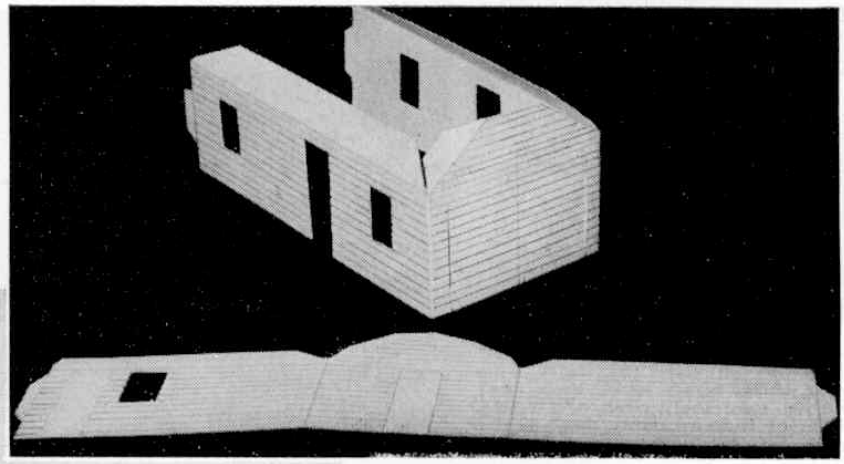
OO gauge Trackside Construction

Building a simple card-and-balsa structure station



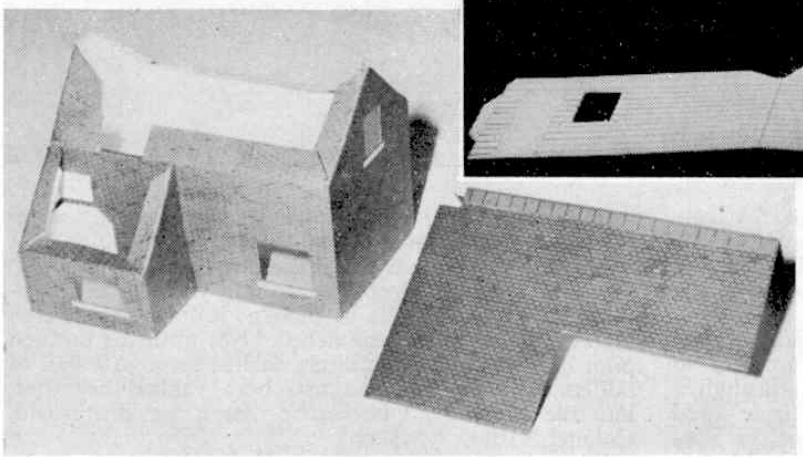


Photo. 1: The picture above gives a good idea of the basic card construction of the station. The waiting room corners have been bent round, by half cutting through with a knife, but the little lamp room is still " in the flat " just as it was cut out from the card.

Photo. 2: The Station Master's House in course of erection. The tabs to which the roof will be stuck can be clearly seen, and the balsa base of the building is just visible through the window openings. Note the cut-out in the end of the roof, which will house a chimney.

A Small Country Station

THE FOCAL points of any model railway are its stations. In fact, a model railway without any stations at all would be unthinkable, and very boring to operate. On a small layout, there will probably only be room for one reasonably interesting station; in fact, it is better to restrict the number of stations on any layout, however big, as too many, closely spaced, impart a " toy-like " atmosphere to even the most ambitious model railway. It is best, for a start, to settle for a small country station, with a single platform and perhaps a " bay," a run-round loop and a couple of sidings. The station can be a " through " station or a terminus, according to choice; each offers quite different forms of operation, which we shall look at in a later article.

Construction

Having established that the most important single part of a layout is the station, we now turn to the problem of building it. Building trackside structures is, in fact, a very enjoyable side to railway modelling; it does not demand the same standards of accuracy as locomotive and rolling stock construction, and yet it is just as interesting. Our station building represents a typical small branch line affair, with timber-built waiting room and brick Station Master's house. It is based upon a model designed by John Ahern, who was a pioneer of scenic railway modelling in the early post-war years. There is no reason why you should not design your own station buildings " from scratch " or build an exact replica of an existing structure—perhaps your local station. Either way, the best way to make the structure is from card. We used Bristol board, which can be easily obtained from artists' suppliers, but any good quality card with a nice smooth surface will do. Start by making a full-size drawing of the building, and then transfer the various " parts " to the card itself. Photo. 1 shows how the three sides of our waiting room were cut out in one piece, and the corners half cut through and bent round after cutting out. In the same picture, the little " lamp room " is shown " in the flat," just as it was cut out from the sheet of Bristol board. In the end wall of the main building are two slots, into which the tabs on the lamp room walls fit, thus joining the two buildings together. We used a Swan Morton Craft knife for all cutting operations.

Photo. 2 shows the Station Master's house under construction. Construction is of card once again, this time covered with brick paper. The tabs at the top of the walls will be used to support the roof, which, as can be seen in the picture, has a cutaway at one end to accommodate a chimney stack. Although the walls of our buildings are of card, we have used $\frac{3}{16}$ in. balsa as a base, which is cut accurately to exactly fit inside the walls; this balsa base is just visible through the window apertures in some of the pictures, and it adds greatly to the final rigidity of the model. Photo. 4 shows the waiting room, lamp room and Station Master's house joined together; our station is taking shape. The boarded timber walls of the waiting and lamp rooms are represented by scoring lines on the card, and filling these lines with ink. If the final coat of paint is not too thick, these lines will show through to give a passable " boarded " effect. If you are really meticulous, you can cut out individual boards, and stick them on separately; this will give a more realistic effect, and is really worth the trouble; we didn't have time!

All windows are glazed with thin perspex sheet, or any suitable transparent material; remember to glaze the windows before sticking on the roof. Chimney

