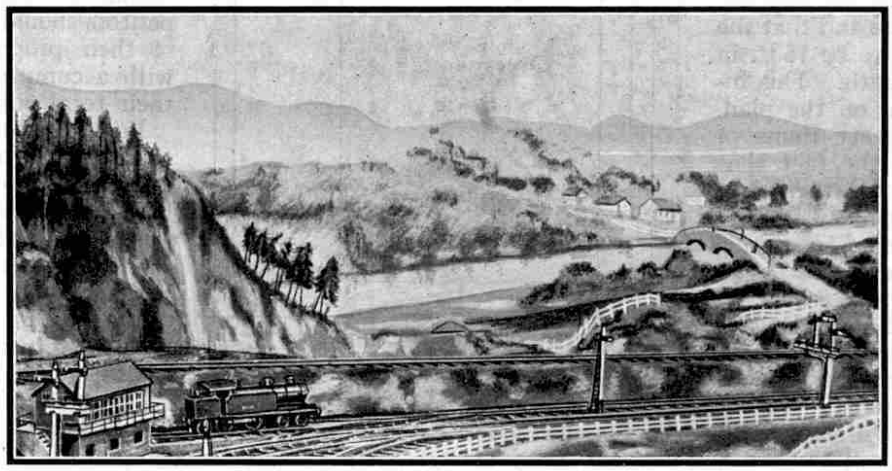
How to Get More Fun from your Hornby Railway

IV.—MAKING MINIATURE SCENERY

THE aim of the really keen model railway enthusiast is to make his railway as far as possible a miniature reproduction of the real thing. The first and most important point is to develop a layout that can be operated on actual railway principles. Even when this has been done, however, and when the line is working realistically to timetable there still remain great possibilities in the way of providing the layout with realistic surroundings.

It is unfortunately true that little can be done in this direction with a track that has to be laid down on the floor of a room and subsequently must be taken up again completely. In the case of a permanent or even a semi-permanent track such as may be laid down in an attic or other spare room, or perhaps in an outhouse, the position is quite different. With such layouts it is quite possible to provide a background and scenery that will improve the attractiveness of the layout to an enormous extent. Many model railway owners appear to be under the impression that the making of suitable railway scenery is a difficult task and only practicable for those with artistic ability. This is a great mistake, however, and the object of this article is to show by what simple means quite realistic effects may be obtained.

First of all from an onlooker's point of view a perfectly flat model railway never looks as realistic as one that is laid in hilly surroundings. It is quite true that inclines of any steepness are not practicable with clockwork locomotives but little difficulty should be experienced with slight inclines. Even if no inclines at all were possible the difficulty is not insurmountable. As a matter of fact a miniature railway that is level or almost level may be made to appear distinctly undulating. This effect is produced by careful distribution of embankments and cuttings and a general arrangement of scenery so as to produce the effect of hilly country.



Our illustration shows a very attractive piece of scenery arranged round a model railway layout. Readers will be interested to learn that all the landscape effects were painted directly on to the wall of the room occupied by the railway

How to Make Embankments

It is quite a simple matter to make a really effective embankment. A framework should first of all be arranged to support the lines, which should be nailed to a piece of board or a plank to ensure their steadiness. This board should be fixed on top of the embankment framework. The next step is to cover the sides of the framework with pieces of old felting, brushed up the wrong way with a stiff brush so as to make it rough. The embankment will then be ready to be painted over, either with a thin layer of green paint to represent grass, or with brown paint, to give the effect of soil. An occasional patch of a lighter brown, or perhaps a delicate touch of red here and there, will make the finished work look as though it consists of soil containing clay.

Another very effective method of finishing off an embankment side is by soaking brown paper in a thin solution of glue and warm water. The paper should be taken out, and after the superfluous liquid has been drained off, it should be attached to the framework and worked up into any desired shape, which it will retain when dry. The embankment is then ready to be sprinkled over with gravel or with bits of rock and stone.

The most popular method of covering over tunnels is very similar to that employed in making embankments, and some very realistic results have been obtained in this direction by numbers of Hornby Train owners. We reproduce here an illustration showing a tunnel and also a piece of realistic scenery, to give beginners some idea of what to aim at when they are about to commence work on a scenic layout. The tunnel in question was made by first of all designing the entrances on cardboard and then cutting them out. The round roofs were then manufactured out of blackened cardboard and stuck in position inside. When this had been done a heap of old boxes and crumpled cardboard was placed on top and brown paper soaked in paste was spread over the whole. Finally an excellent effect was obtained by painting the paper to imitate rough rock.

Cuttings are quite a simple matter to make, and are, to all intents and purposes, embankments "inside out." As long as the same method is employed, no difficulty should be experienced in making very realistic cuttings.

Various Methods of "Growing" Miniature Fields

Miniature fields should present no difficulties to the model railway builder. The recognised method of "growing" a field for a model railway is to obtain a piece of cheap felt which should be brushed up the wrong way by means of a stiff brush and then given a coat of green paint. In order to obtain the best effect, the paint should not be laid on too thickly and uniform but should be rather patchy to give the effect of the grass being thicker in some places than in others.

Another very popular plan for making a field is to obtain some ordinary surgical lint. This is cut into the required shape for the field and is immersed in a green dye. After the lint is dried and brushed up, the effect is quite astonishing.

Still another way of creating a model meadow is by obtaining some fine sawdust. This is put into a basin, and green water paint, or dye, is poured in. The whole is stirred thoroughly, the water is drained off, and the sawdust is then laid out on a sheet of paper and put in the oven to dry. The area to be converted into a field is then glued or Seccotined over and the dried green sawdust is sprinkled lavishly on top. A light brush, or duster, will remove all superfluous "grass" and the field will be quite ready for fattening up model cattle!

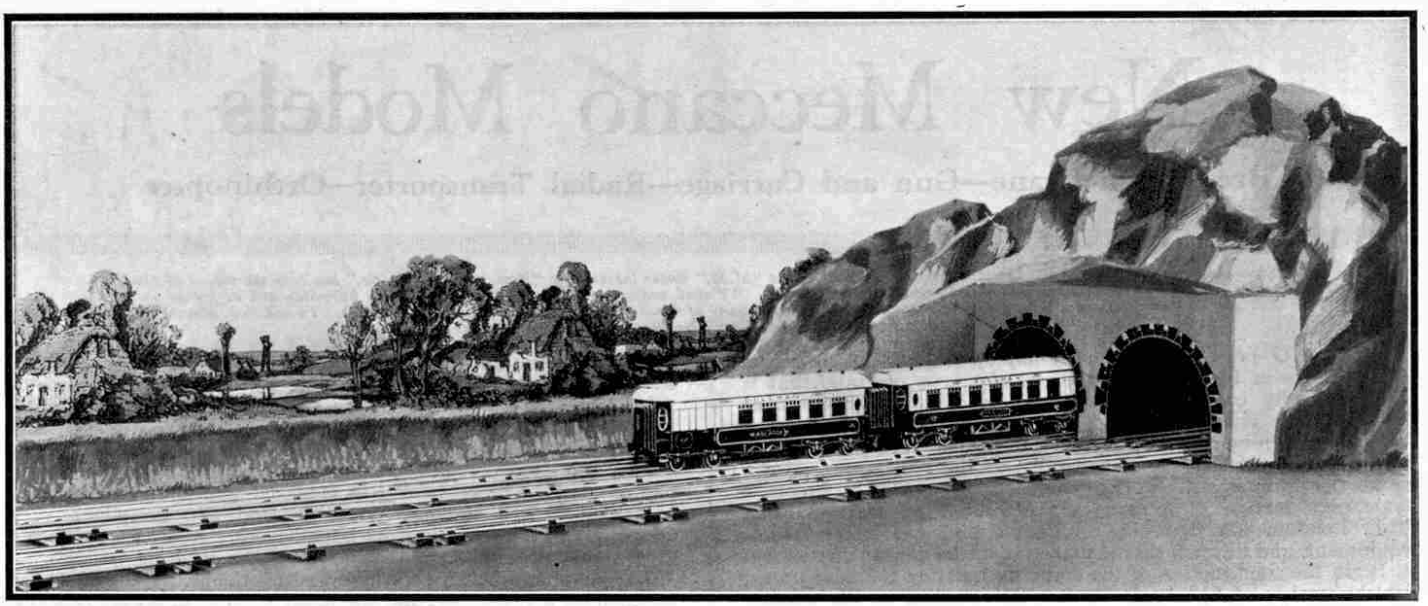
Very often a field of this kind may be relieved by a miniature pond, and the best way of making one of these is undoubtedly to cut out a hole in the field and to place an old piece of mirror underneath. This will look remarkably like a pond and if the banks look rather sharp and unrealistic, these can be smoothened off by the use of Plasticine.

Trees, Shrubs, and the Manufacture of Forests

The tasteful distribution of trees will enhance the appearance of any model line-side to a great degree, and if the engineer has sufficient patience to undertake the manufacture of a forest, he will be well repaid for his trouble. Trees may be made from suitable twigs. Small bits of green moss, obtainable from any florist, are then glued on to the "branches" to represent the leaves. Another method of making foliage for trees is to obtain some green felt or other green woolly material, and to grate this to fluff by means of an old nutmeg grater. The fluff should be stuck to the twigs to represent leaves, and the result obtained will be found to be quite effective.

Fences for Lineside and Background Scenery

Very often the addition of a small fence running up and down hills in the background will improve the general appearance of the scenery around a model layout immensely. There are



The use of wallpaper frieze as scenery on a model railway is illustrated here. In order to obtain the realistic sky effect the wall of the room was first of all distempered in light sky blue. The sky that already existed on the frieze was then cut away and the remainder of the frieze pasted in position. The embankment, consisting of felt treated as explained in this article, was then laid down to the line-side

various methods employed for making fences but the following two are probably the most practicable.

For the construction of a fence that is close to the railway lines, match-sticks may be used, securely planted in small holes that may be made in the baseboard by means of a gimlet. The matches should be connected together by cotton, and the small fence should then receive a light coating of some dark coloured paint. For fences in the more distant background, old gramophone needles placed at regular intervals and bound together with cotton are very useful. These should also be coloured over with a thin layer of paint, and the result is really most attractive.

The Equipment of a Large Station

In addition to making use of the standard Hornby Railway Stations many model railway owners like to make for themselves a terminal station on as big a scale as circumstances will permit. Such a station, even if made accurately and neatly to scale looks very dead and unrealistic until certain finishing touches are provided.

The first matter for consideration is the platform surface. In actual railway practice a platform surface, apart from the paved portions, is covered with asphalt or tar. The best method of obtaining the "asphalt" effect is to varnish over the model platform with some cheap black enamel, and when it is beginning to dry to sprinkle fine emery or pumice powder over it. In order to finish-off a platform the edges should be coloured with a slaty-gray paint to represent the flagstones that are usually found as an edging to the platforms in an actual station.

Then there are the buildings to be considered. Station buildings are usually manufactured from wood, but in many cases are left unpainted and consequently do not look anything like as effective as they might do. All buildings should be finished off by painting bricks on the walls. In order to get a really good brick wall effect, first paint the wall over with brick-red flat paint. Then obtain some Indian ink and rule on the bricks. When finished, the wall will be all that can be desired.

Cottages and houses around the station or along the line-side may be pebble-dashed quite successfully. Glue the surface of the walls and sprinkle coarse sand all over them. When this has been done, coat them over with a thin layer of flat paint, either white, grey or brown, to suit the taste of the "householder."

The use of home-made Papier-mache

Papier-mache comes in extremely useful for scenery work on a model railway. Embankments and cuttings may be made from it, and tunnels may be covered over with it. The simplest way to make papier-mache at home is to obtain some old newspapers, tear them into small pieces and boil them in water in an old pan. The paper eventually will become very soft and pulpy. At this stage the water should be strained off and water paint should then be added, the colour being selected to suit the purpose in mind. A little glue or size should be added to enable the papier-mache to set hard when it is being laid out in position.

The mixture is then ready for use and may be shaped as and where required on the railway. Papier-mache must be left approximately three weeks to dry, but when dry it will be extremely hard and will stand any amount of knocking about. Plaster is very often used instead of papier-mache, but the objection to plaster is that it has a nasty habit of cracking when holes are drilled in it.

Asbestos Sheets for Rock Cuttings

Asbestos sheets often come in very handy in model railway construction. The track may be laid on asbestos sheets if required, but there are one or two points that must be carefully noted before setting to work with this material.

