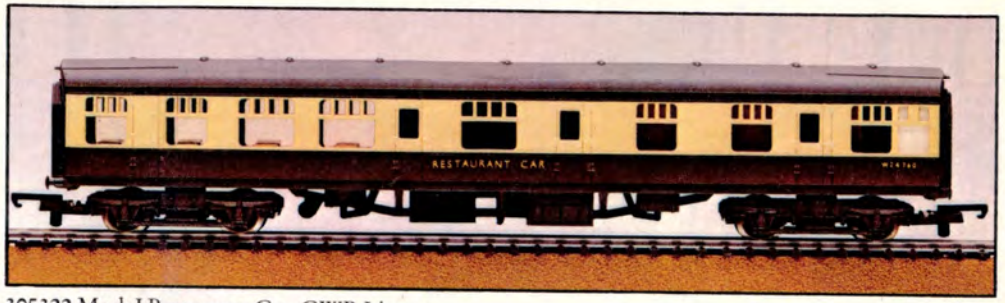




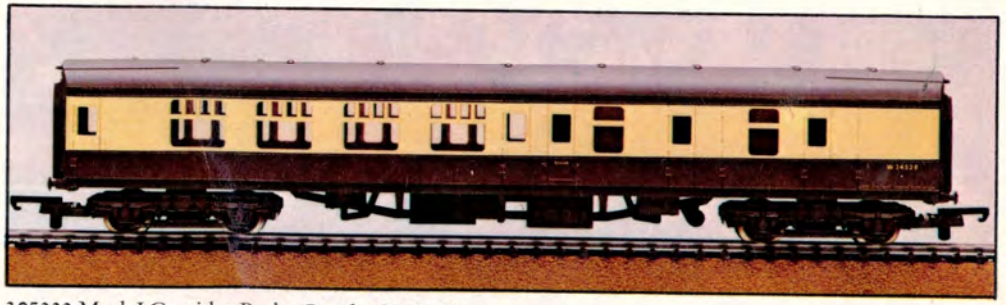
Bristol Temple Meads



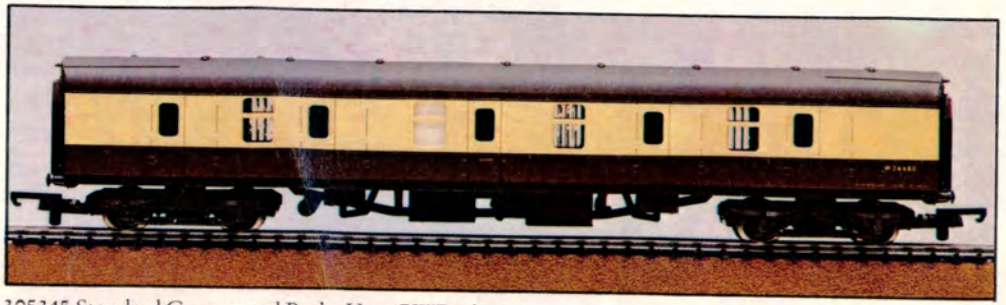
305313 Mark I Corridor Composite Coach. GWR Livery.



305322 Mark I Restaurant Car. GWR Livery.



305333 Mark I Corridor Brake Coach. GWR Livery.



305345 Standard Gangwayed Brake Van. GWR Livery.

INTER CITY COACHES

The name Inter-City was first used in 1951 when a train was named "The Inter-City" for the Festival of Britain.

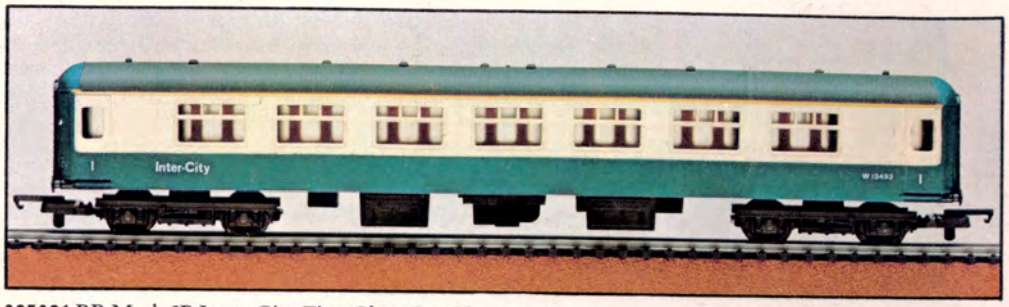
In 1963 the name was used again in an advertising campaign and the concept of presenting the Inter-City service began to take shape. In 1965 the first campaign was launched to present Inter-City on a national basis and the service now generates more than 8,400 million passenger miles per year.

The latest Inter-City coach design (the Mk III) in its famous blue/grey livery was introduced in 1975 – with improved bogies for 125 mph running, power operated internal doors, more seats without extra weight (for better economy), tinted double glazed windows, and improved sound insulation.

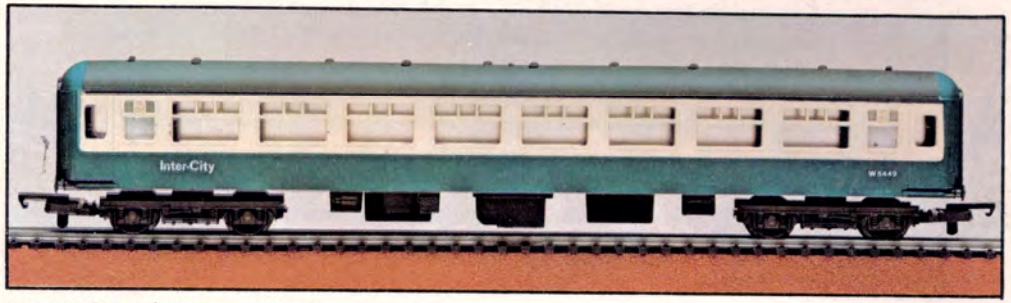
British Rail is the only European railway to provide air-conditioned coaches as standard (on its Inter-City service) without extra charge to the passenger.



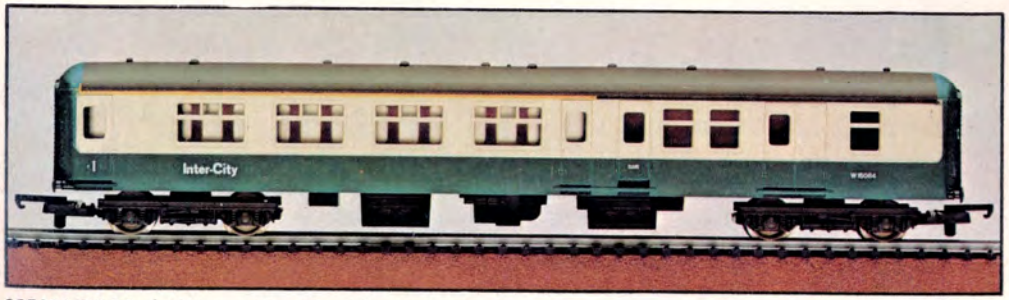
Waterloo Station



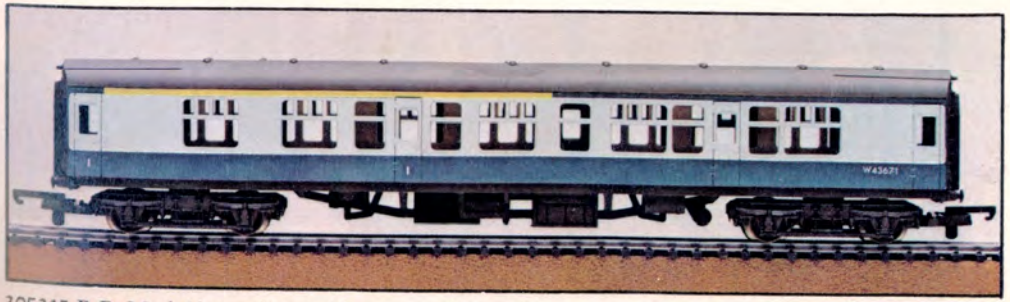
305301 BR Mark 2B Inter-City First Class Corridor Coach.



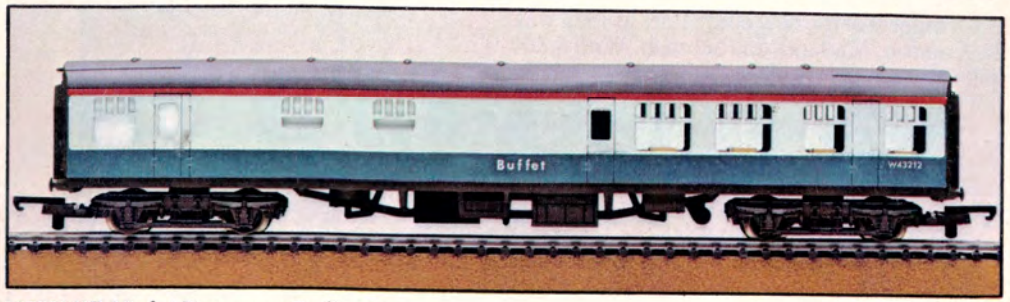
305302 BR Mark 2B Inter-City Open Coach.



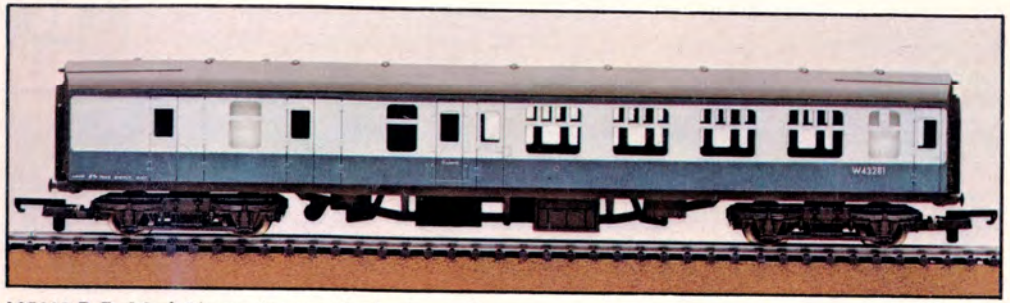
305303 BR Mark 2B Inter-City Corridor Brake Coach.



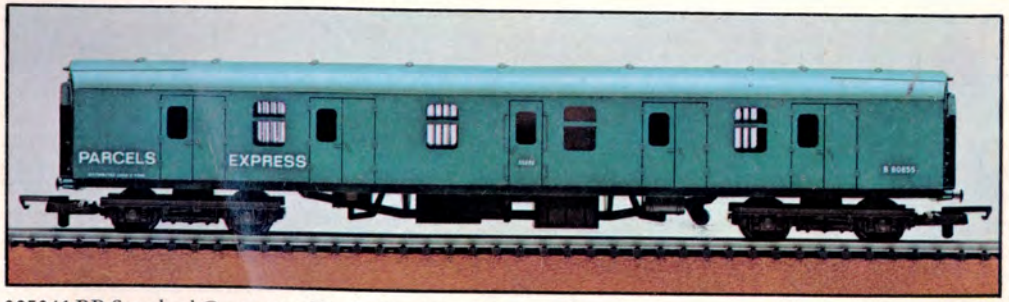
305315 B.R. Mark I inter-city corridor composite coach.



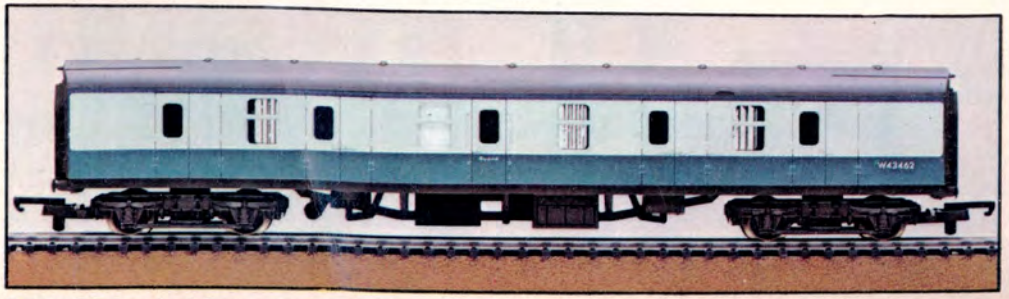
305321 BR Mark 1 Restaurant/Buffet Car.



305335 B.R. Mark I inter-city corridor brake coach.



305341 BR Standard Gangwayed Brake Van 'Parcel Express.'



305343 BR Standard Gangwayed Brake Van.

LMS COACHES

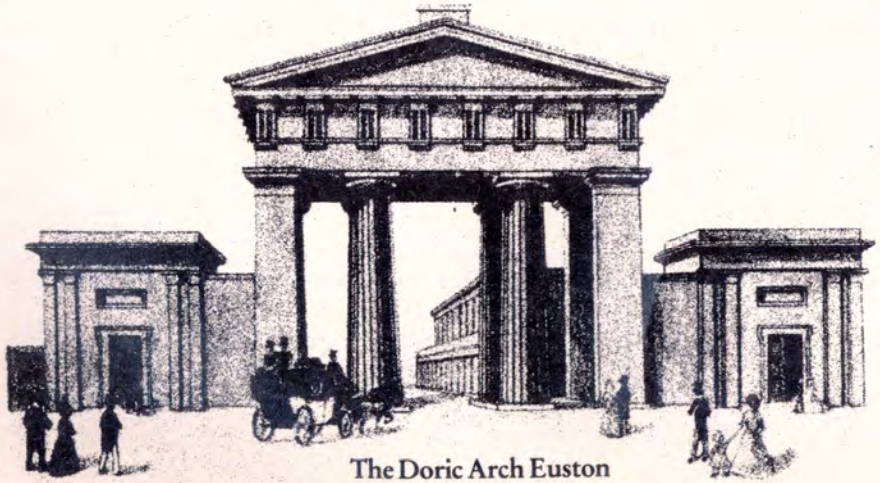
Biggest of the new companies in 1923 was the London, Midland, and Scottish. With 7,800 miles of track, it served the Midlands, North West and much of Scotland.

With its rolling stock in rich maroon livery, the L.M.S. led other companies in the adaptation of diesel locomotives for shunting, and in mass production of rolling stock.

Just before Nationalisation, the L.M.S. ordered two progenitors of the best British Railway diesels, the Class 40. And like its rival the L.N.E.R. it gained much publicity from its streamlined locomotives and trains.







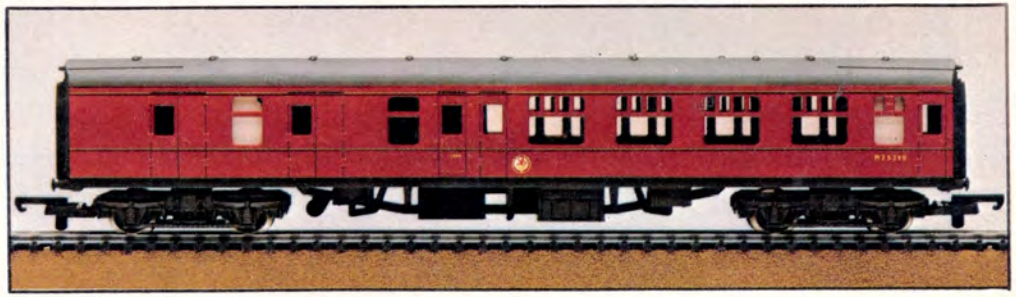
The Doric Arch Euston



305312 BR Mk I Corridor Composite Coach LMS Maroon Livery.



305323 Mark I Dining Car LMS Maroon Livery.



305332 BR Mk I Corridor Brake Coach LMS Maroon Livery.



305342 Standard Gangwayed Brake Van LMS Maroon Livery.

EARLY BR COACHES

After the end of the Second World War the railways were reorganised, but this time not as private companies. On January 1st 1948 nationalisation came, and British Railways was born.

The new structure was divided into six regions. The Southern and Western regions being the old Southern Railway and the Great Western Railway; the London Midland Region corresponded to the LMS in England; the Eastern and North Eastern Regions ran on the former LNER lines in England; and the Scottish Region took over the LMS and LNER lines in Scotland.

At first the new railways changed little, except in terms of liveries. Under the old system each company had its own colours. Now express locos were green, with a few exceptions in blue that were soon changed. And coaches were painted red and cream, popularly known as "blood and custard."

Since then, colour schemes have been changed on several occasions.





Curzon Street Station Birmingham



305331 BR Mk I Corridor Brake Coach. Crimson and Cream Livery.



305325 B.R. Mark I restaurant car.



305311 Mk I Corridor Composite Coach in Crimson and Cream Livery.

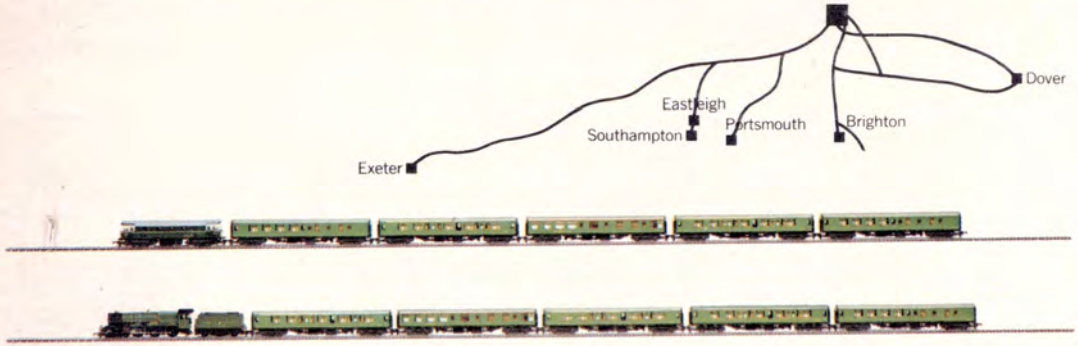


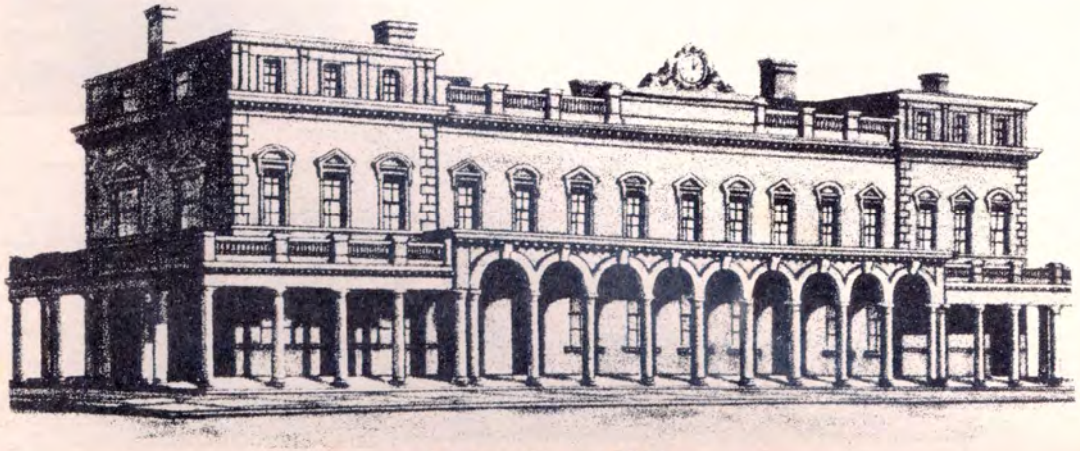
305344 BR Standard Gangwayed Brake Van in Crimson and Cream Livery.

SR COACHES

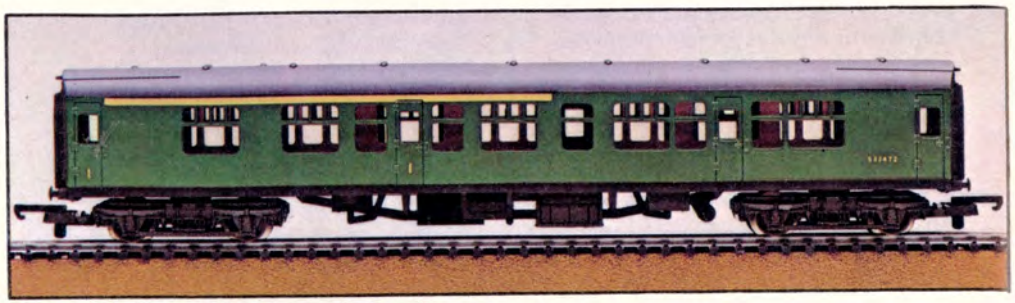
The Southern Region was the most enterprising of the new companies. It was formed by joining the London and South Western, London, Brighton & South Coast, and South Eastern & Chatham railways.

Resplendent in dark green for both locomotives and coaches, its principal preoccupation was electrification, and it extended the 650 volt third-rail system to cover not only London's southern suburbs, but also a new outer suburban zone, which extended as far as Brighton and Portsmouth.





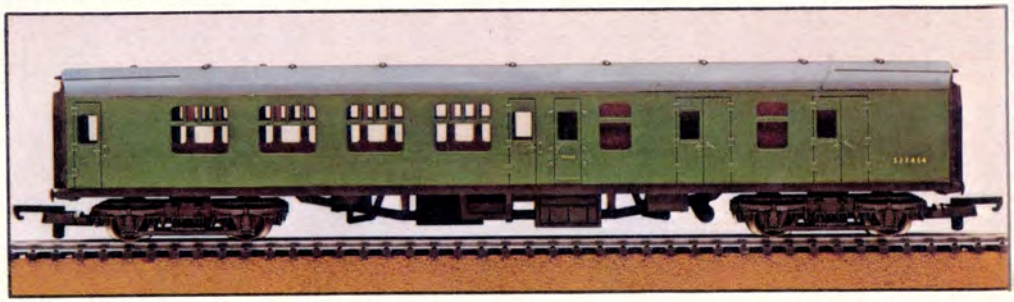
Brighton Station 1840



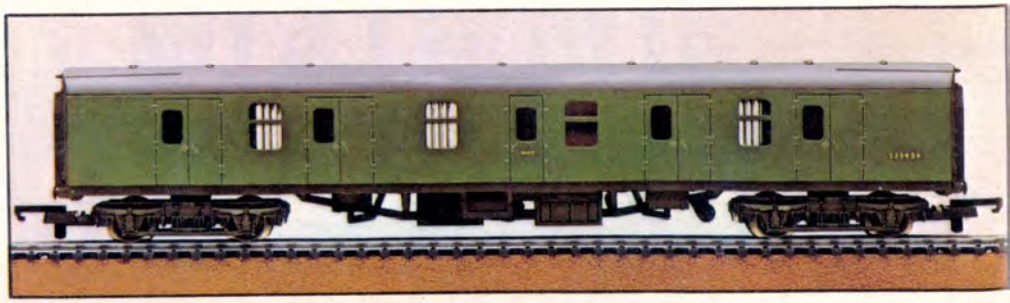
305314 SR Mk I Corridor Composite Coach.



305324 SR Mk 1 Restaurant Car.



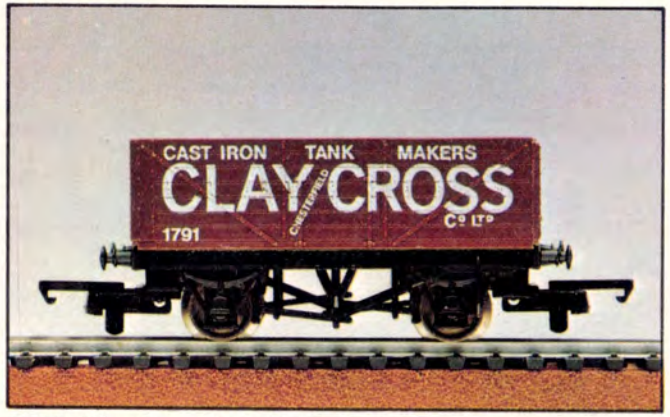
305334 SR Mk I Corridor Brake Coach.



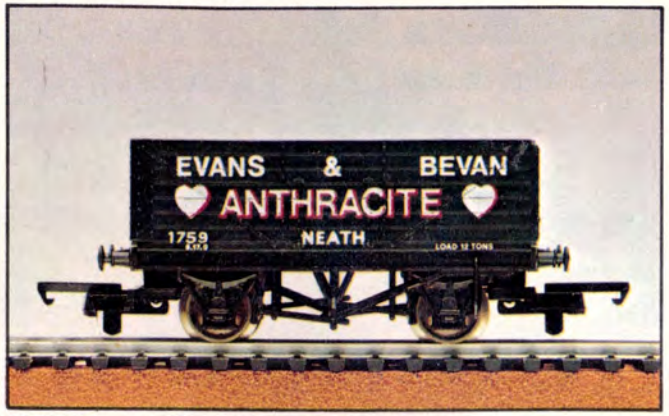
305348 S.R. standard gangwayed brake van.

WAGONS

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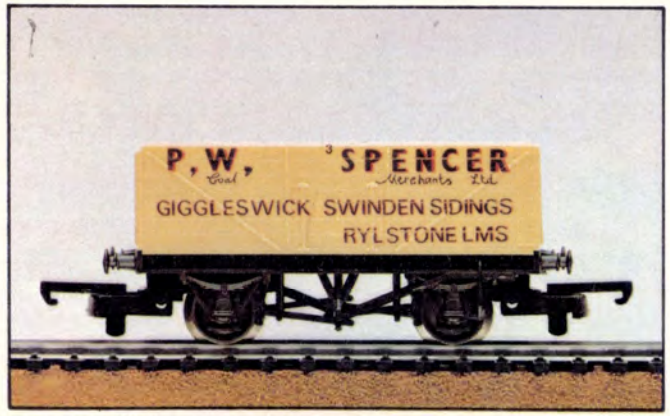
305611 'Clay Cross Co. Ltd.' 7 Plank Wagon.



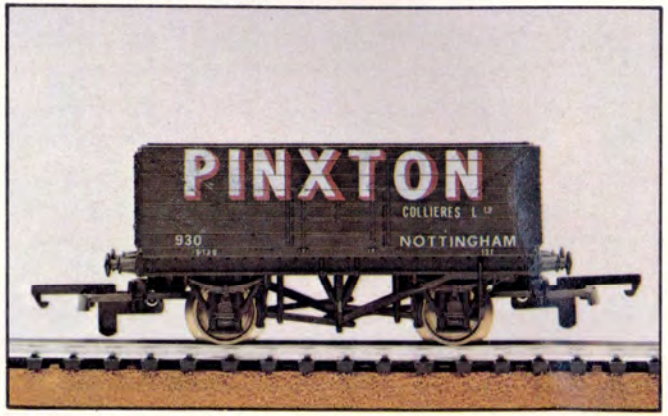
305613 'Evans & Bevan Anthracite' 7 Plank Wagon.



305631 "J.K. Harrison" 7 plank wagon. NEW



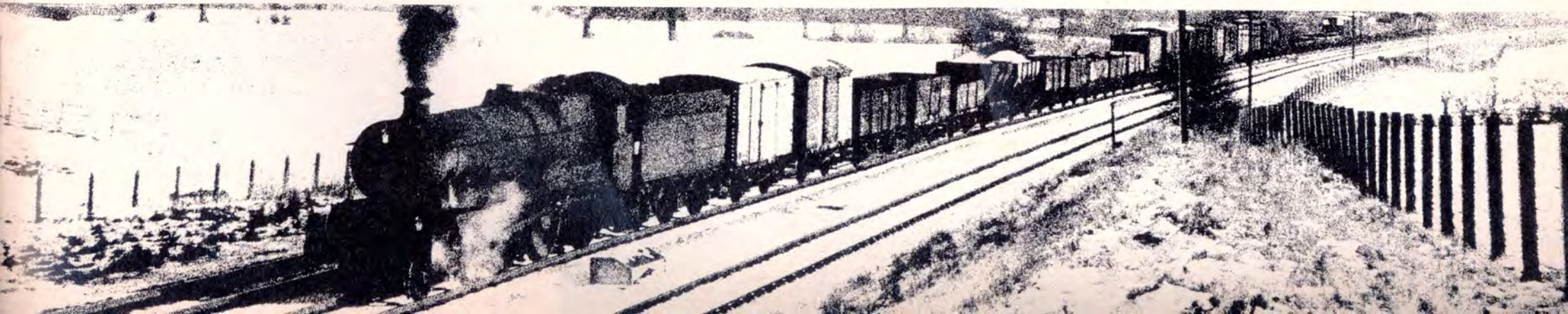
305632 "P.W. Spencer" 7 plank wagon. NEW



305633 "Pinxton Collieries" 7 plank wagon. NEW



305634 "Buxton Gas Dept" 7 plank wagon. NEW

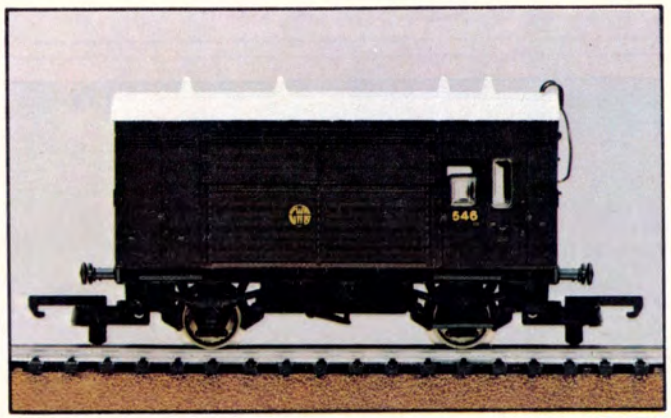




305601 'Typhoo Tea' 20 Ton Box Van.



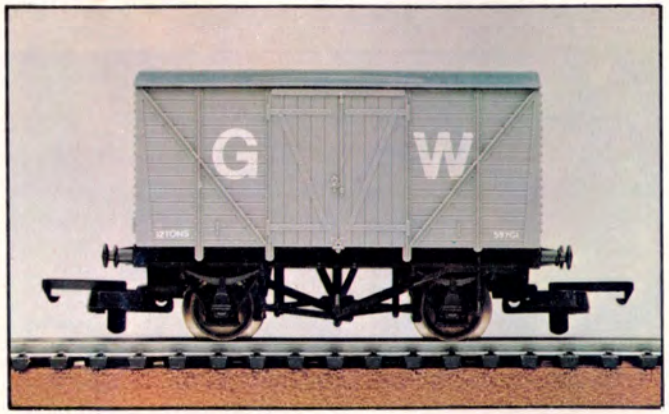
305602 'Homepride Flour' 20 Ton Box Van.



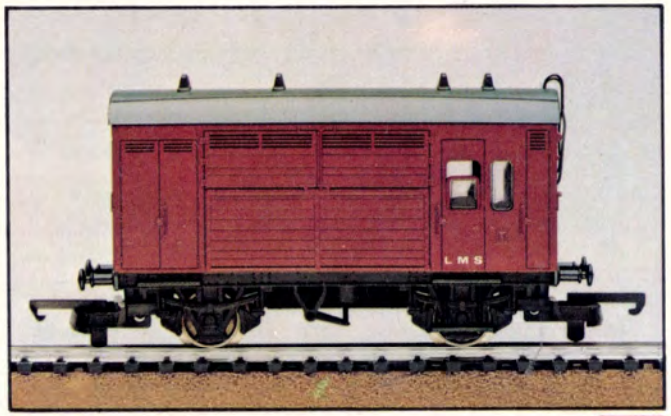
305625 GWR 2 Axle Horse Box. NEW



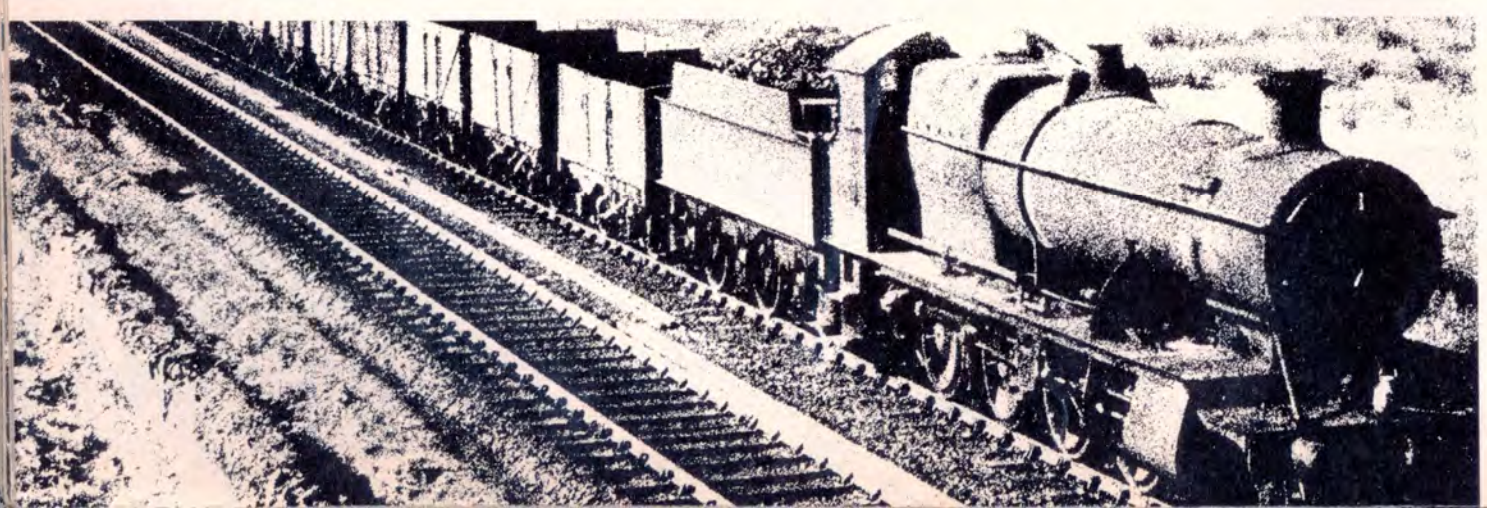
305604 'St Ivel Dairy Products' 20 Ton Box Van.

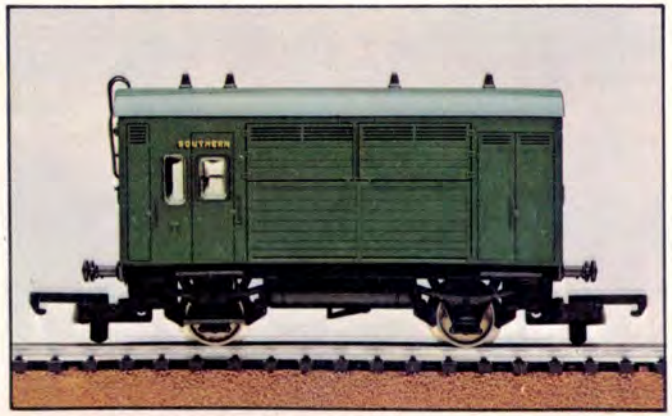


305605 GWR 20 Ton Box Van.

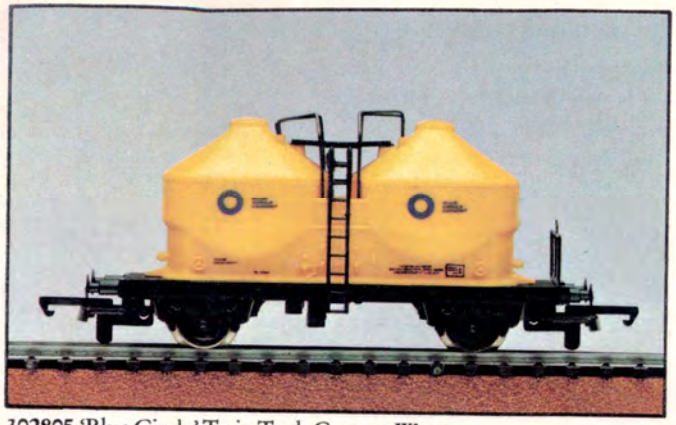


305626 2 Axle Horse Box LMS Livery. NEW

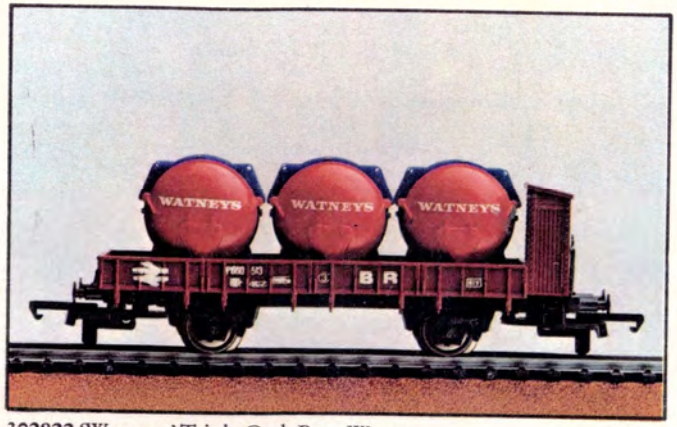




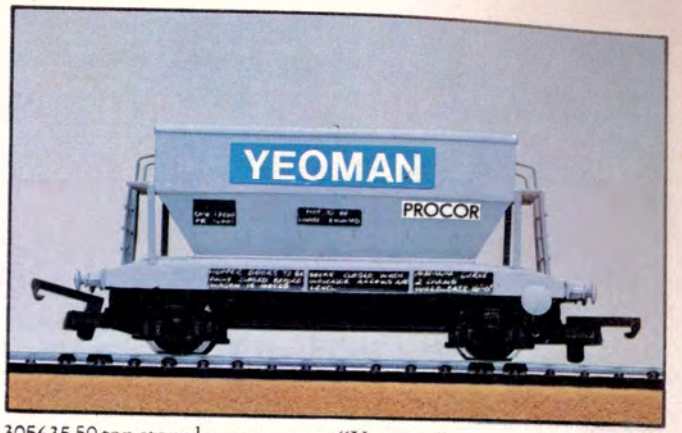
305628 2 Axle Horse Box SR Livery. NEW



302805 'Blue Circle' Twin Tank Cement Wagon.