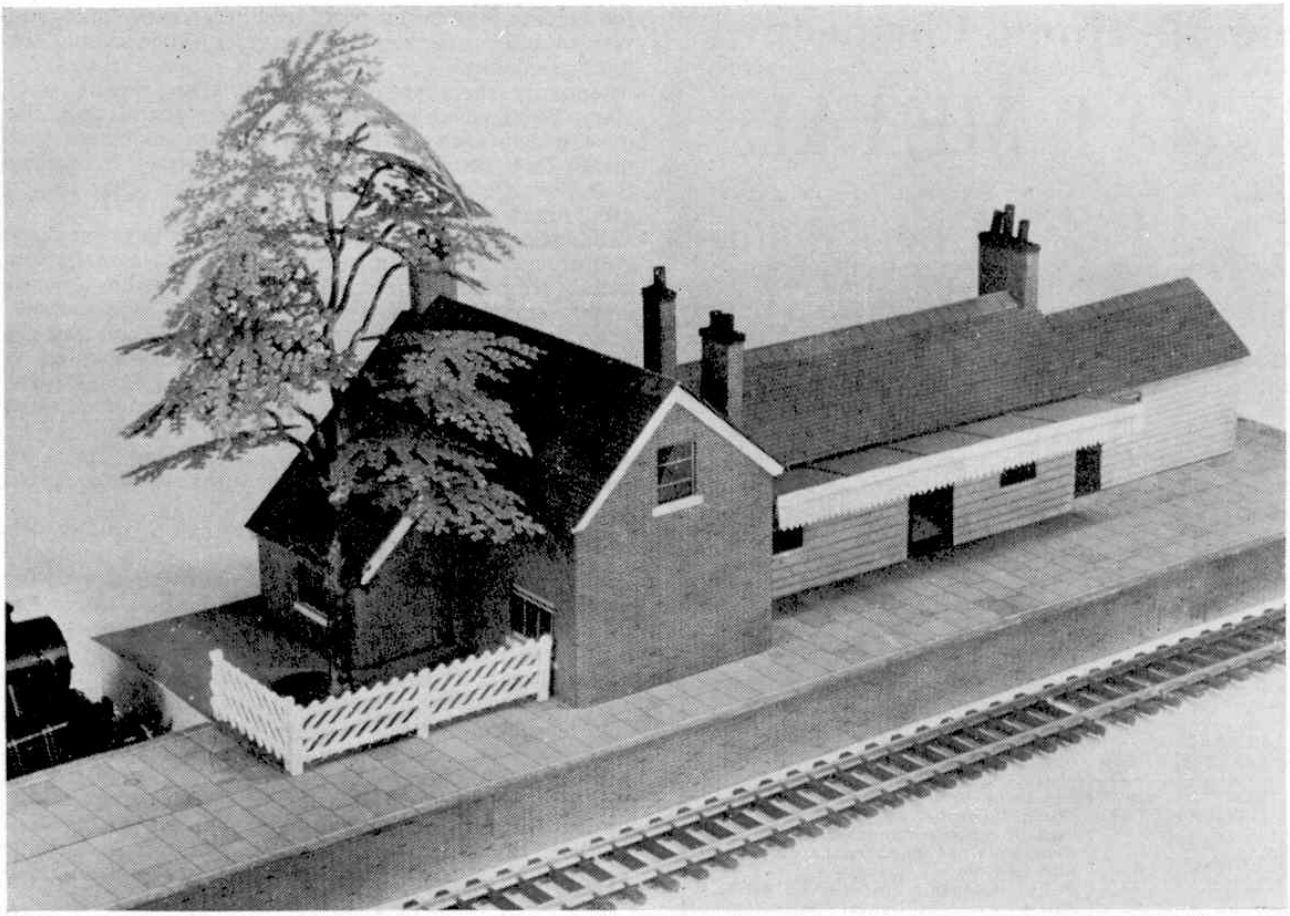


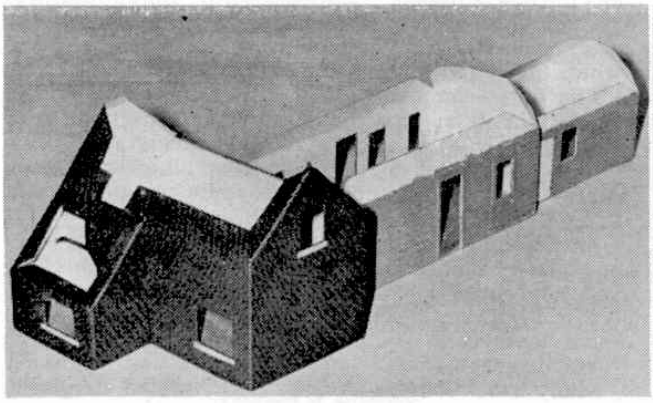
Photo. 3: A general view of the completed station. Detailing is as yet incomplete, but the fence and Britains' tree add much to the overall effect. The platform is from a length of 1 in. x 1½ in. hardwood, faced with brick paper, and pavement paper.

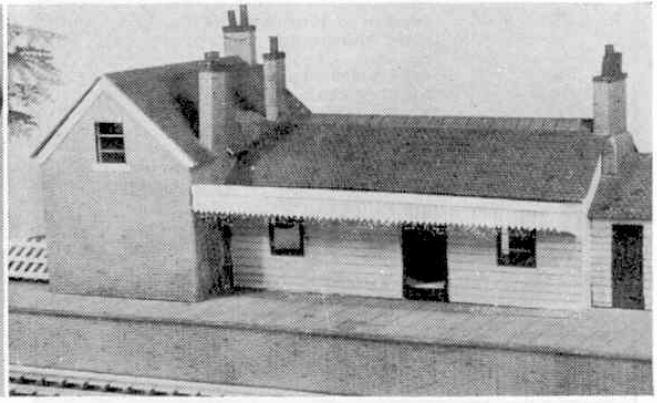
stacks are made from balsa, wrapped around with brick paper, and the pots are made from spent ball-point pen refills, which look most realistic when painted.

Painting and papering

The station buildings can be painted in any desired colour scheme, or in the colours of your favourite railway company. Always use matt paints, with a preference for rather austere colours. Our buildings are in buff and brown (rather like the old Great Western stations) with the house in yellow brick with a red-tiled roof. The short platform on which our building stands was made simply from 1 in. × 1½ in. hardwood, surfaced with brick paper. This simple method gives a really strong platform. The Britains Silver Birch in the Station Master's garden completes the rural effect. When the model is almost complete, you can really go to town adding details like timetables, name boards, posters, people, weighing machines, milk churns, trolleys and lamp-posts; we have not got around to embellishing our station yet, but when we do we'll show you some more photographs. Models like this have a habit of developing into complete layouts—now we just can't wait to build a signal box to match!

Photo. 4: The left-hand picture shows the three parts of the station building joined together. The " window sills " are simply strips of light coloured paper, stuck on. The picture on the right gives a low angle view of the buildings; note the boards.