The objection to asbestos sheets is that they are very brittle and snap easily unless handled carefully. Nails should on no account be driven into an asbestos sheet without holes having first been drilled for them. Another point that should be remembered is that it is not advisable to saw too near the edge of a sheet. Platforms may be made from asbestos sheeting and deep cuttings may be represented in a very true-to-life manner by placing a piece of sheeting on each side of the track and colouring it over with flat grey paint. The appearance is exactly the same as a deep cutting in rock.

Ballasting a Model Track Realistically

Ballasting is a subject that is dealt with in almost any article on model railways and no doubt many Hornby enthusiasts are well experienced in the art of ballasting a model track realistically. The ingredients to use are granite chips, or "chicken grit." The chips may be laid down round the sleepers of the track loosely if desired, but some enthusiasts prefer to mix them with glue so as to avoid the rail bed spreading. It is a good plan to lay felt under the sleepers of the rails and then to spread the ballast round up to the level of the top of the sleepers. The smoothness of the running of trains on tracks so treated will be noticeable immediately.

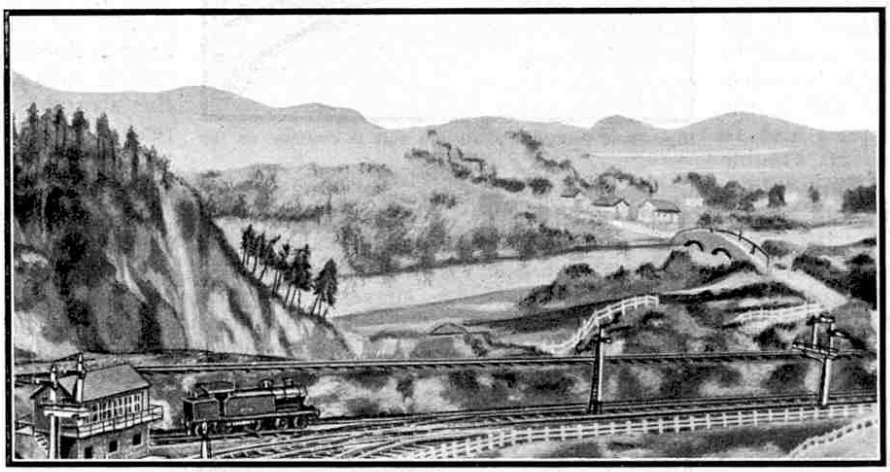
As practically all model railway scenic effects have to be painted, a few words of advice as regards the kind of paint to use will not be out of place here.

For rough jobs such as the colouring of baseboards and similar large surfaces, any cheap brand of stain can be used. On the other hand, for jobs such as the painting of trees, fields and the like, a finer brand of flat oil paint comes in very useful. If possible, however, the best type of colour to use on this kind of work is Reeves' Showcard Paint. This is not a transparent colour similar to those that are supplied in artists' water-colour boxes, but is opaque and, in addition, has the advantage of drying quickly. For fine work, such as the painting of details on model buildings, etc., nothing but first-class enamel should be used.

During painting a great deal of patience must be exercised. More than one good piece of work has been spoilt through being touched before it has dried properly. If two coats of paint are required, the first should be allowed to dry thoroughly before the second is applied.

XXIX.—SCENERY ON HORNBY LAYOUTS

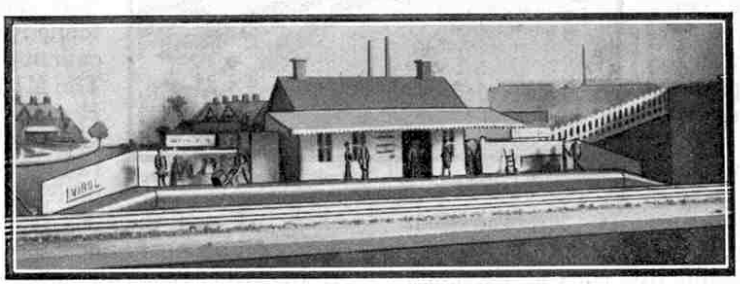
ONE of the great fascinations of the model railway hobby is the great variety of interest that it affords. For instance, some enthusiasts confine their attention almost entirely to locomotives, and pay little attention to the layout, except to ensure that it provides them with a sufficient length of run. Others find their greatest pleasure in making up trains of as varied a character as possible, and in providing their goods trains with actual loads to be carried from one place to another. Timetable working has many thousands of keen supporters; while others make a special hobby of track planning and correct signalling. There is one point on which all agree, however; and that is that the ideal miniature line must resemble a real railway not only as regards its layout, locomotives, rolling stock and accessories, but also in regard to its setting and surroundings.



The fine effects to be obtained by the use of well-arranged scenery are illustrated in this picture. The landscape is painted directly on to the wall of the room, and the illusion of distance is most striking.

The problem of surroundings is apt to worry the model railway engineer; in fact he is often so afraid of it that he leaves it severely alone! As a matter of fact the difficulties of providing a suitable scenic background for the average model railway are more apparent than real. In common with many other so-called difficulties, they begin to disappear as soon as they are tackled in earnest! It is true that there are limits to what can be done with a railway that always has to be completely dismantled after use; but every model railway owner should endeavour to have a part, at least, of his line semi-permanent, that is arranged in sections that can be taken up as a whole. In previous articles we have described how a layout may be arranged in sections of suitable length, screwed down to a baseboard, so that while it can be assembled quickly and accurately, the sections of which it is composed can be stowed away in small space.

In planning scenery for any railway, the general plan of the layout and the purpose of the line should first of all be considered. For instance, a line on which a heavy suburban traffic is conducted should not be provided with a background that represents the Rocky Mountains, or the effect will be absurd! It is not always possible to provide a suitable background for every section of the line, but it is not difficult to obtain a generally suitable effect. A miniature railway that is apparently laid in flat country never looks as realistic as one that passes through hills and across valleys. Gradients are not desirable for lines on which clockwork locomotives are employed, but it is not difficult to produce the effect of undulating country by a careful arrangement of embankments, cuttings and the general background.



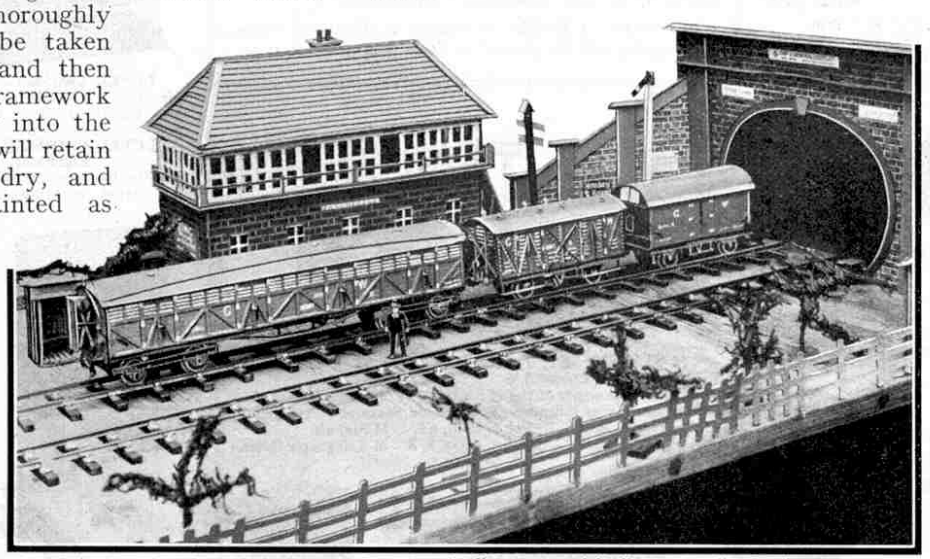
The appropriate background used here greatly increases the natural appearance of the station.

In the case of a permanent layout it is easy to make a most effective embankment. The baseboard should be narrowed so that it is little wider than the ballasted part of the track. Underneath this there should be arranged a false base, sloping as required until the opposite side of the valley that the line is supposed to be crossing is reached. The rails, of course, remain level as they were before, but the false base produces a complete illusion of a rising or falling gradient. In making the embankment a rough framework of strips of wood should be constructed to connect the upper and the lower baseboard. This framework should, if possible, be covered with pieces of old felt, or some similar material, the natural roughness of the surface of which should be increased by brushing

with a stiff brush. When this has been done, green paint should be laid on to represent grass, and occasional touches of brown and yellow give quite a pleasing representation of a typical grass embankment.

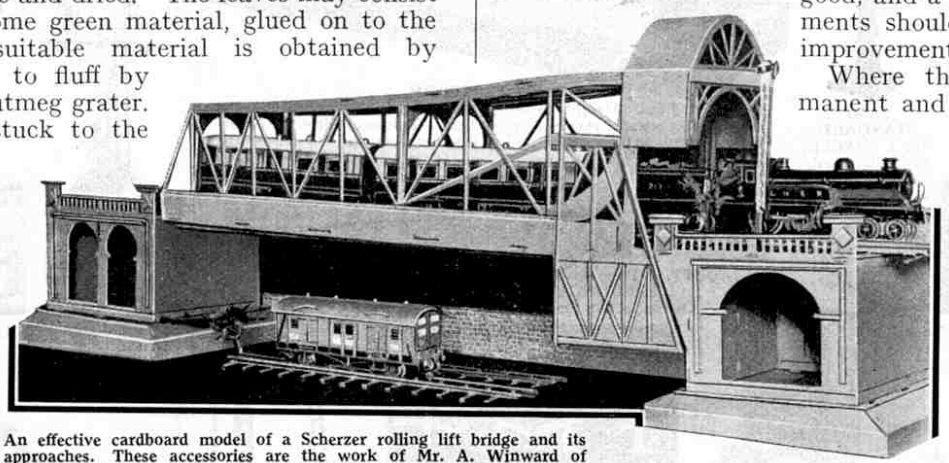
Another method of forming embankment sides consists of soaking fairly stout brown paper in a thin solution of glue and warm water. When the paper is thoroughly soaked it should be taken out and drained, and then attached to the framework and worked gently into the desired shape. It will retain this shape when dry, and then may be painted as desired. Alternatively, sand and very small stones might be sprinkled on it in patches before it is dry, so that the glue holds these in position.

When the layout cannot be even semi-permanent, the incorporation of such an embankment is scarcely possible. In such circumstances much may be done by the use of cuttings, made up into suitable lengths and used at the side of the track as desired. These cuttings may be made in a similar manner to the embankments, commencing with a suitable framework and covering this with any likely material that is at hand.



The possibilities of cardboard for the construction of scenic effects on a model railway are well shown in this photograph and the one below. It is interesting to note that not only the tunnel mouth and signal-box, but also the G.W.R. vehicles are made of cardboard.

Miniature trees placed in appropriate positions add greatly to the realism of a line. These trees may be made from suitable twigs, carefully prepared to the right size and shape and dried. The leaves may consist of small bits of some green material, glued on to the "branches." A suitable material is obtained by grating green felt to fluff by means of an old nutmeg grater. This fluff, when stuck to the twigs with Seccotine, looks surprisingly effective. The trees may be placed at many different points along the line on embankments or cuttings, or simply along the level stretches in front of an appropriate background.



An effective cardboard model of a Scherzer rolling lift bridge and its approaches. These accessories are the work of Mr. A. Winward of Manchester, to whom we are indebted for the photographs.

We come now to the actual background itself, which is of the greatest importance for producing the effect of distance and perspective. The mere mention of backgrounds seems to scare some railway enthusiasts, but we are convinced that this is merely because they have not experimented with them. To those who still maintain that backgrounds are ineffective, and more trouble than they are worth, we can only say—"Try them and see"!

Wallpaper frieze is usually recommended for railway backgrounds, and it certainly has many advantages, particularly in the saving of time and trouble. It is becoming more and more difficult to obtain really suitable friezes for this purpose, however, and in any case it is much greater fun to make up the backgrounds at home. It is not in the least necessary to be a clever artist in order to produce successful results in this direction. Generally speaking, detailed work is not only unnecessary, but also undesirable. All that is required is a suggestion of hilly country, pasture land, or wooded areas, with an occasional river, according to the nature of the imaginary country through which the railway passes. If desired, more detailed work may be added in the neighbourhood of important stations, but that is not really necessary.

Readers who are under the impression that they have not the ability to produce suitable backgrounds should make one or two experimental attempts with a length of, say, a yard of paper about 1 ft. in width, and place this strip in position behind their track, and look at it from the correct distance. In most cases it will be found that the effect is at least fairly good, and a few further experiments should produce a rapid improvement.