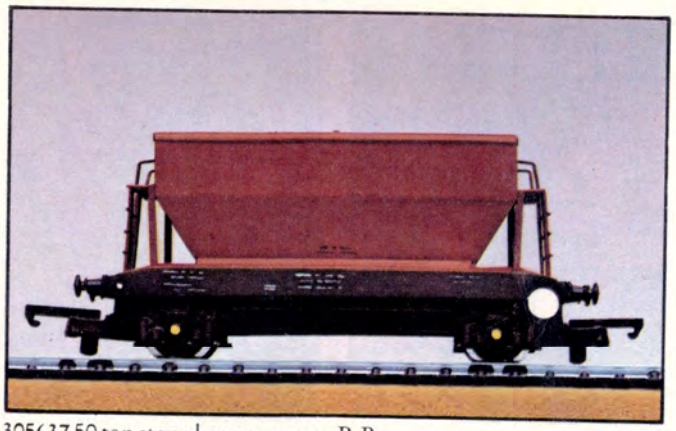
302822 'Watneys' Triple Cask Beer Wagon.



305635 50 ton stone hopper wagon "Yeoman." NEW



305636 50 ton stone hopper wagon "A.R.C. Roadstone." NEW



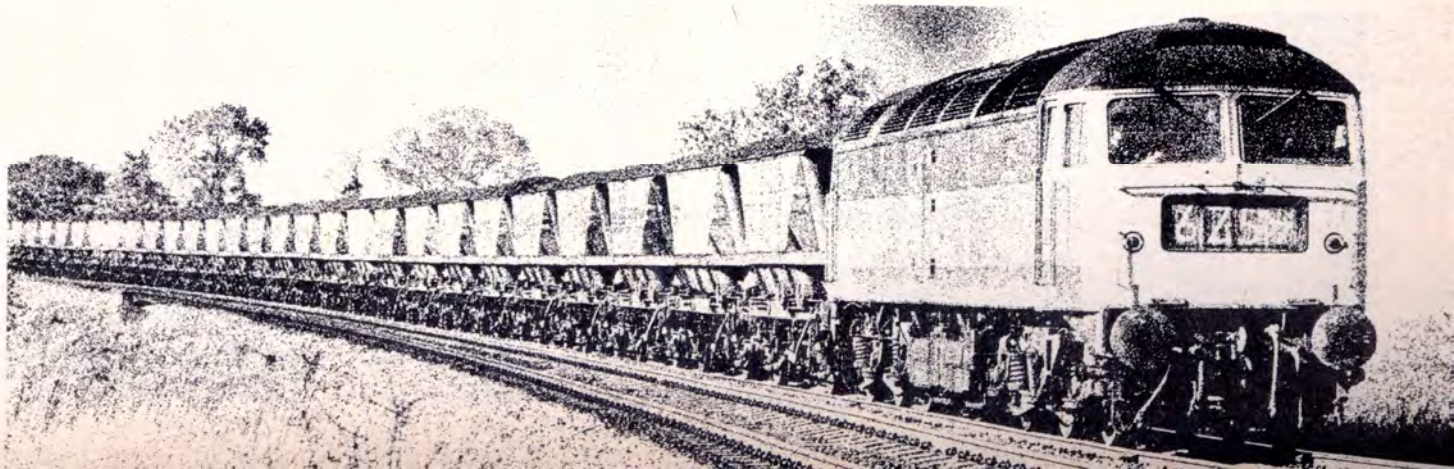
305637 50 ton stone hopper wagon B.R. NEW

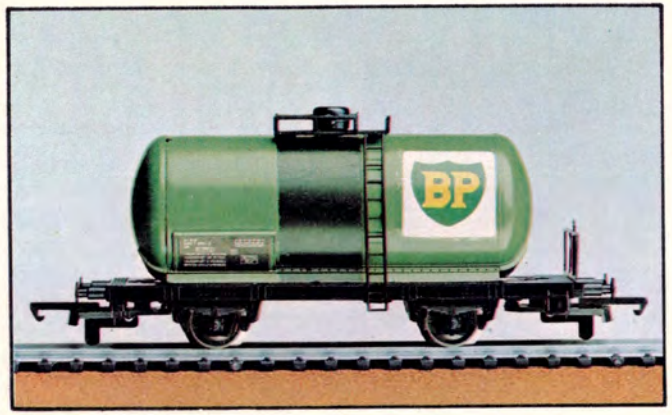


302720 'ICI' Chemical Tank Wagon.



302721 'Unigate' Milk Tank Wagon.

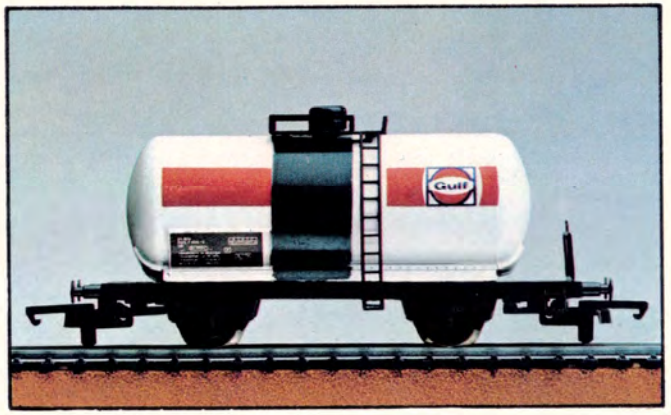




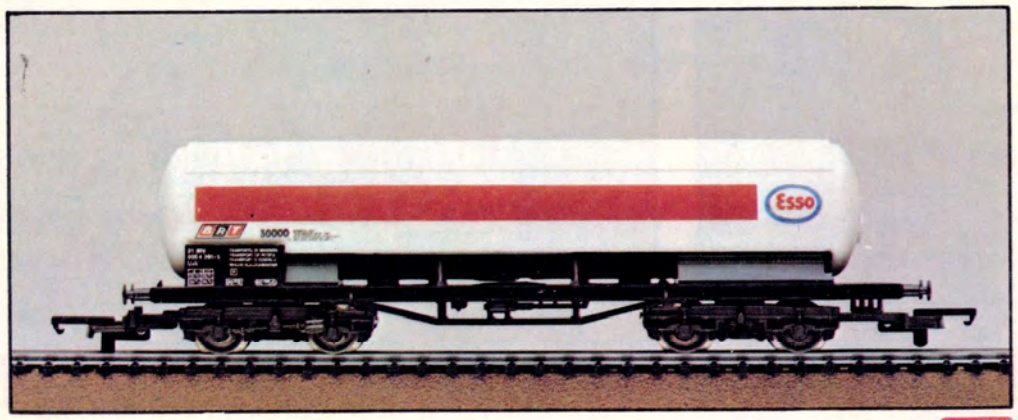
302715 'BP' Tank Wagon.



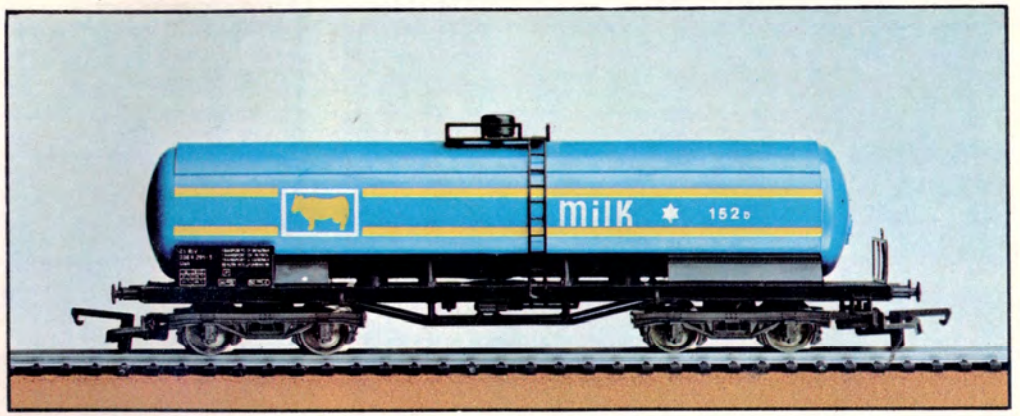
302717 "Mobil P. Gas" tank wagon. NEW



302718 'Gulf' Tank Wagon.



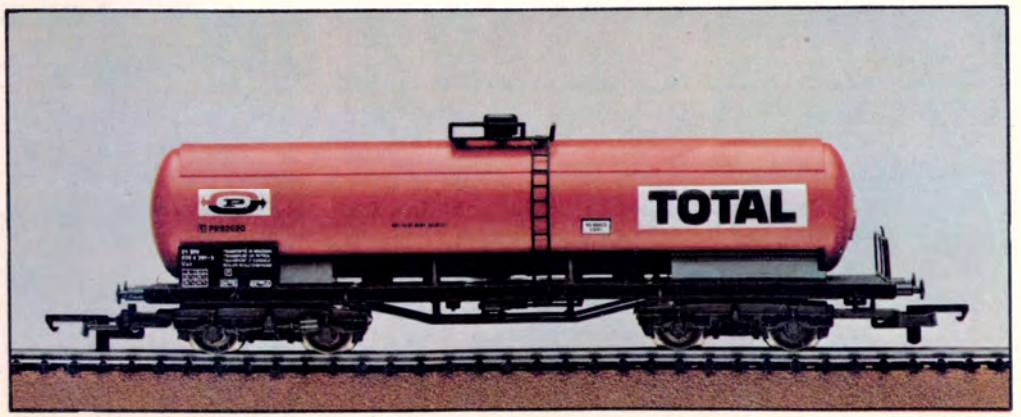
302908 "Esso B.R.T." bogie tank wagon. NEW



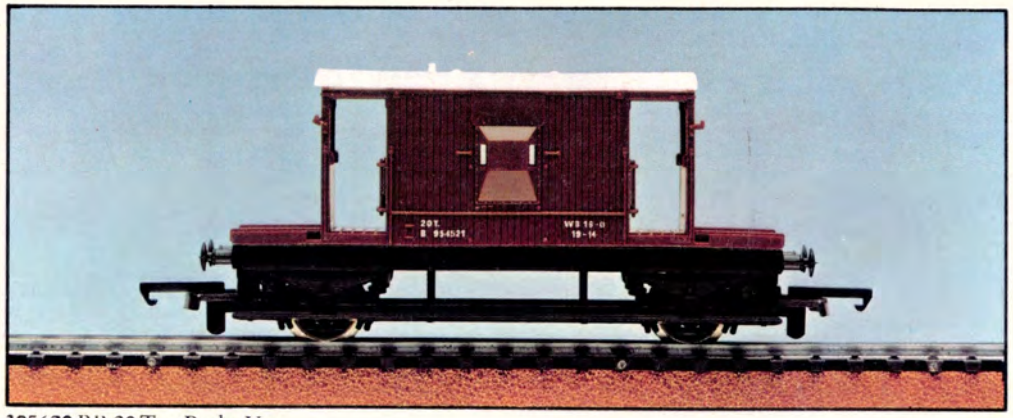
302911 'Milk' Bogie Tank Wagon.



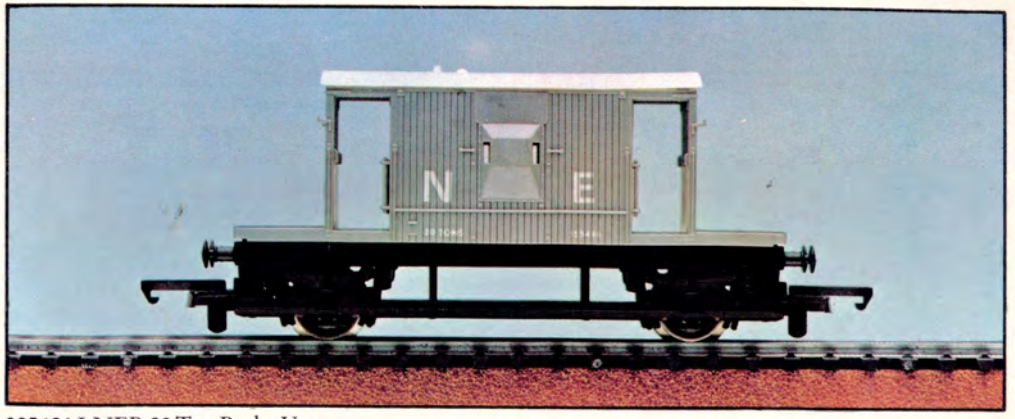
302913 'Amoco' Bogie Tank Wagon.



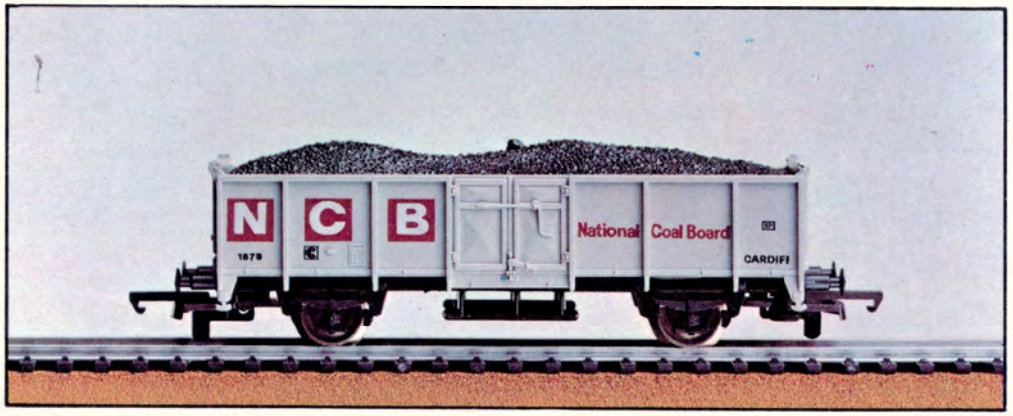
302909 "Total Oil" bogie tank wagon. NEW



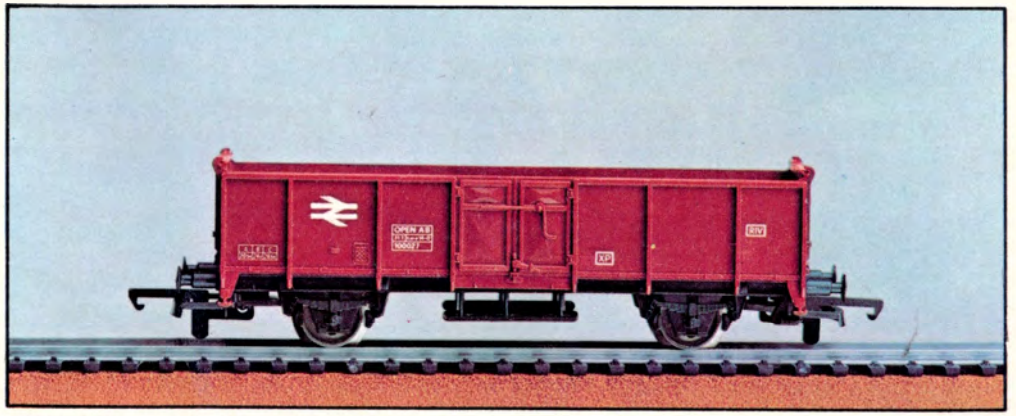
305620 BR 20 Ton Brake Van.



305621 LNER 20 Ton Brake Van.



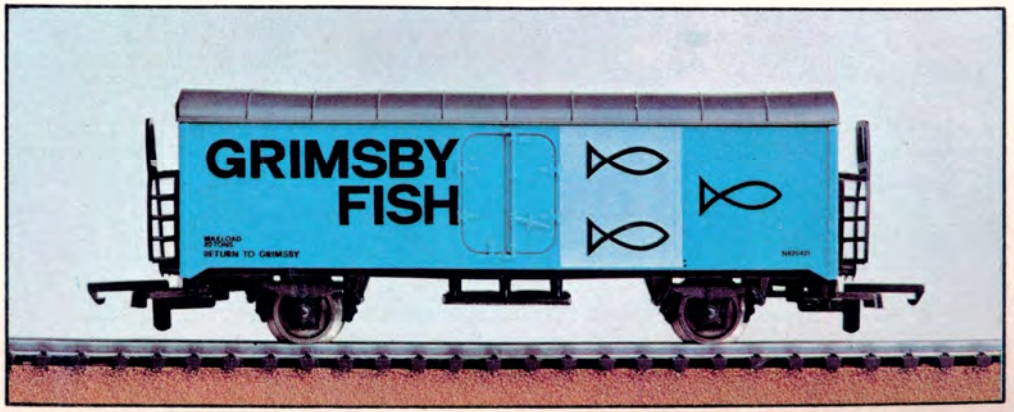
303173 'National Coal Board' Mineral Wagon.



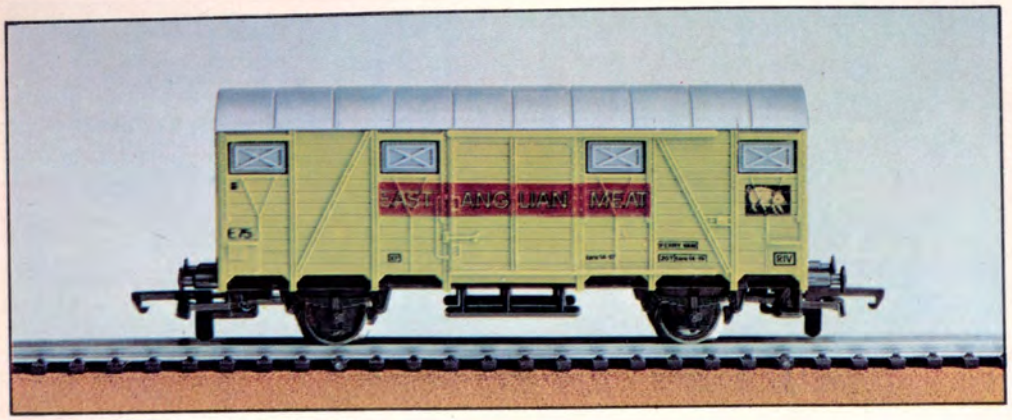
303175 BR Long Wheelbase Mineral Wagon.



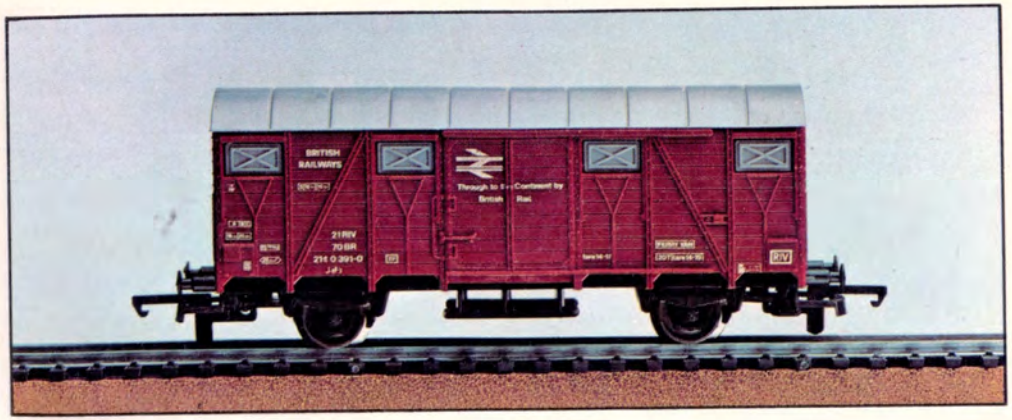
303118 'Schweppes' Refrigerator Van.



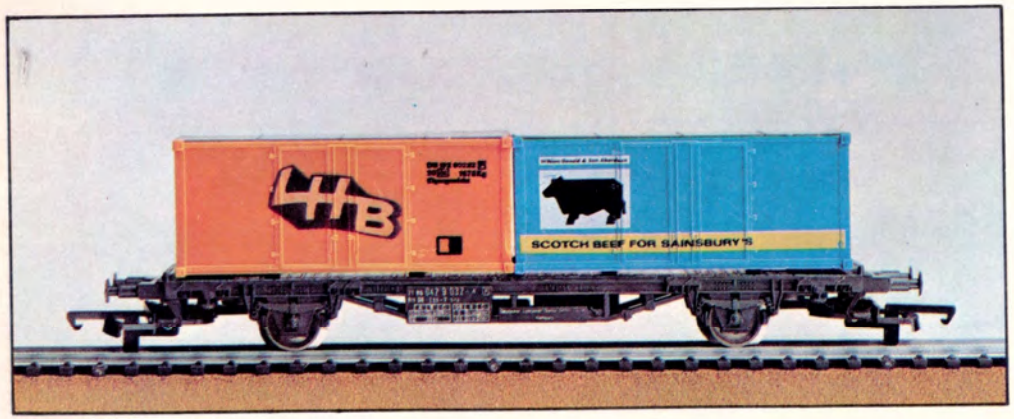
303114 'Grimsby Fish' Refrigerator Van.



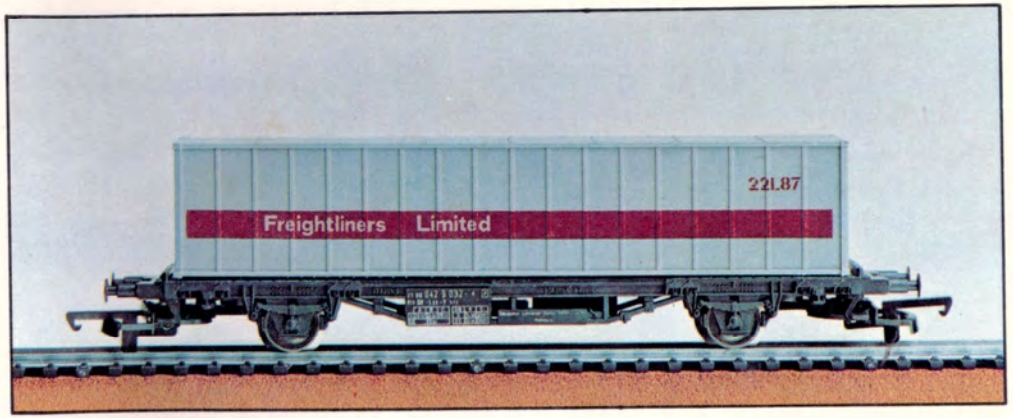
303155 'East Anglian Meat' Closed Van.



303165 BR Closed Van.



302852 'Scotch Beef' Container Wagon.



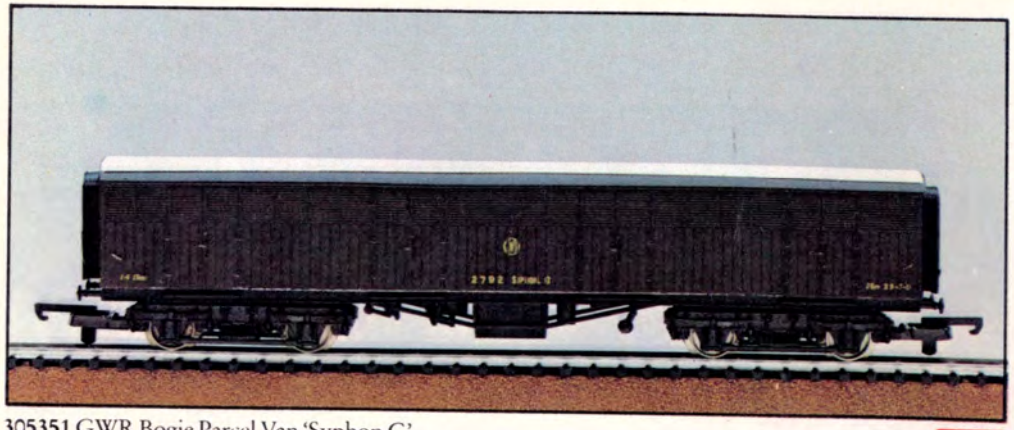
302871 'Freightliners Ltd.' Container Wagon.



303545 "Heinz" closed wagon. NEW

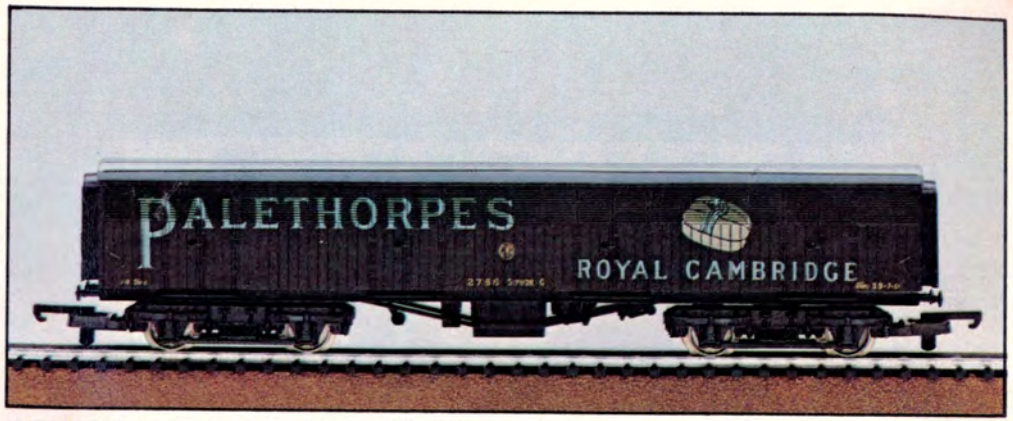


302870 40 container wagon "A.C.L." NEW



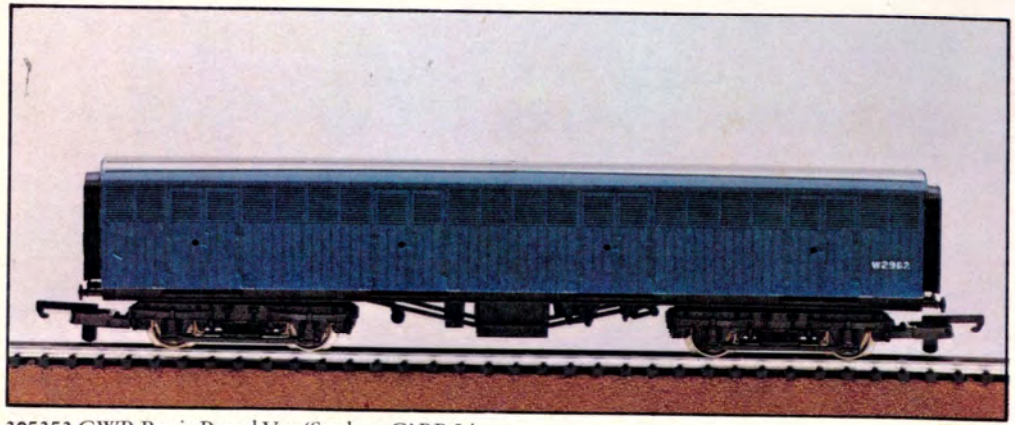
305351 GWR Bogie Parcel Van 'Syphon G.'

NEW



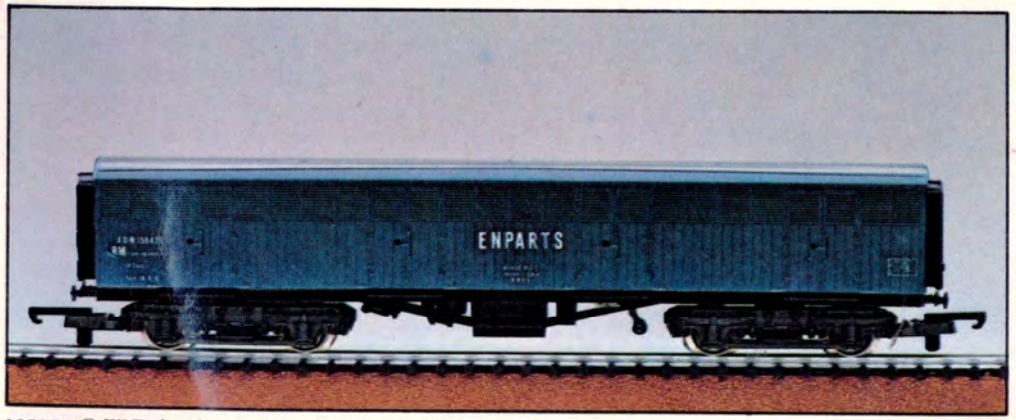
305352 GWR Bogie Parcel Van 'Syphon G' Palethorpes Sausages.

NEW



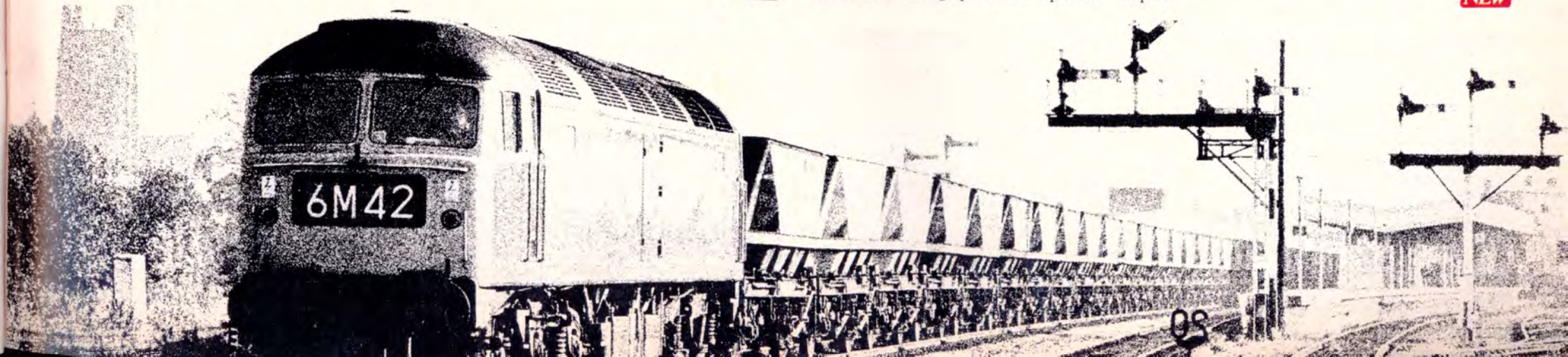
305353 GWR Bogie Parcel Van 'Syphon G' BR Livery.

NEW



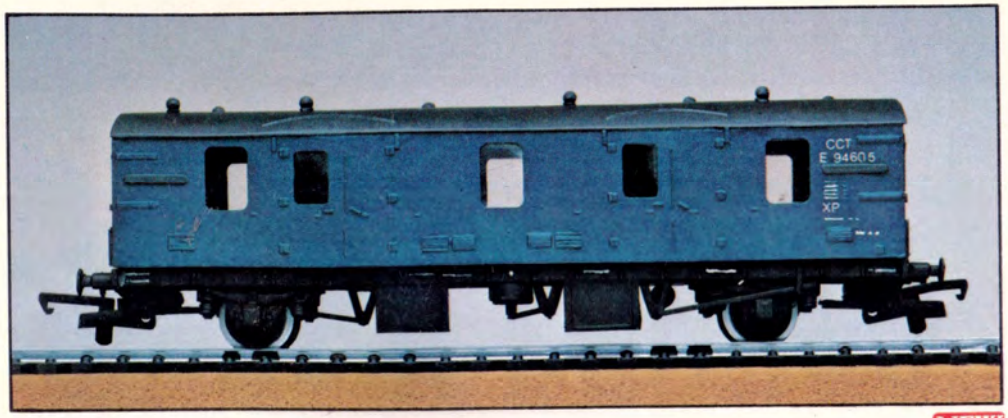
305354 G.W.R. bogie parcel van "Siphon G" "Enparts."

NEW

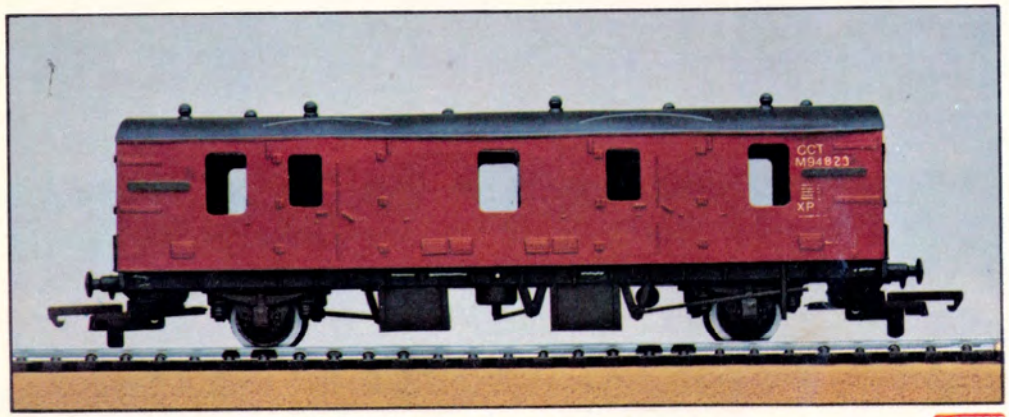




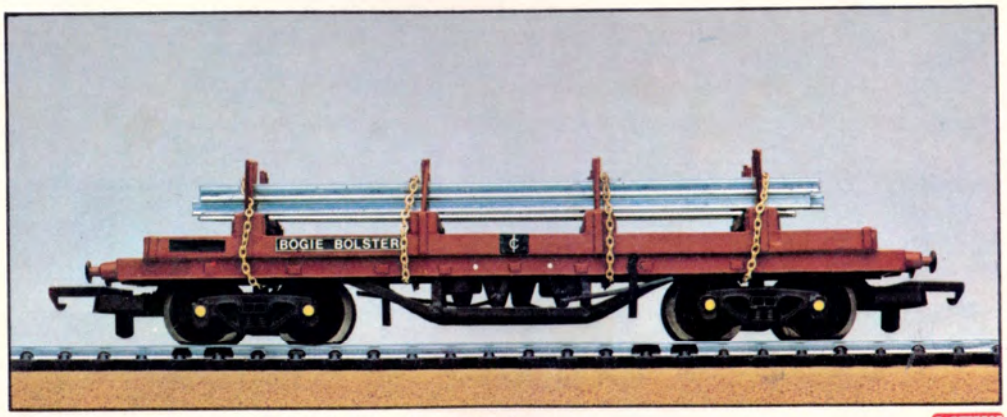
305355 C.C.T. parcels wagon "Tartan Arrow." NEW



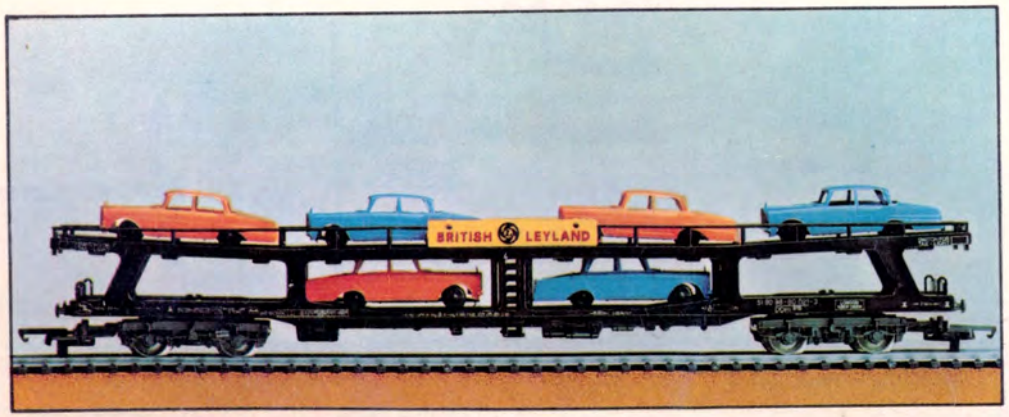
305356 C.C.T. parcels wagon "Modern Livery." NEW



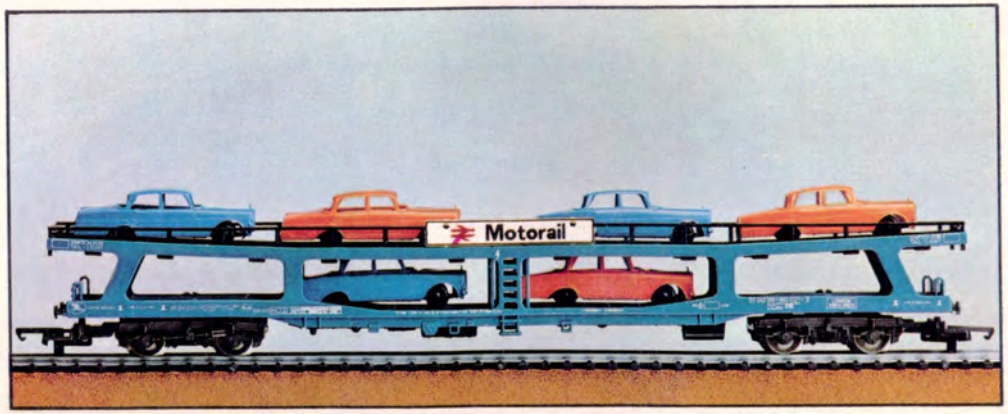
305357 C.C.T. parcels wagon "Early B.R. Livery." NEW



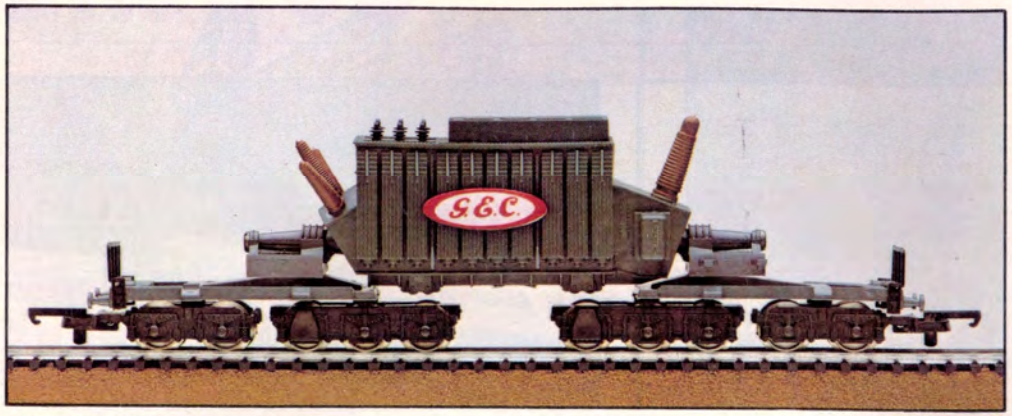
305630 Bogie bolster wagon Bobel "B" with steel load. NEW



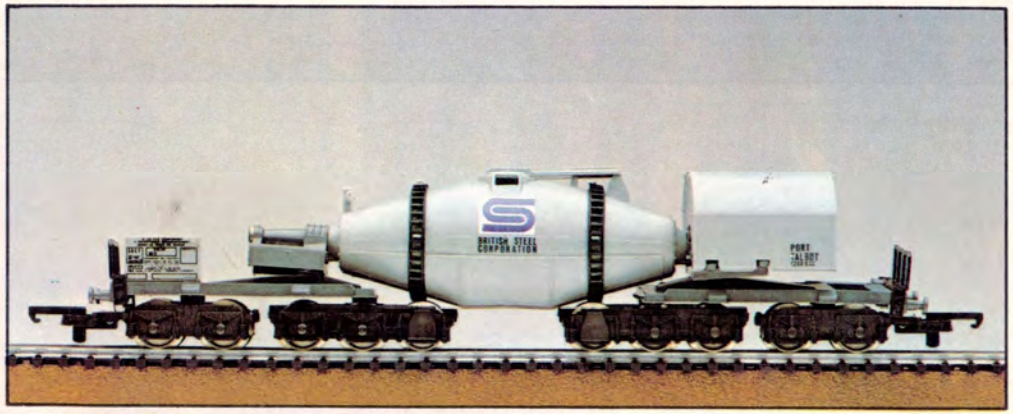
309057 'British Leyland' Car Carrier.