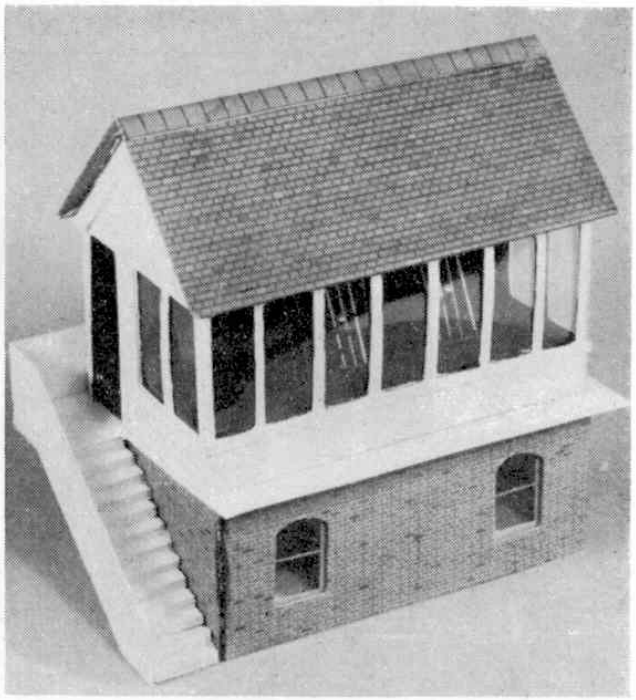
00 Gauge Trackside Construction

BUILDING A SIMPLE SIGNAL BOX

HAVING COMPLETED our small country station (see last month), we thought that the next most important structure to build would be a signal box. The materials we used are card, balsa and brick paper, and the constructional techniques used are exactly the same as for the station. As you can see from the full-size drawings, the signal box is fairly typical of many which can still be seen on the British railway system, but we must point out that the design is entirely "free-lance"; in other words, it is designed to look *typical* and does not faithfully follow any particular existing signal box. The drawings, therefore, are only meant as a guide; there is no reason why you should not make your own "mods" on our design.

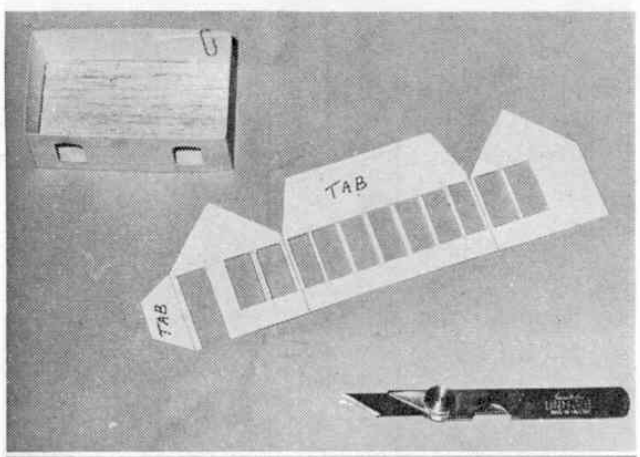
The base of the signal box is of brick construction, with the upper "cabin" part of timber, and the roof is tiled. This is probably the most common form of construction, although some boxes are all brick, and others all timber. As you can see from the photographs, our model is made, basically, in two halves, the lower "brick" section, and the upper "timber" section. The lower part is made first, all four walls being cut from the card in the form of one single strip, with the corners scored with a craft knife and bent round later. Don't forget to cut out the window apertures before assembling into "box" form. It is often easier to cut windows, doors and similar openings *before* cutting the main part from the sheet of card; this way, there is a much larger area of card to hold still while you cut out the fiddly bits. Always remember to provide tabs for gluing; these can be seen clearly in the photographs.

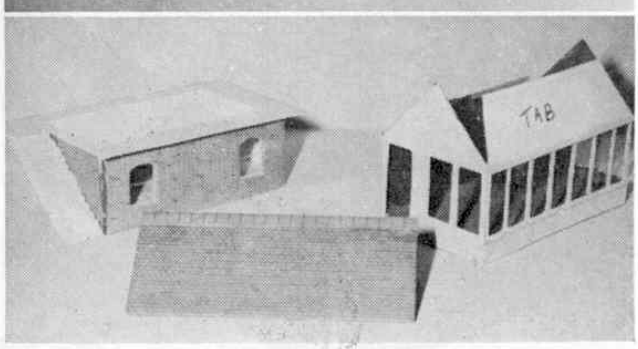
A rectangle of $\frac{3}{4}$ in. balsa sheet is next cut to fit exactly inside the card "box" of the signal box base (see picture). This really stiffens the structure, and keeps the angles of the corners "right." Do not glue the base in place, though, until you have covered the card with brick paper. You will notice from the pictures that between the upper and lower sections of the box, there is a kind of gallery or "catwalk" which runs along the front of the main windows; this is to make the window cleaner's life a little easier. On some lines, the catwalk was provided with a handrail, but

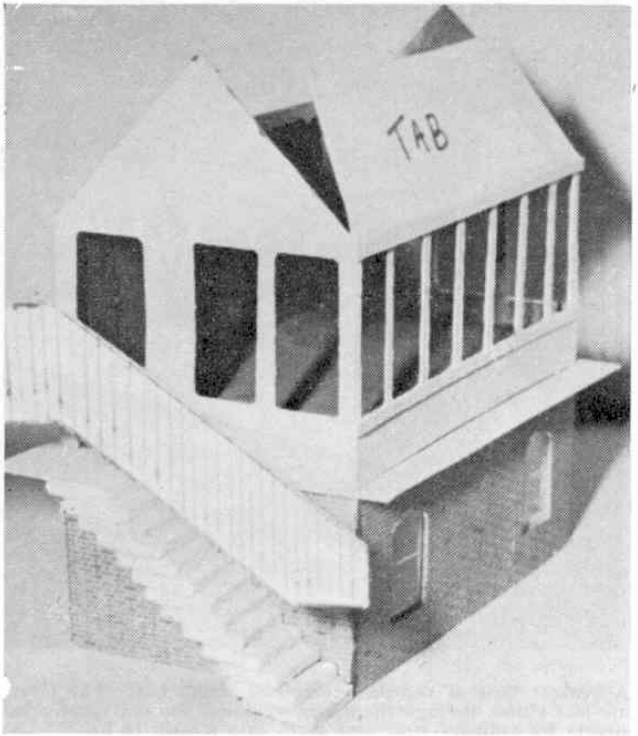


A general view of the near-completed signal box. The levers are just visible through the upper windows, and are represented simply by ordinary steel pins stuck into a strip of balsa. The "catwalk" below the windows is an extension of the cabin floor, and the roof is finished with tile paper.

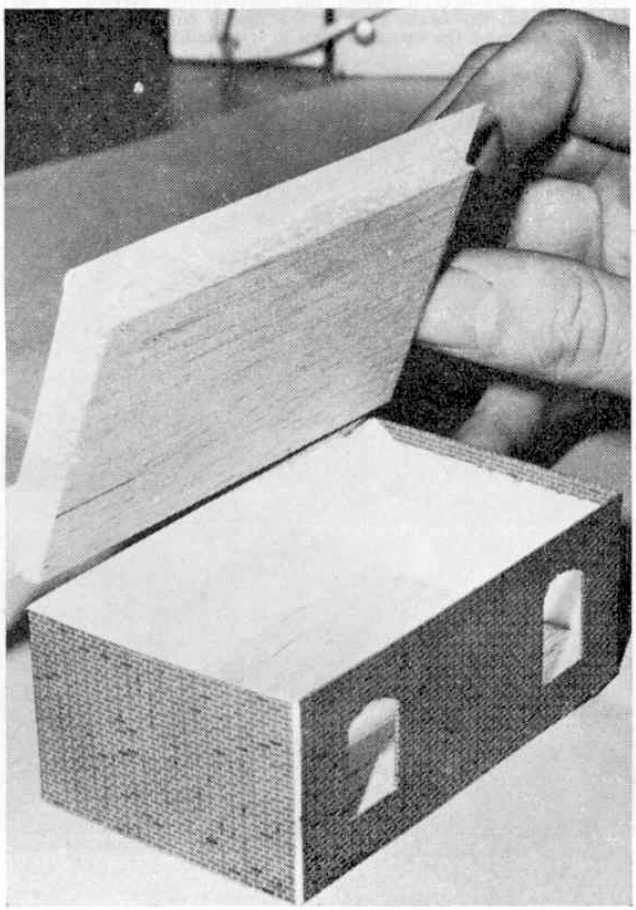
The picture immediately below shows the lower part of the cabin assembled, with the upper part still "in the flat." The lowermost photograph shows the construction carried a stage further, with the lower part of the model complete with staircase and the upper section in its assembled state.