Where the railway is permanent and is arranged round the room, the walls should if possible be covered with light blue paper, and this used as the base upon which the scenery is drawn. For non-permanent layouts it is best to fix the background on light frames in sections of about three or four feet in length, which can be placed in position quickly, and packed away in small space after use.

Scenery made in this manner gives an extremely realistic character to the line. A miniature railway owner will find that he has great scope for the introduction of effective scenery. For instance, impressive rows of factory chimneys may be represented; where suitable, roads may be shown running from distant villages down to level crossings over the railway; and far-off hills and mountains lend charm to the scene.

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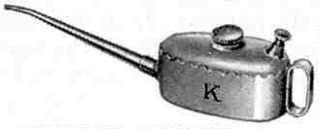

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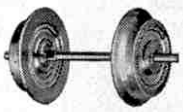

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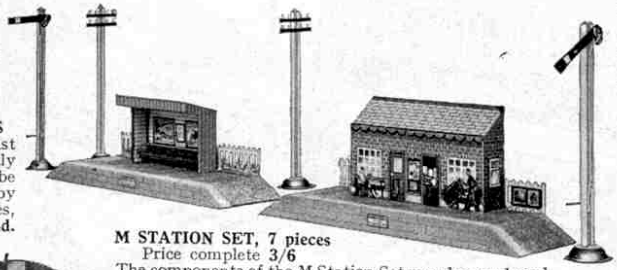

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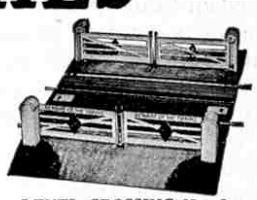

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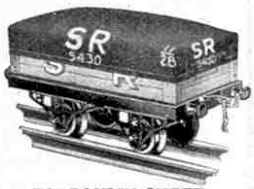

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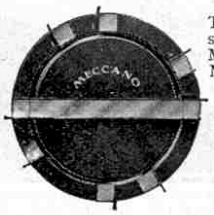

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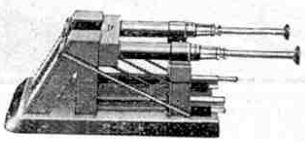

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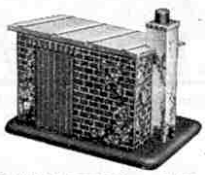

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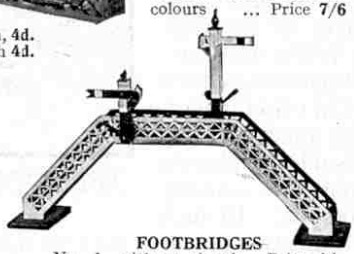

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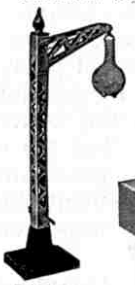

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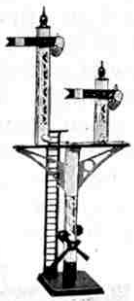

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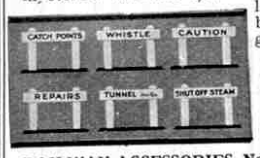

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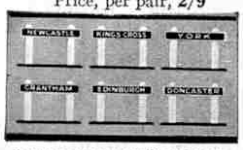
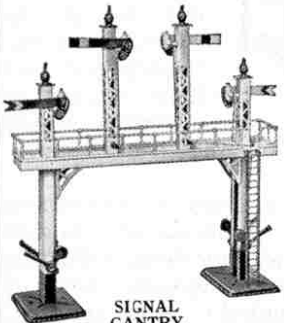
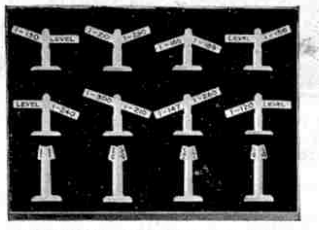


RAILWAY ACCESSORIES No. 9
Station Name Boards.
Price, per set, **2/6**

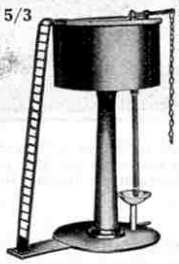


SIGNAL GANTRY
This is a very realistic model, the signal arms of which are operated by levers at the base of the standards. Attractively finished in colours. Price **10/–**

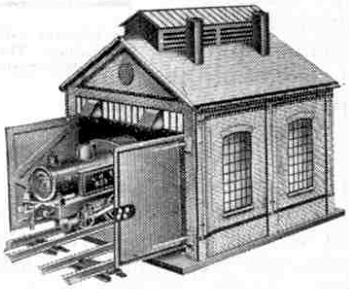
RAILWAY ACCESSORIES No. 7
Watchman's Hut, Brazier, Shovel and Poker ... Price **1/6**



RAILWAY ACCESSORIES No. 5
Gradient Posts and Mile Posts. Price **2/–**



WATER TANK
Brightly coloured. Fitted with flexible tube and valve lever. Price **8/6**



ENGINE SHED No. 1
This Shed is beautifully finished in realistic colours. It will accommodate Locomotives and Tenders of the M series, and Locomotives of No. 0 and No. 1 types ... ... Price **15/–**

RAILWAY STATION No. 2. Excellent model, beautifully designed and finished. Constructed in three sections, which are detachable. Dimensions: Length 2 ft. 9 ins., breadth 6 ins., height 7 ins. ... ... Price **12/6**

Suggested Hornby Train Improvements

INTERLOCKING SIGNAL LEVER FRAME.—We fear it would not be possible to introduce an interlocking lever frame in the Control System, for the method of locking the various point and signal levers would depend upon the particular type of layout. In addition such an accessory also would be costly to produce. No doubt many Hornby enthusiasts will be able to devise a system of interlocking levers for their own individual requirements. An interlocking frame made up of Meccano parts was described in the January 1929 "*M.M.*" (*Reply to R. Thornhill, Cheltenham*).

MINIATURE TINS FOR BISCUIT VANS.—This is a good suggestion, but owing to the fact that the tins would be rather difficult to handle realistically owing to their small size, we doubt if they would prove very popular. We suggest that you model these yourself from either metal or wood, suitably painted. (*Reply to G. Payne, Brighton*).

ROYAL TRAIN SET.—We agree that a train of this description would present a very pleasing appearance. The Royal Train is not familiar to the majority of railway enthusiasts, however, and as it could not be used very effectively for general purposes on a model railway, we doubt if such a set would prove popular. The No. 2 Special Pullmans would be quite appropriate for the purpose, as such vehicles are often used attached to ordinary express trains for the conveyance of royal personages. (*Reply to F. W. Coleman, Southport*).

SNIFTING VALVE ON "SHIRE" LOCOMOTIVES.—The addition of these valves behind the chimney would follow actual practice and give a very realistic appearance to the boiler. Your suggestion will be considered when a suitable opportunity occurs. (*Reply to R. Maclean, Glasgow*).

HORNBY CONTROL ON NON-PERMANENT LAY-OUTS.—The Hornby Control System is perfectly satisfactory when adapted to non-permanent model railways. Indeed one of its chief advantages is the ease with which it may be applied to any particular kind of lay-out. It is important that the rails should be fixed together with the special Hornby rail connecting plates, and that the signals, lever frames and other parts should be securely clamped in position by means of the locking clips provided. (*Reply to J. B. Fidler, Rugby*).

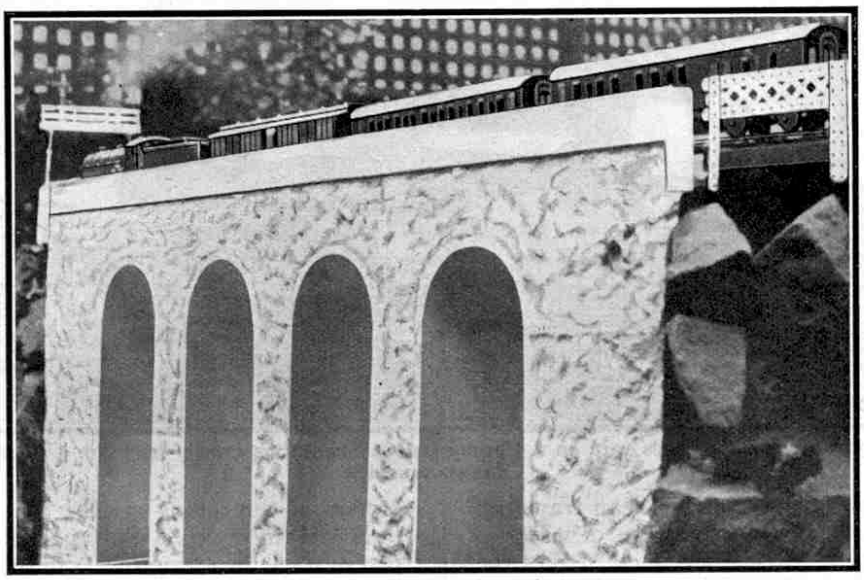
VACUUM BRAKE EJECTOR.—A vacuum brake ejector would no doubt improve the appearance of our models of L.M.S. locomotives, but there is a limit to the amount of detail of this kind that can be effectively applied to Gauge 0 locomotives. In addition small fittings of this kind are very fragile and are likely to get knocked off in service. (*Reply to R. Sackville, Burton*).

OPEN CARRIAGE TRUCK.—This type of wagon was formerly in common use on our railways for the conveyance of carriages and occasionally motor cars. Modern practice, however, favours the covered van for such duties. Complete protection from the weather is thus afforded, while the wagons themselves are not so limited in their sphere of action, as they may be used for the carriage of milk churns or theatrical scenery if necessary. As the introduction of a motor-car van of up-to-date design is at present receiving attention and will probably prove more popular on the whole, we are unlikely to consider the manufacture of an open vehicle of the type you propose. (*Reply to S. Hamson, Exeter*).

WOODEN COACHES.—We cannot consider the introduction of wooden coaches and wagons, as they would be quite out of keeping with the general plan of the system. A mixture of metal and wooden rolling stock looks very unrealistic and awkward. (*Reply to J. Wakefield, Hornsey*).

PLATELAYER'S TROLLEY.—We doubt if there would be a great demand for an accessory of this description, as it could scarcely be put to much use on a Hornby model railway. An excellent substitute is the discarded bogie of an old locomotive. (*Reply to H. S. Ellison, Boston*).

RUSTLESS RAILS.—We have stated many times that Hornby track is not intended for permanent out-door working. Rustless or brass rails such as you suggest would be much more costly than our present standard track, and there would be very little demand for them. (*Reply to K. Bretherton, Coalville*).



A remarkably picturesque viaduct on the outdoor model railway of Mr. G. Hemm of Liverpool. The various portions were cast in concrete faced with white cement and the parts were then joined together. Steel bars are incorporated to add strength to the structure which is thus a striking example of ferro-concrete work in miniature.

SADDLE-TANK LOCOMOTIVE.—Your suggestion for the introduction of saddle tanks representative of one of the types used by the late Lancashire and Yorkshire, or London and North Western railways is interesting, and will be considered. Modern practice in regard to shunting locomotives tends to do away with the saddle tanks, but such engines are still in common use. For the present we suggest that you make use of the Hornby No. 1 or the No. 1 Special Tank, either of which is very suitable for shunting duties. (*Reply to N. Henshall, Manchester*).

COWCATCHERS FOR HORNBY LOCOMOTIVES.—Cowcatchers would not be suitable for the existing Hornby locomotives, except possibly for the Blue Train locomotives. Such a fitting would have only a limited popularity. (*Reply to D. Taverner, Dover*).

TWELVE-TON END DOOR OPEN WAGONS.—These wagons are commonly used by the four group companies, and by many private owners, as they are specially adapted for discharging loads by tipping them endways. Such wagons probably would prove popular in the Hornby Series, and we shall bear the idea in mind when additions to our rolling stock are being considered. Particulars of any decision will appear in the "*M.M.*" (*Reply to F. Davies, Swansea*).

FOOTBOARDS FOR BRAKE VANS.—Footboards would certainly add to the realistic appearance of our Brake Vans, but we cannot consider the introduction of further details of this kind at present. Your suggestion will be noted for possible adoption later. (*Reply to R. Hawthorn, Coventry*).

MODEL REPAIR SHOPS.—Large accessories of this kind are not suitable for manufacture as components of a miniature railway system. They would be costly to produce with sufficient detail to make them really effective, and they would only be suitable for very large layouts. Why not try to build a workshop to your own ideas from Meccano parts? (*Reply to J. E. Brookes, Leeds*).