309053 'Motorail' Car Carrier.



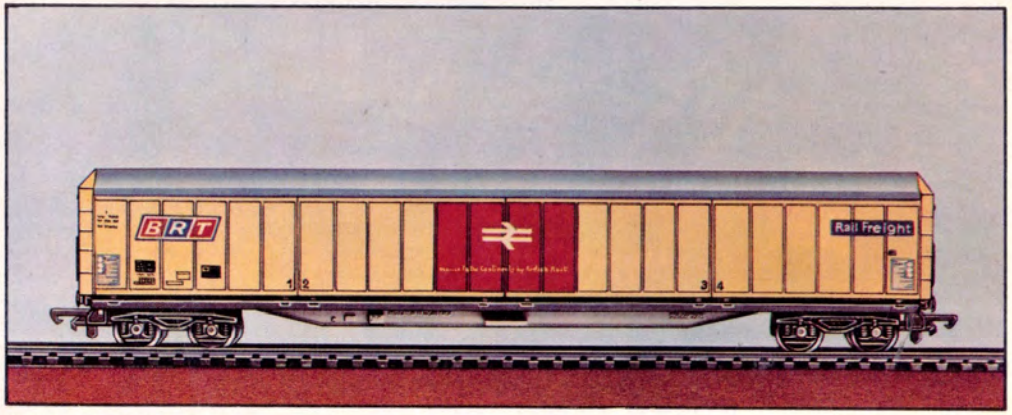
309068 Multiple wagon with "G.E.C." transformer load. NEW



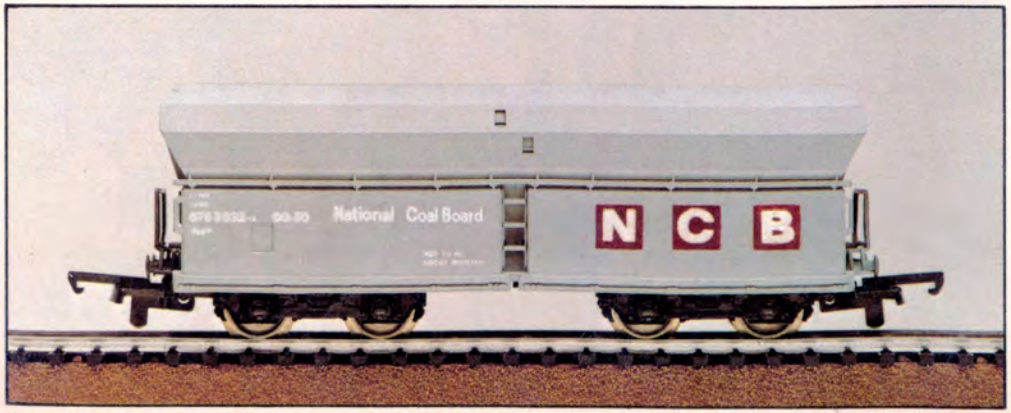
309067 "British Steel Corporation" foundry wagon. NEW



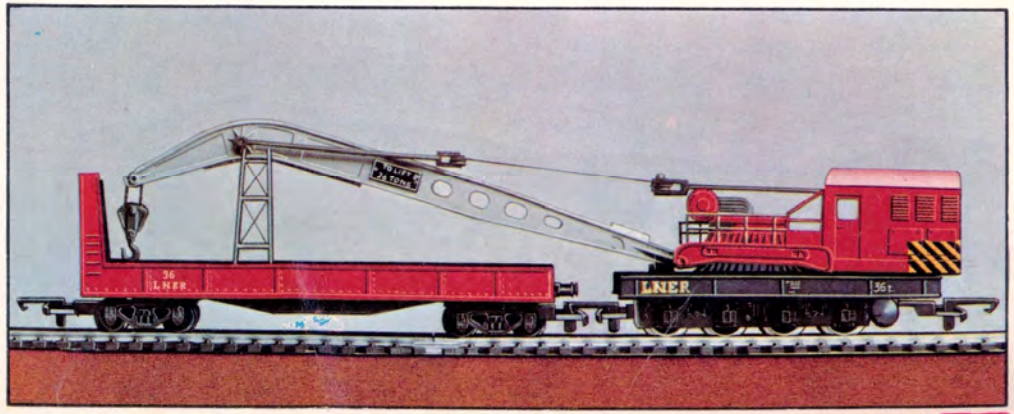
303199 Supply Wagon. 'BP Offshore Services.'



303204 BR Rail Freight Van with 4 Doors.



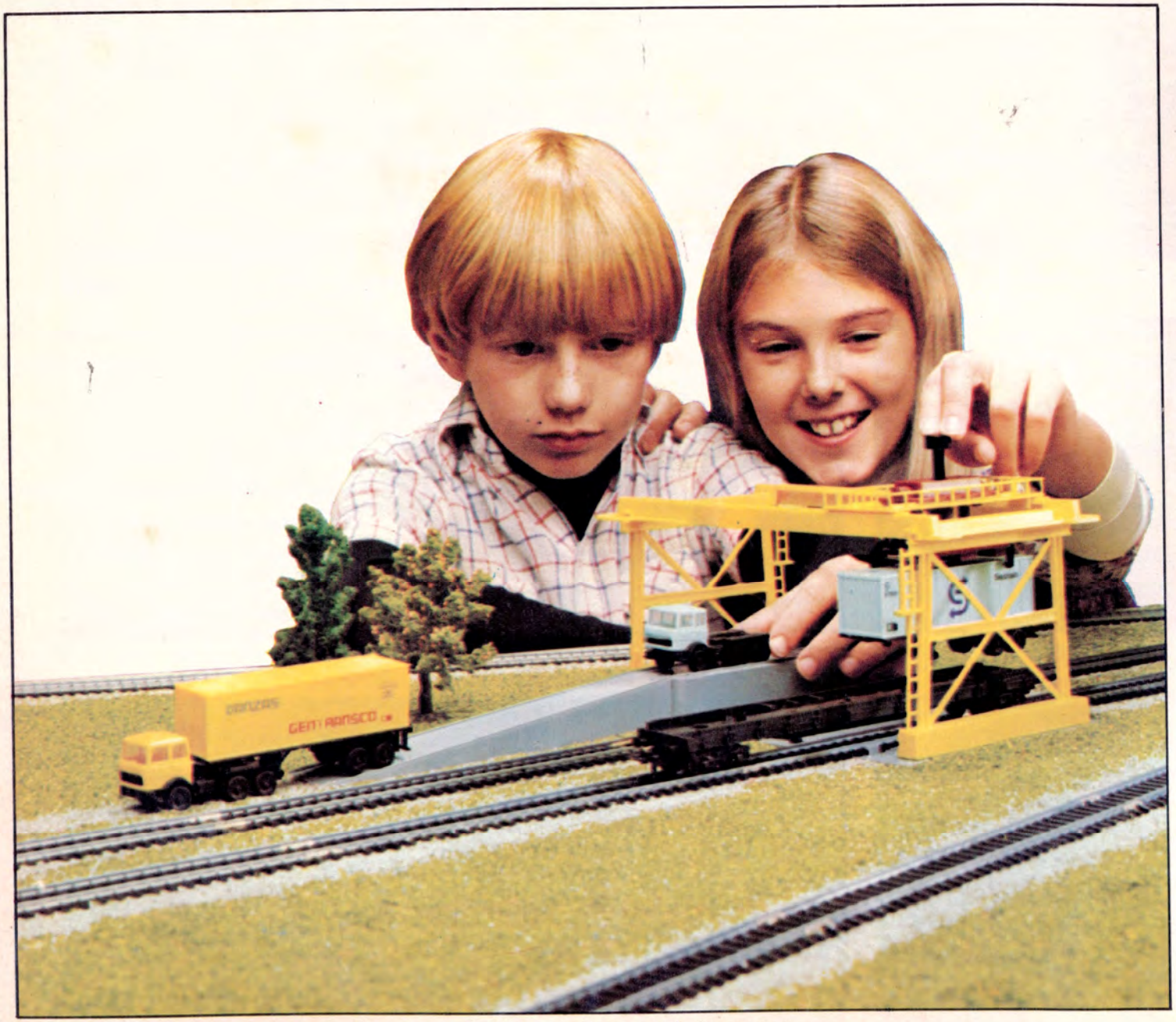
302892 "N.C.B." coal-hopper wagon. NEW



309059 35 Ton Breakdown Crane and Flat Car. LNER Livery. NEW

ACCESSORIES

00 SCALE



600960 Freightliner Terminal, allows transfer of container road vehicles to and from special rail transporter.

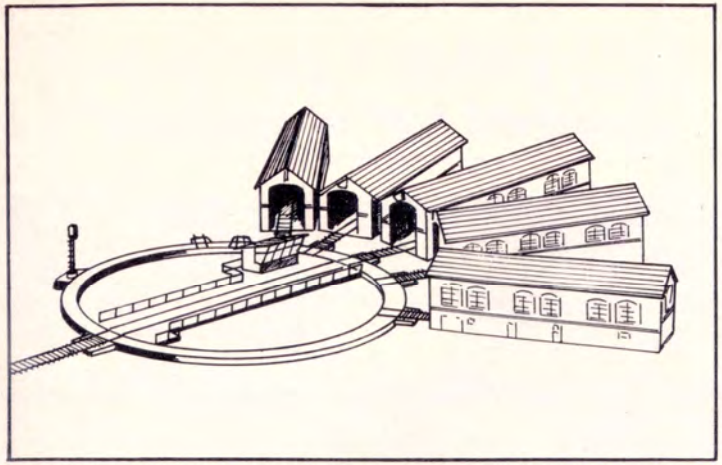


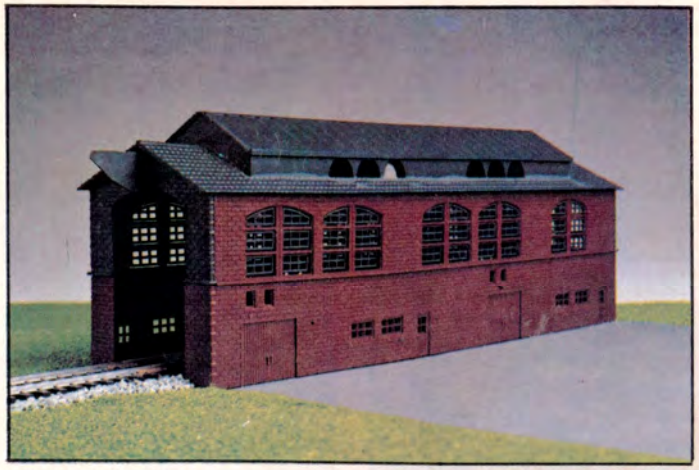
600830 (4 Assorted) 600831 (4 Assorted) 600832 (4 Assorted)
Scale containers for track side or transportation.



600990 Container unloading crane lorry.

NEW



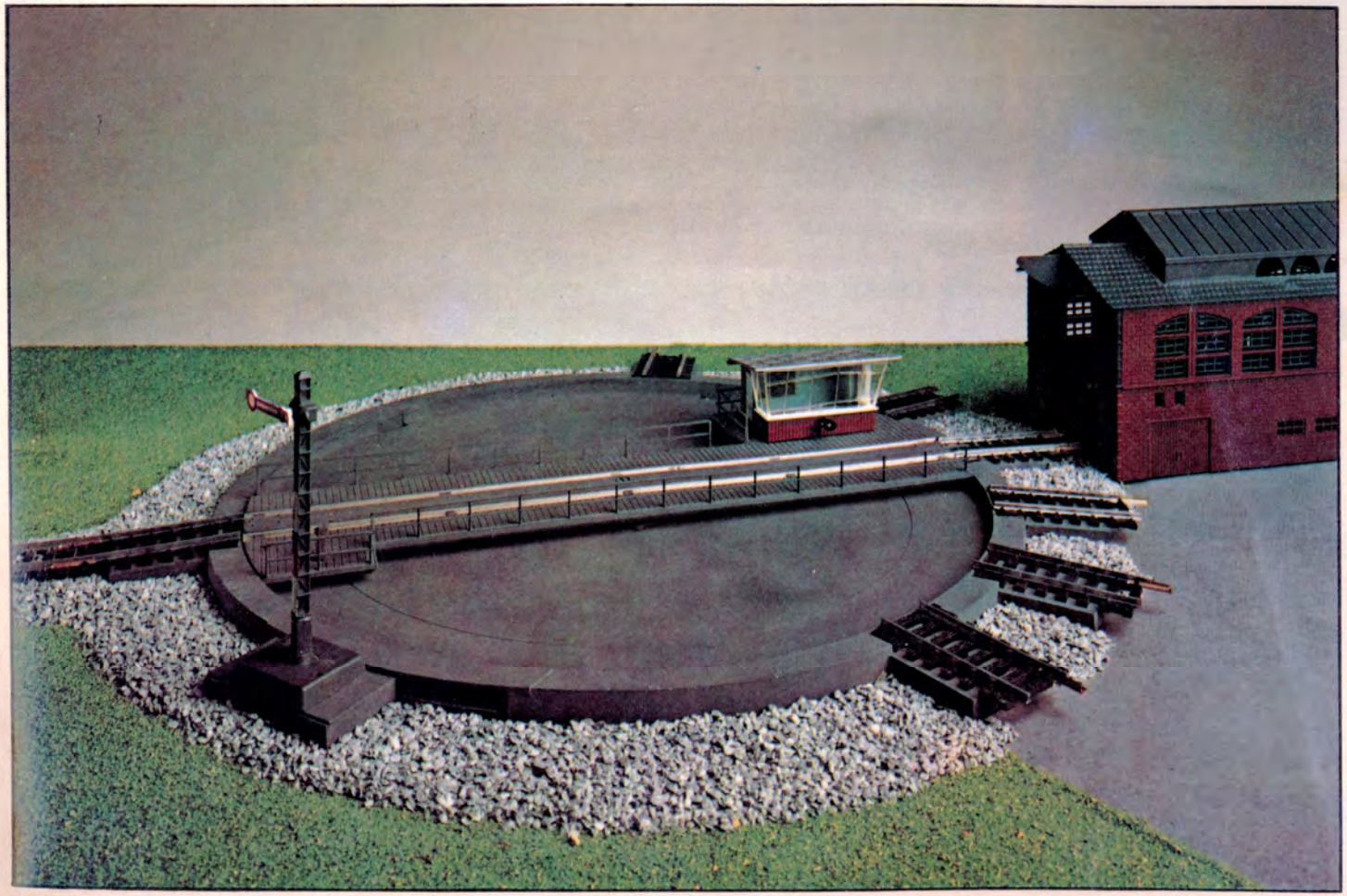


600955 Engine Shed

NEW

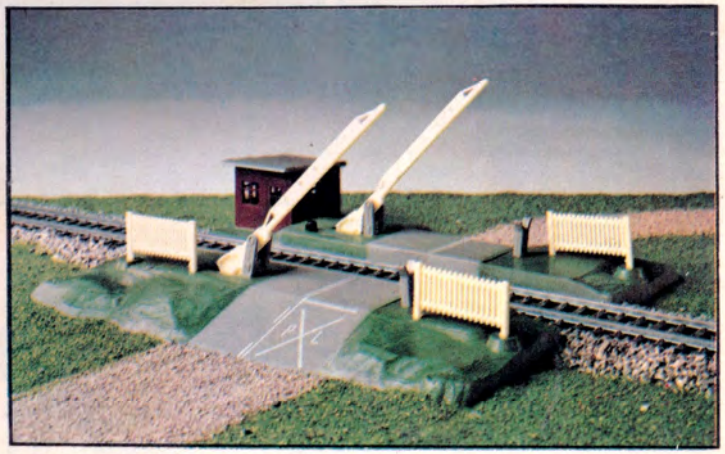


602080 De-Luxe Tunnel featuring Special Scenic Finish.

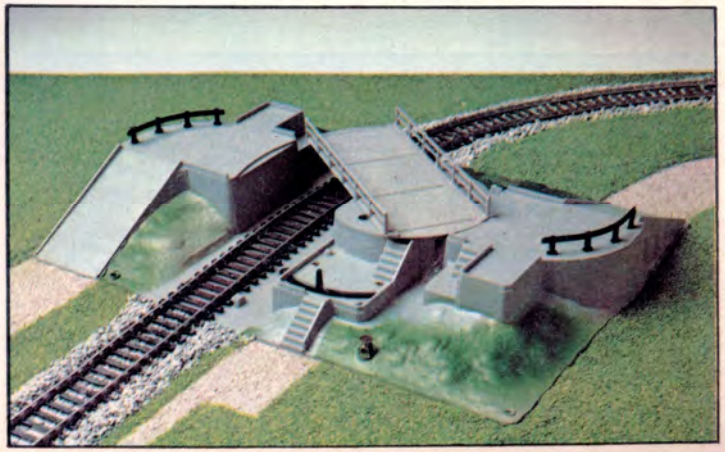


600954 Turntable.

NEW

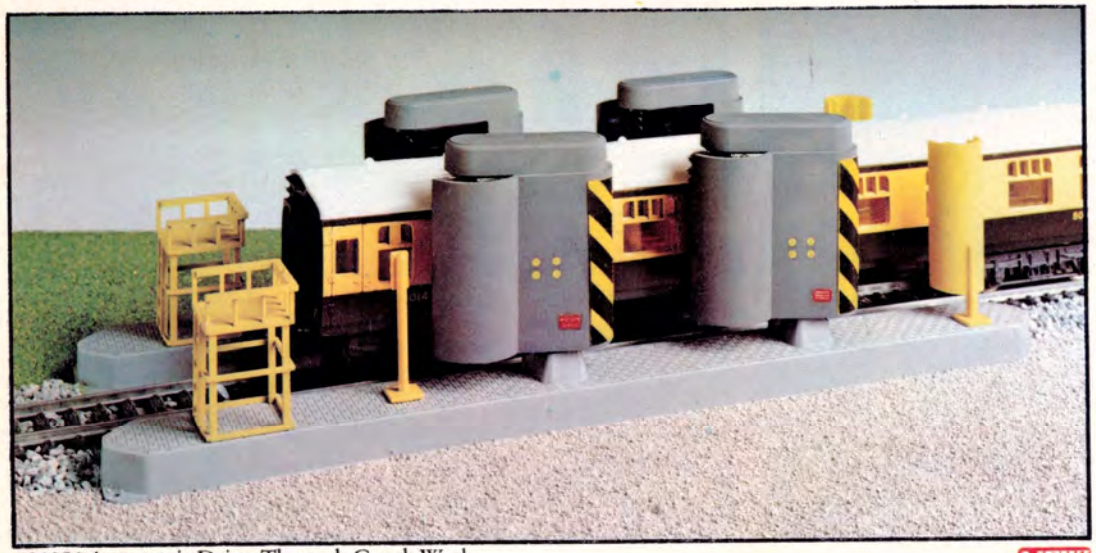


600021 Automatic Level Crossing.



600052 Mechanical Swing Bridge with Auto Train Stop.

ACCESSORIES

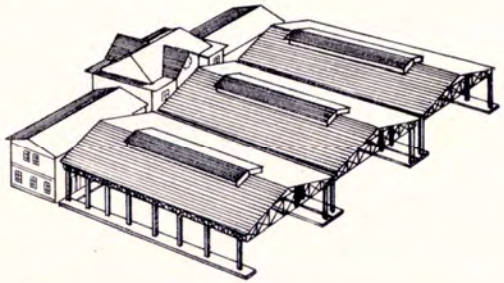


600951 Automatic Drive-Through Coach Wash.

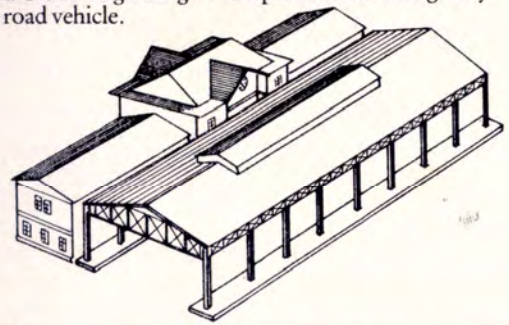
NEW

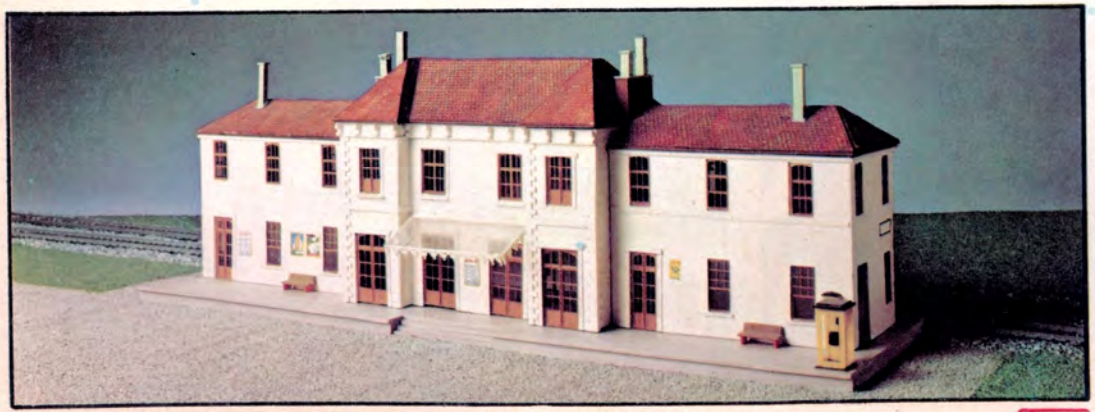


600963 Container Terminal and Unloading Siding. With special rail to siding lorry transporter, terminus and one road vehicle.



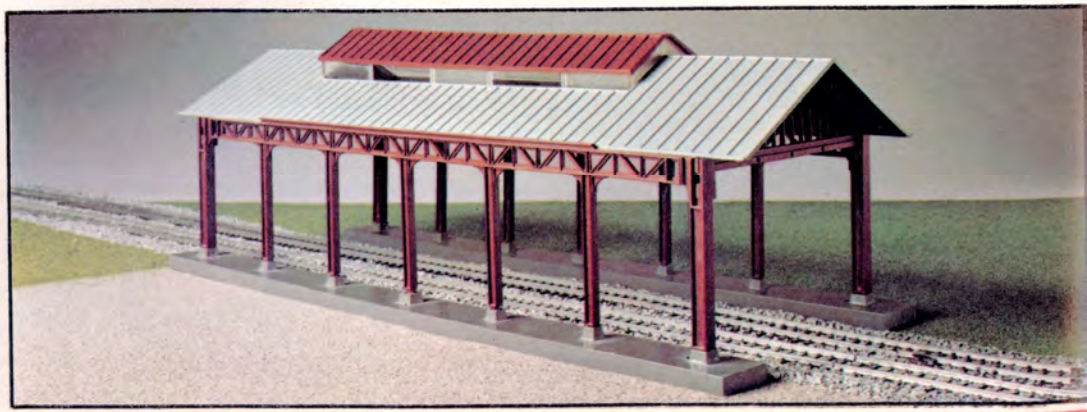
Example of use of parts 60 0031 and 60 0033.





600033 Main Terminal Station Building. For use with Canopy 600031 if required.

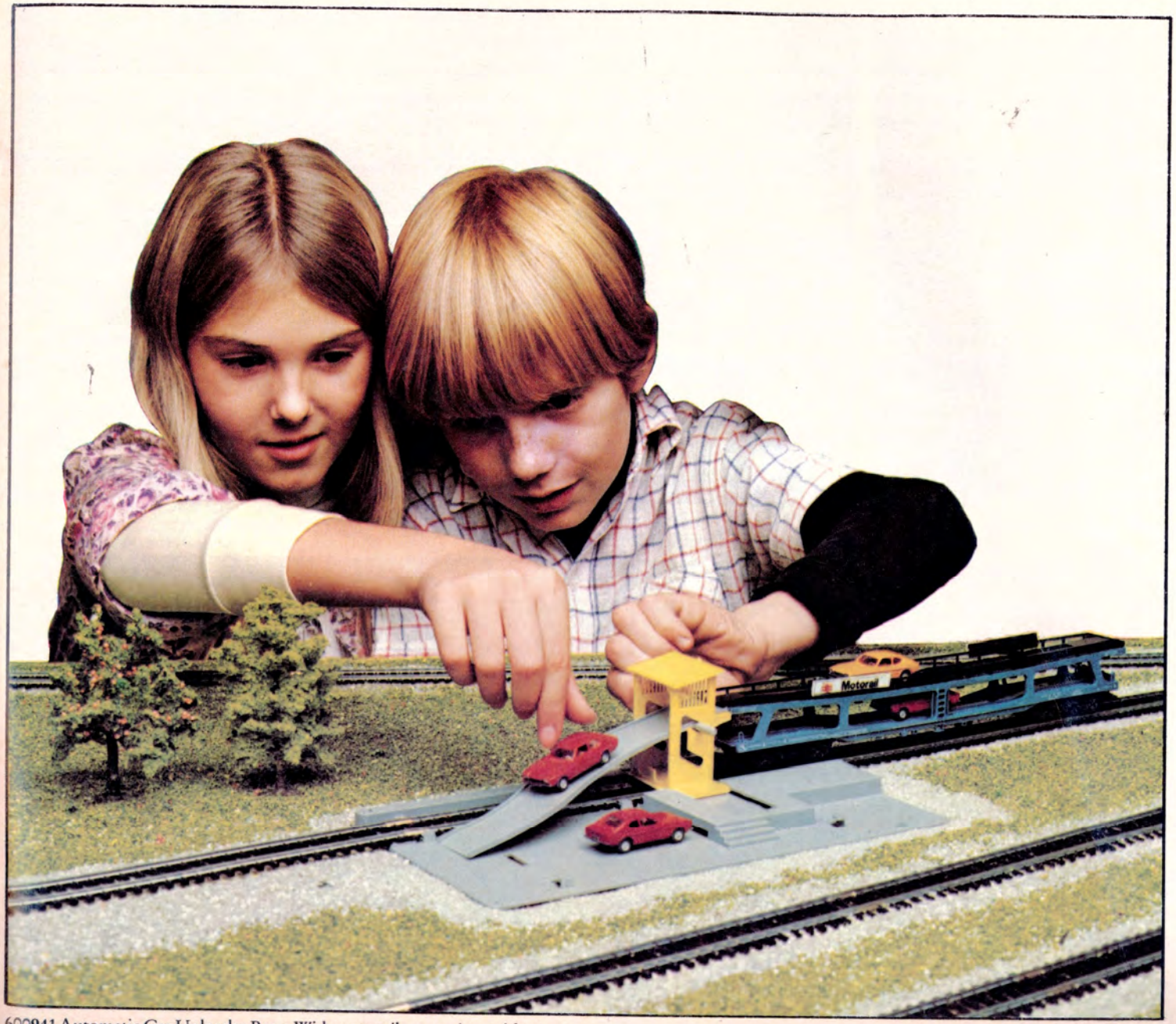
NEW



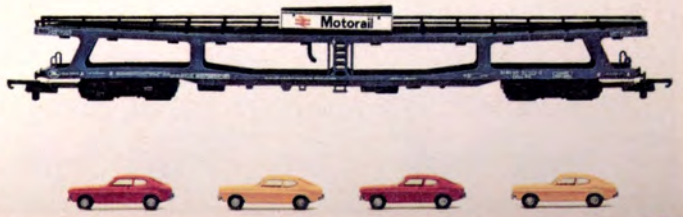
600031 Main Terminal or maintenance area canopy and Platforms.

NEW

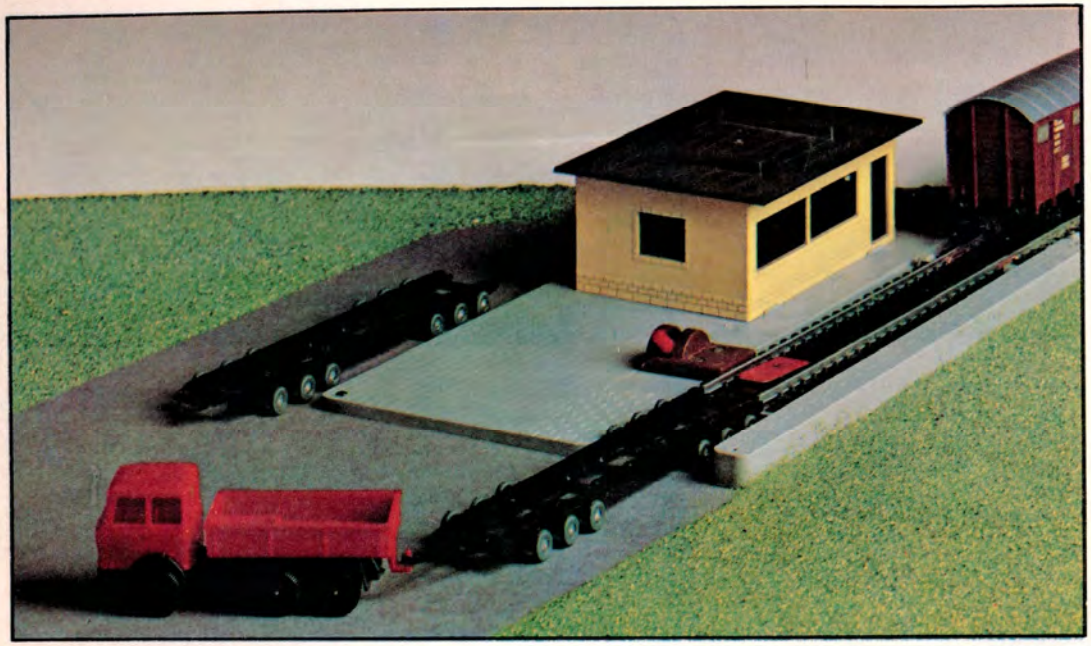
ACCESSORIES



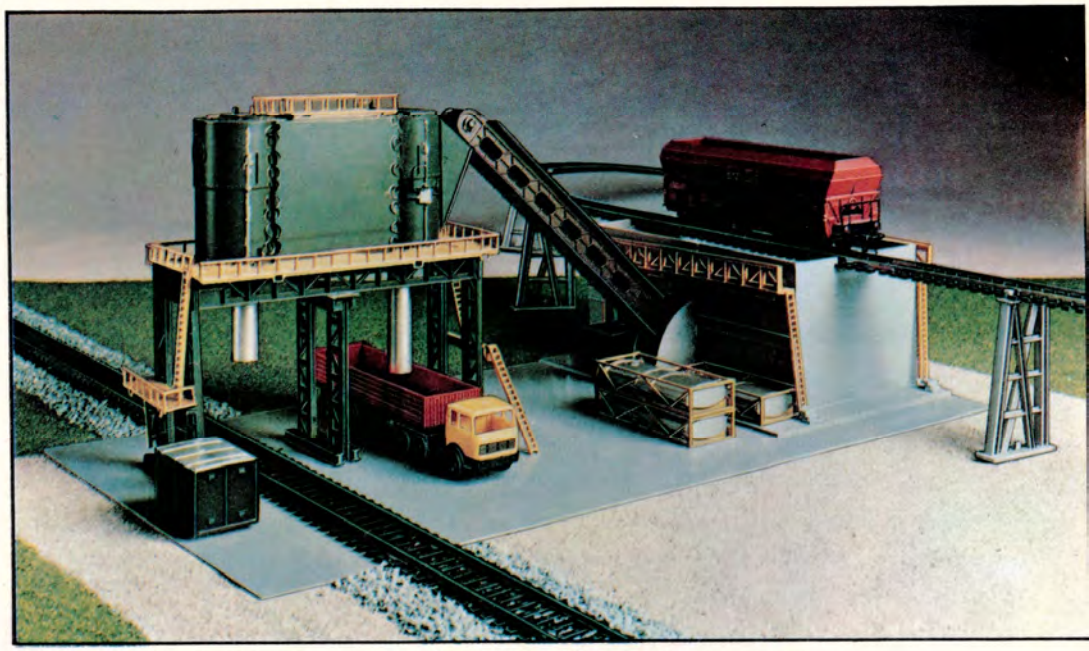
600941 Automatic Car Unloader Base. With motorail car carrier and four cars.