The staircase is made from small pieces of balsa sheet stuck together slightly offset, as the picture shows. The handrail is simply cut from card, with the planks scribed on. In this picture the handrail is being held above its final position for clarity.



Left: A piece of ¼ in. balsa sheet is stuck to the underside of the floor of the upper structure. This forms a lid, which fits snugly into the lower part of the signal box. For a permanent join apply cement to the inside of the signal box's lower part.

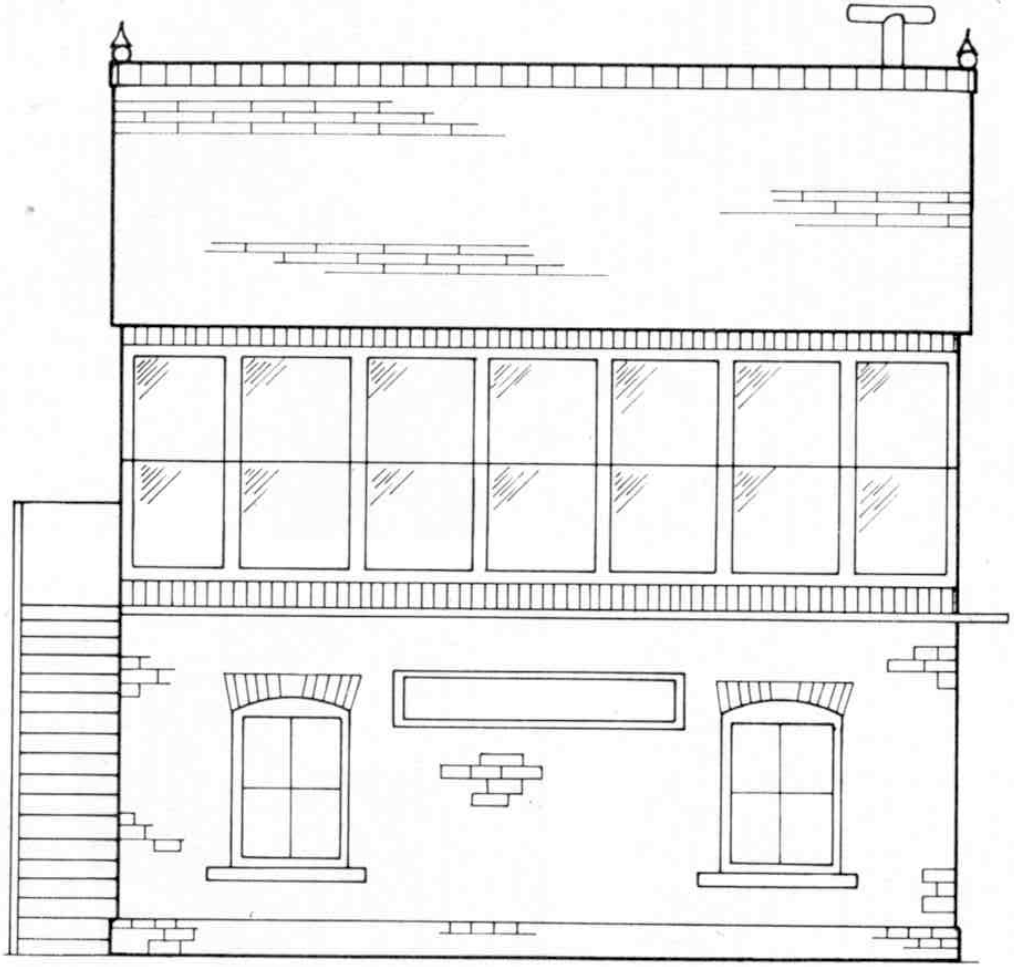
many signal boxes (including ours) have none. The provision or not of a handrail depended on the height of the structure, or perhaps on the availability of window cleaners! The catwalk on our signal box is merely an extension of the floor of the upper part, and is just a piece of card cut to shape, with a small projection from one corner which will become the staircase "landing." This piece of card is glued to another rectangle of ¼ in. sheet balsa, exactly the same size as the piece which forms the base of the signal box. In this way, the floor of the upper part of the box neatly "plugs" into the lower part (see picture). The resulting "box" is surprisingly strong.

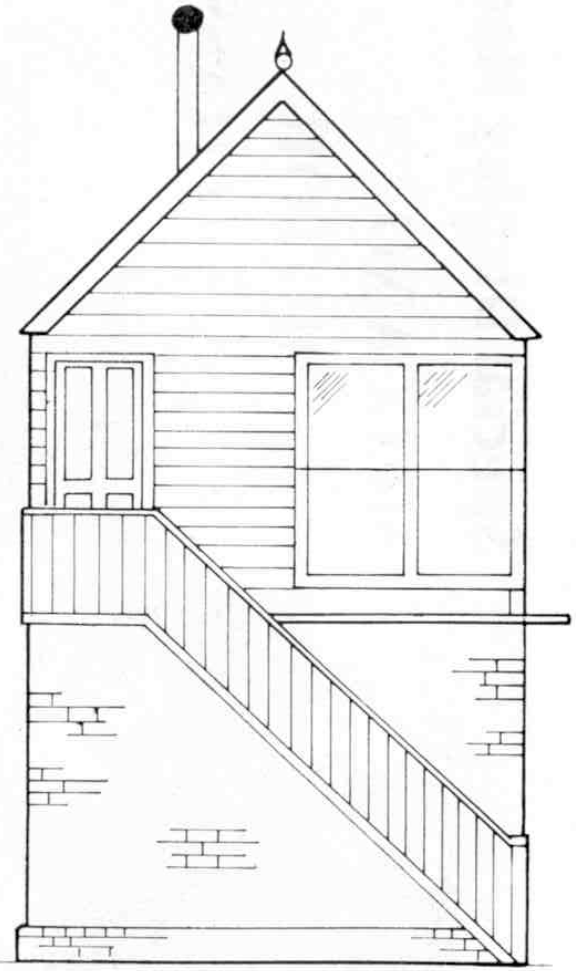
The upper part of the model is made in exactly the same way as the lower part, only a little more care is needed in the cutting out of the big windows—it is all too easy to cut right through the thin dividing pillars. The photograph shows quite clearly what the upper part looks like in "the flat." Planking is represented by scribing lines on to the card with a small screwdriver, and this gives a reasonably realistic effect. If you like the "planks" to stand out more, however, it is a good idea to rule the lines on the card with a ballpoint pen. If the coat of paint you apply is not too thick (and it shouldn't be) these lines will show through. We used both methods at once, and scribed lightly first, filling in with Biro later. The general effect is quite convincing, but it is a good idea to experiment first on odd scraps of card until you find a method to your liking. The ultimate method of planking, of course, is to cut out individual planks, and stick them on one by one. We intend to try it one day!