STEAM LOCOMOTIVES.—The clockwork and electric locomotives of the Hornby Series are so perfectly suited to the special requirements of Gauge 0 railways that we have had very few requests for steam locomotives. In such a small gauge it is difficult to produce a steam locomotive that is thoroughly efficient for all general purposes, and at the same time easy to manipulate. We have had the matter under consideration, however, and if there appears to be a real demand for steam locomotives we may introduce them later. (*Reply to J. Hawley, Gainsborough*).

LARGER CYLINDERS.—Your remarks concerning the size of the cylinders on our No. 2 Special L.N.E.R. locomotives are interesting, but as a matter of fact the cylinders fitted are quite in proportion to the rest of the engine. Any alteration in size, therefore, would tend to detract from, rather than add to, the realistic and true-to-type appearance of the locomotive. (*Reply to J. Askew, Maryport*).

AUTOMATIC TURNTABLE.—Your suggestion that the Hornby Turntable should be fitted for either electric or mechanical control is interesting, and will have consideration. (*Reply to J. Kyle, Plymouth*).

WATER TROUGHS.—As we have previously stated water troughs to be placed between the rails on a suitable stretch of straight track on a Hornby railway would serve no useful purpose, and would not be very realistic. If it is particularly desired to include water troughs on a layout they may be constructed of strips of cardboard or wood, with glass, preferably tinted blue, placed on the top to represent the water. (*Reply to K. Summers, Bushey*).

AMERICAN BOGIE PASSENGER CAR.—The American type rolling stock recently introduced in the Hornby Series has proved very popular, and further additions may be made later. (*Reply to E. Walsh, Melbourne*).

L.N.E.R. "SOMERSAULT" SIGNALS.—In view of recent developments in signalling, especially in the use of the colour-light system, it is probable that these "somersault" signals will ultimately be superseded. For this reason, therefore, we doubt if their popularity would be sufficient to justify their introduction. (*Reply to B. Matthews, Selby*).

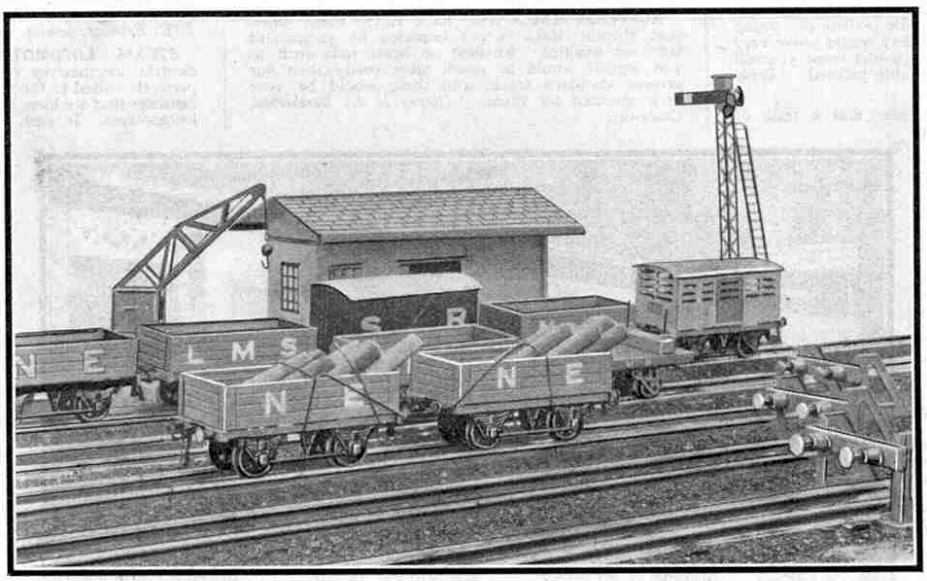
S.R. "MOGUL" LOCOMOTIVE.—We agree that the "Ashford" 2–6–0 type locomotive would be a very fine prototype for a Hornby model. As you point out such locomotives have a wide range of usefulness for both passenger and goods work. Until six-coupled mechanisms are available in the Hornby Series, however, we cannot consider the claims of these engines; but no doubt they will be reviewed in due course. (*Reply to V. Wood, Bromley*).

Buffer Stops in the Hornby Series

By "Tommy Dodd"

IT is interesting to reflect that nearly all railway lines must end in buffer stops, although as one travels over any of the important main lines, such as from London to Scotland, or London to the West of England, the idea that the rails have a definite end to them seems almost impossible. At large terminal stations, however, the tracks necessarily come to an end, and the main feature about these rail ends is that there is always some kind of stopping apparatus fitted to them in the form of buffer stops of one type or another. The main lines also have other endings in goods yards, where the freight trains start and finish their journeys.

The most general types of stopping apparatus are the hydraulic stops, the plain spring pattern buffers, rail-built buffer stops, and what are known as "dead ends."



A photograph of a goods yard on a Hornby Railway indicating clearly how No. 1 Buffer Stops are used.

The action of the hydraulic buffer stops, as the name suggests, depends upon water pressure. They consist of a supporting framework, upon which are mounted two long cylinders. One end of these cylinders is closed, and from the other end there projects a long stout rod, at the end of which the actual buffer head is formed. The rod or shank has a piston fixed on its inner end, which can travel up and down the cylinder. A certain pressure of water is maintained in the cylinder. When a vehicle strikes the buffers the piston travels backward in the cylinder, and as it does so the water passes from back to front of the piston through an opening provided for the purpose. This opening decreases gradually in size, and consequently as the piston moves backward the resistance to its motion increases, producing a corresponding increase in the retarding effect on the train. In most up-to-date patterns of these buffers the cylinders are very long, and are capable of bringing to rest heavy trains moving at speeds of 10 miles an hour or so.

The hydraulic buffer stops of the Hornby Series are splendid representations of the real thing, and their action faithfully follows that of their prototype. It is impossible, of course, for them to operate on the hydraulic principle, and they depend on the use of springs of suitable strength to retard any train that gets out of hand. They may be readily connected up to standard Hornby rails, and to prevent them from becoming disconnected from the rest of the track if a train should strike them with unusual force, they are so arranged that Connecting Plates may be used to join them firmly to the next piece of rail.

It is an interesting practice on the L.N.E.R. to test regularly the hydraulic buffers at King's Cross Station, in order to make certain that they are in perfect working order. This test is usually carried out by one of the large express passenger locomotives, which slowly approaches and pushes the buffers in to the limit of their travel. As may be imagined, this is a very fascinating operation to watch, and invariably there are numbers of railway enthusiasts present when the test takes place.

Buffers of the plain spring pattern are frequently used in terminal stations for the lines devoted to parcels and milk traffic, and also on those lines where horse-box and carriage traffic is handled. Such buffers are used also to a great extent in carriage sidings, and they are sometimes to be seen on engine roads.

Rail-built buffer stops and "dead ends" are also familiar railway features. The latter consist merely of a stockade of disused sleepers, filled in with earth, and a plain wooden beam receives the impact of the buffers of the rolling stock.

The Hornby No. 1 Spring Buffer Stops may be used just as freely in a terminus as in sidings, though, of course, they are more suitable for the latter purpose. Their effective appearance, especially where several are employed side by side, may be gathered from the accompanying illustration. This shows a small goods yard with two through roads and three sidings, which are terminated by spring buffer stops. These stops are most effective in preventing wagons from running away and doing damage during shunting operations. The height of the buffer beams and buffers in both patterns is now made to agree with the reduced buffer height standard on all the latest Hornby rolling stock. Consequently the rolling stock buffers meet the stops squarely, and the wagons do not tend to be thrown up off the track or derailed, provided, of course, that the speed is not excessive.

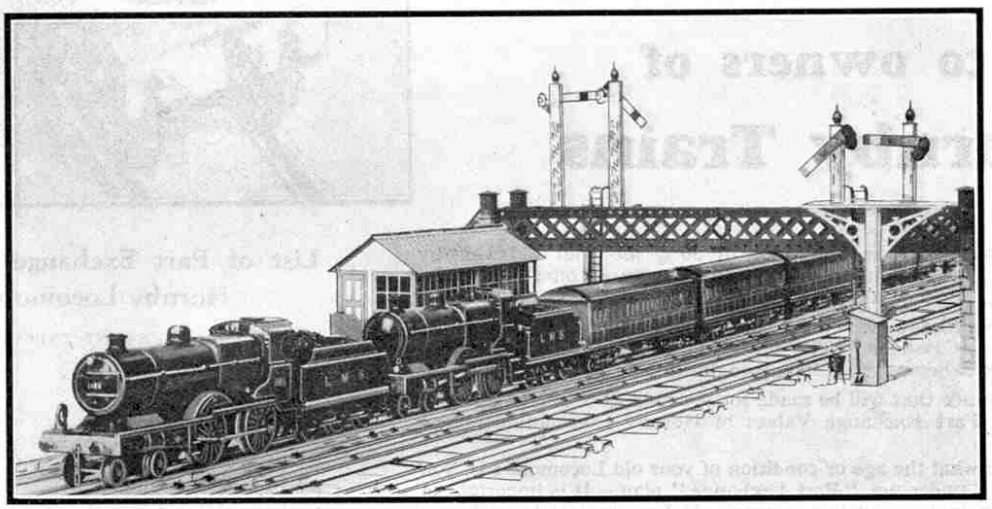
On real railways there are also to be seen triangular iron stop blocks mounted on the rails, and sometimes it is found that the rails at the end of a siding have their ends turned up in a curve. Other and even more primitive methods of retarding vehicles are found in country districts.

Why Trains are Double-Headed

Piloting in Miniature Practice

A PHASE of railway working that is of great interest to railway enthusiasts, and always arouses the curiosity of the casual onlooker, is piloting or "double-heading."

The general reason for the use of two locomotives at the head of a train is that neither of them alone is sufficiently powerful to haul a load at the speed required; but there are many cases where the necessity for double-heading is not immediately obvious. For instance, two locomotives of large and powerful design may be seen heading a light and possibly easily-timed train. In this case the double-heading may be due to the fact that an engine is required farther down the line for certain work. In such a case, in order to avoid running the engine light, thus occupying the track in possibly a busy district, the engine is attached as a pilot to a convenient train. If this train is heavy, and the line is sharply graded, the assistance thus afforded will be valuable, and may perhaps prevent a loss of time that otherwise might have occurred.



A heavy express, hauled by two Hornby Midland Compounds, running on a busy stretch of four-road track. The position of the headlamp of the pilot engine indicates that this is assisting over a portion of the journey not exceeding twelve miles in length.

Alternatively it may be that a special train was worked by the engine, and that there is no train that it can conveniently take on the return journey. Therefore it goes back to its home shed as a pilot engine, even though the particular train may be well within the powers of the train engine provided.

A rather surprising feature of piloting is that the performance put up by two engines on one train frequently excels what would have been done if the load had been divided into separate trains in proportion to the respective capacities of the engines. Owing to the general use nowadays of powerful locomotives, the need for piloting is not so great as when engines of more limited tractive power were widely employed on our railways.

Certain combinations of locomotives have acquired in the past a great reputation for speedy running with heavy trains. For instance, two L.N.W.R. locomotives were regularly used for many years between Crewe and Carlisle for the heavy Scottish expresses. These engines were both of the 2–4–0 type, one of the "Samson" class with 6 ft. driving wheels, and the other of the "Precedent" class with 6 ft. 6 in. driving wheels.

On the Midland Railway a 4–2–2 single wheeler and a 4–4–0 compound have been known to give splendid results. More systematic piloting was carried on on the Midland Railway than perhaps on any other line. This was no fault of the locomotives provided, for they were consistently good. The reason for the large amount of double-heading was that weight restrictions prevented the employment of large locomotives. This, combined with the speed of the Midland services and the severe grading of the main line, made it necessary to restrict the loads hauled by the various classes of engines, so as to prevent them from being unduly pushed to maintain time. The punctuality of the Midland train services was to a considerable extent due to this policy. The practice of limiting the loads to be hauled by the various locomotive classes is pursued on similar lines to-day by the L.M.S.R.

Much piloting has been done at various times on other systems, but there have been some locomotive superintendents whose invariable practice was "one train one engine." This was the case on the Great Northern Railway for a long time; but with the great increase in loads in more recent years arrangements were made for piloting certain trains before the famous Gresley "Pacifics" were introduced in 1922. Piloted trains were exceptionally rare on the London, Brighton and South Coast Railway, and the G.W.R. have always been noted for the capability of their locomotives, which made pilot engines unnecessary except over the very severe gradients in Devon and Cornwall.