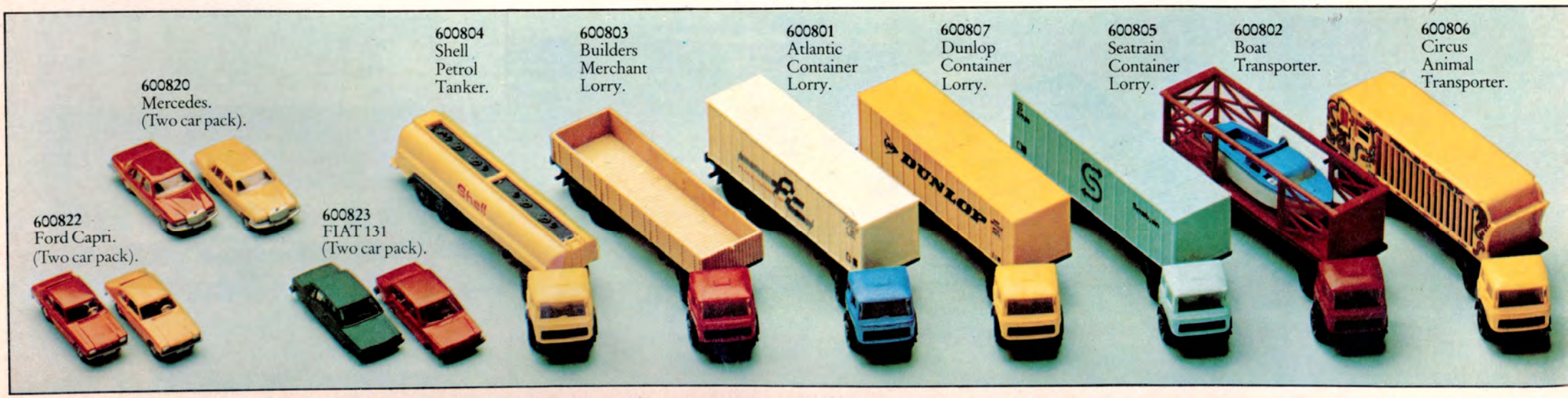
ACCESSORIES



600970 Rolling Stock Road Transporter.



602892 Operating Coal Depot transfers coal between NCB Hopper Wagon, storage sites and two road vehicles.



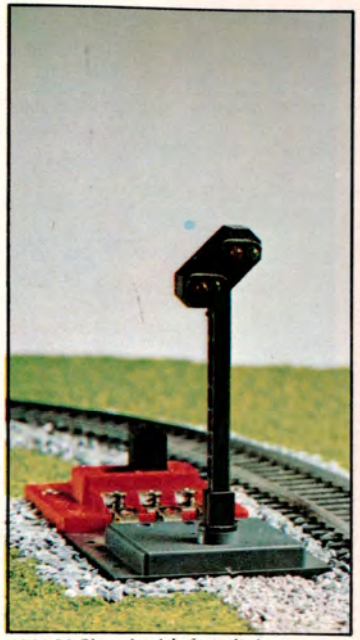
SIGNALS



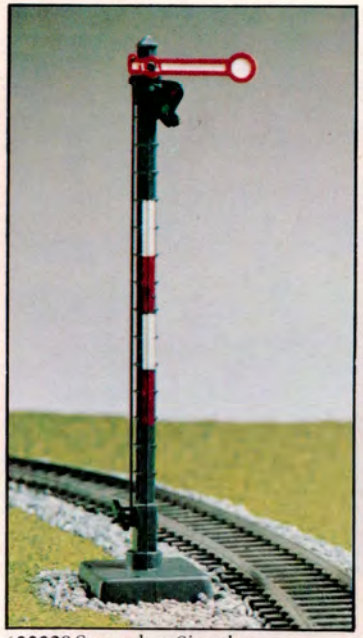
600027 Double yard lamp with bulb and wiring.
600026 Yard lamp with bulb and wiring.



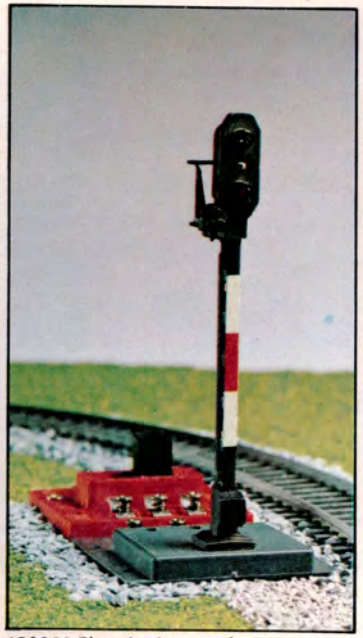
600022 Signal with two lights. Including Junction Box and switch.



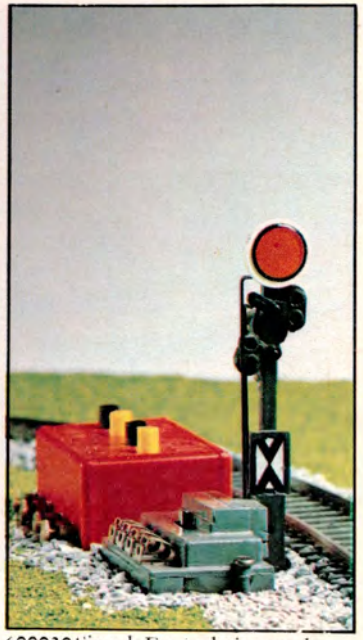
600023 Signal with four lights. Including junction box and switch.



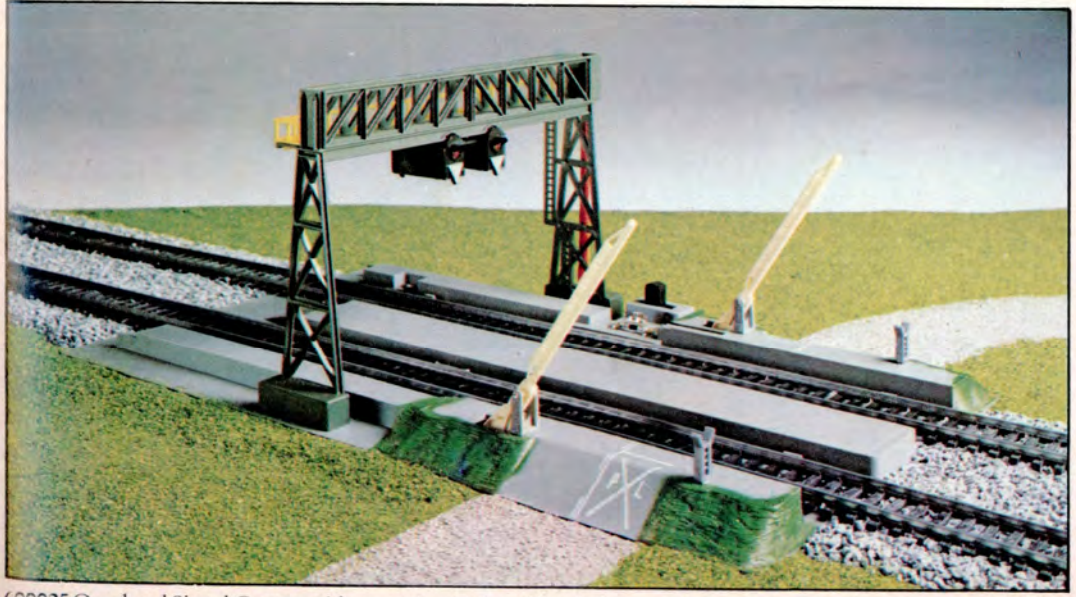
600028 Semaphor Signal.



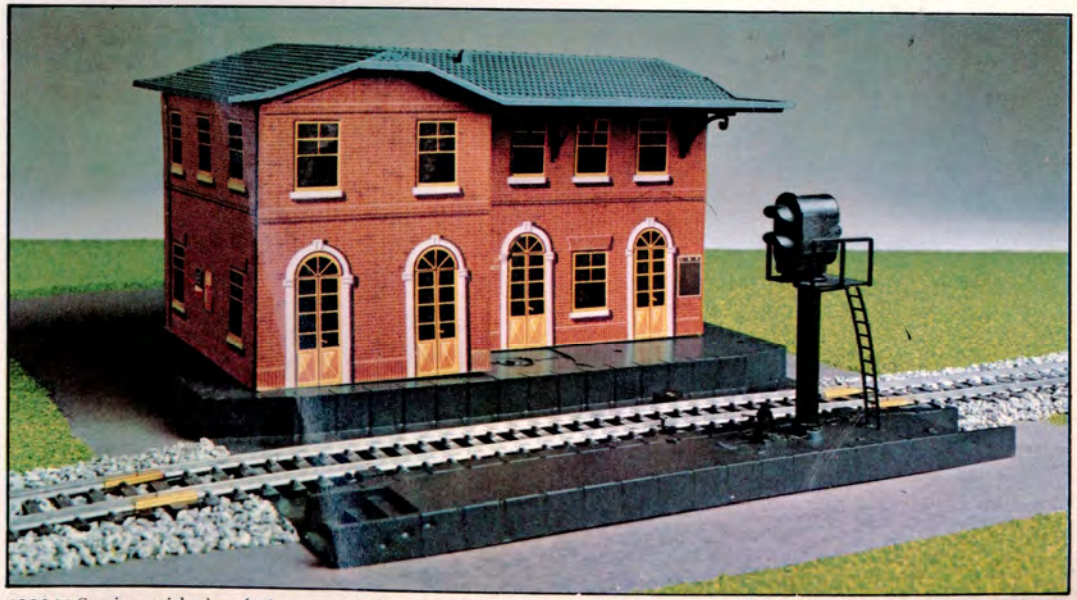
600029 Signal with two lights.



600030 Signal. For isolating tracks with control box.

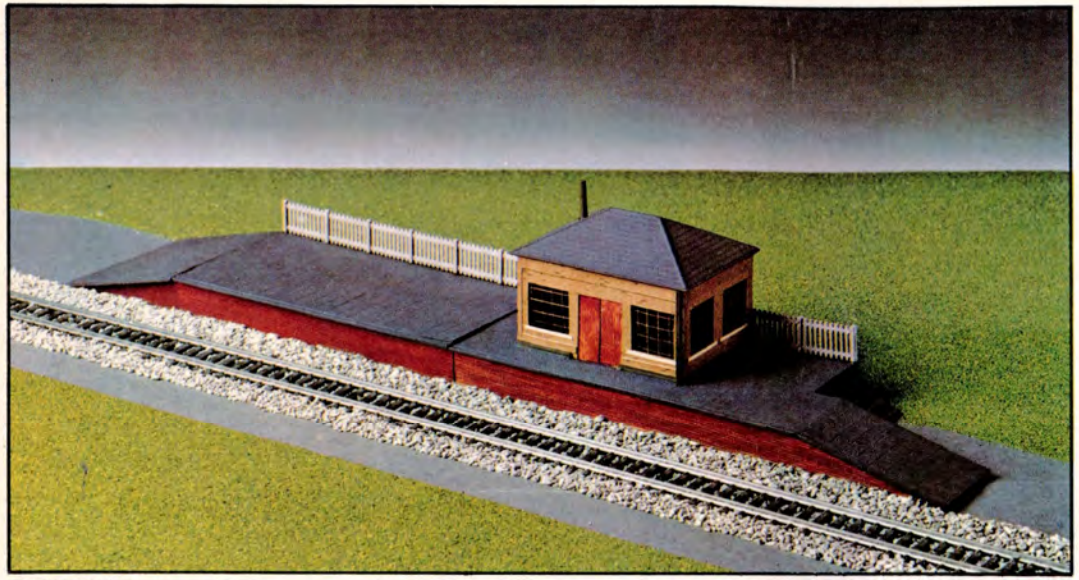


600025 Overhead Signal Gantry with operating Colour Signals for stopping train to allow Level Crossing Action.



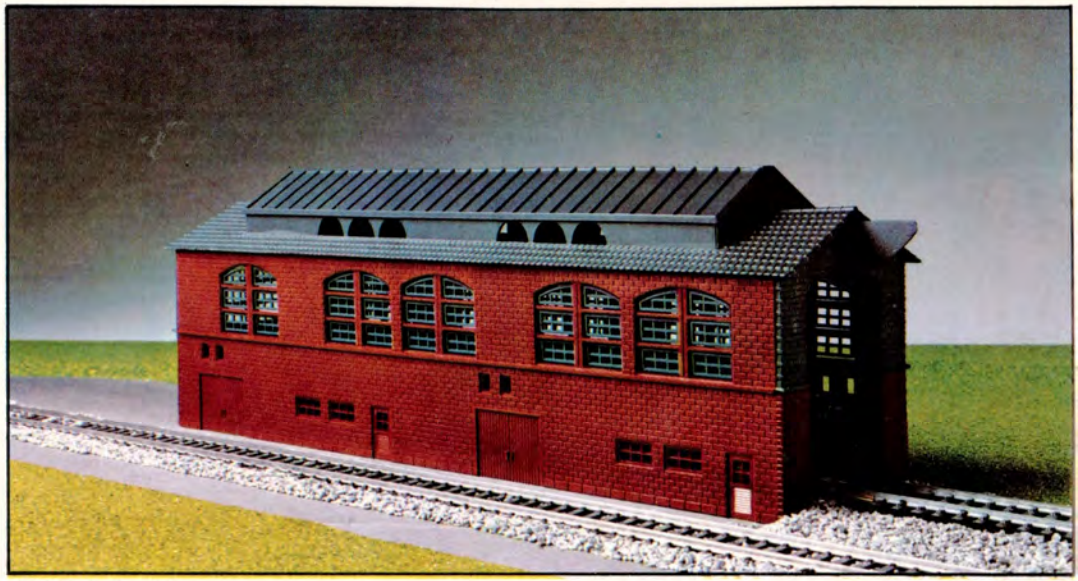
600046 Station with signal. Automatically stops the train in the station when signal is switched to red. NEW

BUILDINGS



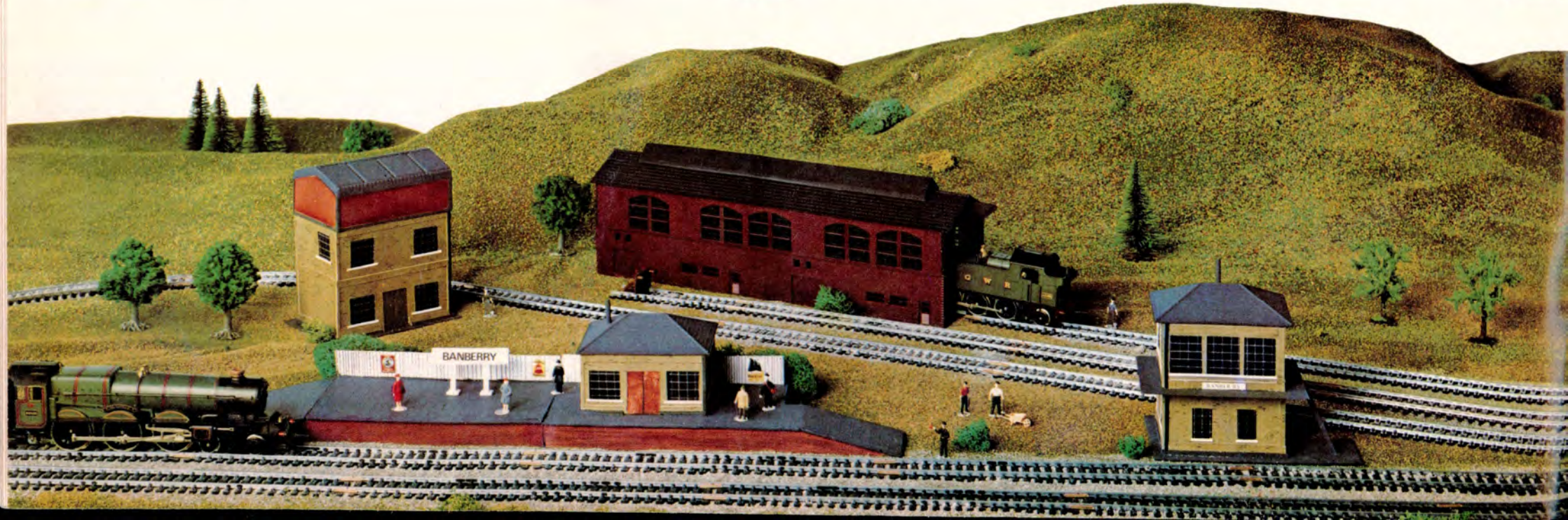
60 0034 Station

NEW



60 0955 Engine shed

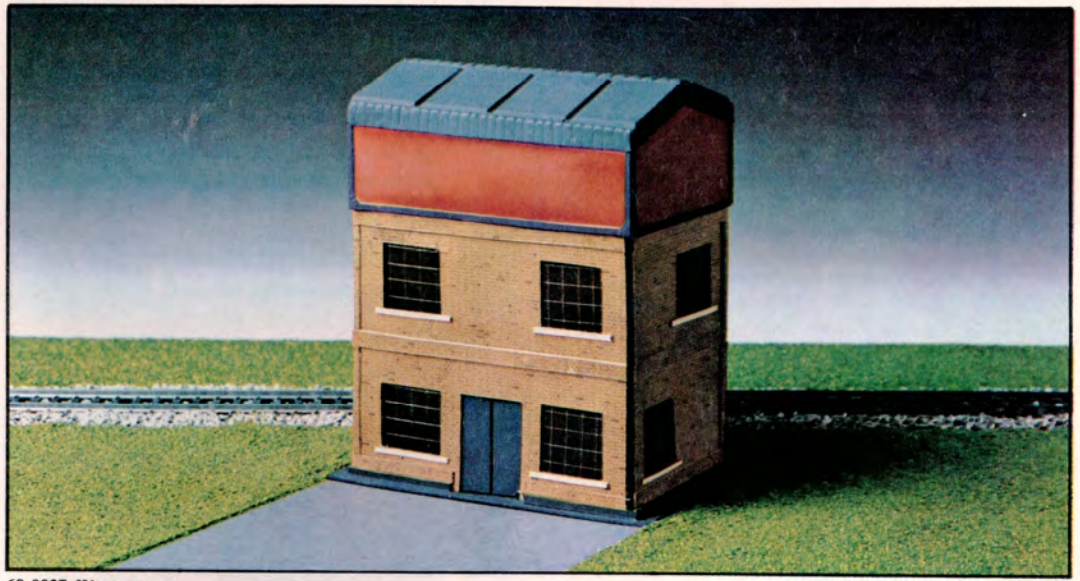
NEW





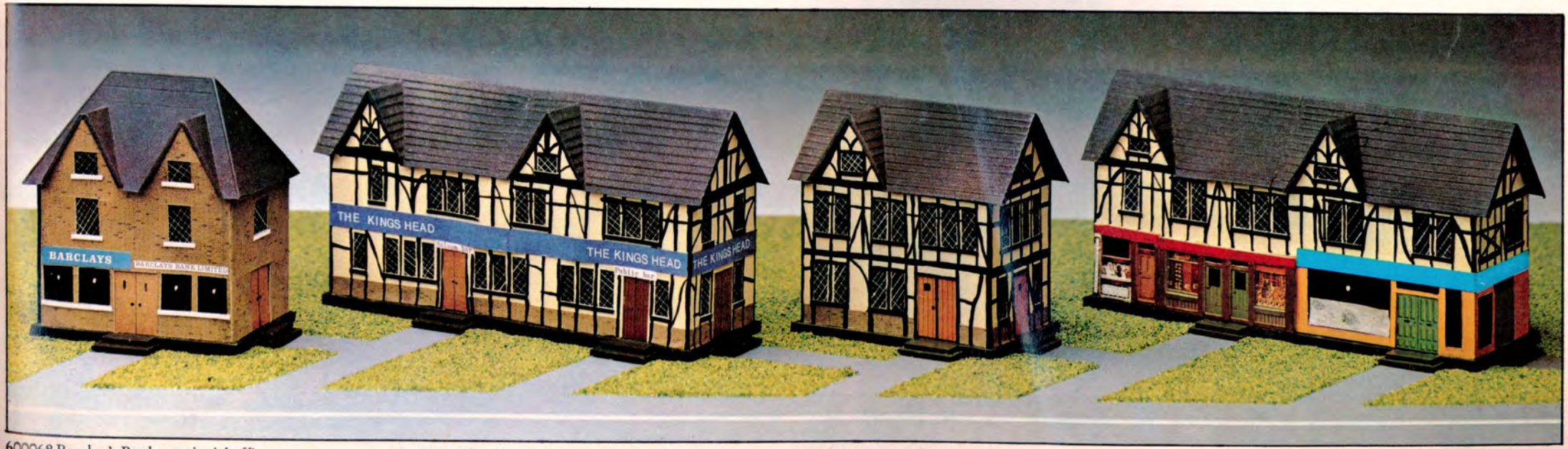
60 0032 Signal box

NEW



60 0037 Water tower

NEW



600068 Barclay's Bank provincial office.

600069 (The King's Head) public house.

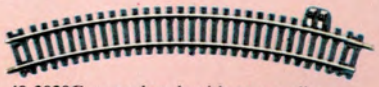
600067 Detached Tudor style house.

600070 Village Stores.

NEW



40 3030 curved track (dia. 720 mm). 36°.



40 3030C curved rack with power clip. 36°.



40 3033 rerailer.



40 3031 curved track Ø 720 mm. 18°.



40 3032 curved track Ø 720 mm. 9°.



40 3011 curved track (dia. 862 mm). 30°.



40 3012 curved track Ø 862 mm. 22°, 1/2.



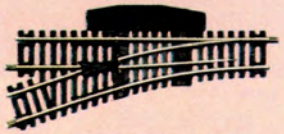
40 3050 right-hand point (manual).
40 3050E right-hand point (electric).



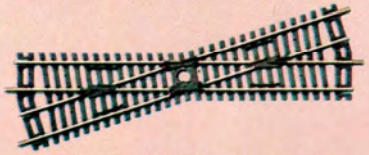
40 3035 compensating left track.



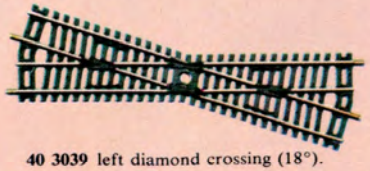
40 3036 compensating right track.



40 3051 left-hand point (manual).
40 3051E left-hand point (electric).



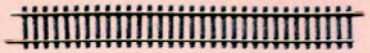
40 3038 right diamond crossing (18°).



40 3039 left diamond crossing (18°).



40 3041 diamond crossing (36°).



40 3020 straight track l.222 mm.



40 3023 straight track standard l. 166,5 mm.



40 3023C straight track standard with power clip l. 166,5 mm.



40 3021 straight track l. 111 mm.



40 3025 straight with buffer stop l. 111 mm.



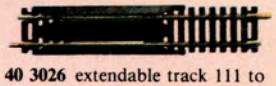
40 3022 straight track l. 55,5 mm.



40 3024 straight with power clip l. 55,5 mm.



40 3024R straight isolating track l. 55,5 mm.



40 3026 extendable track 111 to 166,5 mm.



40 3028 Wagon uncoupler l. 222 mm.

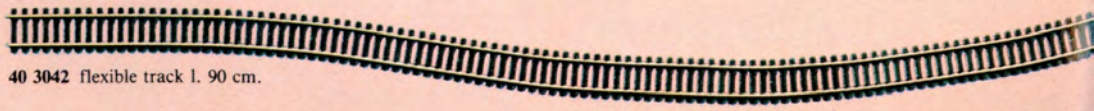


60 0002 Ramp.

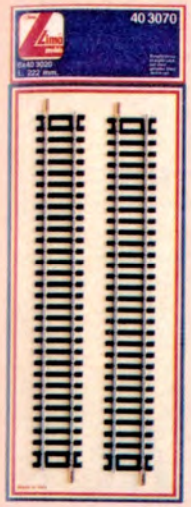


60 0008 Fishplate for track.

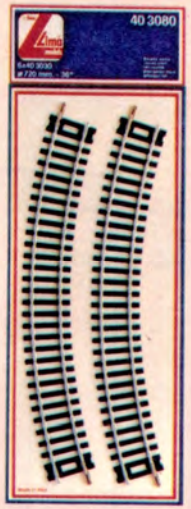
60 0015 Insulating fishplate.



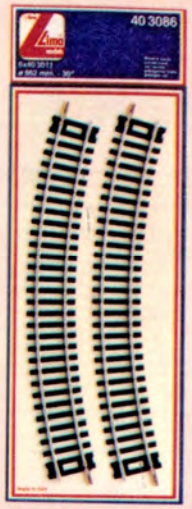
40 3042 flexible track l. 90 cm.



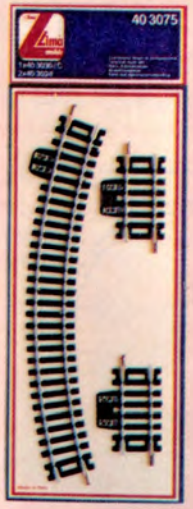
40 3070
6 pieces straight track (222 mm) 40 3020.



40 3080
6 pieces curved track (diameter 720 mm) 40 3030. 36°.



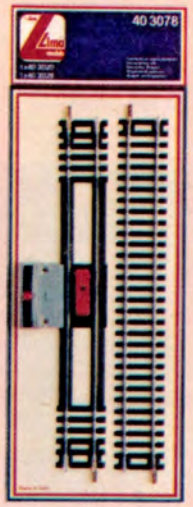
40 3086
6 pieces curved track (diameter) 862 mm. 40 3011 30°.



40 3075
1 curved track with power clip 40 3030C.
2 straight tracks with power clip 40 3024.
l. 55,5 mm.



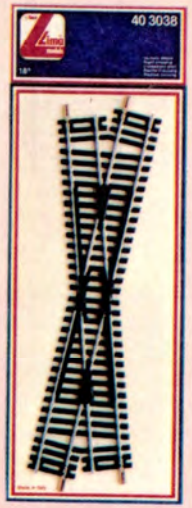
40 3076
1 straight track 40 3020.
1 straight track with buffer stop 40 3025.
1 straight isolating track 40 3024R.



40 3078
1 straight track (222 mm) 40 3020.
1 hand - operated uncoupler 40 3028.



40 3033
rerailer.

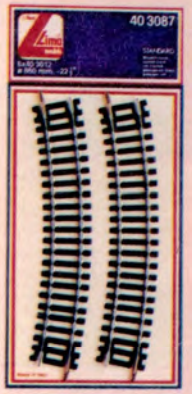


40 3038
Crossing 18° right hand.

40 3039
Crossing 18° left hand.



40 3041
Crossing 36°.



40 3087
6×40 3012 curved Ø 862 mm 22°, 1/2.



40 3072
6×40 3023 straight standard l. 166,5 mm.



40 3077
4 pieces straight track l. 55,5 mm. 40 3022.
2 pieces curved track Ø 720 mm. 40 3032 insulated fishplates 60 0015.



40 3026
Variable lenght track.



40 3050
Right hand point, hand operated.

40 3050E
Right hand point, electrically operated.



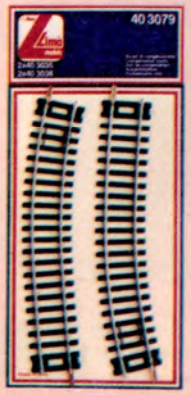
40 3051
Left hand point, hand operated.

40 3051E
Left hand point, electrically operated.

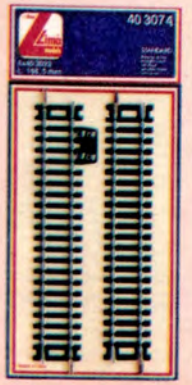


40 3048
1×40 3050,
1×40 3051,
1×40 3036,
1×40 3035.

40 3048E
1×40 3050E,
1×40 3051E
1×40 3036
1×40 3035



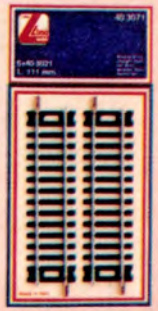
40 3079
2×40 3035 (right compensating track),
2×40 3036 (left compensating track).



40 3074
1×40 3023C
3×40 3023



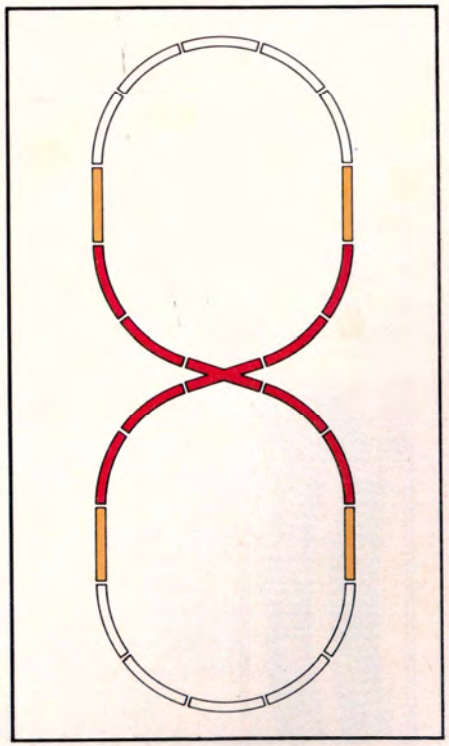
40 3081
6 pieces curved track 40 3031 Ø 720 mm 18°.



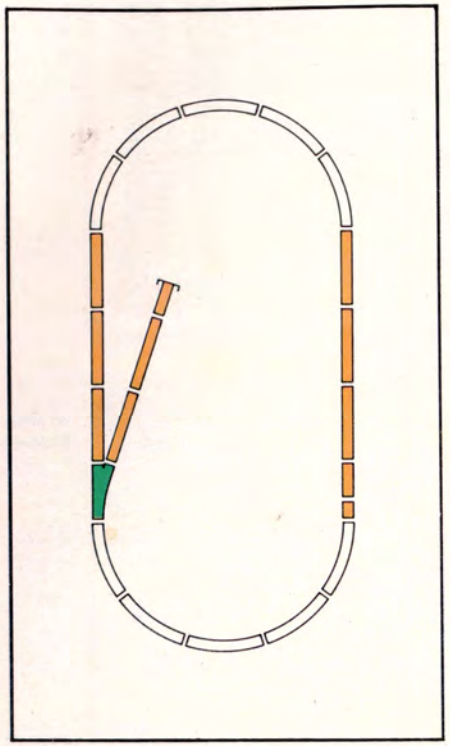
40 3071
6 pieces straight track (111 mm) 40 3021.

EXTENSION PACKS

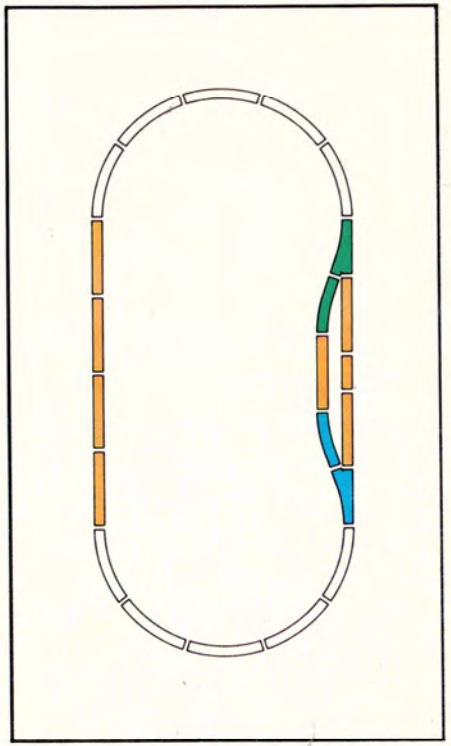
If you have purchased a simple Lima set, perhaps containing only a circle or an oval of track, it's a good idea to consider at the same time the range of Lima track extension packs. In this way you are able to instantly turn your simple layout into an exciting system with designs suitable for passenger terminals, goods yards, signal gantries and much more. These packs contain all the necessary pieces of track to add to your original train set to build it up into a much more complete system.



404051 8 pieces curved track (diameter 720 mm) 403030, 4 pieces straight track (220 mm) 403020, 1 piece diamond crossing (36°) 403041.

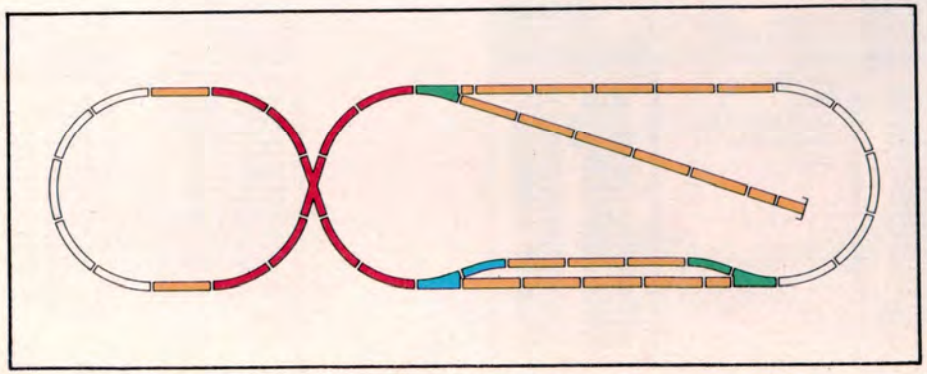


404052 8 pieces straight track (2020 mm) 403020, 1 piece ½ straight track (110 mm) 403021, 2 pieces ¼ straight track 403022, 1 piece ½ straight track with buffer stop 403025, 1 piece right-hand point (manual) 403050.

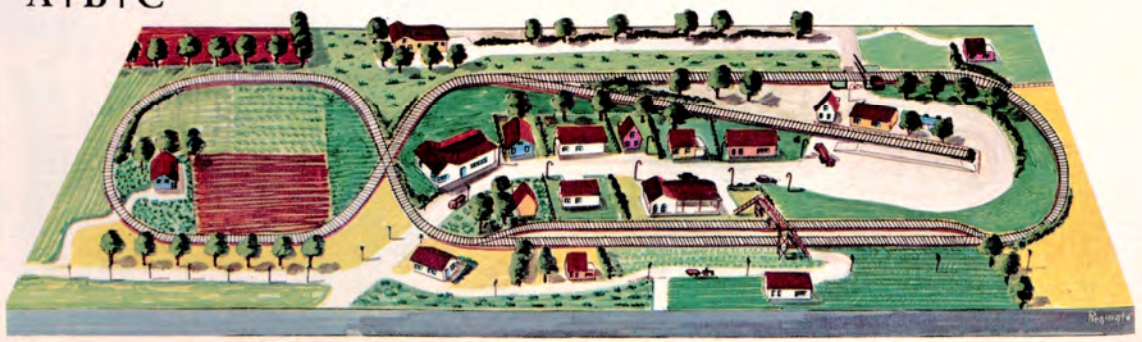


404057 7 pieces straight track (220 mm) 403020, 1 piece ½ straight track (110 mm) 403020, 1 piece right hand point (manual) 403050, 1 piece left hand point (manual) 403051.

This layout is built by adding the track packs A+B+C to the existing circle.



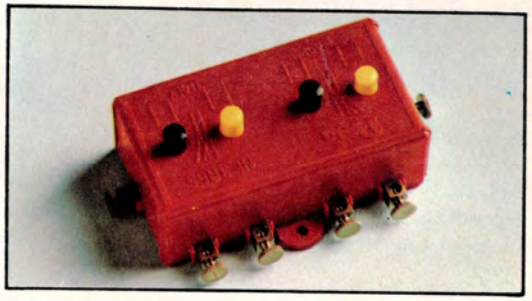
A+B+C



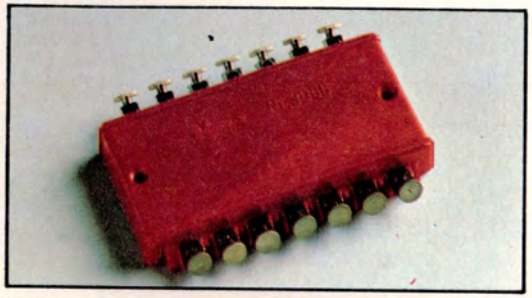
POWER CONTROLLERS

The transformer is basically a piece of equipment which takes current from the mains and converts it to the appropriate voltage, A.C. or D.C., to feed the various locomotives and accessories of a model railway system.

Lima manufacture a whole range of power units, for a whole range of different applications. Each one protected from any possible short-circuit or overload by means of fuses or automatic cut-outs, giving complete safety of operation.



503065 Control Box. Suitable for operating up to 2 accessories (electric points, etc.).



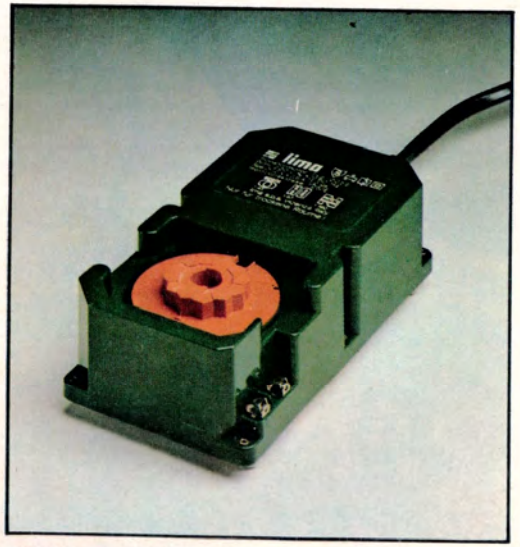
503066 Junction box.



502055 Transformer for operating track side accessories and electric points.



502054 Transformer. Power 3.6VA. Input 220V AC. Output 0-12V DC. Designed to operate one train or DC accessories.



502056 Transformer for 2 trains. Input 220V. Output 0-12V DC or 0.5A.



502057 Transformer for 2 trains, points and electrical accessories. Input 220 V. DC Output 0-12V at 0.7A. AC output 14V at 0.5A. Protected against short circuits by thermal cutout.



502059 Transformer for several trains, points and accessories. 220V input. DC output 0-15 at 2A. AC output 14 V at 1.2A. Protected against short circuits by thermal cutout.

BRITISH N GAUGE

One of the newest developments in model railways, 'N' Gauge, is especially suited to today's living conditions where space is at a premium.