The upper part of the box is glued to yet another ¼ in. sheet balsa base. Now you can stand one half on top of the other, and see the complete model taking shape. The roof is card, covered with red tile paper, but there are other things to do before we stick it on. The first thing is to glaze the windows with thin celluloid sheet, carefully cut to size and fixed inside the window openings with the *minimum possible* cement. Now, as the windows are so large, it is really worth while doing something about the interior. The best way to start is to paint the inside of the walls and floor a dark brown—this improves the view from the outside enormously. However, as the main function of the signal box is to provide accommodation for the lever frame itself, the box could never look truly realistic without a row of shiny steel levers visible through the windows. Our answer to this problem was very simple, as the photograph reveals! The lever frame is simply a row of pins stuck in a strip of balsa, and glued to the signal box floor. Although the pins we used are considerably over scale, and would need a signalman at least ten scale feet tall to operate them, the general effect is very realistic when viewed through the windows.

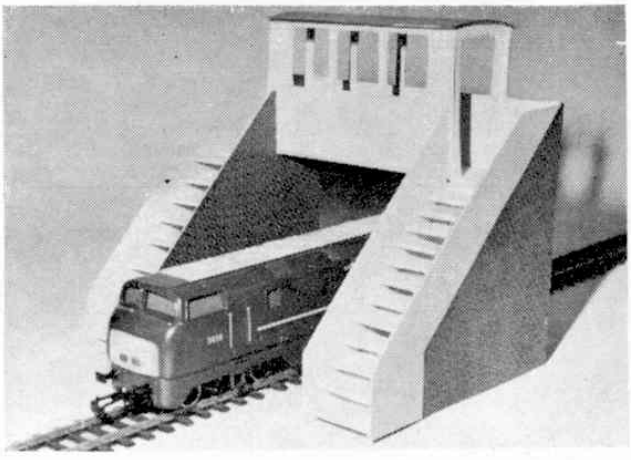
The outside staircase is made up from small squares of $\frac{1}{16}$ in. balsa sheet, each stuck to it partner slightly offset (see picture). The handrail is of card. This really completes the basic signal box, although the possibilities of super detailing are endless. The interior could be made complete with coke stove, lamps, block instruments on a shelf, track diagram, table and chair, signalmen, etc. One thing we have not yet added to our model is the name board, because we cannot think of a suitable name. Has anyone any ideas?

FULL SIZE PLAN FOR AN "00" SCALE SIGNAL BOX





This simple signal box is not based upon any particular prototype, but is typical of many structures which can still be seen all over the country. The full size drawings are meant as a guide only; they do not give constructional details, which are shown in the photographs. Construction is of card, reinforced with balsa. Brick paper is used on the lower half of the building, and tile paper for the roof. The upper part of the signal box is of "boarded" construction; the "boards" are simply scribed on to the card with a small screwdriver.



00 Gauge Trackside Construction

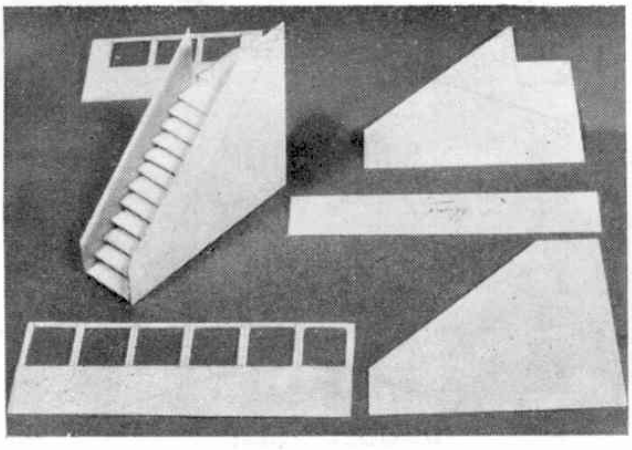
BUILDING A PLASTIKARD FOOTBRIDGE

THIS MONTH'S trackside model follows much the same simple constructional methods as described in previous articles, with one important difference. Instead of using ordinary card or Bristol board, we have built our footbridge from Plastikard. This material, which is available from most good model stockists, is really styrene sheet. It looks very much like card, and is available in a large variety of thicknesses. Its advantages are its superb surface (absolutely smooth, and slightly shiny) and its terrific strength when assembled correctly. It can be cut, sawn, filed and drilled (and even turned, if you have a lathe) with great success, and all edges look nice and smooth, with none of the "furry" trouble associated with cardboard. The one important thing to remember is that, as its name suggests, it *is* plastic, so it is no use trying to stick it with conventional glues. A polystyrene cement of the sort used in plastic kit assembly *must* be used, or, far better, Mek-Pak. This latter is a fluid cement, made by Messrs. G. Slater who make Plastikard, and is a fantastic improvement on ordinary tube cement. Applied with a fine brush (keep one handy for cement only) the fluid is drawn into the join by capillary action, and a very neat "welded" joint results, without the surrounding area being affected and without those ghastly "cob-webs" which used to be an occupational hazard of plastic modelling.

Construction of the footbridge is very simple, and the full-size diagram opposite gives a good idea of its appearance, although the drawing is not meant to be a "working" one. Our footbridge has open staircases, built on solid "brick" bases, and a covered "bridge." Other permutations could include covered stairs, or all open construction. The length of the "bridge" part will depend entirely upon how many tracks you want your footbridge to span, so we have not suggested any dimension for this part. If more than three tracks are spanned, the bridge will probably need an additional support in the middle to prevent disaster.

The pictures show the basic construction, which is straightforward. Start by building the two staircases, and make the installation of the "bridge" section the last job. A tall "box" forms the basis of each staircase, to two sides of which are fixed the large triangular walls. These walls are tied together by the steps themselves, which are merely small pieces of thick ($\frac{1}{16}$ in.) Plastikard. You will notice that the steps have treads only, and no "risers"; this is quite common practice, and makes life easier for us.