A curious example of the use of two engines where one normally would have sufficed occurred more than 30 years ago on the North British Railway. The through expresses from King's Cross to the North were then, and had been for a number of years, hauled by North Eastern locomotives between Newcastle and Edinburgh. The course from Berwick onward was over the North British Company's line, and suddenly this company decided to work the trains on this section with their own engines, and the North Eastern were given notice accordingly. It was announced also that although the trains would stop at Berwick for the engines to be changed, the run would be made in the same time as before. In order to ensure that this should be accomplished, and to prevent the possibility of any failure on the road, two North British engines were used for a considerable time. Finally, however, an agreement was reached by which each company worked certain trains between Newcastle and Edinburgh, and the necessity for the use of two locomotives disappeared.

Owing to the varying conditions of railway operation, some curious locomotive combinations are to be observed at times. All railway enthusiasts are familiar with the famous L.M.S.R. single-driver locomotive "*Cornwall*," which has the largest driving wheels in the world, and has been used in recent times as an inspection engine. On one occasion this engine worked from Crewe to Euston with a directors' special, and in order to return her conveniently to her home shed she was actually attached as a pilot to the mid-day Scottish express from Euston, the train engine being the well-known "Claughton" class locomotive "*Patriot*." It is a great pity that no photograph was taken of the engines on this notable occasion.

War-time conditions accounted for many curious locomotive assortments, for with the curtailment of passenger train services a large number of express engines became available for goods work. Two passenger engines might be used together; a little goods engine of old design might be piloted by a relatively up-to-date express engine; or a heavy coal train might be seen with a single-driver or 2–4–0 as train engine, and perhaps a modern 0–6–0 as pilot. For a considerable period the large 4–6–4 "Baltic" tanks that had been designed for the former London, Tilbury and Southend Railway were employed in coal train operation between Wellingborough and London on the Midland. They were sometimes to be seen in company with regular goods engines, or sometimes with a large-wheeled express locomotive. Their appearance on this duty would hardly have occurred in normal times, as they were unsuited for the work, their bunker capacity being somewhat limited for heavy-duty trips of this length.

(*Continued on page 272*)

Hornby Series
For 2-ft. radius layouts only.

HORNBY

COUNTRYSIDE SECTIONS

Real Scenery for your Railway!

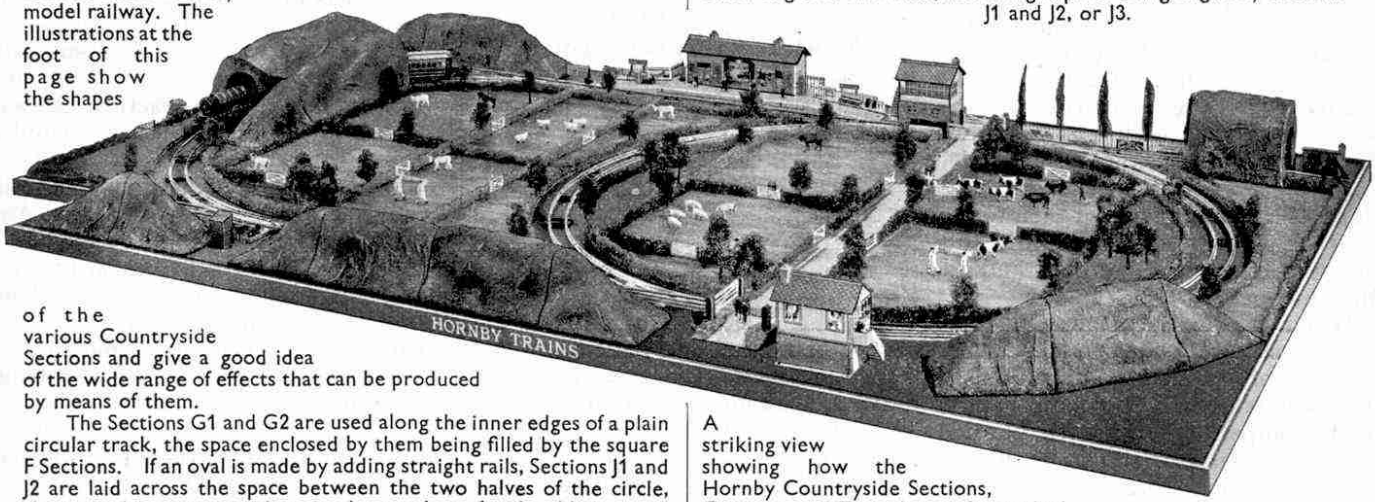
The new Hornby Countryside Sections provide model railway owners for the first time with scenery in a ready-made form that is suitable for any kind of 2 ft. radius layout. Splendid scenic effects may be obtained by arranging the Countryside Sections round a layout, and inserting here and there the Hornby miniature animals—cows, sheep, horses and pigs—Modelled Miniatures No. 2. The realistic effects produced in this manner add enormously to the attractiveness of any model railway. The illustrations at the foot of this page show the shapes of the various Countryside Sections and give a good idea of the wide range of effects that can be produced by means of them.

The Sections G1 and G2 are used along the inner edges of a plain circular track, the space enclosed by them being filled by the square F Sections. If an oval is made by adding straight rails, Sections J1 and J2 are laid across the space between the two halves of the circle, their number corresponding to the number of rails added.

The No. 1 Level Crossing necessitates the use of road Section H, the breadth of which is equal to the length of the Crossing. Similarly a half-rail requires the narrow field Section J3. Section H fits under the sloping approach of the Crossing, and a packing piece R is used on the opposite side to preserve the level.

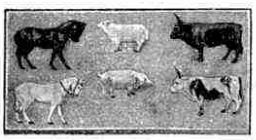
Triangular Sections K1 and K2 fit between the arms of the Right-Angle Crossing, so that "figure eight" layouts can be easily made up.

Curved Sections L1 and L2, and M1 and M2, are available for the outer edges of the track, the straight parts being edged by Sections J1 and J2, or J3.



A striking view showing how the Hornby Countryside Sections, Cuttings, and Tunnels may be applied to a layout is given in the above illustration.

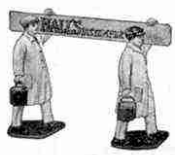
Ask your dealer to show you the new Hornby Countryside Sections



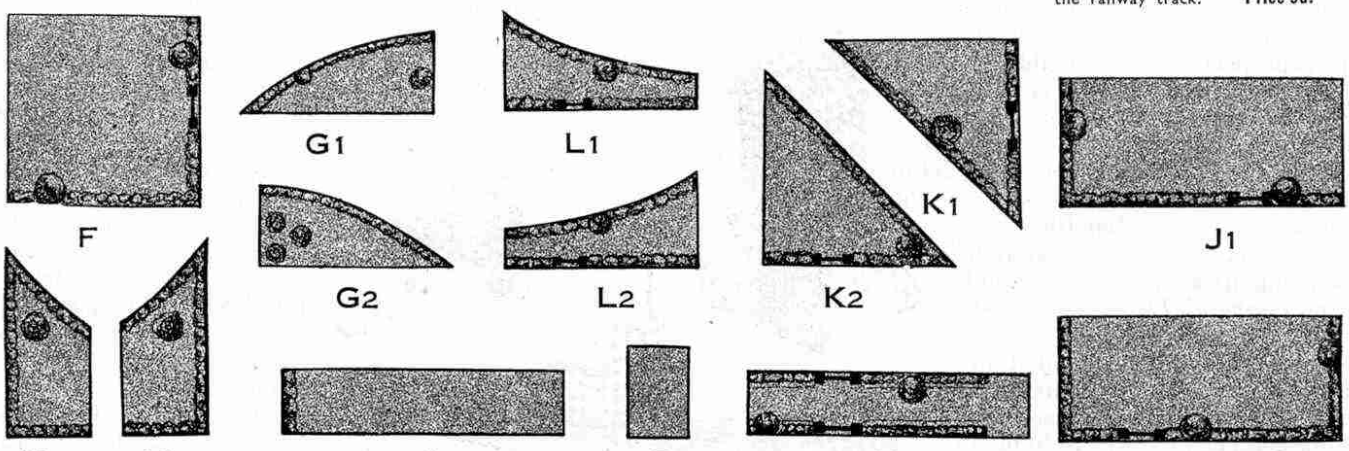
MODELLED MINIATURES No. 2
FARMYARD ANIMALS
Comprises six animals—Sheep, Pig, two Cows, and two Horses.
Price per set 1/6

PRICE LIST OF COUNTRYSIDE SECTIONS

Fields F	Box of four	10/-
Fields G1 and G2 ...	Box of eight (four G1 and four G2) ...	11/-
Roads H and Supports R	Box of two H with R Supports	5/6
Fields J1 and J2	Box of four (two J1 and two J2) ...	11/-
Fields J3	Box of two	2/-
Fields K1 and K2 ...	Box of four (two K1 and two K2) ...	8/-
Fields L1 and L2 ...	Box of four (two L1 and two L2) ...	7/-
Fields M1 and M2 ...	Box of four (two M1 and two M2) ...	5/-



MODELLED MINIATURES
No. 13
HALL'S DISTEMPER ADVERTISEMENT
This miniature of a well-known lineside advertisement is intended to be placed in the fields adjoining the railway track. **Price 9d.**



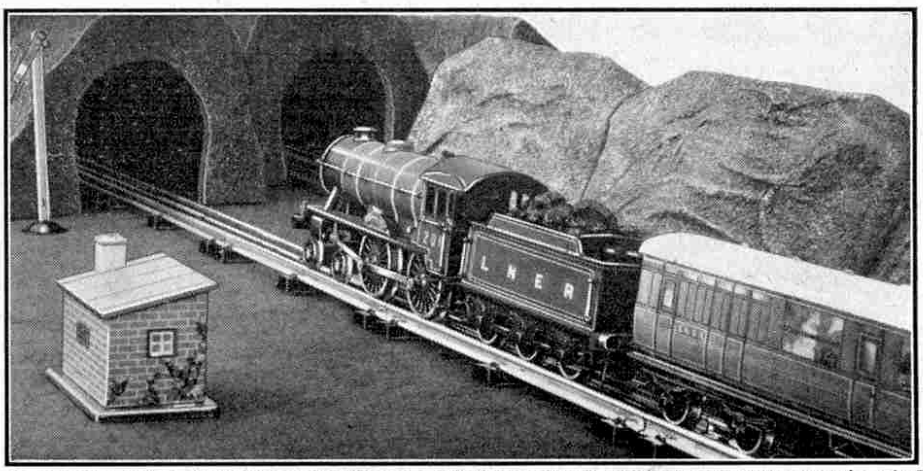
MECCANO LIMITED — OLD SWAN — LIVERPOOL

Cuttings and Tunnels on Hornby Railways

Useful Additions to Lineside Scenery

NO miniature railway can be regarded as complete or realistic unless it reproduces in some form the cuttings and tunnels that make real railways interesting. On miniature railways, particularly those that have to be taken up frequently, the inclusion of cuttings formerly was a matter of some difficulty. This trouble was overcome by the introduction of the Hornby Cuttings, and now the most temporary of layouts can have such features. The longer Cuttings are designed in sections of such a shape that cuttings of any suitable length can readily be built up.

The smallest and simplest of these valuable Hornby Accessories is the No. O Cutting, which consists of two sloping "banks" mounted on a base over which the railway track is laid. The base is square, with a side 6 in. long, and over it trains run between banks rising from the lineside in exactly the same manner as those of real cuttings. The banks are made of fabric shaped in a realistic manner and finished in natural colours. This Cutting is particularly suitable for Hornby railways with single track.



A miniature L.N.E.R. express about to plunge into a Hornby Tunnel. Two Hornby No. 2 Tunnels are used to give the effect of twin bores, and they are led up to effectively by Hornby No. 2 Cuttings.

There are three sections of the larger Cuttings, known respectively as the No. 1, No. 2 and No. 3 Cuttings, and each is a section designed with a special purpose in view. The No. 1 Cutting is an End Section, reproducing the increasing height that is noticed by every traveller when entering a real cutting. The No. 2 Cutting is a Straight Centre Section, the height of which is approximately the same throughout and is equal to the greatest height reached by the End Section. One bank of a very effective Cutting therefore can be made by placing a No. 2 Cutting between two No. 1 Cuttings, and by repeating this operation on the opposite side of the track a very fine miniature cutting is obtained. The Centre Section has a length of $10\frac{1}{4}$ in. and the End Section of $7\frac{3}{4}$ in., so that the total length of a cutting built up in this manner is $25\frac{3}{4}$ in.