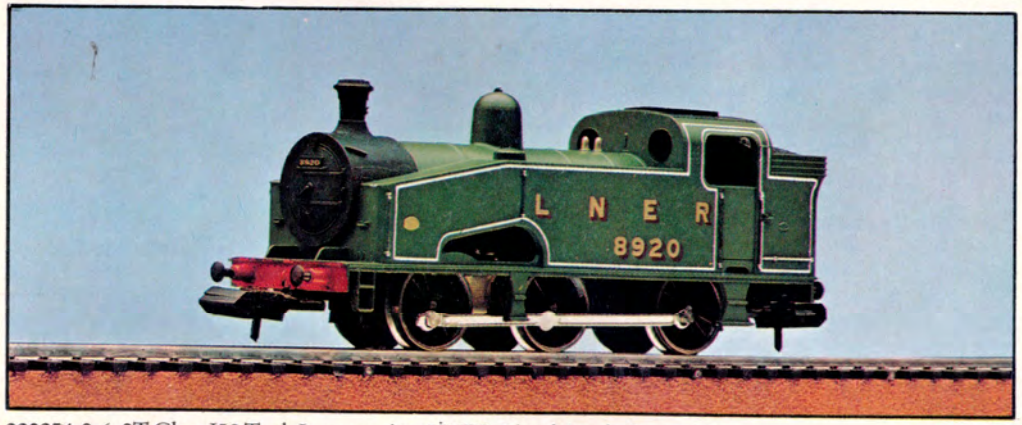
Many people just don't have room for a permanent 'OO/HO' system – but a really intricate 'N' Gauge layout can easily fit onto a baseboard as small as 92cm x 61cm. Another important factor is that the modeller who wishes to be creative with his scenery can incorporate much more into an 'N' Gauge layout with its facility to create a larger 'backdrop'. The gauge used for 'N' is 9mm to a scale of 2mm:1 ft.

Lima have an enviable world-wide reputation for packing both reliability and a wealth of fine detail into their 'N' Gauge models. A reputation built up over many years of experience with this scale.

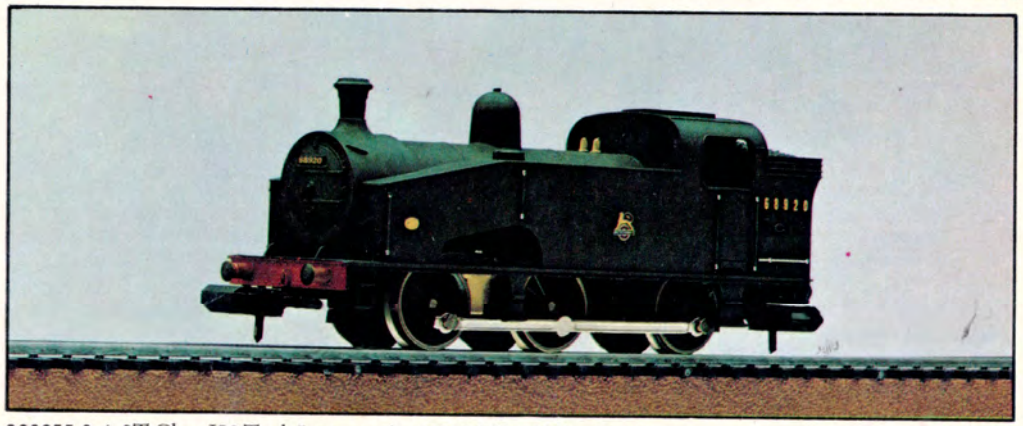


LOCOMOTIVES

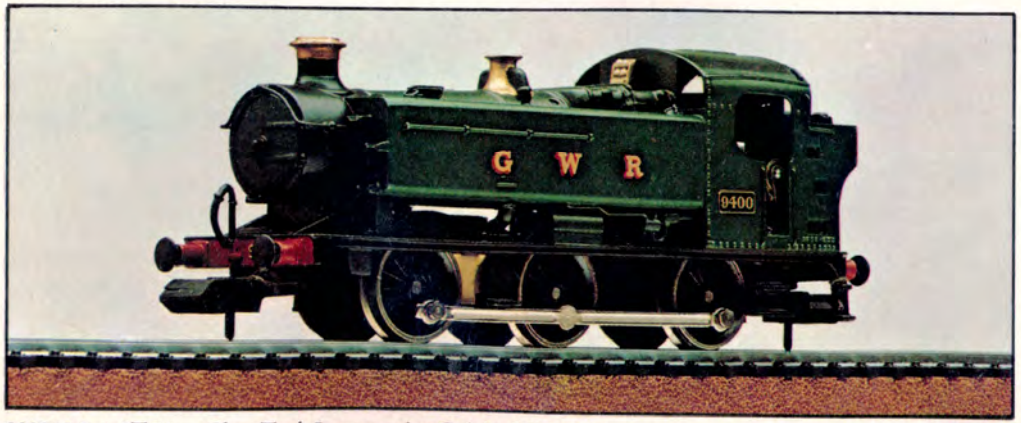




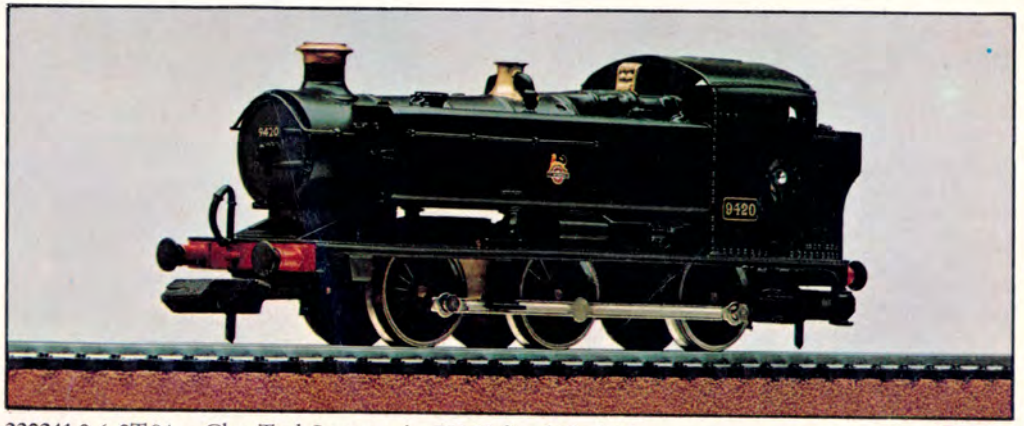
220254 0-6-0T Class J50 Tank Locomotive. LNER Lined Apple Green Livery. NEW



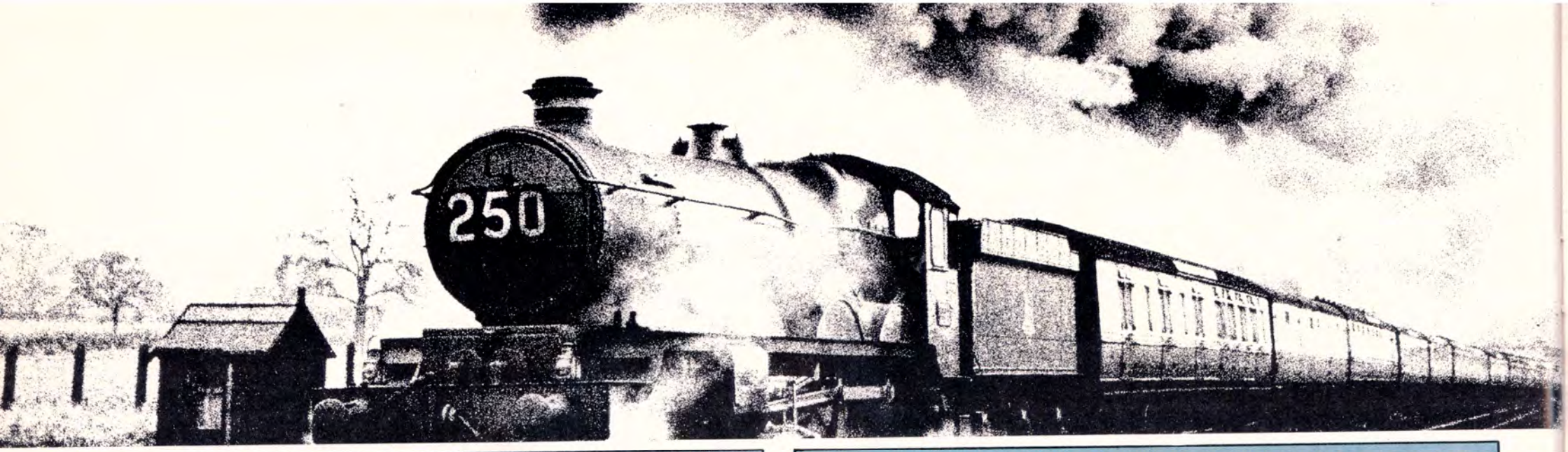
220255 0-6-0T Class J50 Tank Locomotive. BR Unlined Black Livery. NEW

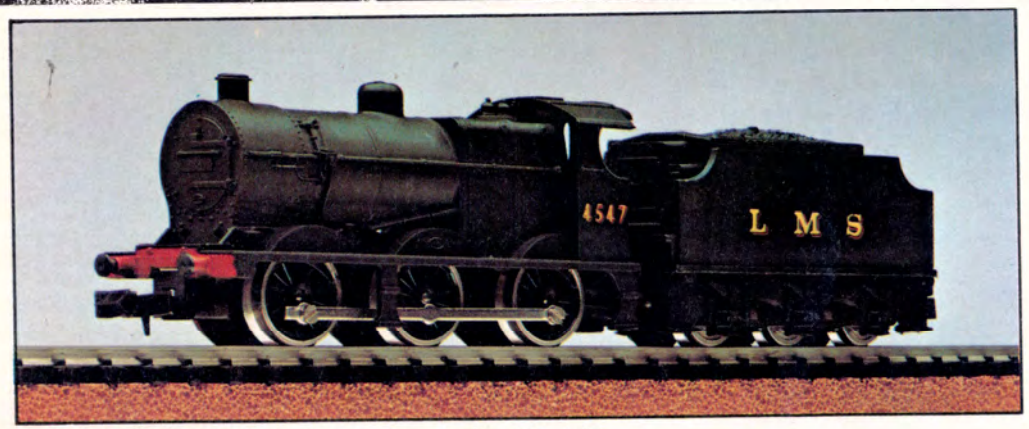


220240 0-6-0T 94 xx Class Tank Locomotive Original GWR Livery NEW

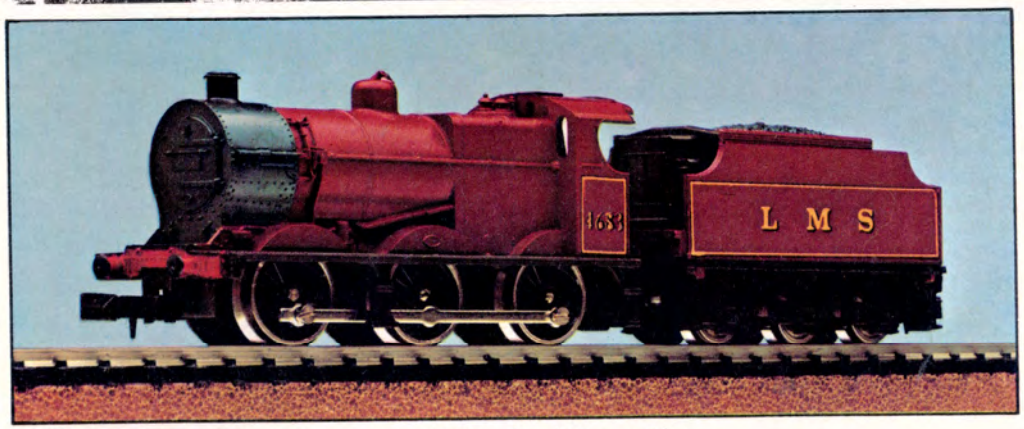


220241 0-6-0T 94 xx Class Tank Locomotive BR Unlined Black Livery NEW

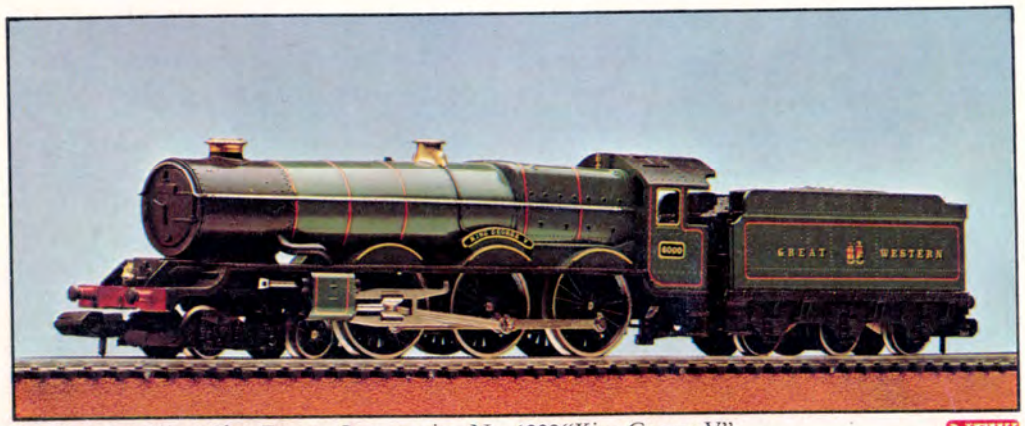




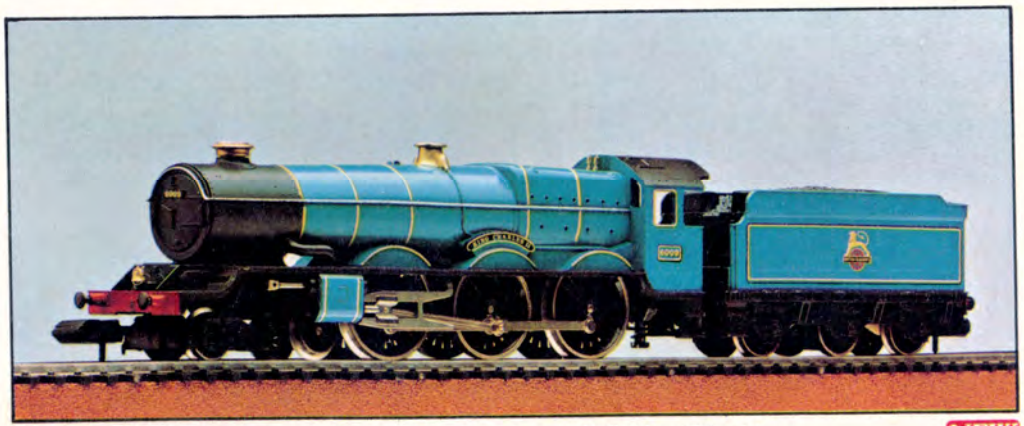
220258 0-6-0 Class 4F Tender Locomotive. Unlined Black Livery.



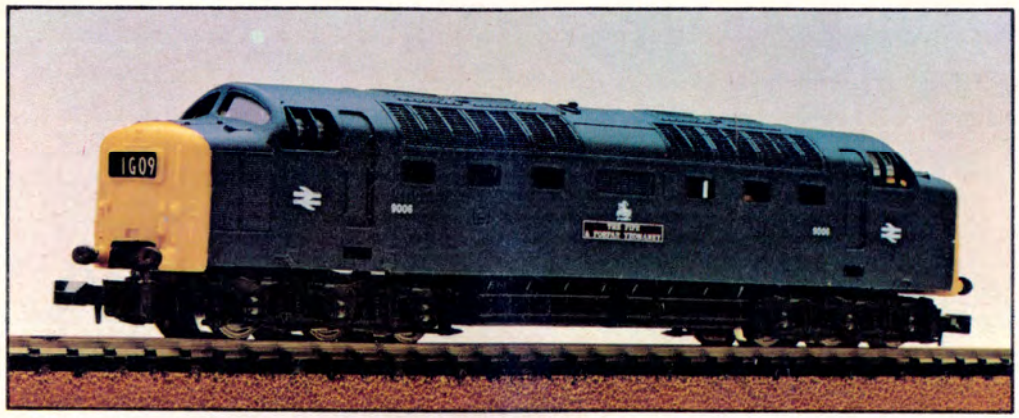
220259 0-6-0 Class 4F Tender Locomotive. LMS Unlined Maroon Livery.



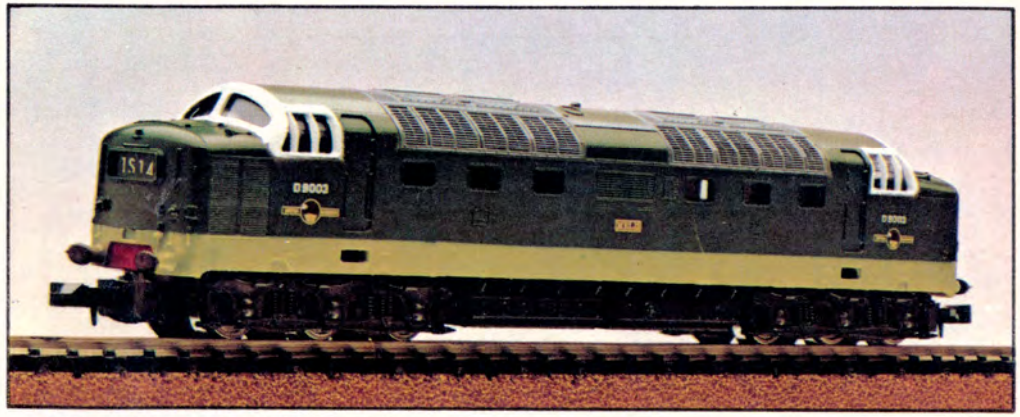
220256 4-6-0 'King' Class Express Locomotive. No. 6000 "King George V" in Lined GWR Green Livery. NEW



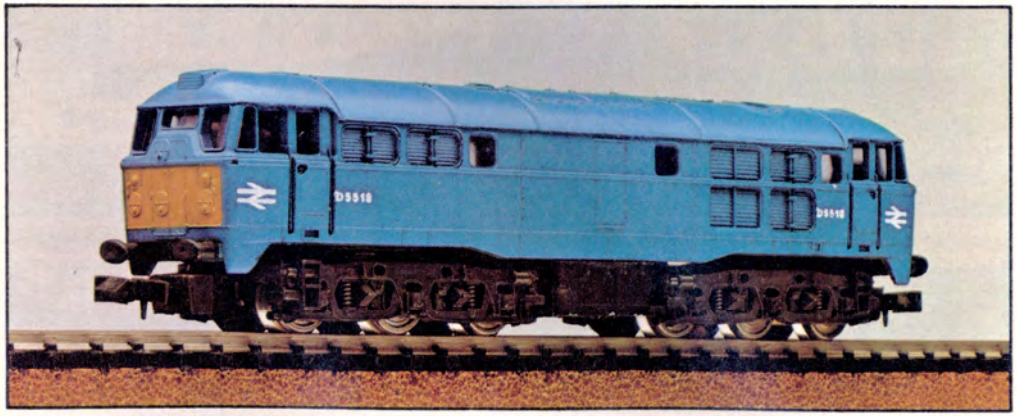
220257 4-6-0 'King' Class Express Locomotive Experimental BR Lined Blue Livery No. 6009 'King Charles II.' NEW



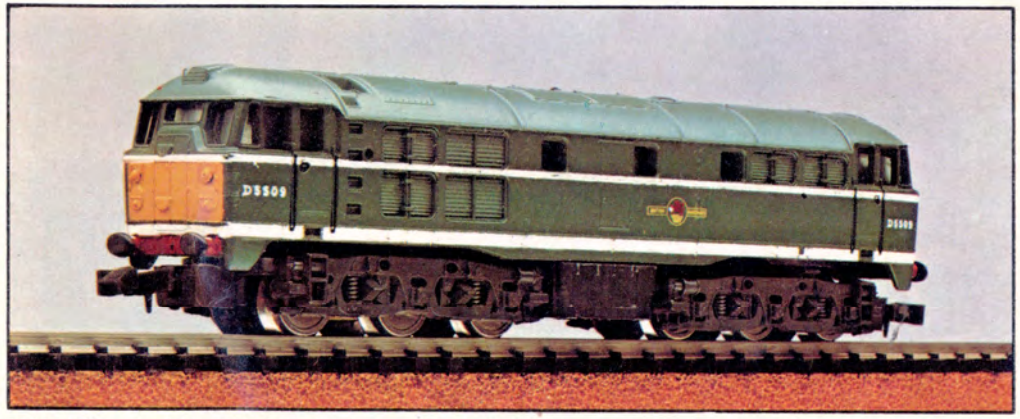
220217 BR Class 55 'Deltic' Co-Co Diesel Locomotive. No. 9006 "The Fife and Forfar Yeomanary".



220253 0-6-0 Class 09 350 BHP Diesel Shunter. BR Livery.



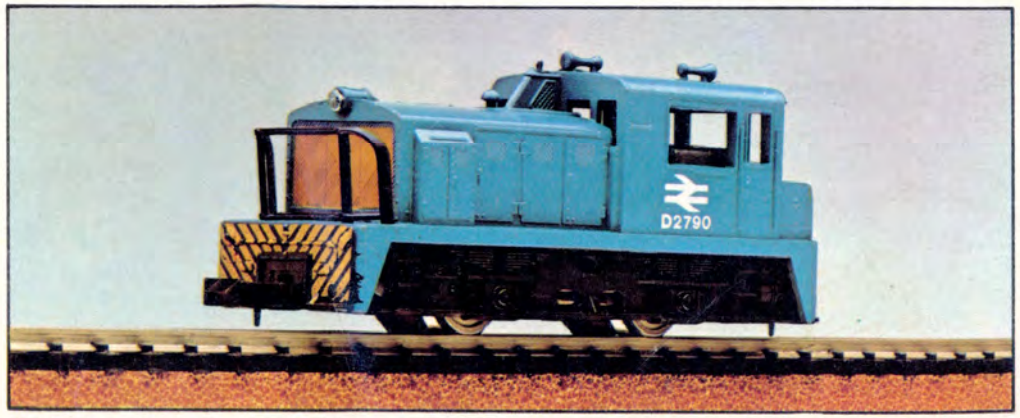
220209 Class 31 AIA-AIA Diesel Locomotive. BR Blue Livery.



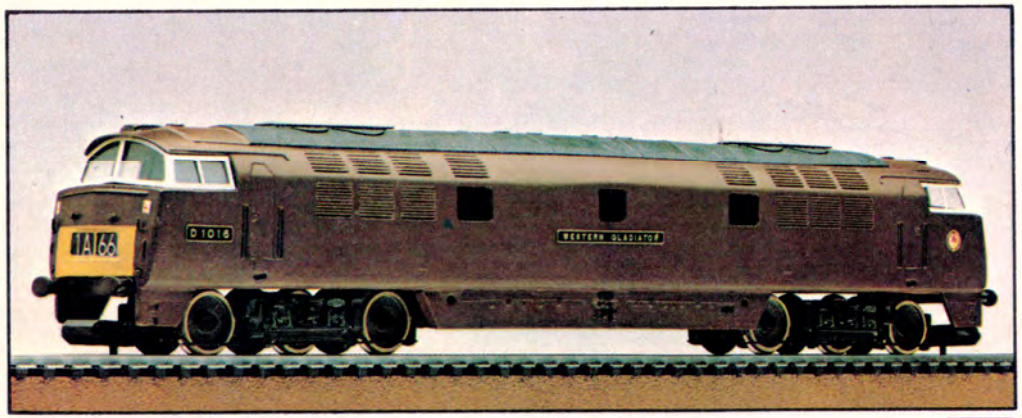
220214 Class 31 AIA-AIA Diesel Locomotive. Early BR Livery.



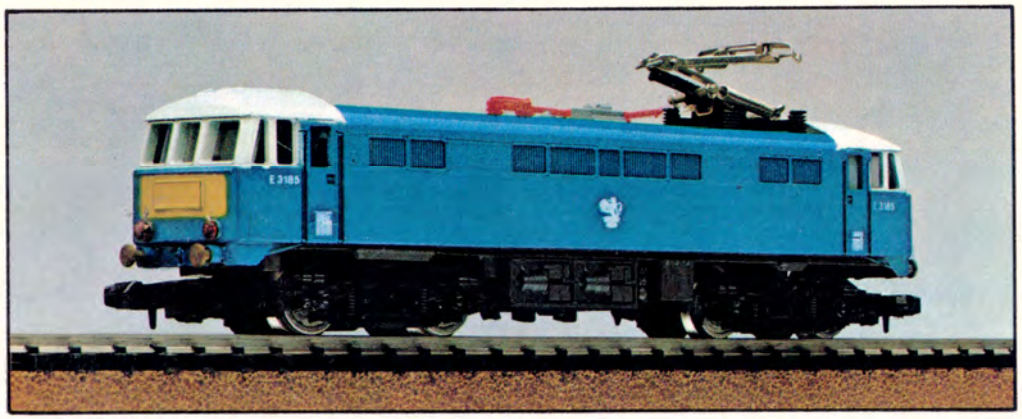
220210 0-4-0 Diesel Shunter. Early BR Livery.



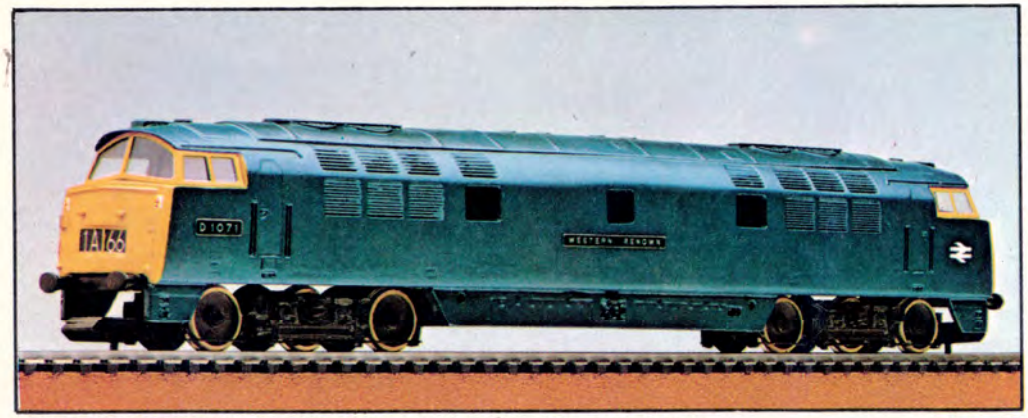
220211 0-4-0 Diesel Shunter. BR Livery.



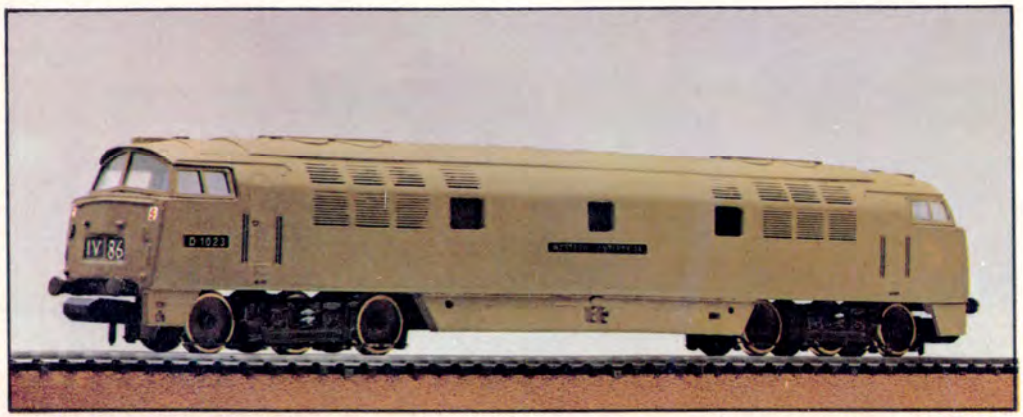
220242 Class 52 'Western' Diesel Hydraulic Locomotive. Western Maroon Livery. No. D1016 "Western Gladiator". NEW



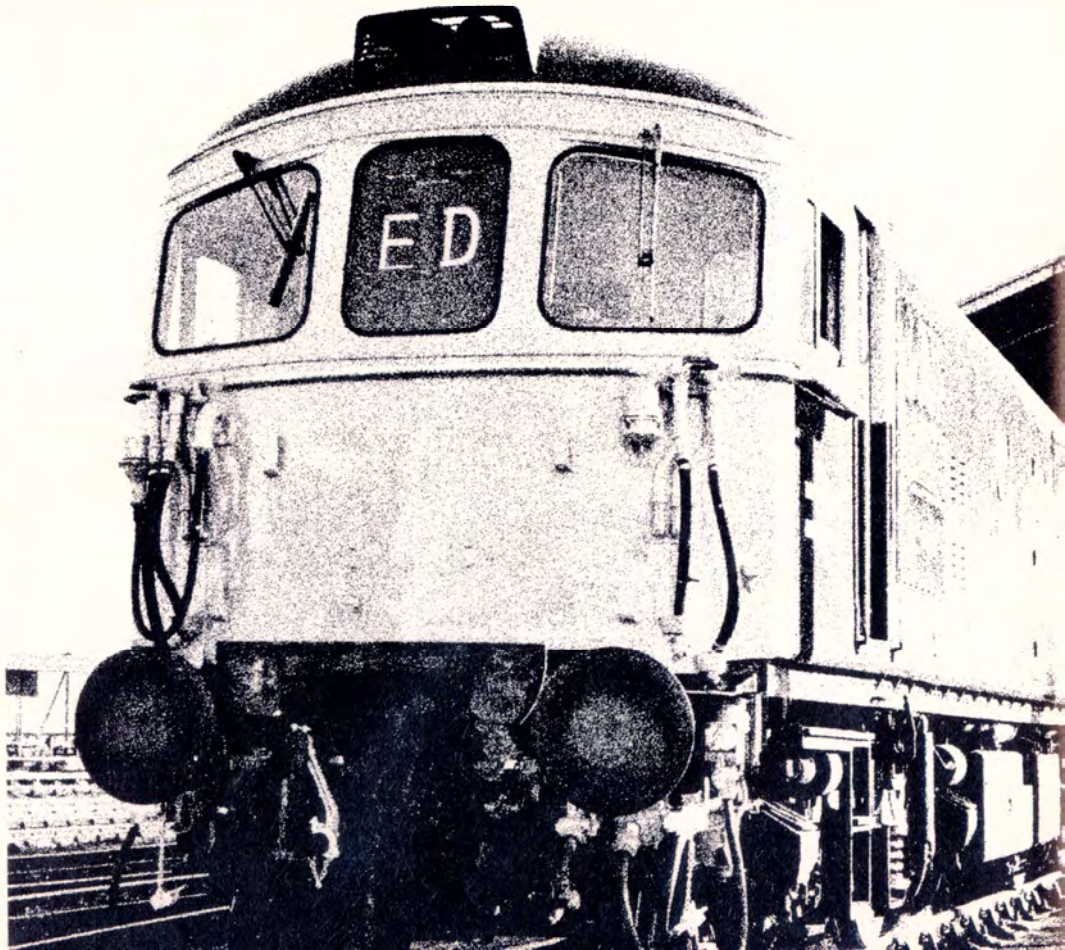
220205 BR Class 81 Electric Locomotive (standard rail pick-up).



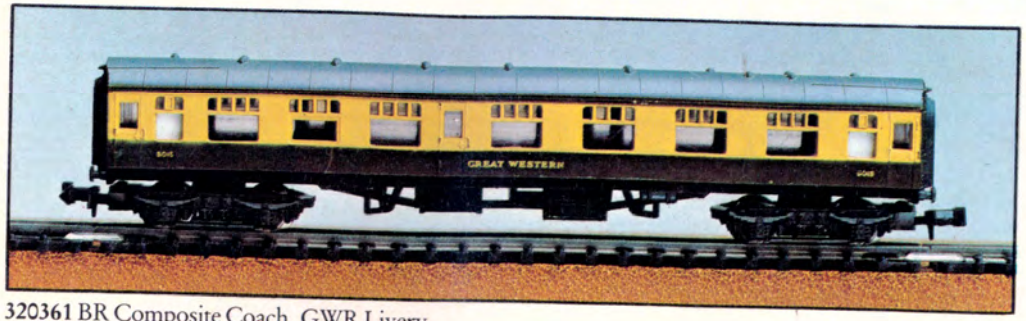
220243 BR Class 52 'Western' Diesel Hydraulic Locomotive. No. D1071 "Western Renown". NEW



220299 Class 52 "Western" diesel-hydraulic Co-Co No. D.1071 "Western Renown." NEW



COACHES



320361 BR Composite Coach. GWR Livery.



320362 BR 2nd Class Brake Coach. GWR Livery.



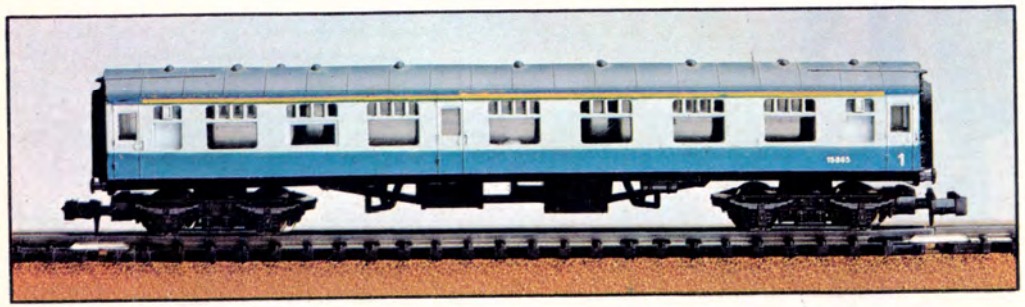
320363 BR Restaurant Car. GWR Livery.



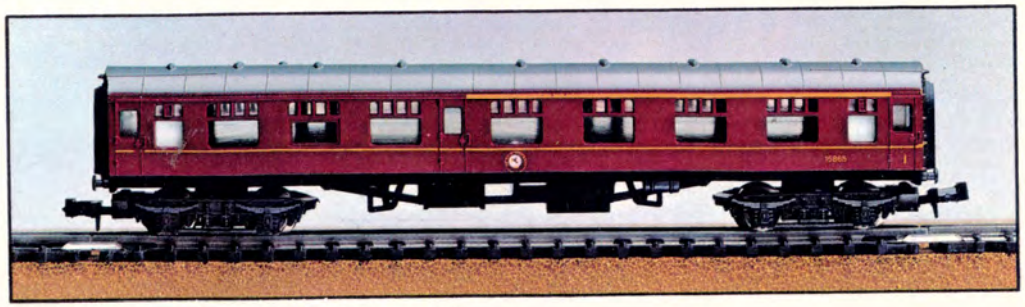
320366 BR Standard Gangwayed Brake Van. GWR Livery.



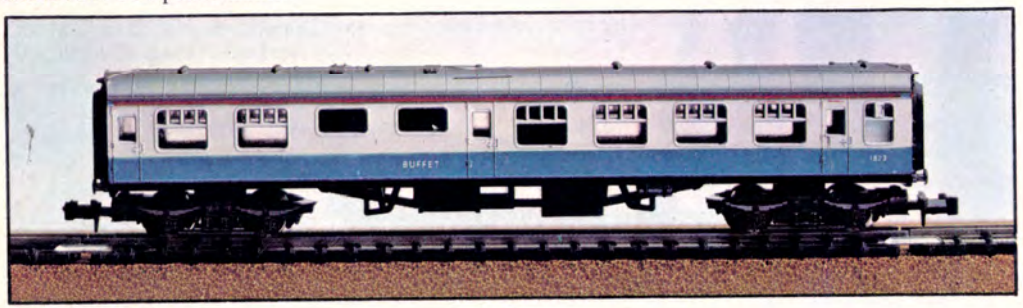
COACHES



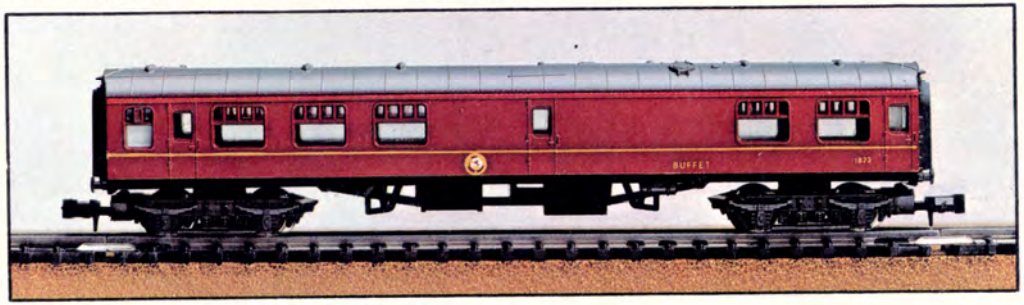
320306 BR Composite Coach.