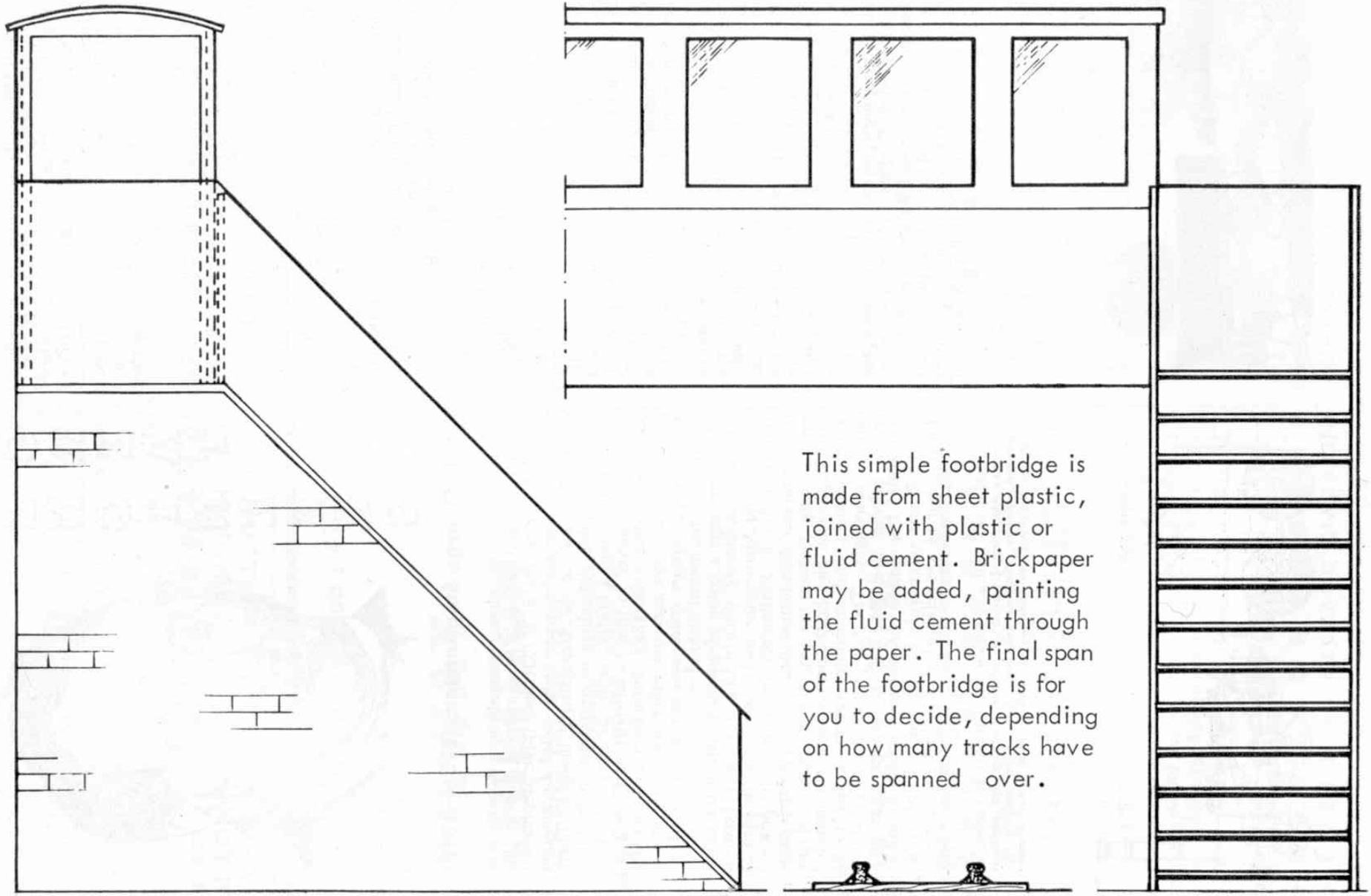
The side walls of the staircases can be covered with brick paper below the line shown on the diagram, and the "balustrade" can be painted to represent either wood or metal as you wish. The roof of the covered portion can be painted grey, to represent roofing felt, or covered with imitation "corrugated iron" sheets, from Slater's.



In the heading photo above, the completed single track span footbridge finished with brick paper, and matt enamel paint, looks extremely realistic with a Marklin "Majestic" diesel locomotive passing underneath it on Gem flexible railway track.

Component parts of the footbridge as cut from Plastikard with scissors and modelling knife. The full-size plan opposite should be transferred to the Plastikard with the use of carbon paper. Note that we have only shown one staircase in this photograph.

FULL SIZE PLAN FOR AN "00" SCALE FOOTBRIDGE



This simple footbridge is made from sheet plastic, joined with plastic or fluid cement. Brickpaper may be added, painting the fluid cement through the paper. The final span of the footbridge is for you to decide, depending on how many tracks have to be spanned over.