The No. 3 Cutting is similar to the No. 2 Cutting, except that it is curved. The use of curved cuttings on a miniature line adds greatly to the fun of operations, as well as giving variety to the general appearance, and a very fine curved cutting that is suitable for both 1 ft. and 2 ft. radius track is readily made by combining the No. 3 Cuttings with End Sections in the manner already explained when dealing with Straight Cuttings.

Various other combinations will no doubt suggest themselves to Hornby Train owners. For instance, a short cutting can be made by combining two End Sections on each side of the track. Another plan for exceptional circumstances is to have a straight bank along one side of the line and a bank curving outward on the other. This would enable a junction to be made in the cutting. Junctions of this kind are perhaps not often seen on real railways, but have been made in special cases.

Yet another scheme is to use Hornby Cuttings to lead up to the entrance of a Hornby Tunnel. This is a very effective plan, for on real railways trains do not run suddenly from level ground into tunnel mouths, but reach them by passing between banks that become higher and higher until the limit is reached. The Hornby Tunnels are made of the same material as the Cuttings, so that the two can be used together with a very natural and realistic effect.

There are few thrills greater than to see a miniature train plunge into a tunnel. There are five Tunnels in the Hornby System, and the fun of having these structures on a miniature railway can be enjoyed by every owner, no matter how small his layout may be. The No. O, No. 1 and No. 2 Tunnels are straight. For very small layouts the No. O Tunnel is excellent, and of course it can also be used on large layouts to represent short tunnels. This Tunnel is straight, and is 6 in. long.

The No. 1 Tunnel is larger, its length being $7\frac{3}{4}$ in., while its overall width at the base is $6\frac{1}{4}$ in. The No. 2 Tunnel has a length of $15\frac{3}{4}$ in., or a little more than twice that of the No. 1 Tunnel. It also is wider, the extra material that is put in to give a base measurement of $9\frac{1}{2}$ in. being planned to give a more natural appearance than the smallest tunnels can have. This is the largest of the straight Tunnels, but if a longer tunnel is required it is a simple matter to combine tunnels, and when No. 1 Cuttings are used to form the approaches, a really imposing structure can be laid down on a miniature railway.

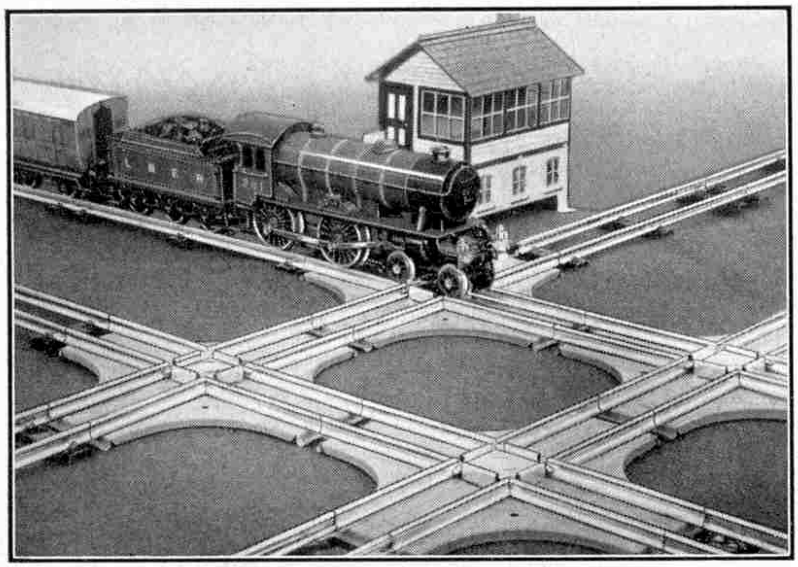
The No. 3 and No. 4 Tunnels are curved, with lengths of 13 in. and 20 in. respectively. The No. 3 Tunnel can be used on track of 1 ft. or 2 ft. radius, but the No. 4 Tunnel is suitable only for track of 2 ft. radius. The shape of these Tunnels allows them to be used with advantage in corners of a layout, where at times it is difficult to devise lineside scenery that is suitable and really effective.

A point that should be kept in mind is that Hornby Tunnels are arranged to accommodate only a single track. When a double track main line is required to pass through a tunnel two separate bores therefore must be provided as shown in the illustration on this page. This is quite in accordance with railway practice.

How to Use Hornby Crossings

An Interesting Type of Layout

AMONG the most interesting and popular tinplate track components in the Hornby Series are the Acute-angle and Right-angle Crossings. Probably few layouts have been developed to a more or less complete state without incorporating one or other of these Crossings. As their name implies, they allow one track to cross another on the level, but give no choice of routes, as do points. The Crossings have in fact no movable components, but their use makes possible some interesting developments in track layouts.



A Hornby L.N.E.R. express running over the double crossing that forms the basis of the layout described on this page. The realistic effect that is obtained is quite striking.

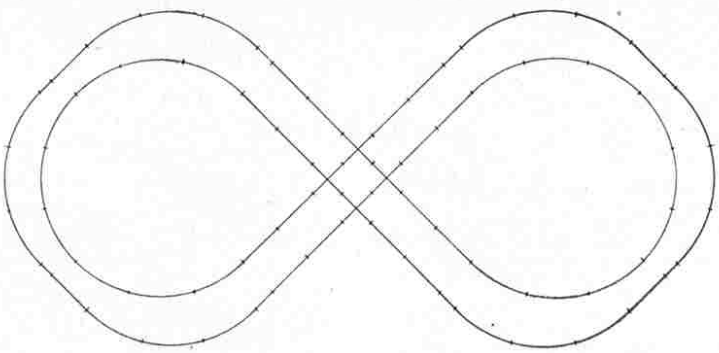
The simplest form of miniature railway layout is the plain circle, and it is usual in the earliest steps of the development of a system to extend the circle into an oval by the addition of straight rails. This of course is satisfactory, and splendid systems can be built up from the oval by the addition of points. The oval track by itself allows of no greater running possibilities than does the plain circle, however, and Hornby train owners on the lookout for further variety in their operations invariably turn their attention to the type of layout that is popularly known among model railway enthusiasts as the "figure 8."

The shape of this type of layout will be obvious from the name, and its essential feature is a Hornby Acute-angle or Right-angle Crossing at the centre. In addition to being available in these two patterns, Hornby Crossings for clockwork layouts are made with arms of suitable length for use in conjunction with 2 ft. radius and 1 ft. radius curves respectively. For electric tinplate layouts only one type of Crossing is available, for use in conjunction with 2 ft. radius curves, and this is made in two patterns having acute and right angles respectively. There is no disadvantage in this, however, as the difference in the length of the arms of the 2 ft. radius and 1 ft. radius patterns can be made up by adding a standard Straight Quarter Rail to each arm of the Crossing.

A fine variety of layouts can be made up with Hornby Crossings, and many of these will be found in the booklet *"Hornby Layouts,"* a copy of which should be obtained by all owners of Hornby Tinplate Track. It can be obtained from all dealers price 3d., or it will be sent direct from Meccano Ltd., for 4½d., post free.

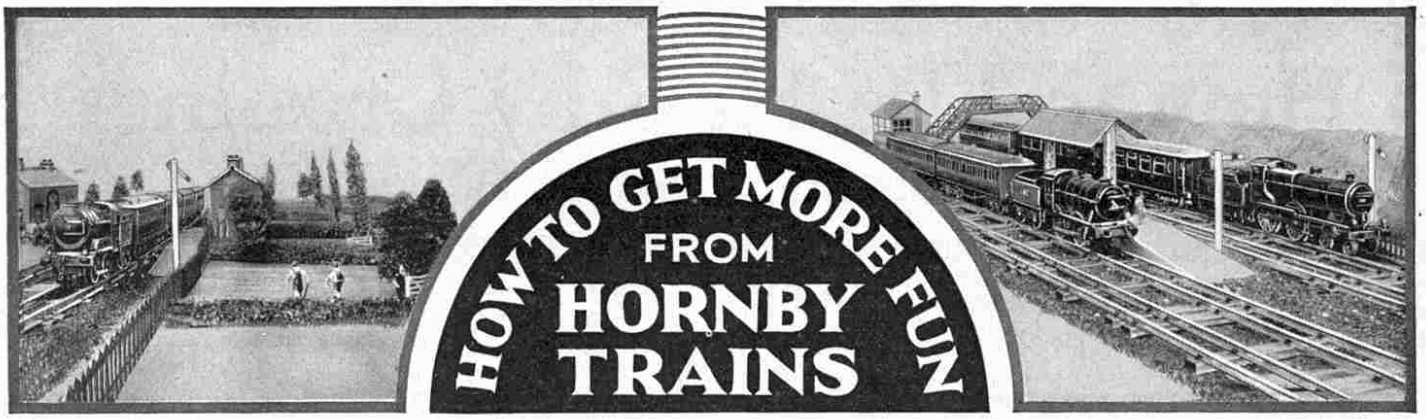
As a general rule layouts incorporating Hornby Crossings are of the single track kind. It is easy to construct double line systems incorporating Crossings, however, and an interesting example is shown in the diagram on this page. A necessary feature is the inclusion of four Right-angle Crossings, which are connected to each other to form a double level crossing.

An interesting point about the layout is that both tracks are of exactly the same overall length. A train on the inner line of one section of the layout automatically runs on to the outer line of the other after negotiating the crossings. This means that the layout is invaluable as a test track, as locomotives can be tested against each other both for speed, haulage and length of run. It is fascinating to note the performances of two locomotives on the layout at once, each on a separate track. Care must be exercised in operation in order to avoid any collisions at the crossings, but this can usually be effected easily by starting them side by side on the crossing itself.



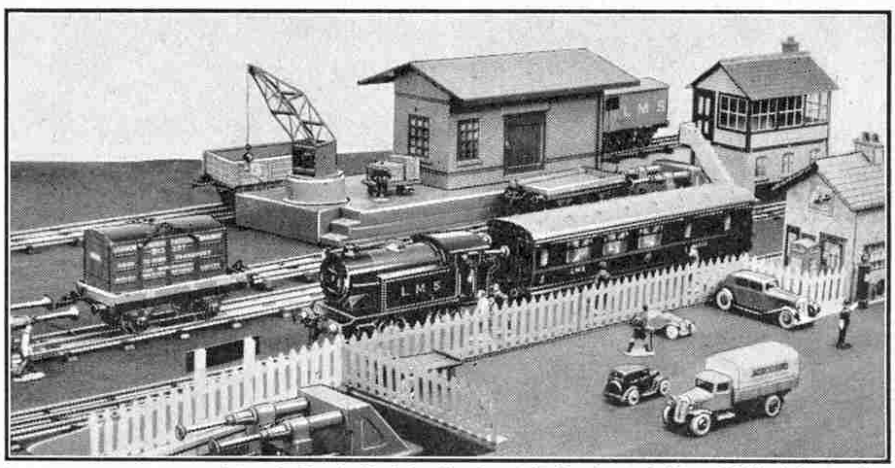
Above is a diagram of the layout dealt with in this article. The rails required to complete it are: 36 A2, 20 B1, 4 B½, 4 B¼ and 4 CR2.

The upper illustration shows the four Crossings on their solid bases, which make a neat and effective assembly in the centre of the layout. With the Hornby L.N.E.R. No. 2 Special Locomotive *"The Bramham Moor"* negotiating the crossing one is reminded strongly of the complicated crossing layout on the L.N.E.R. outside Newcastle Central Station. The crossing on the level of main line is rare in this country, although the route of *"The Flying Scotsman"* is crossed on the level twice between London and York. One of these crossings is at Newark and the other is situated at Retford.



THE WORKING OF SUBURBAN SERVICES

THE greatest delight of most model railway engineers is to operate long-distance expresses that reproduce on a small scale the features of such famous trains as the real *"Royal Scot"* or *"Flying Scotsman."* They may have to forego the running of these trains, however, as many factors may make such operations impossible. One of the chief of these factors is the matter of space. The amount of space that is available for a layout has far more influence on the final arrangement and working of the miniature system than is apparent at first. Space not only governs the actual extent of the line, but also affects the radius of the curves on it, and this in turn governs the choice of the rolling stock. In a limited space small radius curves therefore may be necessary, and in these circumstances only the smaller locomotives and items of rolling stock can be operated with any success.



A useful rail motor unit consisting of a Hornby No. 2 Corridor Composite Coach attached to an M3 Tank Locomotive is shown alongside the platform in this illustration.