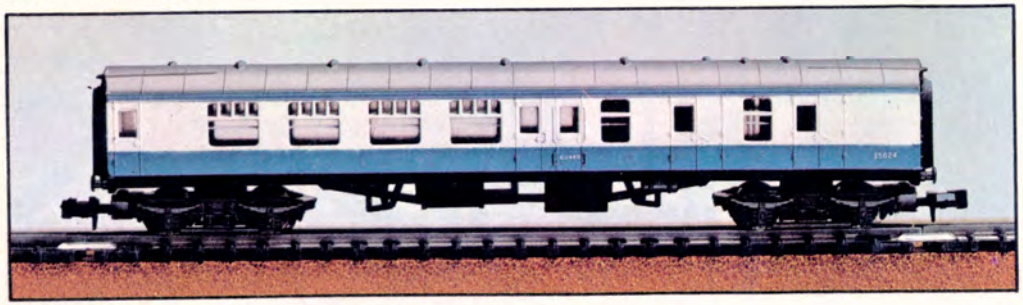
320314 BR Composite Coach. LMS Maroon Livery.



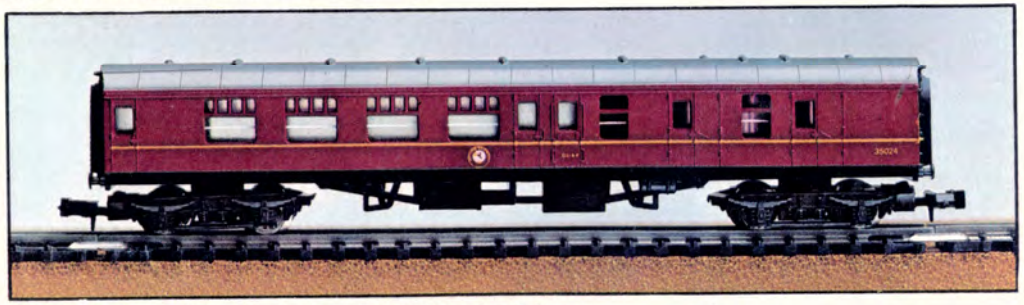
320313 BR Buffet Car.



320316 BR Buffet Car. LMS Maroon Livery.



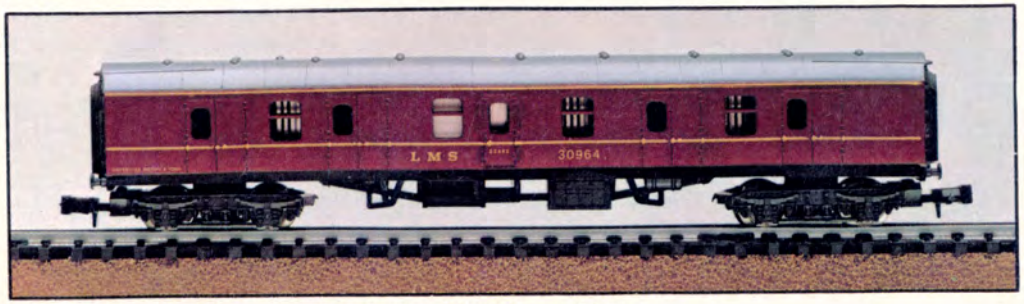
320307 BR 2nd Class Brake Coach.



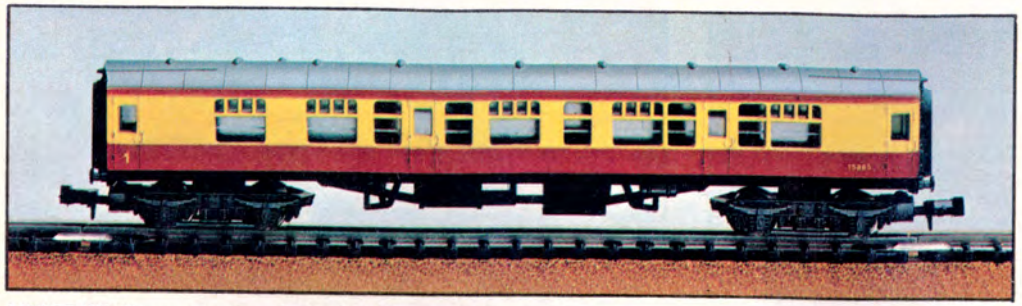
320315 BR Second Class Brake Coach. LMS Maroon Livery.



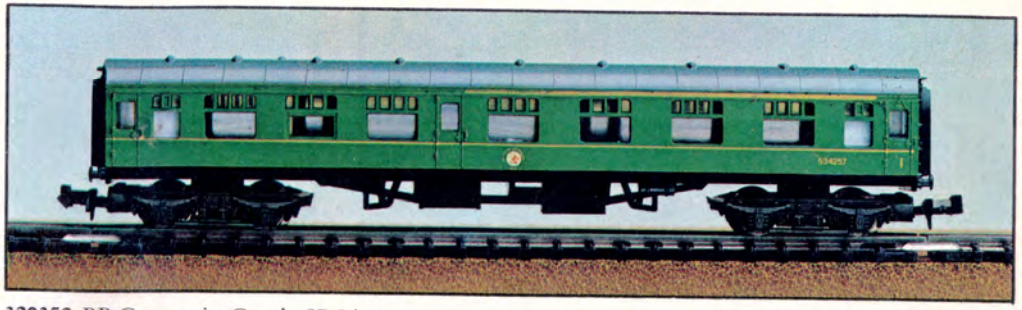
320368 BR Standard Gangwayed Brake Van.



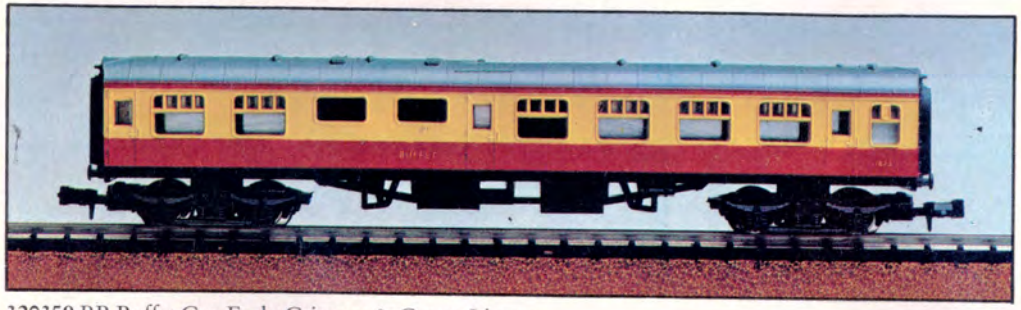
320367 BR Standard Gangwayed Brake Van. LMS Maroon Livery.



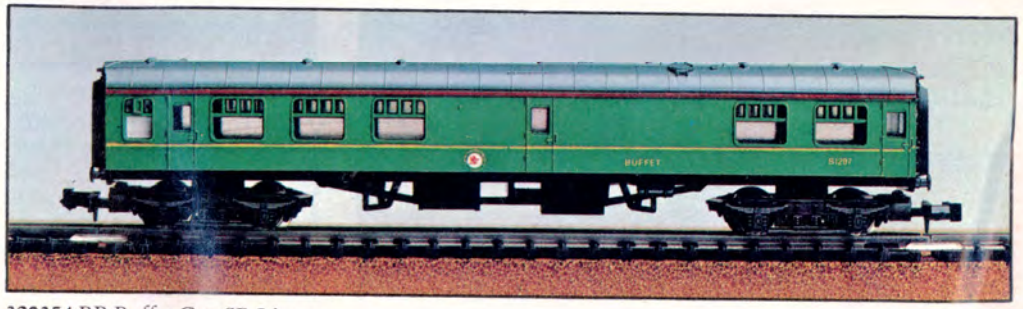
320357 BR Composite Coach. Early Crimson & Cream Livery.



320352 BR Composite Coach. SR Livery.



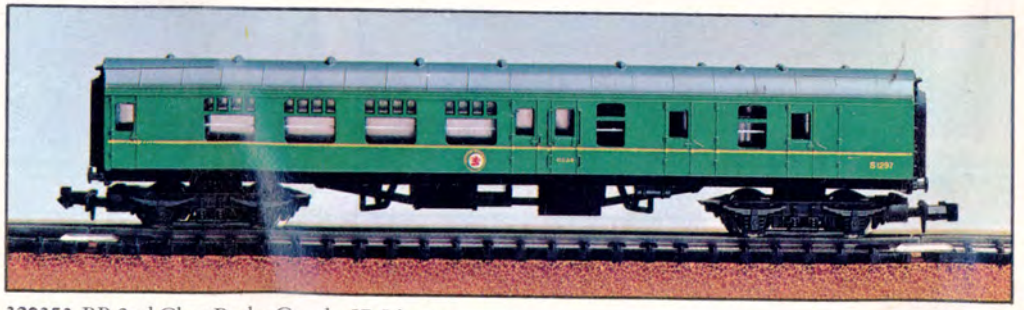
320359 BR Buffet Car. Early Crimson & Cream Livery.



320354 BR Buffet Car. SR Livery.



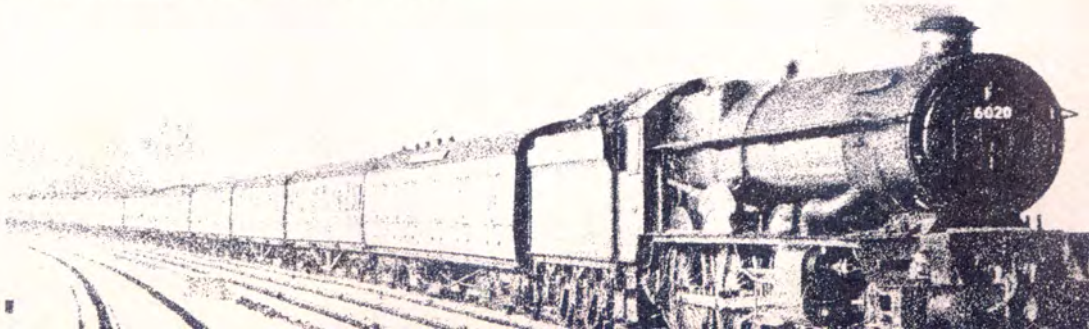
320358 BR 2nd Class Brake Coach. Early Crimson & Cream Livery.



320353 BR 2nd Class Brake Coach. SR Livery.

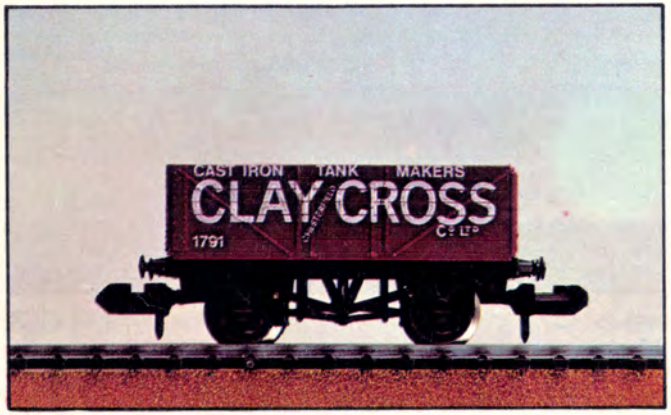


320369 BR Standard Gagwayed Brake Van. Early Crimson & Cream Livery.

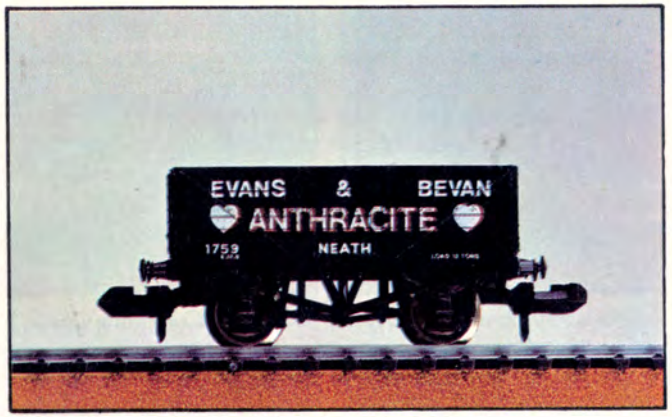


WAGONS

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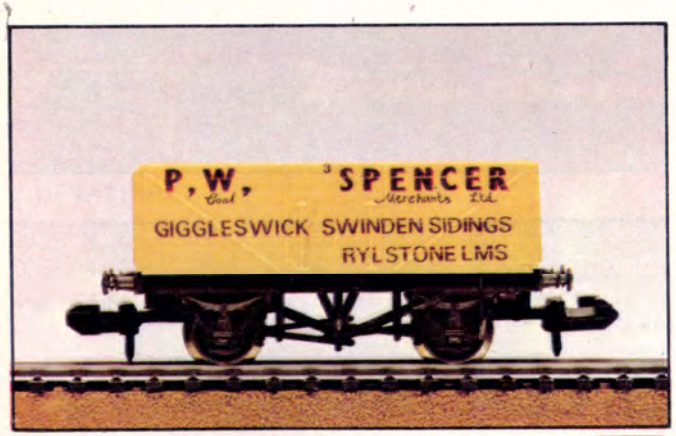
320601 'Clay Cross Co. Ltd.,' 7 Plank Wagon.



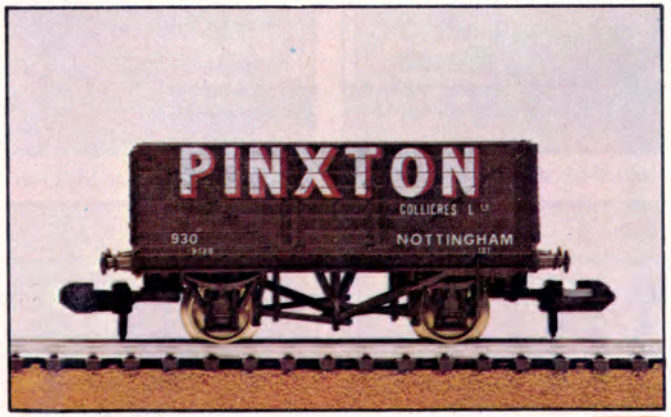
320603 'Evans & Bevan Anthracite' 7 Plank Wagon.



320607 "J.K. Harrison" 7 plank wagon. NEW



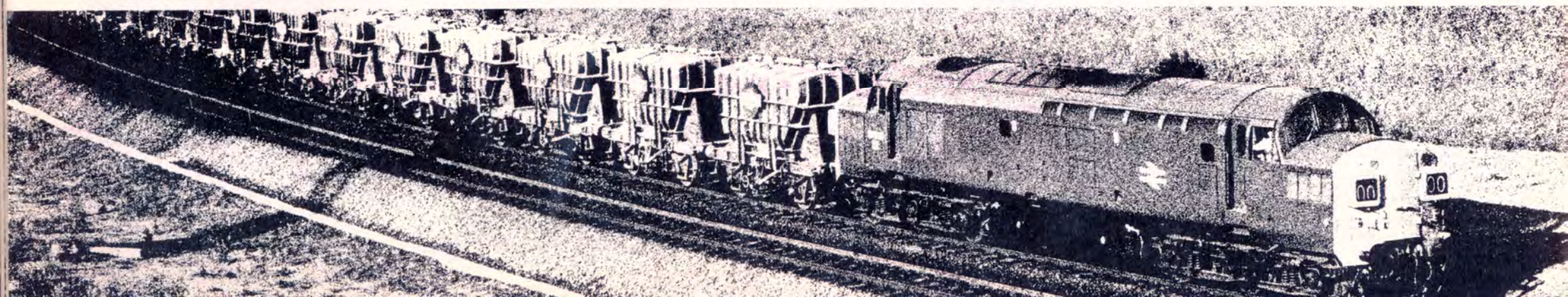
320608 "P.W. Spencer" 7 plank wagon. NEW



320609 "Pinxton Collieries" 7 plank wagon. NEW

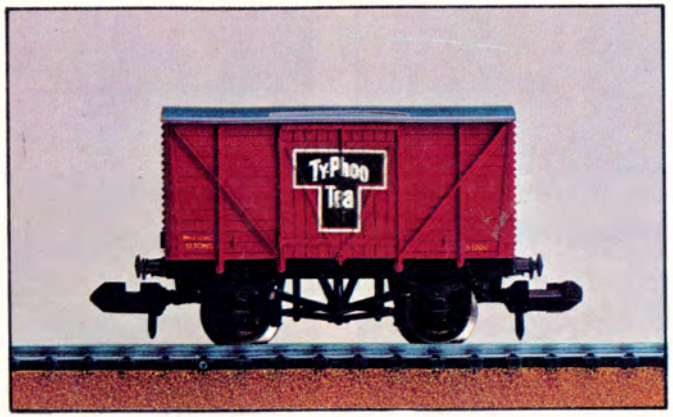


320610 "Buxton Gas Dept" 7 plank wagon. NEW





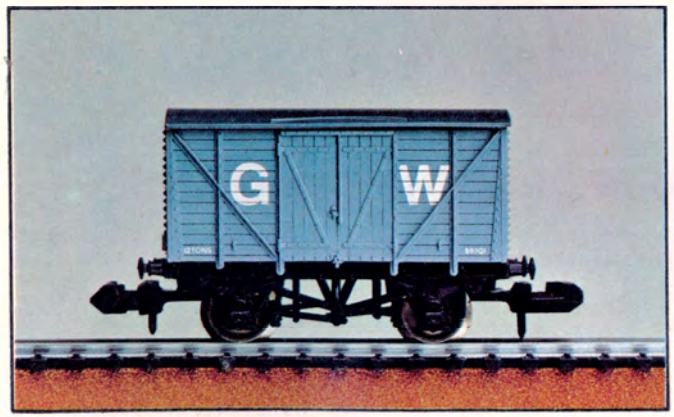
320612 'Homepride Flour' Box Van.



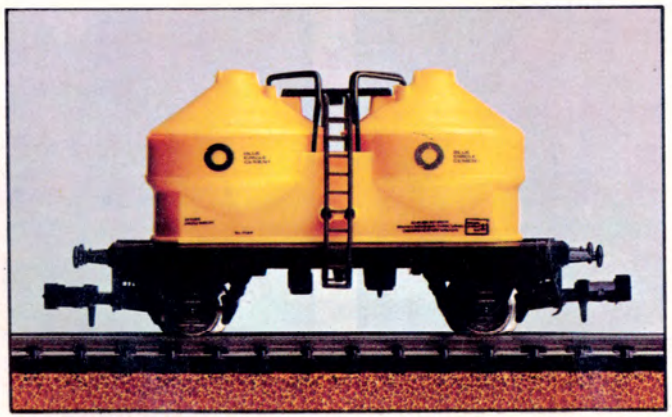
320611 'Typhoo Tea' Box Van.



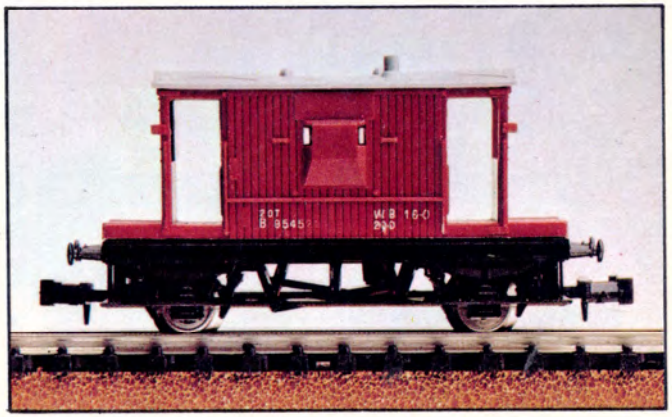
320614 'St Ivel Dairy Products' Box Van.



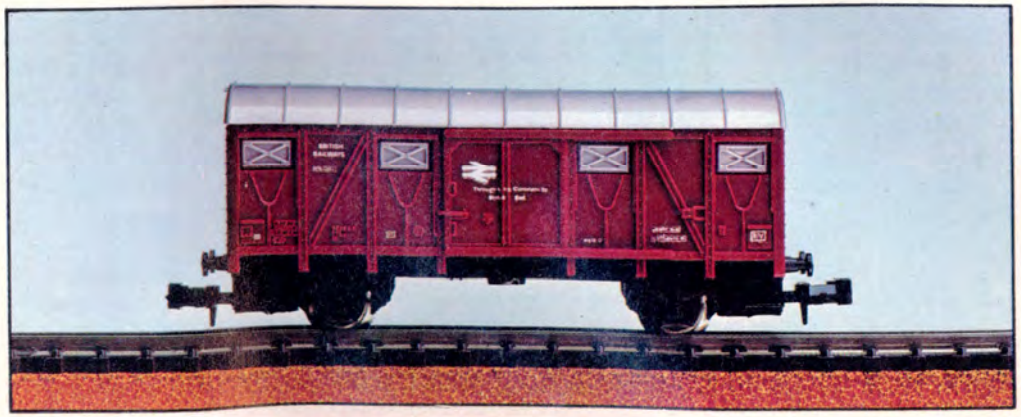
320615 GWR Box Van.



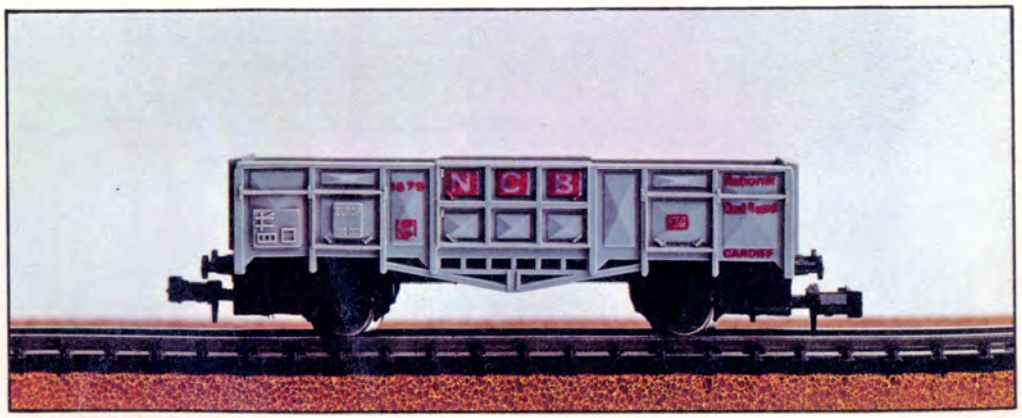
320729 'Blue Circle' Twin Tank Cement Wagon.



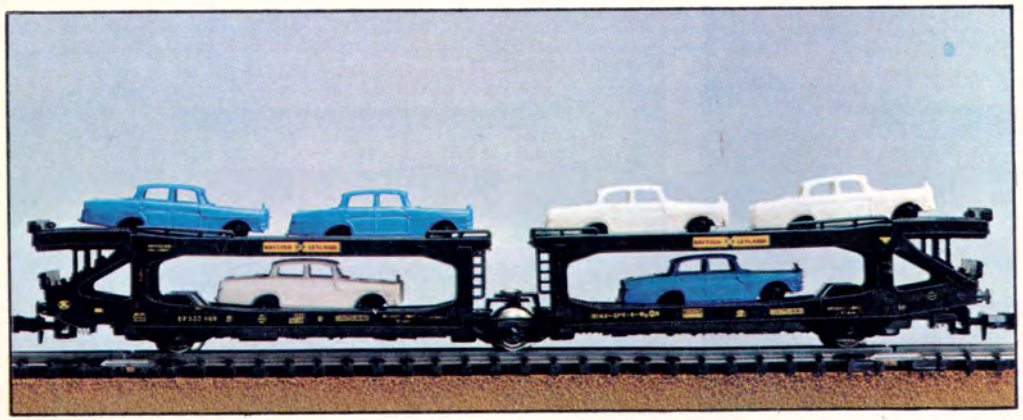
320405 BR 20 Ton Brake Van.



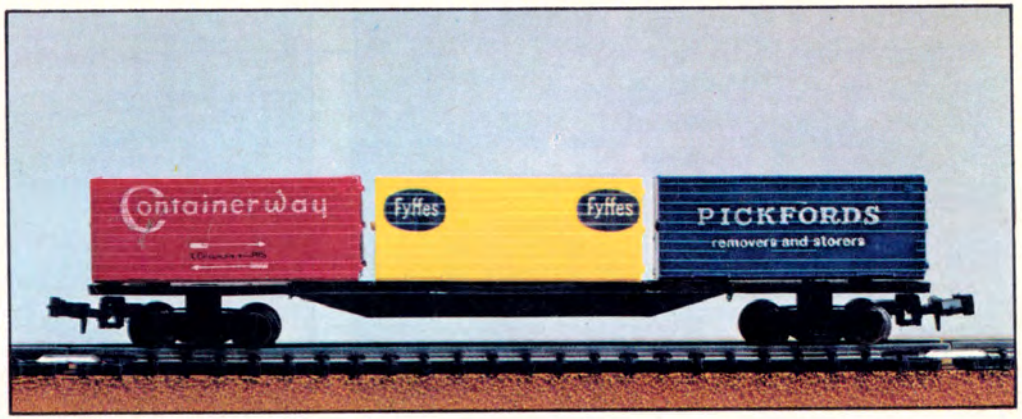
320400 BR Closed Van.



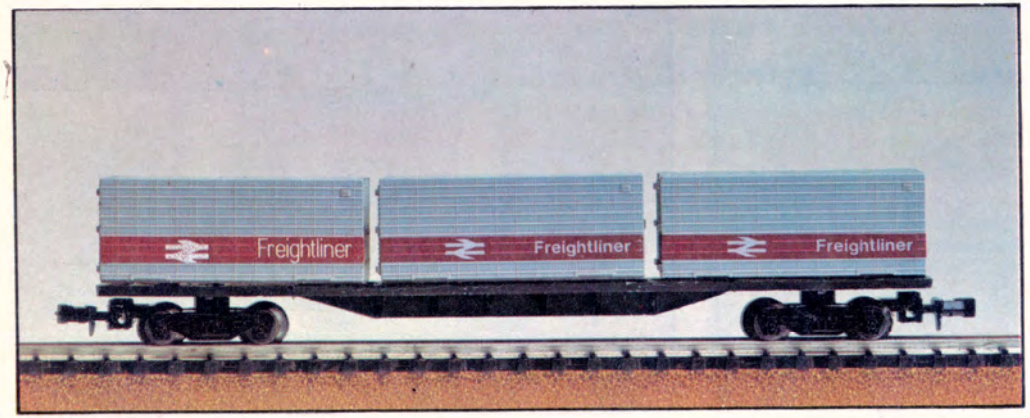
320726 'National Coal Board' Mineral Wagon.



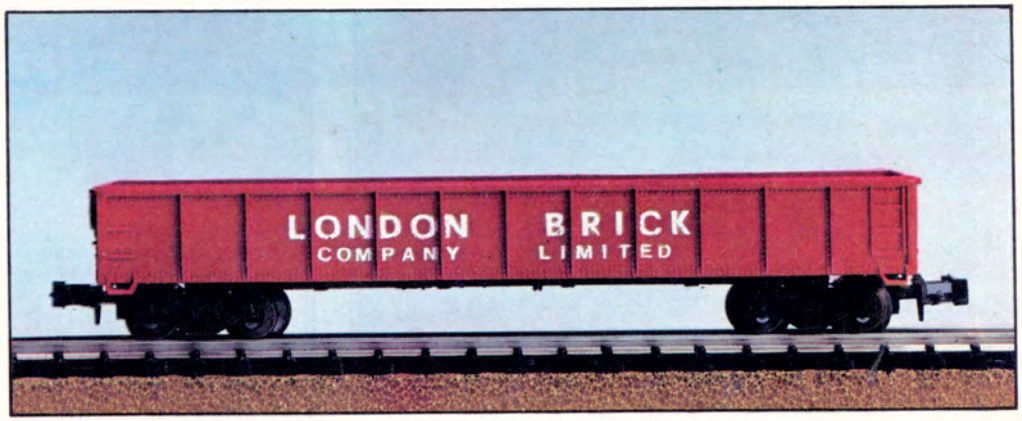
320792 'British Leyland' Car Carrier. Three Axle Design.



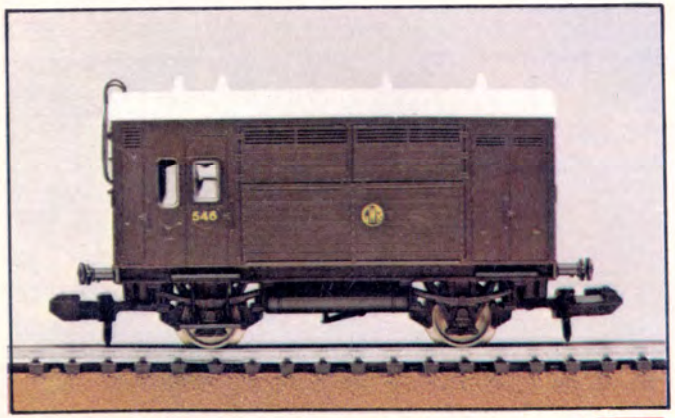
320795 Bogie Container Transporter.



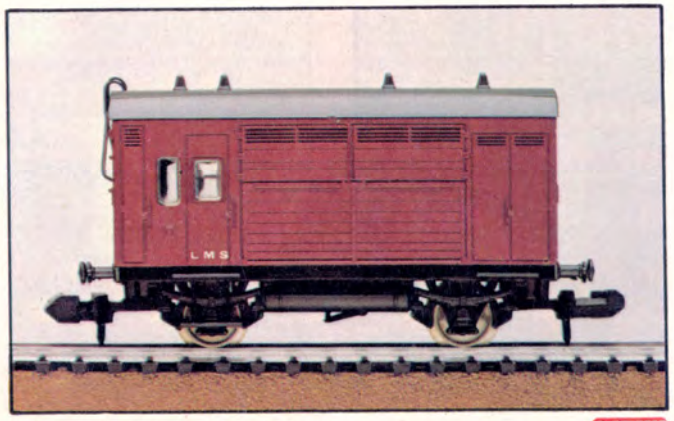
320484 Bogie Freightliner Transporter.



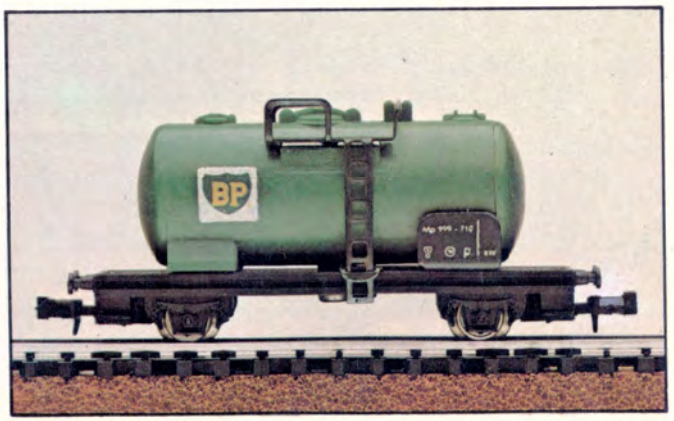
320720 'London Brick' Bogie Wagon.



320616 GWR 2 Axle Horse Box. NEW



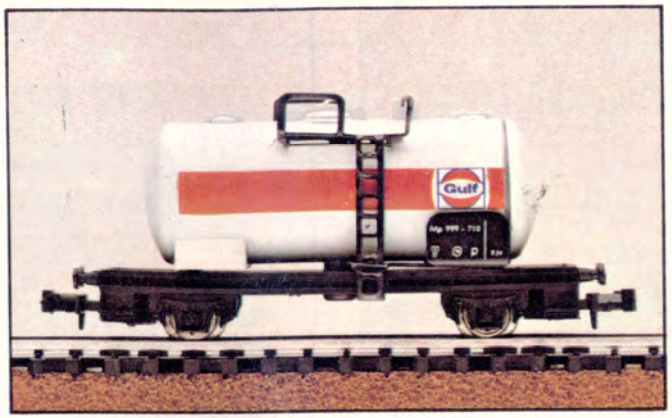
320617 2 Axle Horse Box LMS Livery. NEW



320454 'BP' Tank Wagon.



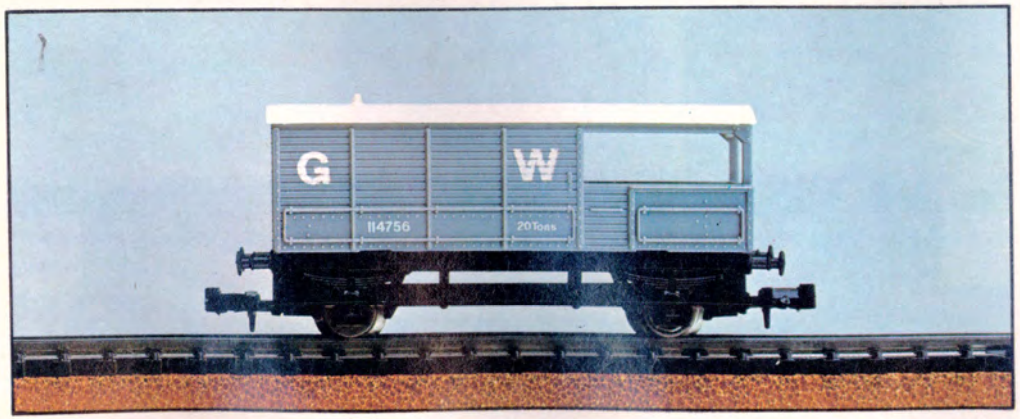
320784 "Mobil LP Gas" tank wagon. NEW



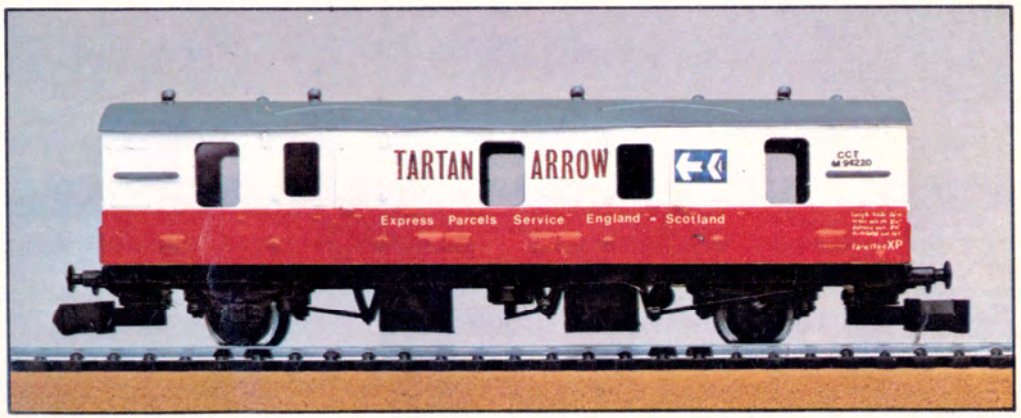
320780 'Gulf' Tank Wagon.



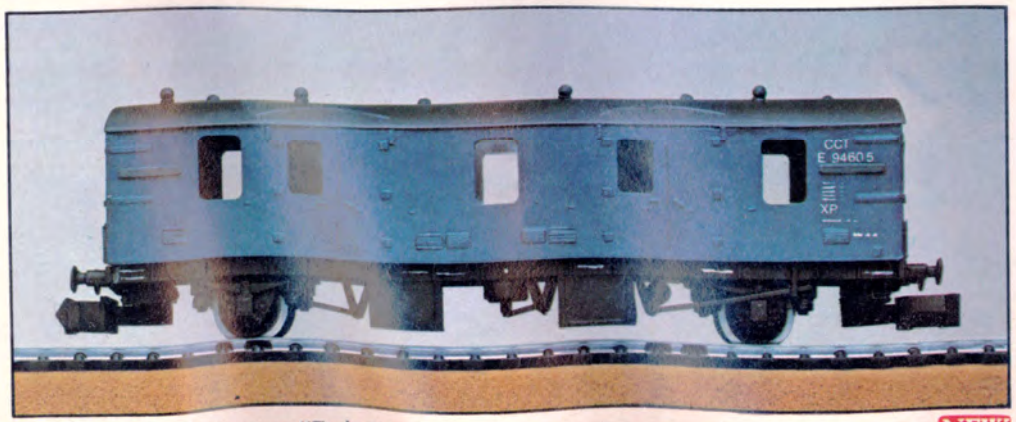
320782 'ICI Chemicals' Tank Wagon.



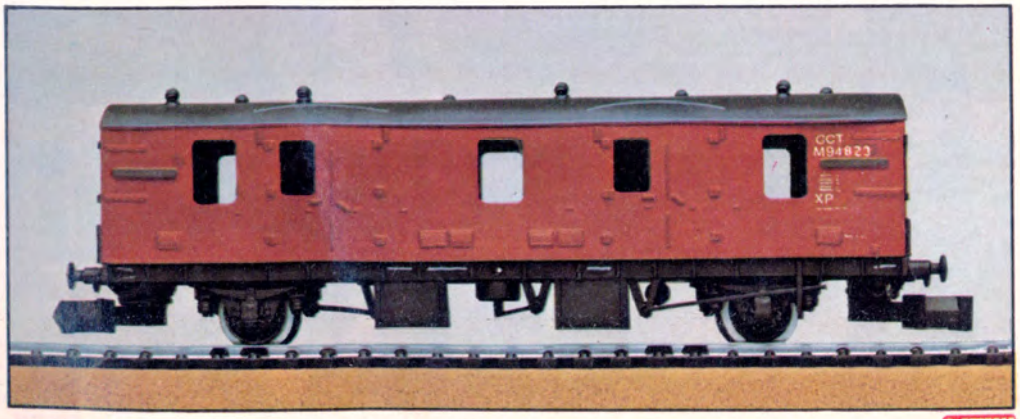
320410 GWR Brake Van. Long Wheelbase Version.