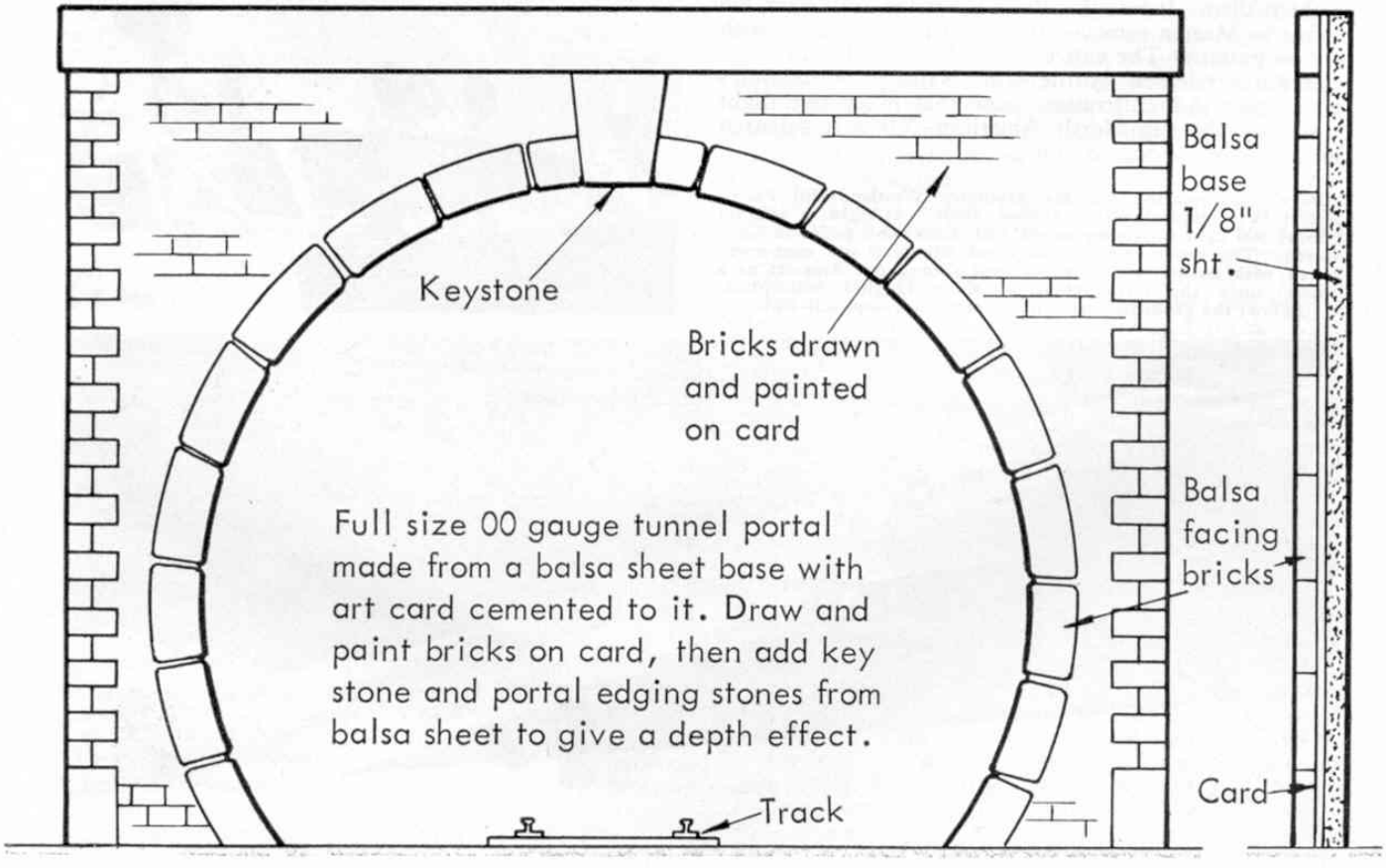
OO Gauge Trackside Construction

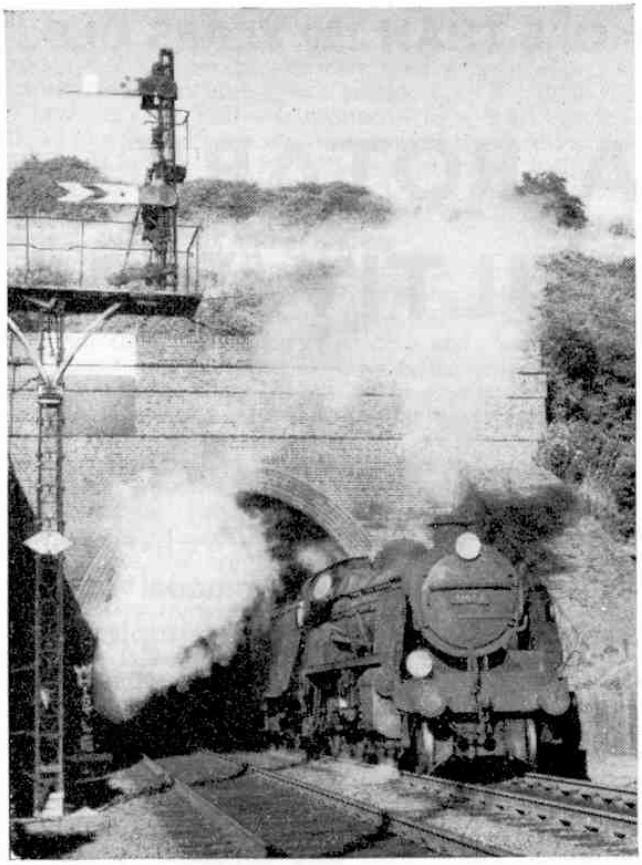
TUNNEL PORTAL

THIS MONTH, our OO gauge "trackside" subject is a very simple one, although it is also a very common sight on railways the world over—a tunnel portal. The word portal just means "entrance" and some tunnel portals are magnificent entrances indeed. In the early days of railways, a great many people were very frightened at the idea of travelling in a train at all, and were even more terrified at the thought of travelling *underground*. The railway engineers knew this, so they designed tunnel portals to look as large and imposing as possible. Sometimes the entrance was disguised to look like a castle or large building. So impressed were the passengers in the early days, that they either quite forgot their fears in the wonderment of it all or decided that if the entrance looked as strong as that, then the tunnel itself must be safe enough!

As can be seen from the pictures and the full-size drawing, our tunnel mouth is very much like thousands which can still be seen up and down the country. Although it is designed for single track, the clearances both at the side of the passing trains and above them are ample. Construction could be carried out in many ways; we cut out the shape of the portal from balsa sheet. We could have covered the balsa with brick-paper, but we decided to be clever, and make our own. The shape of the balsa portal was traced on to a piece of art paper (with a nice smooth finish; ours was the back cover of a motor car catalogue!). The paper was then painted with Humbrol matt "Camouflage" green. Why green? Well, if you look at the average tunnel mouth, usually buried deep in a cutting, you will see that so much green moss is growing in the cracks between the bricks or masonry blocks, that the whole affair has a very distinctive green tinge. We then picked out one or two "bricks" with white, before the green had quite dried. This ensures that the white does not look too "starey," as it tends to take on a little of the green colour. The next stage was to cut out the keystone (the large stone at the top of the arch) from the same sheet of art paper, and stick it in place with cement. The thickness of the paper gives just a slight "relief" to the stone, and makes it look as if it were really a separate fitting. The same thing was done with the ring of stones around the tunnel entrance itself. This done, the long "lintel" along the top of the wall was added.

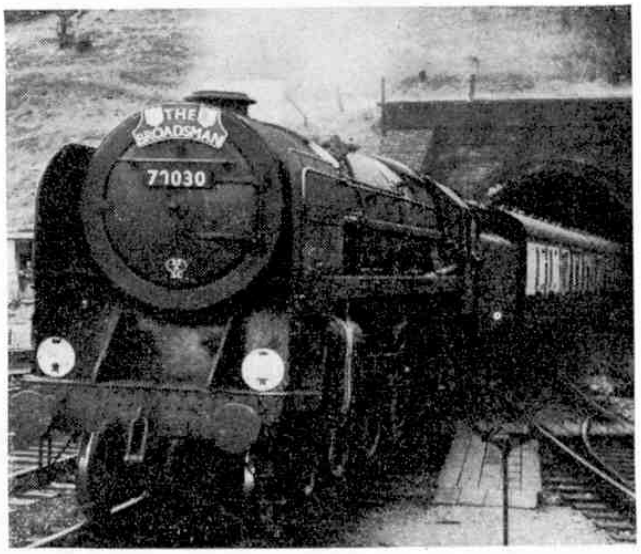
At this stage, it is best to stick your paper facing on to the balsa former. After this, when the whole thing is nice and rigid, the painted "bricks" can be touched up with a ball-point pen or Indian ink. The finished product is only the tunnel portal, of course. A tunnel must have a hill to go through and the construction of a hill from "Mod-Roc" will be the subject of a later article. In fact, the tunnel portal would almost certainly have retaining or "splay" walls on either side of the entrance, to retain the embankments of the cutting on either side of the line. However, we have not shown these in this article, as their application varies a great deal, depending on the contours of the country through which the tunnel is driven.