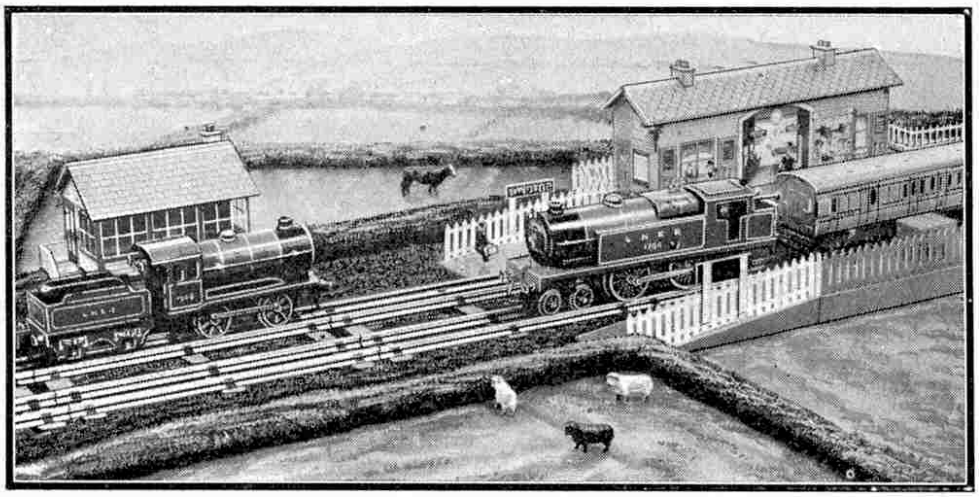
For these reasons it is not always the best policy to attempt the running of "crack" expresses, and the operator then will have to be content with the operation of less ambitious services. He need not be downhearted over this, however, for he can enjoy just as much fun in the correct reproduction of the less spectacular train services of actual practice. He then has a choice between the working of goods trains and the operation of local or suburban passenger services, and in actual fact the two may be combined.

Goods train working is very fascinating, as the articles on this topic that have appeared in the *"M.M."* show. There is variety and interest in planning the layout of goods yards and stations, in making up the trains and in providing suitable loads for the wagons employed, according to the district supposed to be served by the line. The running of ordinary passenger trains is no less attractive, and the trains themselves are important, for they are as useful to the people who travel by them as to the companies who run them for the revenue they produce. We propose therefore to devote this article to them, and particularly to suburban trains. These may appear too familiar to many Hornby Train owners, possibly by reason of daily travel in them, but they offer many interesting possibilities for miniature railway working.

First of all let us consider the necessary layouts, which depend on the type of trains to be run. The equipment may be simple, provided that there is sufficient accommodation at the main station, especially where this is of the terminal pattern, such as in a non-continuous layout. Facilities for allowing the engine to run round its train should be available if possible. Where space is limited there may not be room for the necessary points or crossovers, however, and in that case a fresh locomotive can be employed for the return journey. The name "turnover" locomotive is applied to the engine that takes up the duty in this manner. No turntable will be necessary if tank engines are employed, for these can be run equally well backward or forward, as is done in practice. Wayside stations and other features may be of simple character, according to the extent of the system and the resources of the "company."

A variety of rolling stock is available for these services. The trains may be made up of Hornby No. 1 Passenger Coaches, and as they have to run in both directions, with little or no re-marshalling, a passenger Guard's Van should be placed at each end. An interesting scheme is to form the coaches into set trains for the various services, and for convenience in arranging working timetables, and for reference generally, each train should be given a letter or a number, or even a name. The coaches may be arranged in close-coupled sets of two or three. Such sets are very useful for intensive suburban services, for they are operated as complete units and require no making-up in the sidings, once the permanent coupling has been arranged. Extra vehicles can be added during particularly busy periods, or possibly two sets can be combined to form one train. Units of two or three coaches can then be kept in reserve for such duties, and should be labelled "strengthening sets," after the custom of real practice.

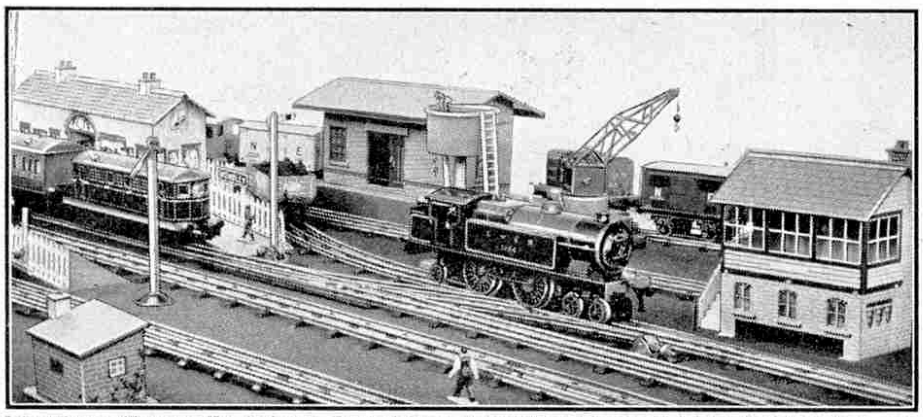
For such trains as these a suitable type of locomotive is the Hornby M3 Tank. These little engines are simple in external design, as are most small tank engines engaged in suburban work, and like them they have remarkable power for their size and a very good length of run. At first glance the latter quality may not appear of much moment for short-distance stopping trains. Actually it is of great importance, however, for it allows the operator to run an engine for a complete trip, including several stops, without having to rewind the motor. Reversing gear of course is provided, as is necessary on a tank engine that is required to work equally well forward and backward.



A typical scene on a suburban line. A heavy stopping passenger train hauled by a No. 2 Special Tank Locomotive is about to pass a goods train proceeding in the opposite direction.

The Hornby No. 1 Special and No. 1 Tank Locomotives are more elaborate in general style. Both engines have outside cylinders and thus may be used to represent many of the tank engines of more up-to-date design, but still of moderate dimensions, that are now run on intensive suburban services. A useful feature is that the reversing gear can be operated from the track as well as by means of the lever in the cab. This allows the engine to be manœuvred in a satisfactory manner by means of Brake and Reverse Rails placed in suitable positions along the track, such as in stations and sidings.

The services operated by such trains can be supplemented, or even replaced during periods when little traffic is to be handled, by a motor train consisting of only one coach, which in one direction is pulled by the engine, and in the other is pushed. Useful employment is found in this manner for a small tank engine that may be of an obsolete pattern, and perhaps is now of insufficient power to take its place in a "link" with more up-to-date engines on suburban duties.



Interesting working on a Hornby layout. The tank locomotive on the siding is moving forward ready to back on to the train after the Metropolitan Electric Locomotive has been detached.

A rail motor also is very useful for maintaining connecting services on branch lines. The station equipment of a branch may be of the simplest character, and then there is a considerable advantage in the use of a motor train or a rail motor, for neither requires running-round facilities at terminal points. The simple nature of branch stations suggests a further possibility that we may make use of on the main line itself. This is to provide a platform or "halt" between two recognised main stations. Such halts are often found in actual practice, and are frequently provided in districts that are developing between existing stations. They enable the railways to offer a service for passenger, and perhaps light goods traffic, that otherwise might go by road.

Not all trains may be booked to call at a halt, and the omission of stops at main stations by different trains will be quite in order, as this frequently is a feature of actual suburban services. Rail motors should call at small stopping places, for which they afford a useful service.

More elaborate provision must be made for longer distance traffic, on which trains run very smartly between stations and on some sections can be regarded as expresses. Bogie coaches are the rule and powerful tank engines are used on these trains. On a Hornby railway therefore the splendid No. 2 Passenger Coaches are ideal for such work. They may be arranged in sets if desired, with a Composite coach at each end of the train, and a train made up in this manner has an interesting and distinctive appearance.

The Hornby No. 1 Special Tank provides suitable locomotive power where more or less frequent stops are made, but for longer journeys, on which fast running is required over certain sections, the No. 2 Special or E220 Special Tank Locomotive is more appropriate. In general design this engine is similar to the express tanks of most of our railways. The upper illustration on this page shows the No. 2 Special Tank Locomotive on fast suburban service on a Hornby Railway, and also gives a good idea of the massive proportions as well as the generally realistic design of these models.

Perhaps one of the most interesting features possible on a suburban line is the joint working that is very often a practice on actual railways. Indeed the coaches of one company coupled to the engine of another company is quite a common sight.

The lower illustration on this page gives a good instance of joint suburban working. In this case the operations are made more interesting by the fact that both steam and electric type locomotives are in use. The No. 2 Special Tank is just moving over from the Water Tank before taking over a train from the Metropolitan Locomotive.

A realistic station scene showing the effective use of various lineside features. Note the appearance of "distance" given by the scenic background.

On the Lineside of your Hornby Railway

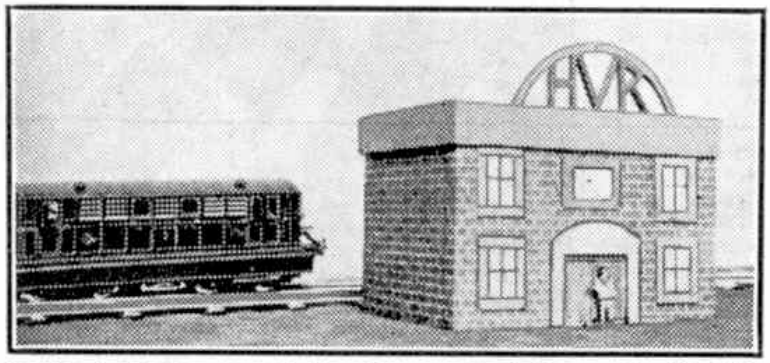
THE interest of the miniature railway hobby extends far beyond the movement of locomotives and trains, although this naturally is the principal feature in the development of realistic operations. Train working however is given an added attraction if the correct signals are provided for the layout and for the movements to be carried out; equally important too in giving an atmosphere of realism to the proceedings is the arrangement of the various lineside features.

The average onlooker or visitor to a miniature railway system who is not an enthusiast himself when looking at certain layouts sometimes has difficulty in telling just where the railway ends and the surroundings begin. Admittedly at times space restrictions make a certain amount of crowding inevitable, but it is usually possible to place some boundary to mark off the railway premises in the neighbourhood of stations and their goods yards and along the ordinary main line stretches. In this country the railways are bound to fence in their property so that in miniature it is necessary to give some attention to this point. For this purpose the Hornby Paled Fencing is ideal. It can be bent to follow the course of the track at curves and thus it gives a neat finish to the lineside. This same material forms the standard fencing on the platform of the larger Hornby Stations so that a tidy and consistent effect is obtained by its use at the lineside generally.

As an addition to the Fencing or as an alternative to it at certain spots good use can be made of the lengths of Hornby Hedging. These give a welcome touch of green along the lineside and where the "countryside" is at all extensive they can be employed to divide off one field from another and so on. Associated with them are the Hornby Trees, both "poplar" and "oak" patterns. These can be dotted about the lineside generally while single trees or little groups of them give quite a good appearance to "fields," embankments and cuttings.

A specially useful Accessory is the Station Hoarding. This is principally intended for use on Station platforms for the display of the attractive Miniature Posters. It can be employed in addition as an effective timetable board and for this purpose a strip cut from an actual timetable can be stuck on. The Hoarding can be placed outside the Station in the road approach for either of the two purposes just mentioned, and it looks well along the actual lineside; in the latter situation it should not be placed too close to the railway or "passengers" will be unable to see properly the posters displayed on the board.

The Platelayer's Hut and the familiar Watchman's Hut are two little structures that add considerably to the railway-like atmosphere of the lineside. The Watchman's Hut is of course a "winter" building for that is the season when it is most frequently necessary to have fogmen posted along the track. The Watchman's Hut therefore can be staffed by one of the Miniature Figures at times when a fog is supposed to be about. The Platelayer's Hut on the other hand can practically always have some of the "permanent way staff" in its neighbourhood.