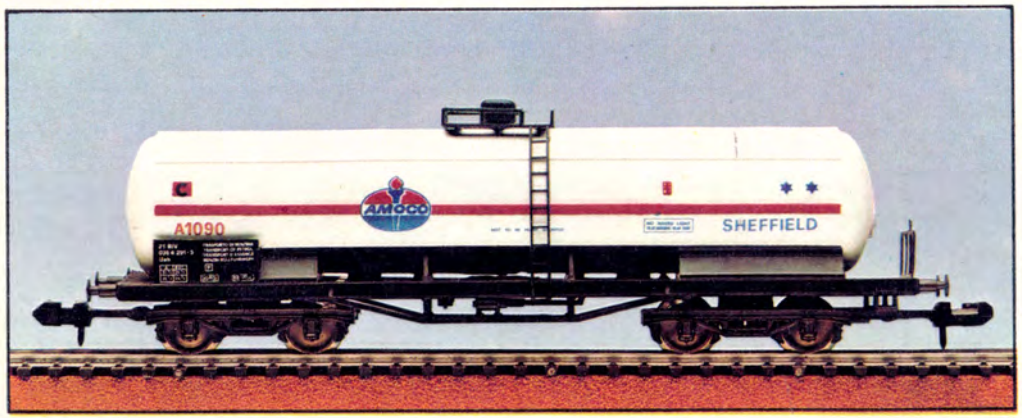
320868 C.C.T. parcels wagon "Tartan Arrow." NEW



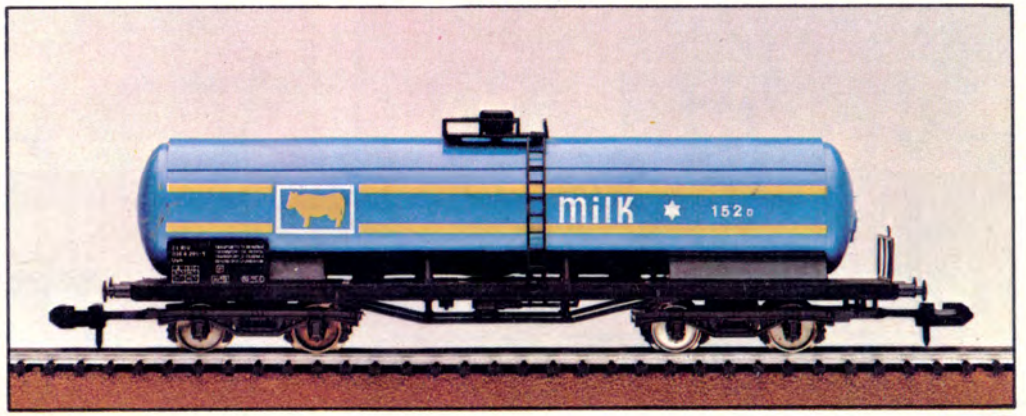
320869 C.C.T. parcels wagon "Early B.R. Livery." NEW



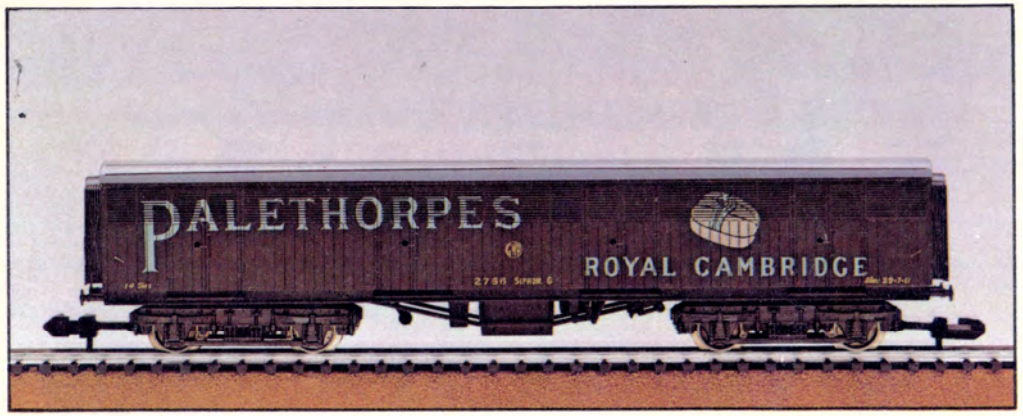
320870 C.C.T. parcels wagon "Modern Livery." NEW



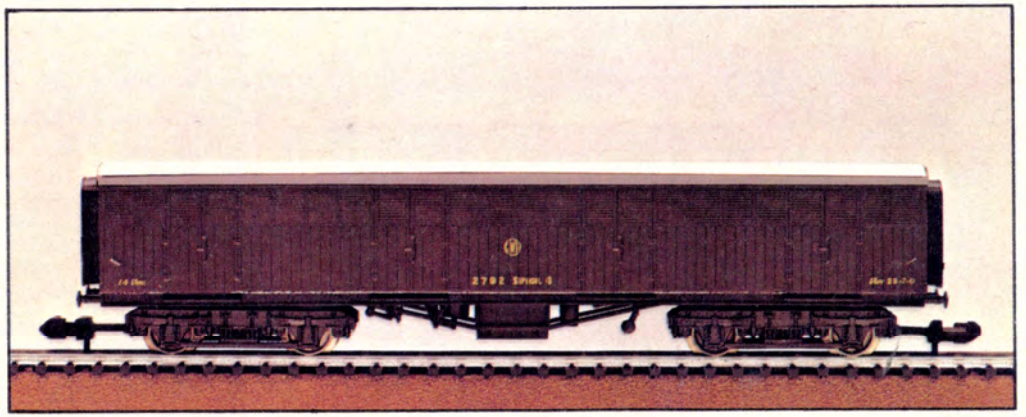
320622 'Amoco' Bogie Tank Wagon. NEW



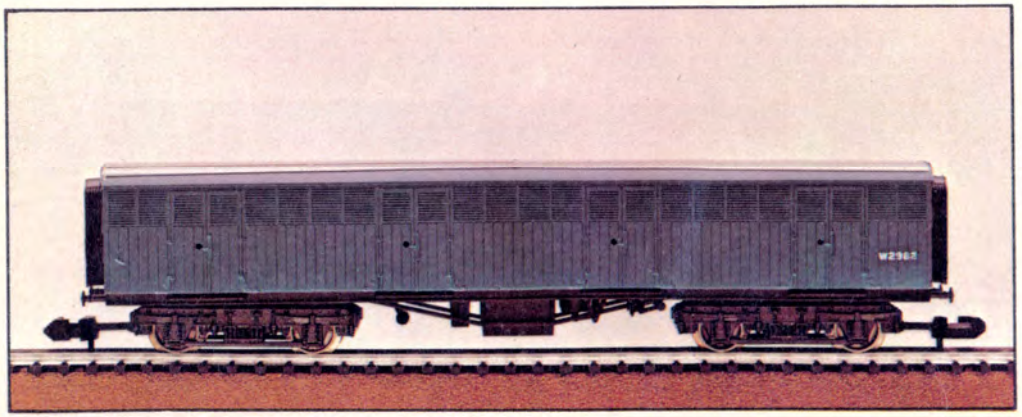
320625 "Milk" bogie tank wagon. NEW



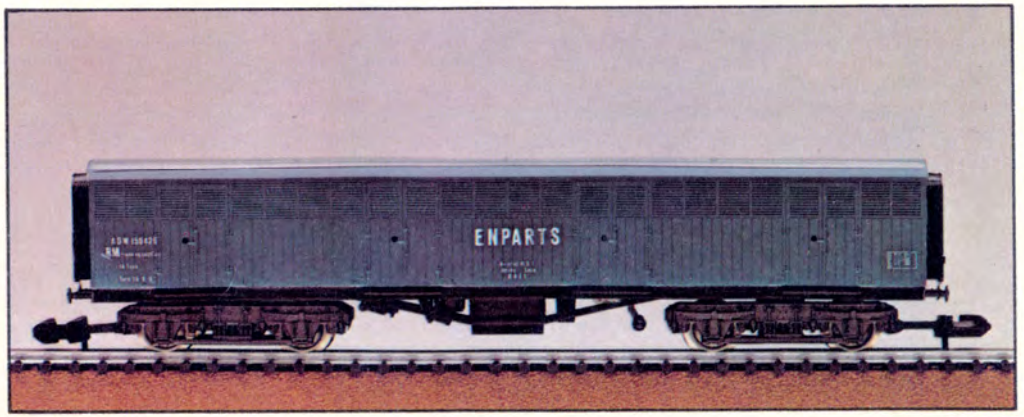
320863 GWR Bogie Parcel Van 'Syphon G.' Palethorpes Sausages. NEW



320862 GWR Bogie Parcel Van 'Syphon G.' NEW



320864 GWR Bogie Parcel Van 'Syphon G.' BR Livery. NEW



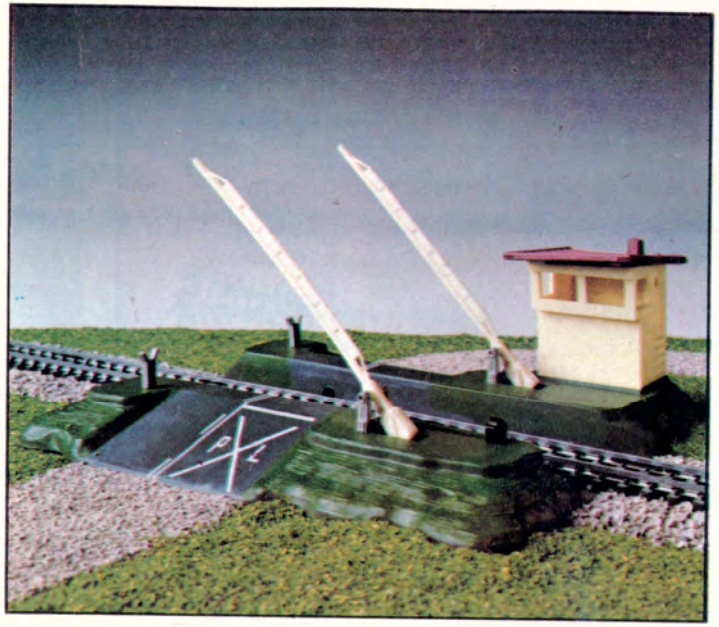
320867 G.W.R. bogie parcel van siphon G "Enparts." NEW

ACCESSORIES

N



620707 Platform truck carrying containers "LHB-SCOTCH BEEF," gantry crane for loading/unloading, and road transporters.



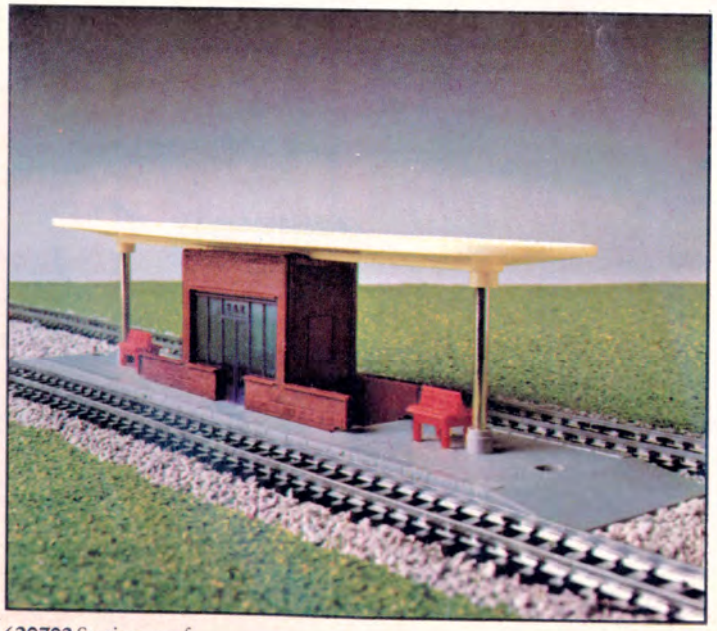
620722 Level crossing.



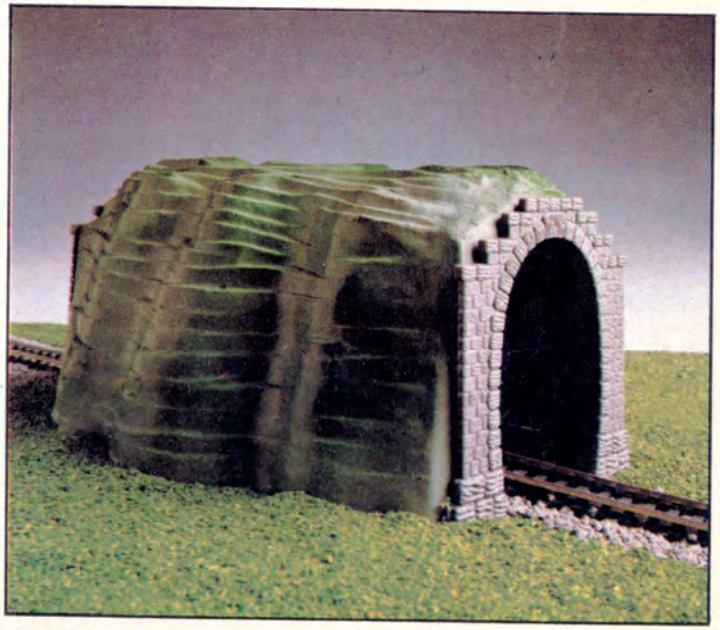
620715 House.



620714 Station.



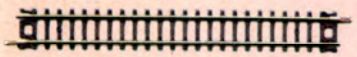
620702 Station roof.



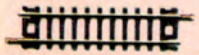
620705 Tunnel.

TRACK

STAINLESS STEEL PROFILE



420561 straight track (124mm).



470562 ½ straight track (62mm).



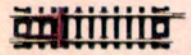
420563 ¼ straight track.



420564 ½ straight with power clip.



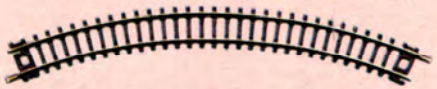
420564R ½ straight with power terminal.



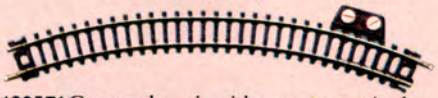
420565 ½ straight with buffer stop.



620721 Railer.



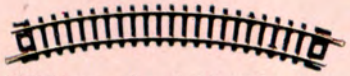
420571 curved track (45°).



420571C curved track with power terminal.



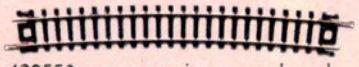
420572 ⅓ curved track (15°).



420551 curved track (dia 472mm).



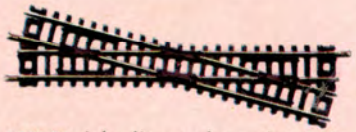
420552 ½ curved track (dia 472mm).



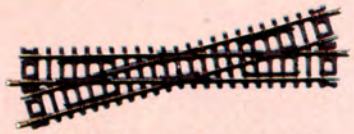
420553 compensating curved track.



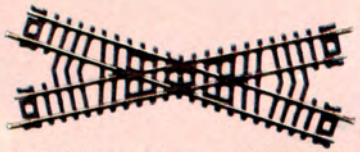
600018 'N' Gauge fish plates (metal) for new flexible track 420511.



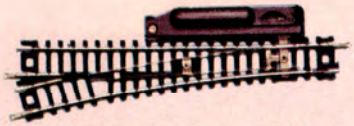
420521 right diamond crossing (15°).



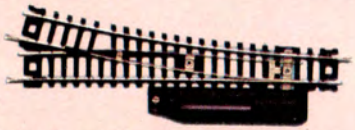
420524 left diamond crossing (15°).



420522 diamond crossing (30°).



420526 left-hand point (manual).
420526E left-hand point (electric).



420525 right-hand point (manual).
420525E right-hand point (electric).



600017 insulated fish plates.

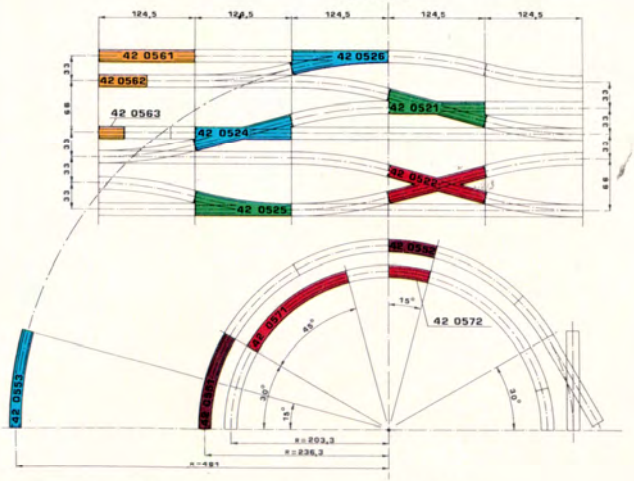


420511 flexible track length 736mm.

Extra track is available in the following packs:



420580 6 pieces straight track (124mm) 420561.
420581 6 pieces ½ straight track (62mm) 420562.
420590 6 pieces curved track (45°) 420571.
420592 6 pieces ⅓ curved track (15°) 420572.
420591 6 pieces curved track (diameter 472mm) 420551.
420593 6 pieces ½ curved track 420552.
420585 1 piece curved track, (45°) 420571.
1 piece curved track with power connecting terminal 420571C.
420586 1 piece ½ straight track with power connecting terminal 420564R.
2 pieces ¼ straight track 420563.
insulated fish plates 420017.
420587 1 piece straight track (124mm) 420561.
1 piece isolating track with power connecting terminal 420564R,
1 piece ½ straight track with buffer stop 420565.

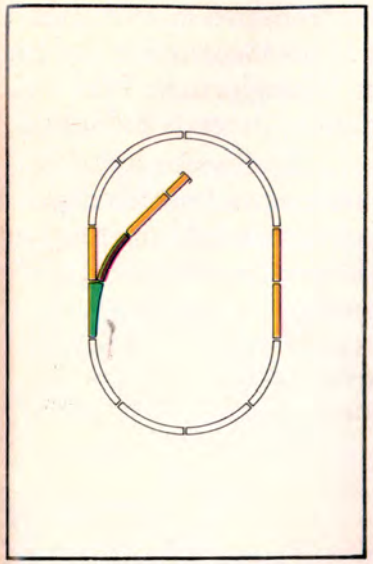


Remember when installing your track that trains on adjoining tracks must be able to pass freely without touching.

In Lima 'N' Gauge the basic measurement to be born in mind is represented by a distance between tracks of 33mm., maintained in both straight lines and through the curves.

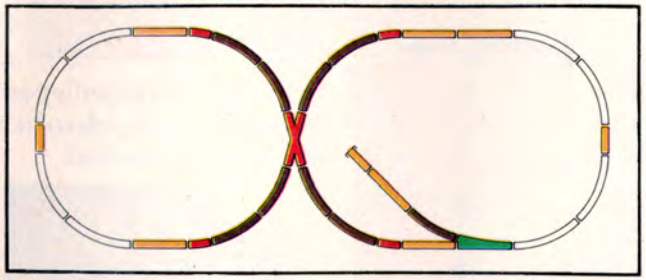
For instance the compensating curve 420533 when used with points 420525 and 420526 maintains this basic 33mm spacing.

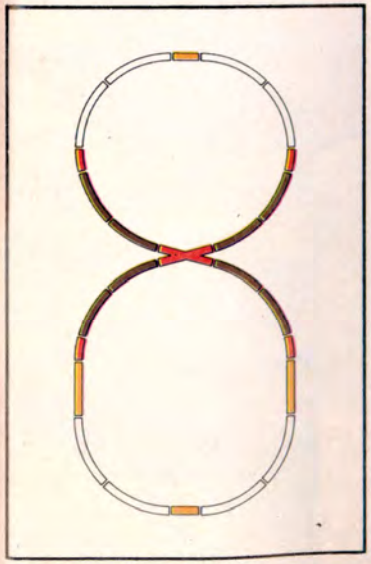
EXTENSION PACKS



4205401 piece right-hand point (manual) 420525, 1 piece ½ straight track with buffer stop 420565, 4 pieces straight track (124mm), 1 piece curved track (diameter 472mm) 420551.

420540+420541

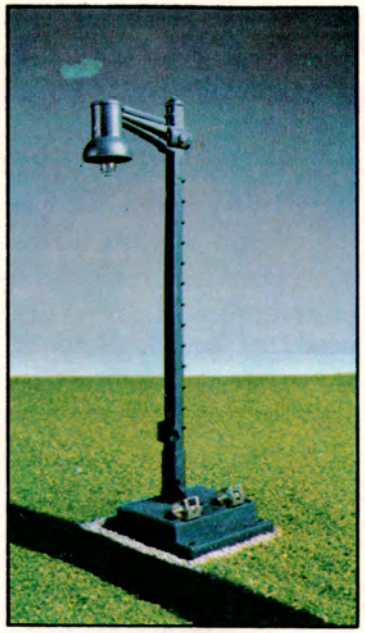




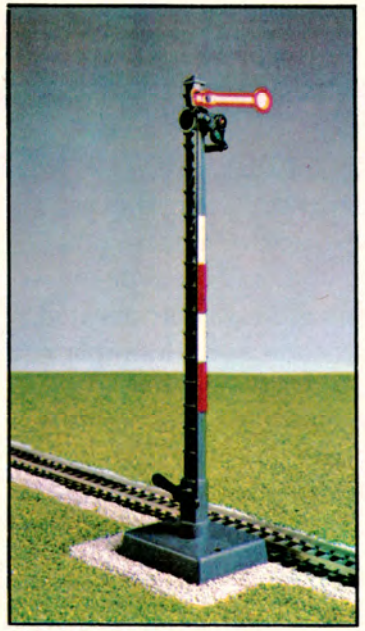
420541 1 piece 30° diamond crossing 420522, 8 pieces curved track (diameter 472mm) 420551, 4 pieces ⅓ curved track (15°) 420572, 2 pieces ½ straight track (62mm) 420562, 2 pieces straight track (124mm) 420561.



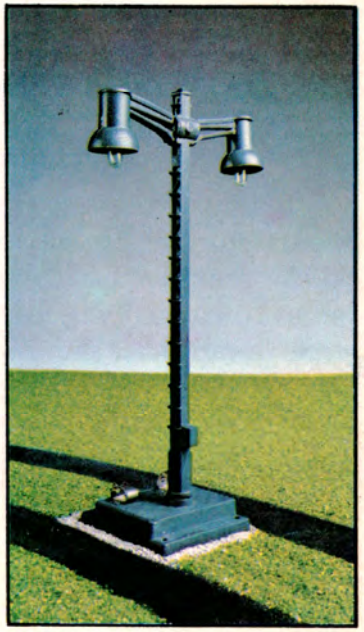
SIGNALS



620710 Single Street Lamp.



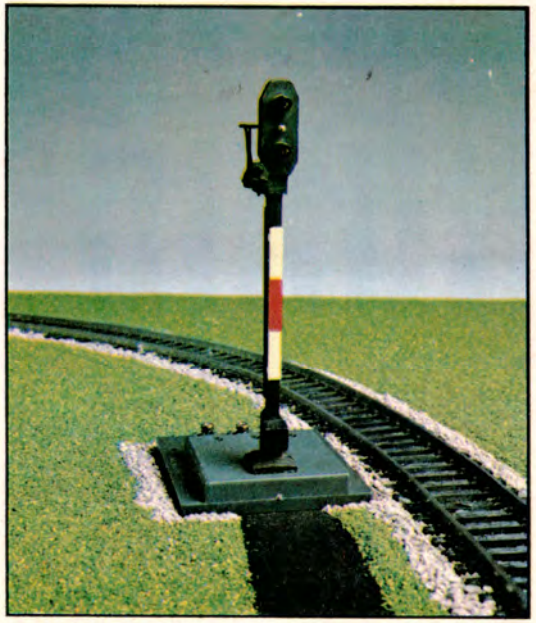
620709 Semaphore Signal.



620711 Double Street lamp.



620712 Signal with Four Lights.



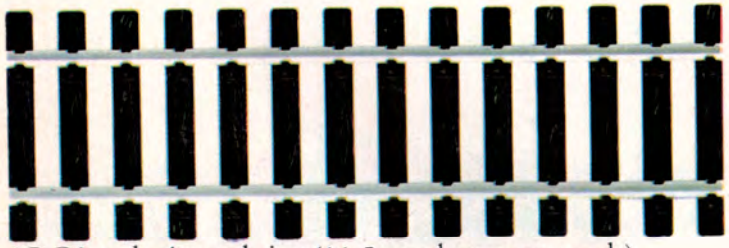
620713 Signal with Two Lights.

HOW TO BUILD YOUR LIMA MODEL RAILWAYS SYSTEM

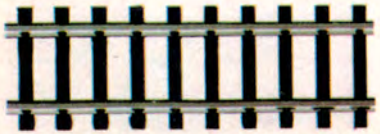
CHOOSING THE RIGHT SYSTEM

It's important to consider at the outset the two major factors which will determine the system you choose: the space available to you, and the type of layout you prefer (whether it has lots of complicated scenery or intricate shunting systems or is a simple layout to begin with). 'N' gauge is most suitable where space is very limited. 'O' gauge is ideal for very large rooms or out of doors. While 'HO/OO' scale, the most popular of all, makes a versatile compromise.

An 250cm x 125cm baseboard mounted on 5cm x 5cm legs provides an ideal starting point.



'OO' scale Actual size (16.5mm between track)



'N' 9mm to the scale of 1:148

THE BASEBOARD
BEGIN WITH THE RIGHT TOOLS

Before starting on the construction of your baseboard, you must ensure that you have the correct tools for the job. Show here are the tools you will need .

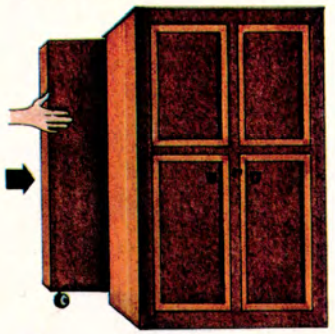


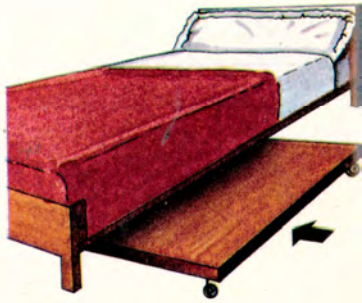
Start the baseboard by fastening with oval nails an 250cm length of wood (about 5cm x 2.5cm in section) on edge on one side of the plywood top. Then lay another 250cm length alongside this as an easy guide for marking the lengths of the crosspieces and ends. Fasten the shorter pieces and the ends next, and the other long side last. The corner blocks should be

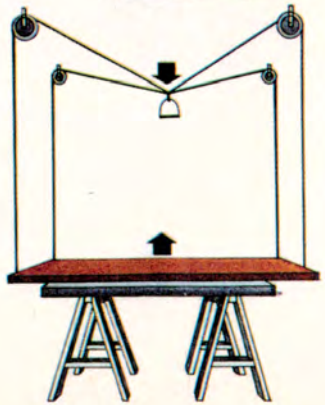


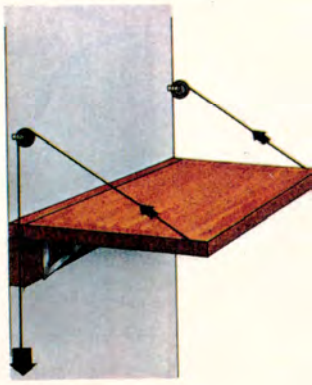
made from two short lengths of 5cm x 10cm timber and cut at 45° angles to fit. Nail these to the ends and side.

The baseboard can now be mounted on legs, or suspended from the ceiling by means of a pulley. Alternatively, it can be attached to the wall on hinges with a pulley as we show in the illustration. Mounted on wheels to fit behind the wardrobe, or simply stored under the bed.





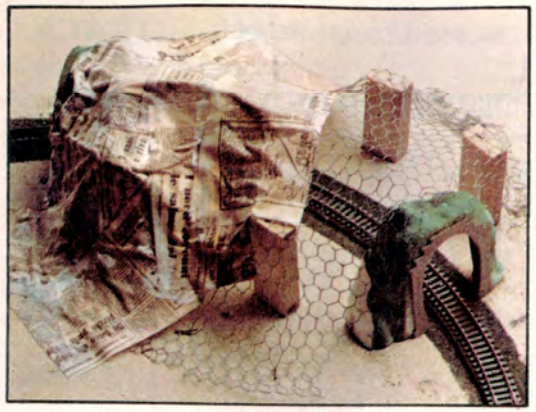




MAKING SCENERY

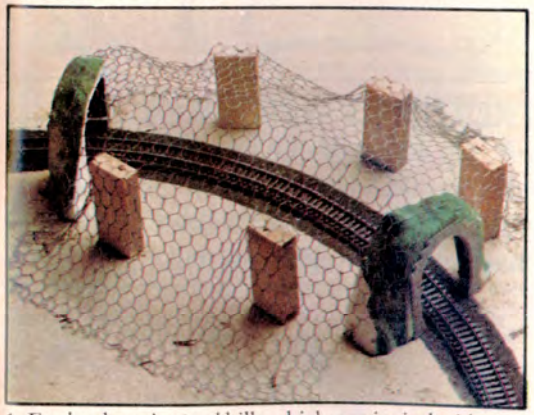
The first rule in making scenery is to follow nature. Observe the colours, slopes, textures and groupings found in real life. Keep things in proportion to your locomotives and rolling stock, and be certain that the change from wild areas to villages etc. is gradual and natural.

Scenery-making should proceed in several stages. First plan your contours and features with a rough sketch. Deciding where you want a river, which areas will be high and which low. And allowing for villages, stations and tunnels.

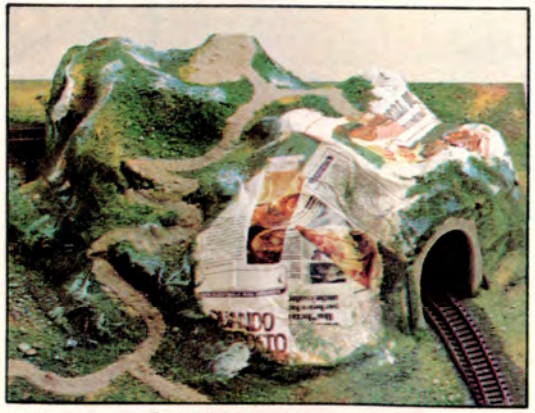


3. Now dampen strips of newspaper and lay them onto the wire. Criss-crossing to provide strength. When the wire is completely covered, apply a coat of wallpaper paste. Then cover with a second layer of damp paper and repeat the process. When dry, test for strength using light hand pressure. Further layers can be added if needed.

LANDSCAPING

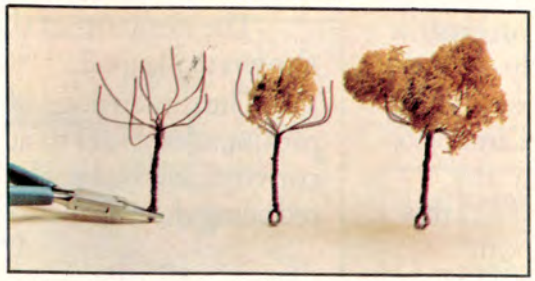


1. For landscaping and hills, chicken wire is the ideal material. It provides a firm base, yet is easily moulded to the required shape. But remember to turn up the ends of the wire for safety.
2. Before you cover it, position the wire framework on the layout and check that the rolling stock doesn't foul against it.



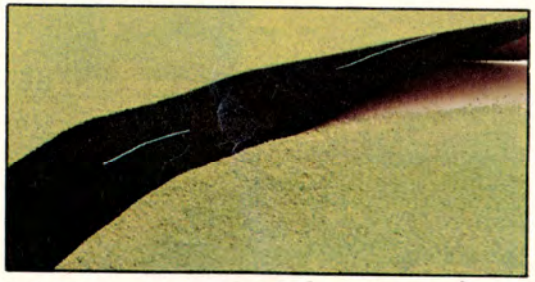
4. You can easily build a Lima Tunnel (item 602080) into your hill before you position the chicken wire. It creates a really authentic effect.
5. Finally, colour the model so it blends in with the rest of your scenery.

HOW TO MAKE TREES, HEDGES OR SHRUBS



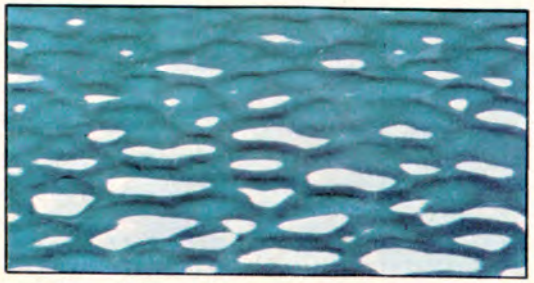
1. Pieces of lichen, mounted on wire make ideal trees.
2. Twist a few strands of soft wire to form a trunk, using the ends for the branches.
3. Then push the lichen onto the branches and the tree is complete!

ROADS



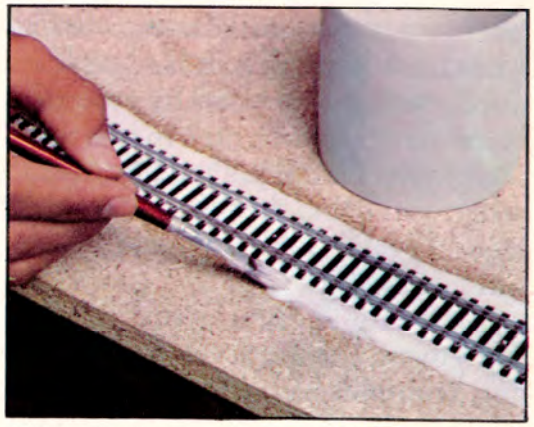
1. Roads can be constructed by cutting lengths from readily available scenic mats, fastened down with suitable adhesive.

RIVERS



3. Patterned glass preferably with a 'ripple' effect is best for rivers. Simply spray the underside with a suitable blue paint.

ROUND YOUR TRACK PUTTING BALLAST



1. First paint the area to be covered with glue.



2. Spread ballast mixture along the track and work it between the sleepers, using a small paint brush.
3. Push the ballast down with your fingers. Scrape away any that extends more than 4mm from the sleepers at the trackside.
4. When the ballast is where you want it, allow to dry and you'll have ballast that's firm, but looks realistically loose.
5. Consult your local Lima stockist for details of available materials.

TRACK INSTALLATION

THE LIMA TRACK SYSTEM

The track is the foundation of your model railway. It is therefore essential to ensure that the track system you install is the finest you can buy. Lima track is just that. It has been carefully developed over the years by experts, whose painstaking research now means that the Lima track system is unique and unsurpassed by any other. You'll find the time and trouble taken at this stage of your hobby amply repaid by smooth running and increased enjoyment later.

Even the smallest layout can provide hours of enjoyment, but the development of larger and more complex layouts will give you all the excitement of running a real railway network.

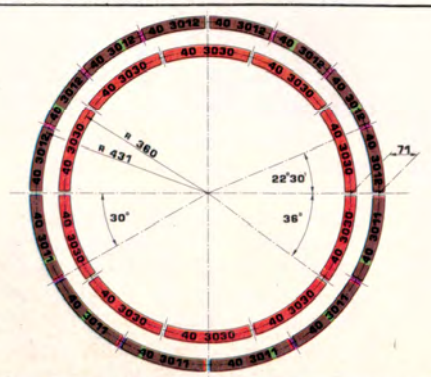
There are various gauges in use for model railways. Here are the measurements of the two most important types:–

'HO/OO' 16.5mm.

'N' 9mm.