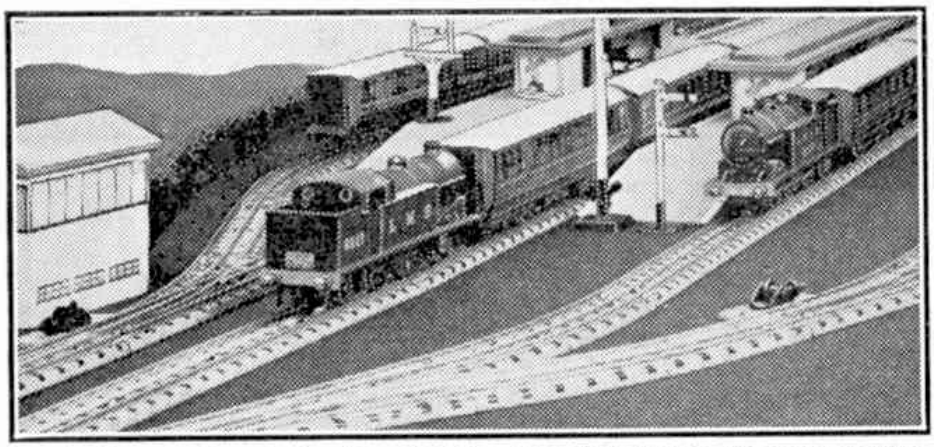


The front of a home-made transformer sub-station on the "Hebble Valley Railway" of Mr. A. R. Wilson, Halifax. The building houses a Meccano Transformer.

Electrically operated railways offer interesting opportunities for the ingenious miniature railway engineer to provide special buildings for different purposes that can easily be made at home from thin wood or even cardboard. An effective model of this kind is shown in the lower illustration on this page. This represents a transformer "house" or sub-station and is the work of our reader Mr. A. R. Wilson of Halifax, for his "*Hebble Valley Railway*," an imaginary line "somewhere in Yorkshire." This model has a dummy "doorway" to allow parts of the electrical installation to be moved into the building. When all is complete this entrance is bricked up. A movable trap-door allows the controller handle to be operated.

Hornby-Dublo Suburban Train Working

ONE of the advantages of the smart and imposing Hornby-Dublo Standard Tank Locomotive is that its "mixed traffic" character allows it to be used equally well on passenger as on goods services. It is typical of the useful 0–6–2 tank of actual practice with medium-sized driving wheels, that does a great amount of work in local goods and passenger services. The Hornby-Dublo range does not as yet include suburban passenger coaches, but it is possible to conduct local passenger traffic by means of the standard Two-Coach Articulated Unit. Although this represents a main line corridor "twin," real corridor stock appears at times on local work, especially when filling in time between long-distance trips; so that the use of the Dublo Unit in miniature for suburban duties is quite reasonable.



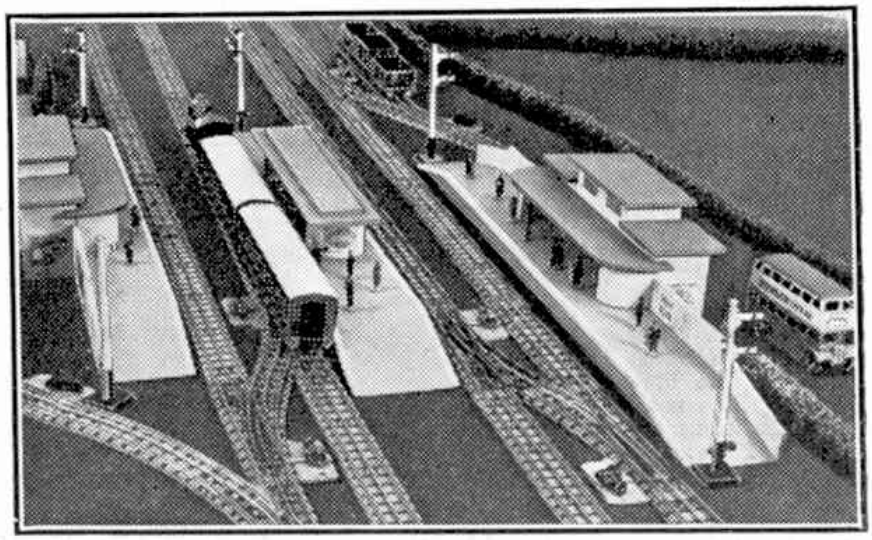
A realistic surburban station formed of two Island Platforms. One train is held in the bay platform while the other gets ahead on the main line.

With a single engine and train quite an interesting service can be run, even on the simplest layout. On a continuous track, an "all stations" train can make successive halts at the same station on each circuit in order to represent the conditions of making a journey from point to point. The actual methods of working will depend to some extent on the station layout. Thus if a loop line is provided at the station, forming in effect separate "up" and "down" tracks, the "running round" of the engine ready for the return trip when the end of a "journey" is reached can easily be carried out. During periods of heavy traffic the "turn round time" allowed at terminal points is usually very short, so that smart working is necessary if time is to be kept. On a Dublo system a single operator can amuse himself by seeing just how smartly the running round operation, and in fact the terminal work generally, can be carried out. With two or more members of the "staff" available the various duties can be divided up in a satisfactory manner.

If there is no loop line, "running round" cannot be done in the orthodox manner, but the engine can be got to the other end of the train ready for the return journey by uncoupling it at the end of a journey and running it right round the track until it reaches the train again. The train can then make another trip and so be worked back to its original starting point.

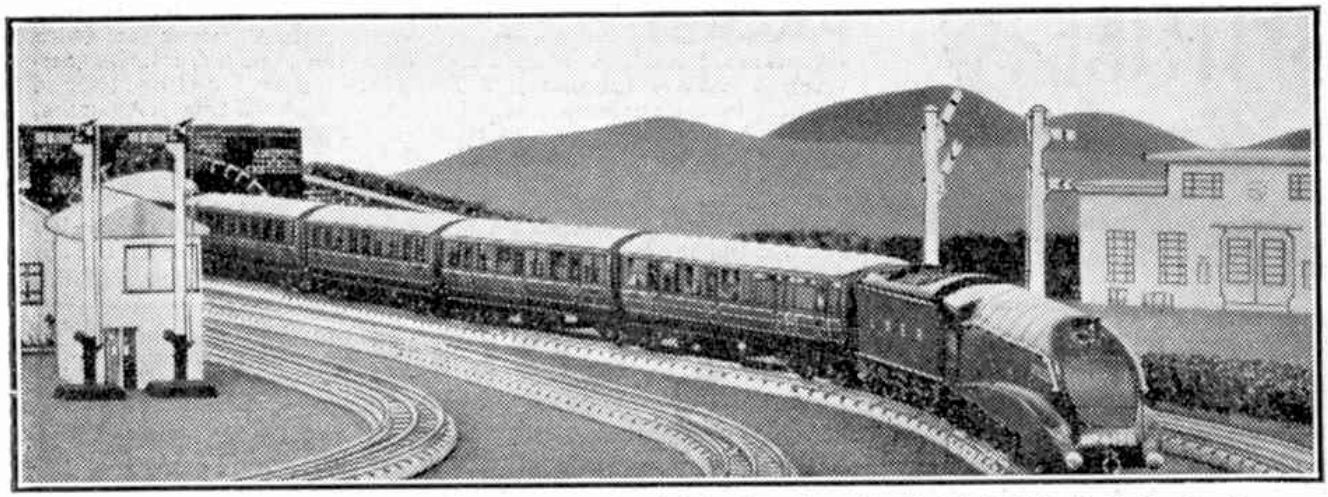
This simple routine can be varied by imagining a "rush hour" period, when the train may require to be strengthened by the addition of another vehicle. The Corridor Coach D1 can be added to the Twin Unit for several journeys and then detached when traffic slackens off again. At other times a van or two can be conveyed by the train for some particular local traffic—a Horsebox perhaps, or one of the various vehicles suitable for the carriage of perishable or urgent goods.

With bigger layouts more involved operations become possible, and as a rule the larger systems have sufficient equipment to allow such working to be carried out. A terminus station, for instance, arranged perhaps with the components of the Hornby-Dublo City Station Outfit, can have a platform and tracks reserved for suburban traffic. If a running-round loop is provided, then a single engine can give very good service. It frequently happens however that the length available for a terminus station does not permit of the inclusion of crossover points, and the length of "draw ahead" track near to the Buffer Stops, necessary for running round facilities. Then we have to adopt the "turn-over" system of engine working. This means that one engine brings the train in and is detached; another engine, which has been waiting in an engine siding or perhaps in an Engine Shed or yard outside the terminus, comes on to the other end of the train ready for the return journey. Soon the train departs and the first engine is then released to stand by until it in its turn takes out another train that has arrived.



Two Main Line Stations and an Island Platform make up this four-track station. Traffic is evidently quiet at the moment as the "local" shown is using the main or "fast" line.

To carry out this scheme it is necessary to arrange for the platform lines in the terminus to be sectionalised by means of the Isolating Rail which we have dealt with previously in these pages. The arriving engine can then be held on an (*Continued on page 230*)



A Hornby-Dublo express rounding a curve headed by the streamlined 4-6-2 "Sir Nigel Gresley."

Fun in Dublo Train Running

THIS month we show in the diagram on this page another simple layout on which Hornby-Dublo owners with a limited amount of rolling stock can have some good fun in train running and operating generally. The layout is single track and is continuous, so that a certain amount of "make believe" is necessary when the trains are supposed to be making a round trip between what are in real life terminal points many miles apart.

The favourite oval formation is employed for the main line, and alongside the lower straight side of this there is a standard Main Line Station. From the opposite side of the layout there diverges by means of a set of Right-Hand Points a siding that runs diagonally across the inside of the main oval and through an Engine Shed to the Buffer Stop. The length of track between the Shed and the Buffers can be used to accommodate an engine waiting "for repairs."

From the diagonal siding just referred to there is thrown off another track, this time by means of Left-Hand Points, and this line runs parallel to the main line. It can be used for any of several purposes. Passenger stock can be stored there when not in use, or goods wagons can be held there. Alternatively the line can be used by the "Locomotive Department" for coal wagons to stand on.

In our article last month we dealt almost exclusively with goods train operations; now we are going to follow up some passenger train working schemes for which the layout we have just described is particularly suitable. We will suppose that we are the fortunate possessors of the components of the Dublo Passenger Train Set consisting of the 4–6–2 Streamlined Locomotive "*Sir Nigel Gresley*" and a Two-Coach Articulated Unit. We can use in addition a standard Corridor Coach to make up a three-coach train, but this makes no actual difference to the operations.

With a single passenger express locomotive available the first move will be to run the engine out from the Shed and into the siding near by, if the latter is used for stabling the train. Possibly the vehicles will be kept at the station when not in use, and if so the engine will have its coal and water supplies attended to in the siding, and then make its way out on to the main line. Having done so it backs in a clockwise direction round the main track to the station. This represents a terminus for the time being, and the familiar "backing in" operation, either of the engine or of the complete train, is thus reproduced.

After a brief wait for the passengers to entrain, the starting signal of the Single Arm "home" pattern shows line clear and the train moves out of the station, this time of course in a counter-clockwise direction. We will suppose that the train is to make several circuits of the track non-stop, and that being so the Double Arm Signal that is encountered as the train nears the station again will have both its semaphores "off" except when the train is about to make a stop. Then the lower or distant semaphore will be in the horizontal position, indicating "caution."

We are working, say, a north-west express from "*King's Cross*," and the first stop after several circuits can represent York. To add some variety to the operations we can make this an engine changing point. If there are two operators this engine changing arrangement gives each a turn at managing the train while the other operates Points and Signals, which is desirable if each boy has his own engine on the line. Even with one engine the appearance of engine changing can be maintained. The engine is uncoupled from the train and then run forward round the line until just past the points leading to the locomotive yard. The points are changed, and the engine can be backed into the Shed momentarily. It then emerges again as if it were a fresh engine going out to its work.

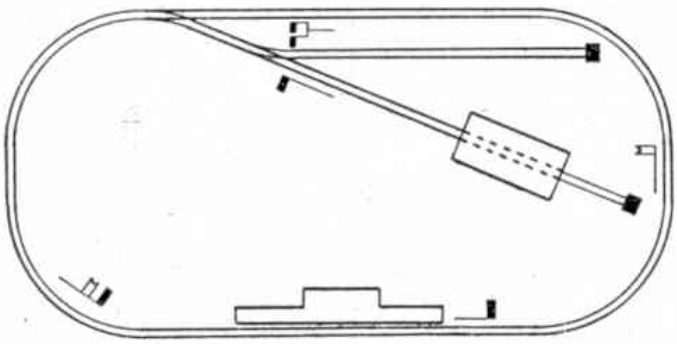


Diagram of the layout referred to on this page.

The next stop can represent Newcastle; then on to Edinburgh, where another engine "change" can be carried out; and as streamliners work north beyond that city the use of our miniature No. 4498 on to "Dundee" and so to "Aberdeen" will be in order.

With two engines available sectionalising of the engine sidings on the lines dealt with in these articles will be necessary, and the provision of an additional track in the Engine Shed will be an advantage.