In the Lima 'OO/HO' system there are two types of curve with respective radius of 360 (14¹/₅ins) and 431mm (17ins). To build a circle of 720mm (28²/₅ins) diameter 10 sections of 1st radius curves are required which have an arc of 36°. For a larger circle of 862mm (34ins) diameter we use 16 sections of 2nd radius curve which have an arc of 22½°. Alternatively we can use 12 sections of curves with 30° arc. (Fig. 1)

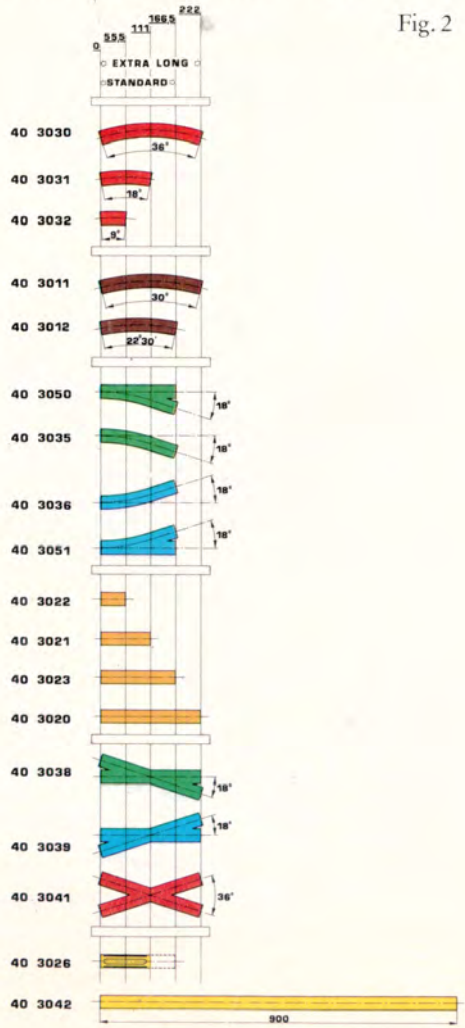
Fig. 1



The elements of the Lima track system are shown in figure 2.

The dimensions of the tracks have been produced in order to achieve smoother running convoys and better electrical conductivity by reducing the number of joints.

Fig. 2



THE COMPOSITION OF THE LIMA TRACK GEOMETRY

One of the main essentials to remember when installing your track is to ensure that the trains on adjoining tracks can circulate freely without touching. For example, in a Lima 'OO/HO' scale system the correct distance between track centres is 71mm (2.8ins), maintained both in straight runs and through the curves. (Fig. 3)

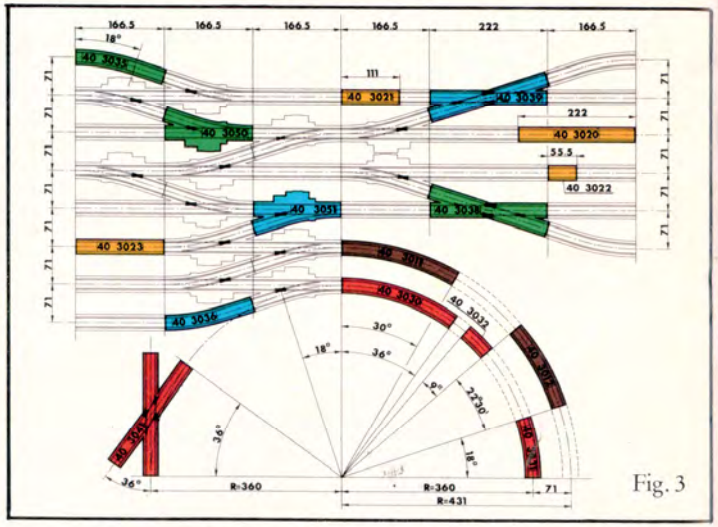


Fig. 3

CONSTRUCTING A 'FIGURE 8'

When building a 'figure of 8' track, it is essential that the cross-over should correspond geometrically to two curves side by side. The advantage of having the circle divided in 10 parts

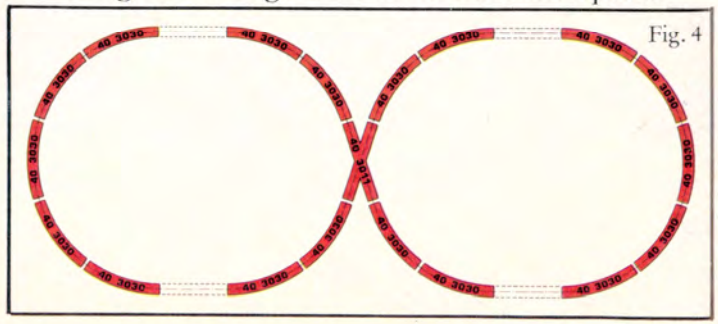


Fig. 4

is the ability to insert straight tracks to obtain a longer figure "8". (Fig. 4)

Thus in 'OO/HO' scale, the 'figure 8' circle illustrated below would require 18 pieces of curved track (item 403030), plus a cross-over of 36° (item 403041).

CONSTRUCTING A PASSING LOOP

Use two points (one left hand and one right hand) with the appropriate compensating tracks to maintain the correct spacing between tracks.

The Lima system becomes so geometrically perfect that the cord of arc of every curved element is exactly the same length as the corresponding straight tracks. (Fig. 5)

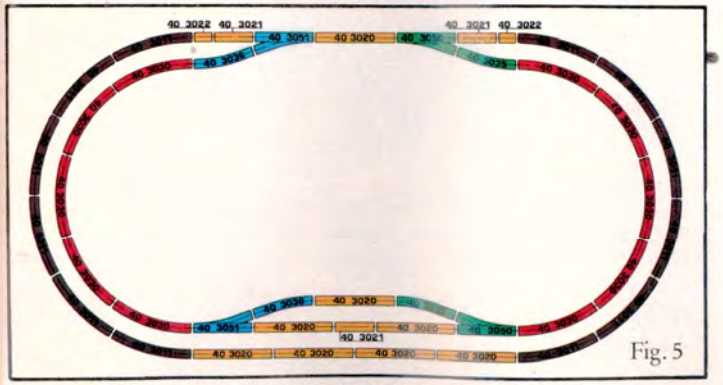


Fig. 5

ADVANCED TRACK LAYOUTS

For advanced track layouts including gradients or descents, 'extendable track' (item 403026) may prove useful. This special track has the facility of being extended from half straight to three quarter straight length by means of a sliding section.

Groups of points and crossings can be used to convert two tracks of main line into six tracks at the entrance to a station (see illustration Fig. 6 which shows the use of the 36° crossing ref. 403041 in conjunction with the 18° crossings ref. 403038 and 403039).

In other cases, flexible track can be used to produce special curves and can be cut to size with an ordinary (fine-tooth) hack-saw.

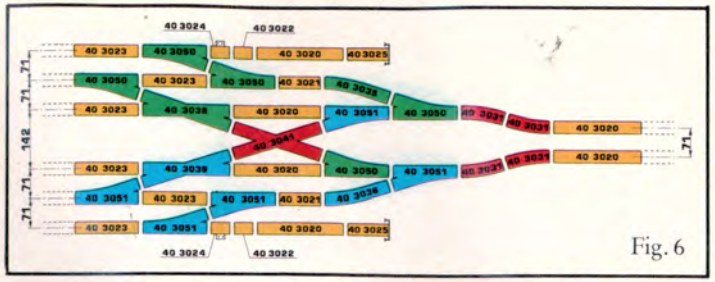
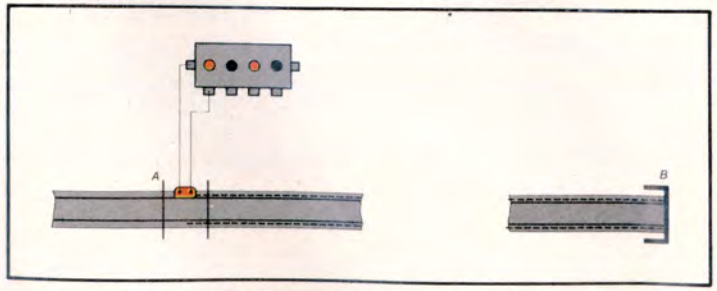


Fig. 6

ISOLATING SECTIONS OF TRACK

For the most realistic results, many railway modellers run more than one train on a given section of track. However, care must be taken that the various trains do not collide, and can stop at the right moment and the right place to let other trains through.



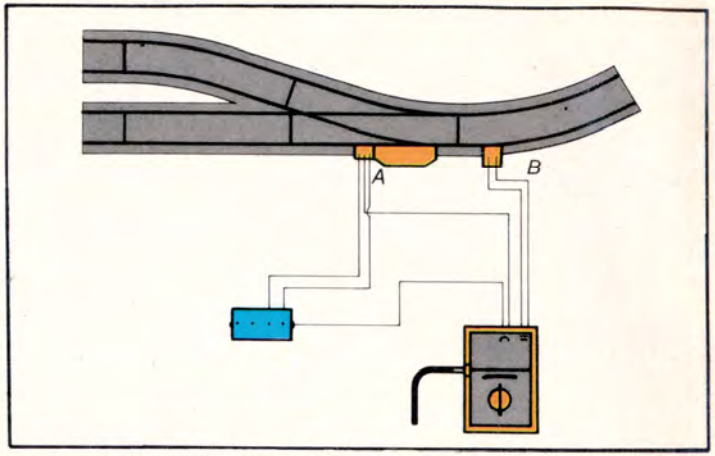
ISOLATING TRACK. From A to B in the marked section power to the track is cut off unless the left-hand button on the control box 503065 is pushed.

The use of an 'isolated stretch of track' allows one train to be held stationary while another train is operating. This works by cutting off the electric current from the locomotive of the train it is required to hold.

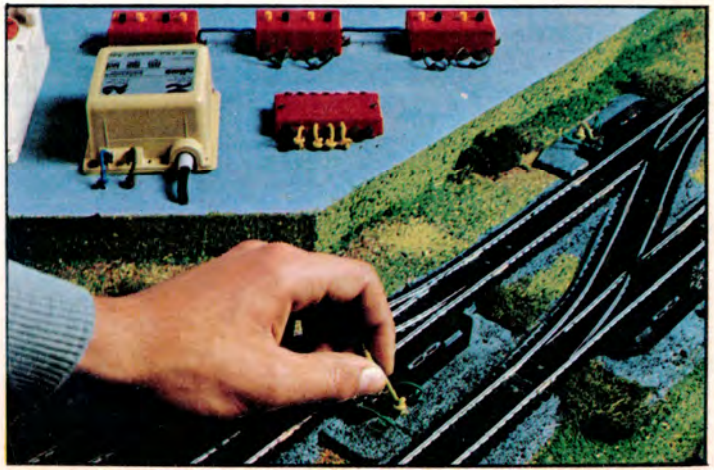
The simplest way of using an 'isolated stretch of track' is to install a siding ending with a set of buffers.

WIRING THE LAYOUT

Wiring that runs across the top of the baseboard spoils the look of the layout and may get entangled with the trains. So always drill holes to take it underneath. Tie a knot in the leads, just above the baseboard hole, so they cannot be pulled through accidentally.



USE OF POWER UNIT – 502058. The diagram shows the correct wiring.
A = electric point operated by alternating current through control box 503065D. B = connection of the power feed to the track (direct current) through curved track 403030C.



BRIDGES

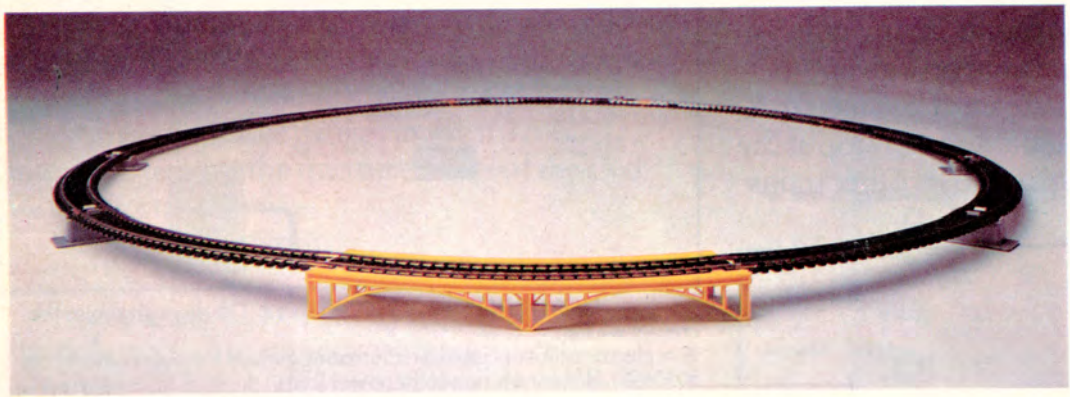
One of the biggest problems facing railway modellers is the lack of space. One answer is build up another layout some 8-10cm above the first – but it is important to remember that a locomotive can only climb certain gradients. If the incline is too steep the driving wheels will spin and the locomotive may stop, unable to reach the top.

As a general rule, if the gradient is of 3% the ramp must not exceed 3cm of track per metre. Thus in this case, for the ramp to give a height of 9cm the gradient must be spread along 3 metres of track.

Where short trains are used a steeper incline is possible – up to 4.5%. Giving a gradient spread along 2 metres of track where a height of 9cm is desired. Lima supply three basic sets of ramps:

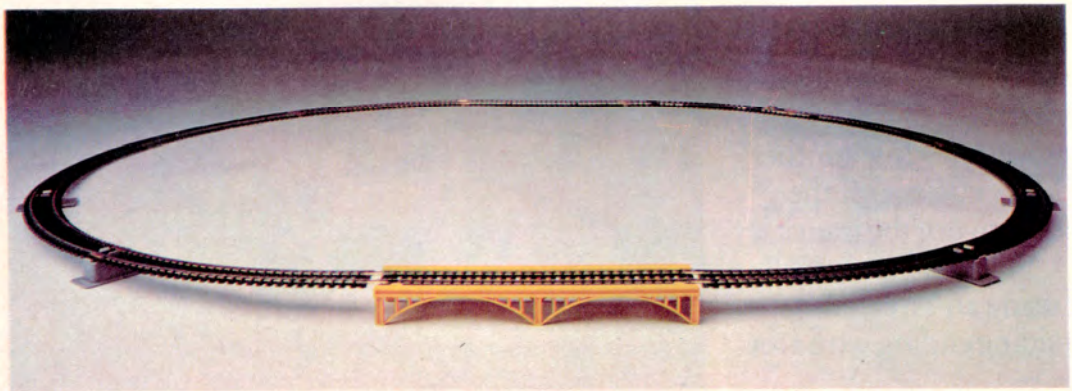
600055 BANKED BRIDGE IN A CURVED STRETCH

If you have a small circle of track with 720mm diameter, you can use bridge 600055 and the respective trestles to build up a viaduct with a banked stretch.



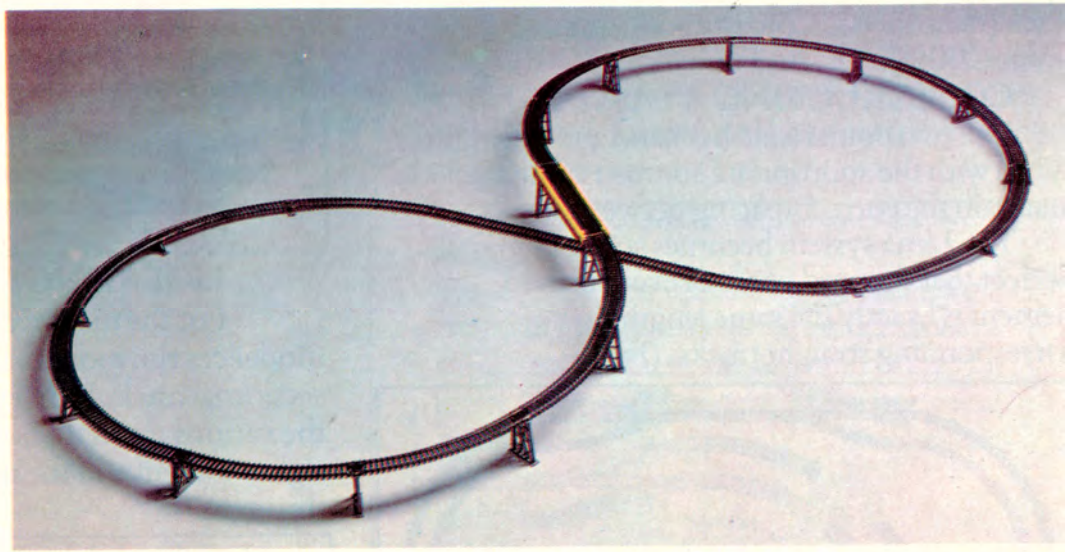
600057 BANKED BRIDGE IN A STRAIGHT STRETCH

You can transform a small circle into an "oval" by adding a straight piece of viaduct and two straight pieces of track (item 403020).



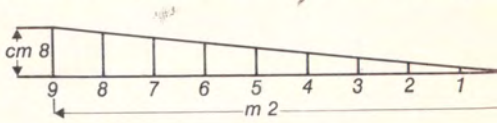
600911 BRIDGE FOR A FIG. 8 BANKED CIRCUIT

Using 600911 you can construct a figure "8" circuit passing over the track by means of a straight piece of viaduct (item 403020) and nine trestles of increasing height for each one of the two ramps.

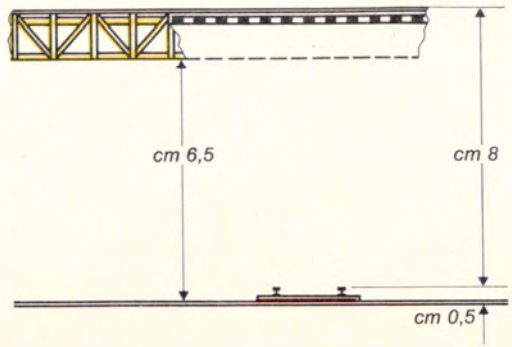


Central point of the figure "8". The height measurements refer to the point where one trac passes over the other. A gap of 65mm is necessary to allow trains to run on the lower track.

Gradual incline. Use item 600911. Every Lima locomotive can climb such an incline, even when loaded with a normal complement of wagons or coaches.



The bridge in item 600055 gives a track height of 2.8cm maximum. The circle can be enlarged by adding two or more sections of straight track (item 403020).



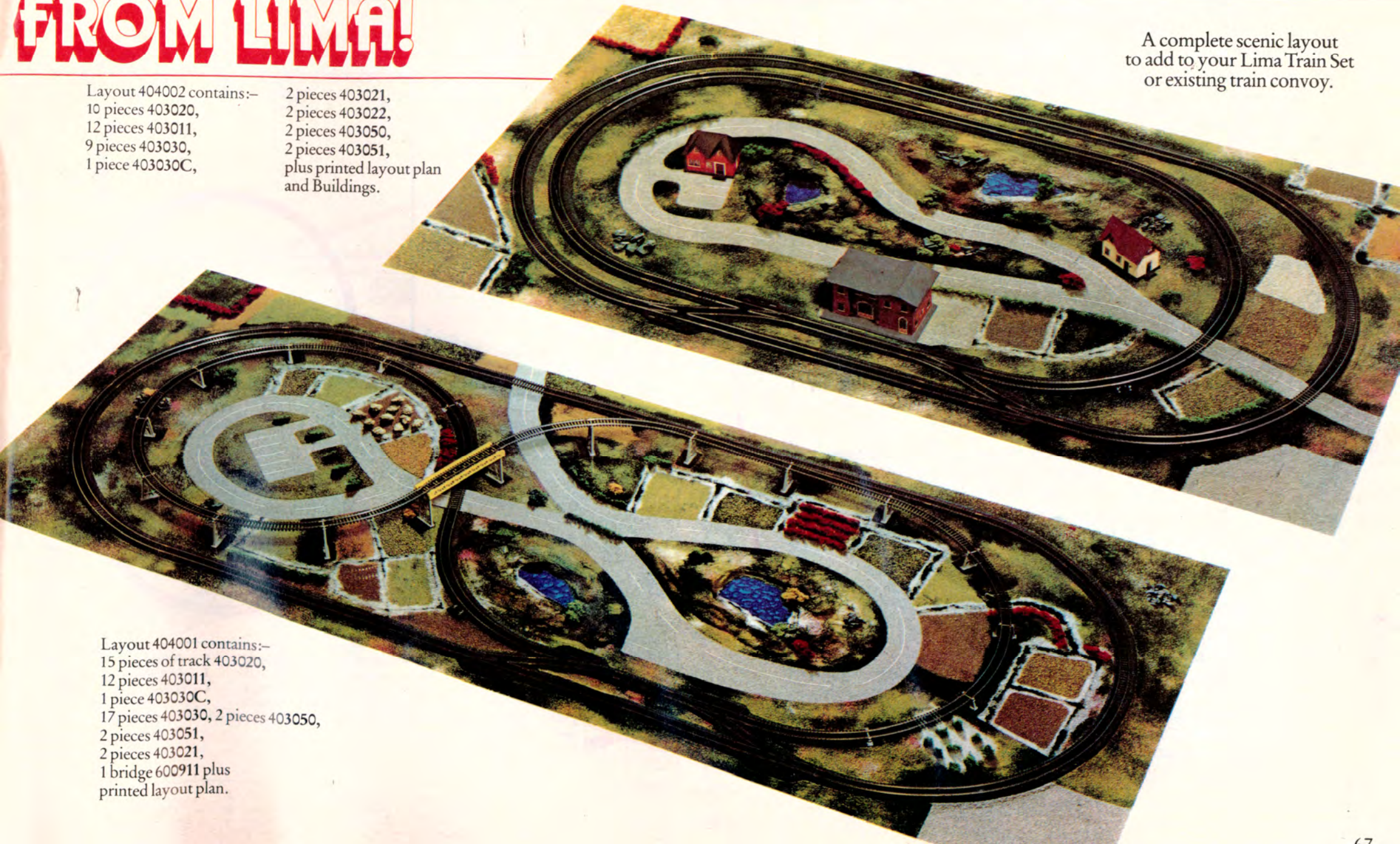
The bridges and piers of item 60091 give a track height of 8.6cm and allows a train t pass under the top tracks . There are nine piers for each ramp, limiting the gradient to 4%

Please note that if you are using an electric locomotive with a pantograph, the pantograph must be lowered to avoid collision with the bridge.

HERE'S A COMPLETELY NEW IDEA FROM LIMA!

A complete scenic layout
to add to your Lima Train Set
or existing train convoy.

Layout 404002 contains:–
10 pieces 403020,
12 pieces 403011,
9 pieces 403030,
1 piece 403030C,
2 pieces 403021,
2 pieces 403022,
2 pieces 403050,
2 pieces 403051,
plus printed layout plan
and Buildings.



Layout 404001 contains:–
15 pieces of track 403020,
12 pieces 403011,
1 piece 403030C,
17 pieces 403030, 2 pieces 403050,
2 pieces 403051,
2 pieces 403021,
1 bridge 600911 plus
printed layout plan.

TRACK PLANS

00 SCALE

What makes a model railway different from other hobbies involving scale-models? The fundamental answer is the track. This is where the fascination of miniature railways really begins.

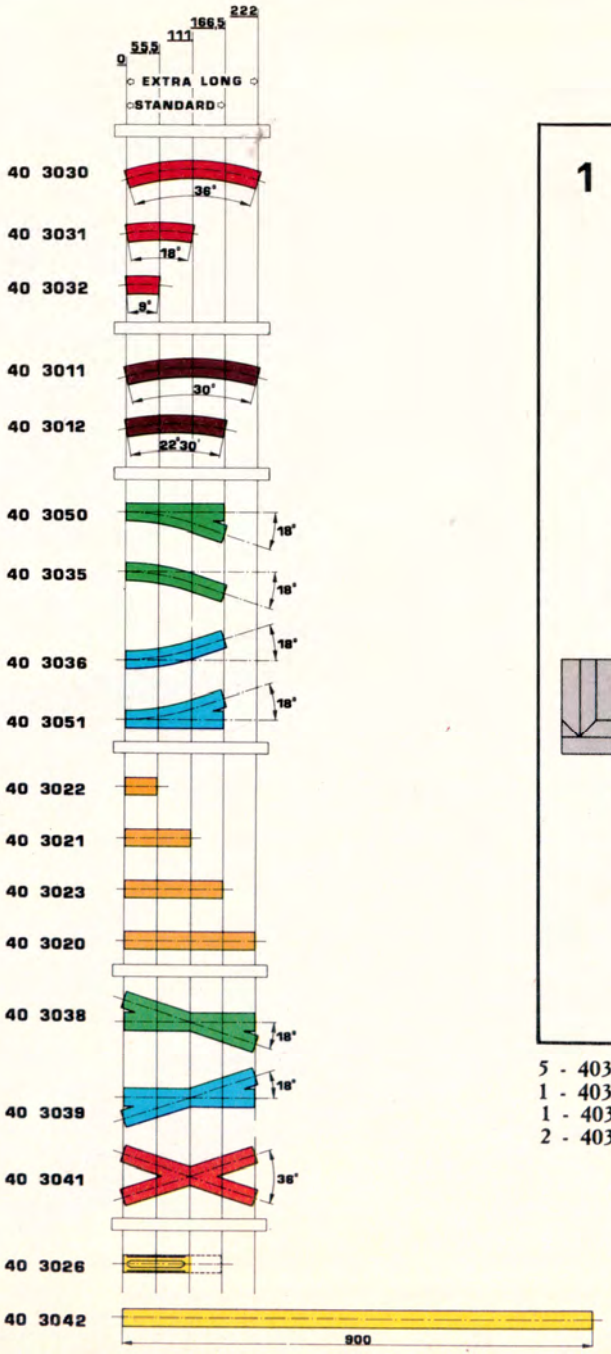
While a lot of fun can be had with a basic train set, building this up into a proper railway layout can turn railway modelling from a pleasant pastime into a lifelong hobby, in the true sense of the word.

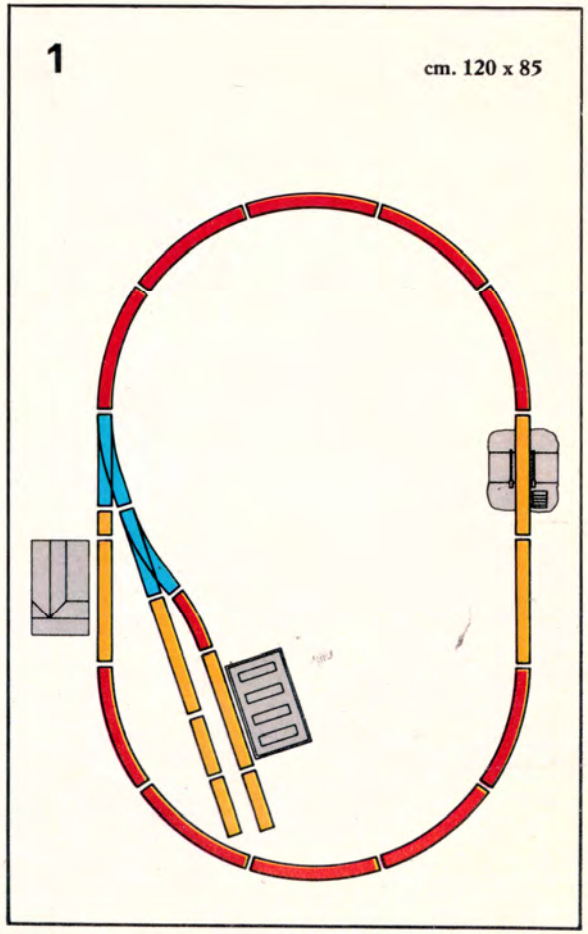
On the following pages you'll find a number of track plans – designed to help you develop and extend your system. The components of each plan are numbered and described, to assist you in planning a change from one layout to another.

But remember, don't be over-ambitious at the outset by building a bigger and more complex layout than you can handle. Even the simplest of these layouts will give you a considerable amount of pleasure – both in building and running. And you'll have a lot more fun if you take things easily, stage-by-stage, as your skill and experience develops.

Also remember that for smooth and safe operation, the track assembly must be done with maximum care. Lima have produced a special system (System 222) to make this easy. All parts are geometrically based on the length of a straight track section of 222mm or its fractions. Straights and curves are divided into 2 categories: basic and subsidiary, which are equal in length so that either may be connected to the layout without altering its geometry.

So if you follow these track plans carefully, you simply can't go wrong.



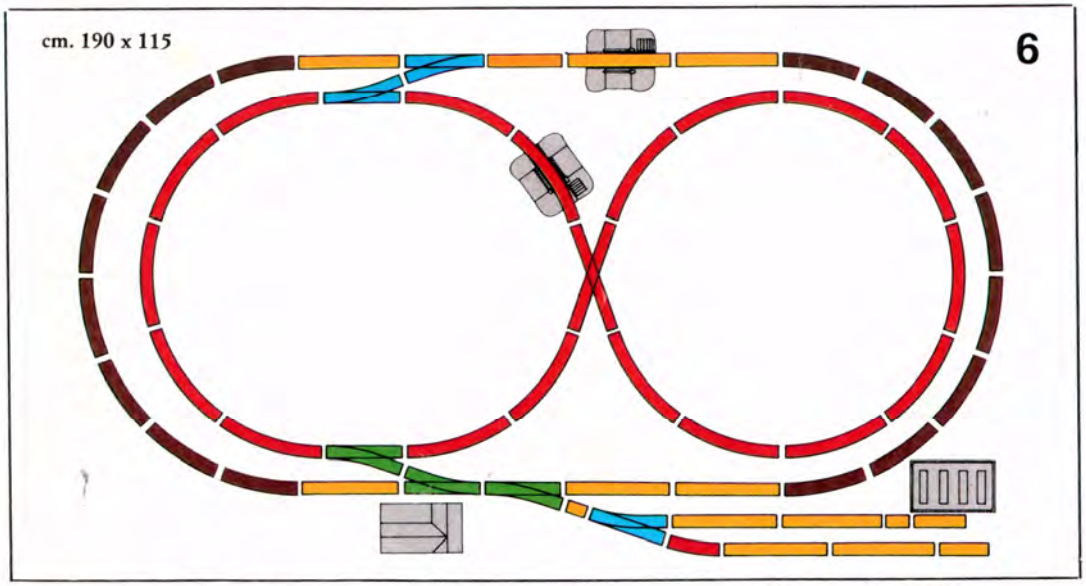


5 - 403020	1 - 403022	9 - 403030
1 - 403021	2 - 403025	1 - 403030C
1 - 403031	1 - 600021	1 - 600041
2 - 403051	1 - 600045	

00 SCALE

cm. 190 x 115

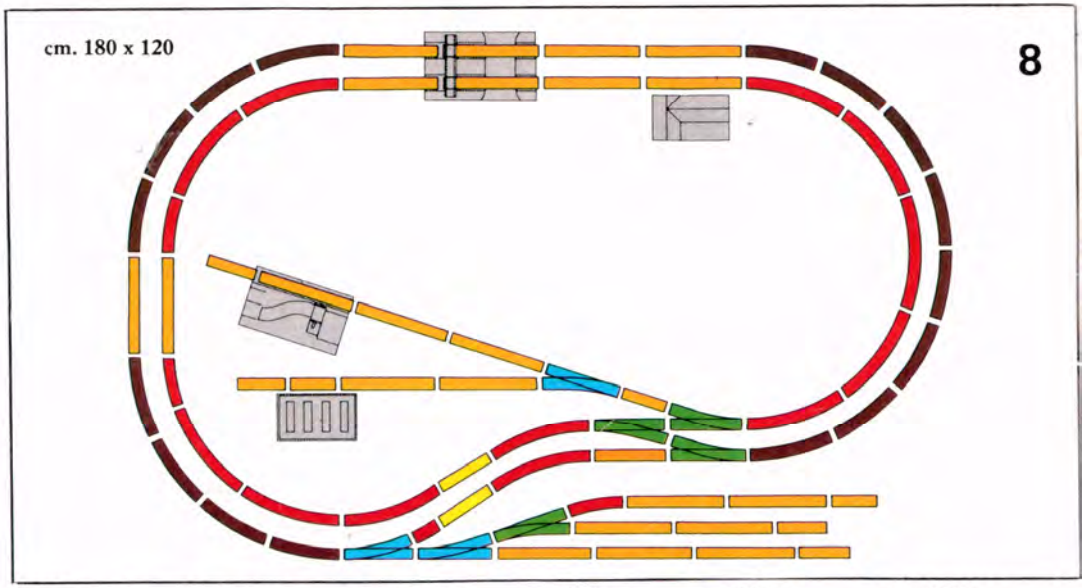
6



10 - 403020	2 - 403025	1 - 403030C	1 - 403050	1 - 600041	1 - 403023
2 - 403022	17 - 403030	1 - 403031	3 - 403051	1 - 600045	
		1 - 403041	1 - 600021	16 - 403012	

cm. 180 x 120

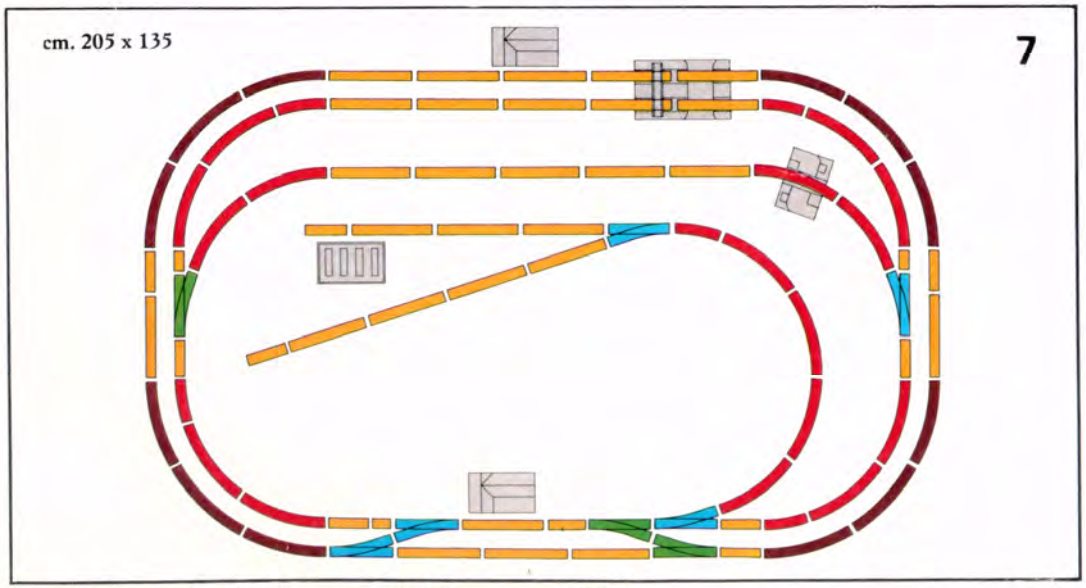
8



22 - 403020	5 - 403025	1 - 403030C	3 - 403051	1 - 600025	1 - 600045
2 - 403021	11 - 403030	3 - 403031	4 - 403050	1 - 600940	16 - 403012
		1 - 403032	2 - 403026	1 - 600041	1 - 403023

cm. 205 x 135

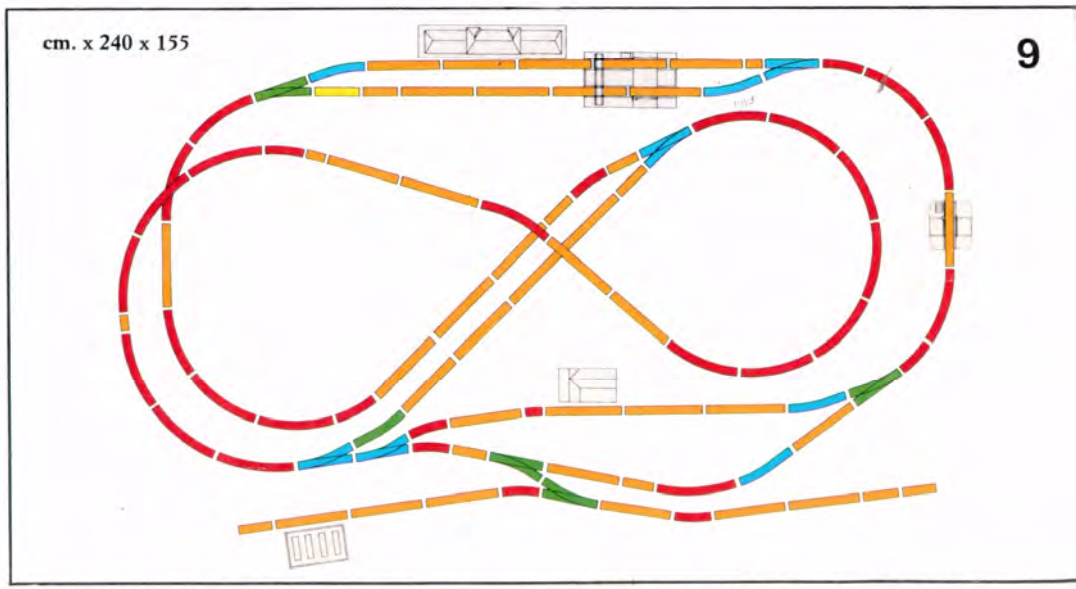
7



28 - 403020	2 - 403025	1 - 403030C	3 - 403050	
8 - 403021	12 - 403011	5 - 403031	2 - 600045	1 - 600052
3 - 403022	15 - 403030	5 - 403051	1 - 600041	1 - 600025

cm. x 240 x 155

9



34 - 403020	2 - 403025	1 - 403030C	4 - 403050	1 - 403035	1 - 600021
7 - 403021	1 - 403026	9 - 403031	4 - 403051	1 - 600033	1 - 600041
3 - 403022	22 - 403030	1 - 403032	4 - 403036	1 - 600025	1 - 600045

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