The picture on the left shows a famous tunnel mouth on the Southern Region of British Rail; it is the Martello tunnel at Folkestone and in this picture a Maunsell mixed traffic 2-6-0 is seen emerging.

The tunnel mouth in the picture below is just outside Ipswich station on the Eastern Region. The train is the erstwhile "Broadsman," which used to be the 3.30 p.m. from Liverpool Street. The locomotive is Britannia class No. 70030 "William Wordsworth."



00 Gauge Trackside Construction

Scenic Modelling . . . . . using plaster reinforced cloth materials

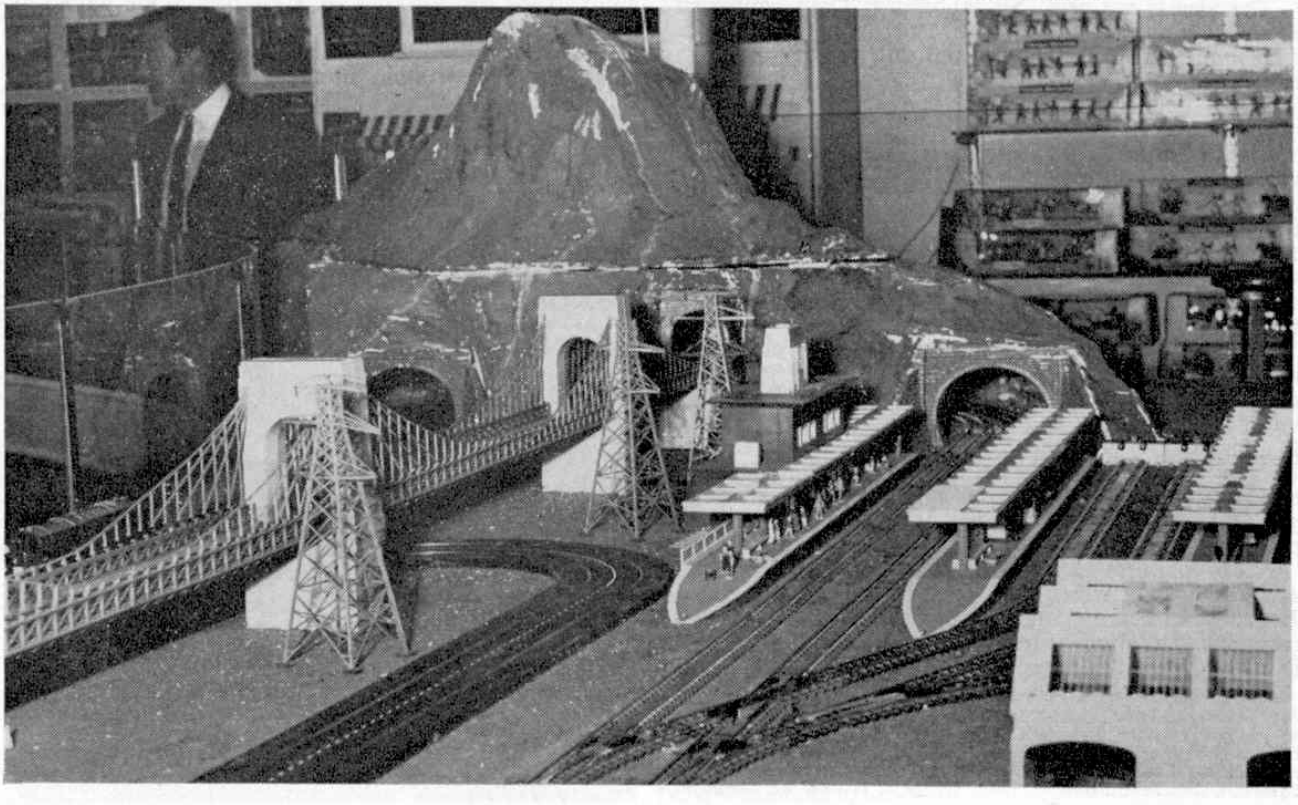
UNLESS YOU are modelling the Trans-Siberian Railway, or the line that crosses the Nullabor Plain in Australia, hills on a model railway layout are a necessity. Take any railway journey in this country (well, almost any) and you will pass through tunnels and cuttings, under bridges and over viaducts; even in relatively flat country, the track itself will probably be raised upon a shallow embankment. Until fairly recent times, the reproduction of such scenery on a model railway was a considerable problem, and required a great deal of "foundation" work to support the "hills." These days, however, the use of plaster-impregnated cloth, moulded over formers of screwed-up newspaper, greatly simplifies what was once a complicated job for the experts.

The photographs show some of the tunnels and embankments we built on a small display layout, using both Mod-Roc and the similar Beattiplast. These invaluable modelling materials are composed of open-work cotton cloth which contains plaster of Paris and a special built-in adhesive. One pack of Mod-Roc contains 12 pieces, each measuring 5 in. × 30 in., which is enough to do quite a lot of scenery. The only additional equipment required is a pile of old newspapers and a large bowl of water. One word of warning before starting: if you value the pleasures of family life, do not operate in the dining room—white furniture is very contemporary, but . . . it will brush off.

When you have decided where the first hill or embankment is to be (choose a small one for a start) screw up a quantity of newspaper and moisten it slightly in the bowl of water. Mould the resultant mass into roughly the shape you require, and place it in position on the baseboard. If necessary, hold it in place with sticky paper tape. The Mod-Roc should be used in 2-3 thicknesses; immerse them, in short lengths, in the bowl of water for about three seconds or until the bubbles cease. Squeeze gently (do *not* wring), and lay the wet material over the newspaper "former." Repeat the process, overlapping each successive piece until the whole area to be landscaped is covered. Smooth the surface to exactly the shape you want, and leave to dry out thoroughly for about eight hours (preferably overnight). It should be mentioned that Mod-Roc is hygroscopic before use; it takes up water and so should always be stored in a dry place.

So much for ordinary "solid" hills of reasonably small proportions; tunnels present different problems, as a hollow space must be left "underground" to allow the trains to pass through. On our small layout, we covered the tracks in with a "roof" of cheap cardboard of the laminated type, in the fond belief that this would provide the support for the covering hill. It did, but complications arose later! As the wet newspaper and Mod-Roc dried out, the supporting

A demonstration layout that used vast quantities of Mod-Roc open work cotton cloth with plaster of Paris. Note how the hill top is removable for transportation and the realistic tunnel mouth entrances. The tunnel portal described in last month's trackside construction is ideal for using with Mod-Roc or Beattiplast constructed hills, etc.



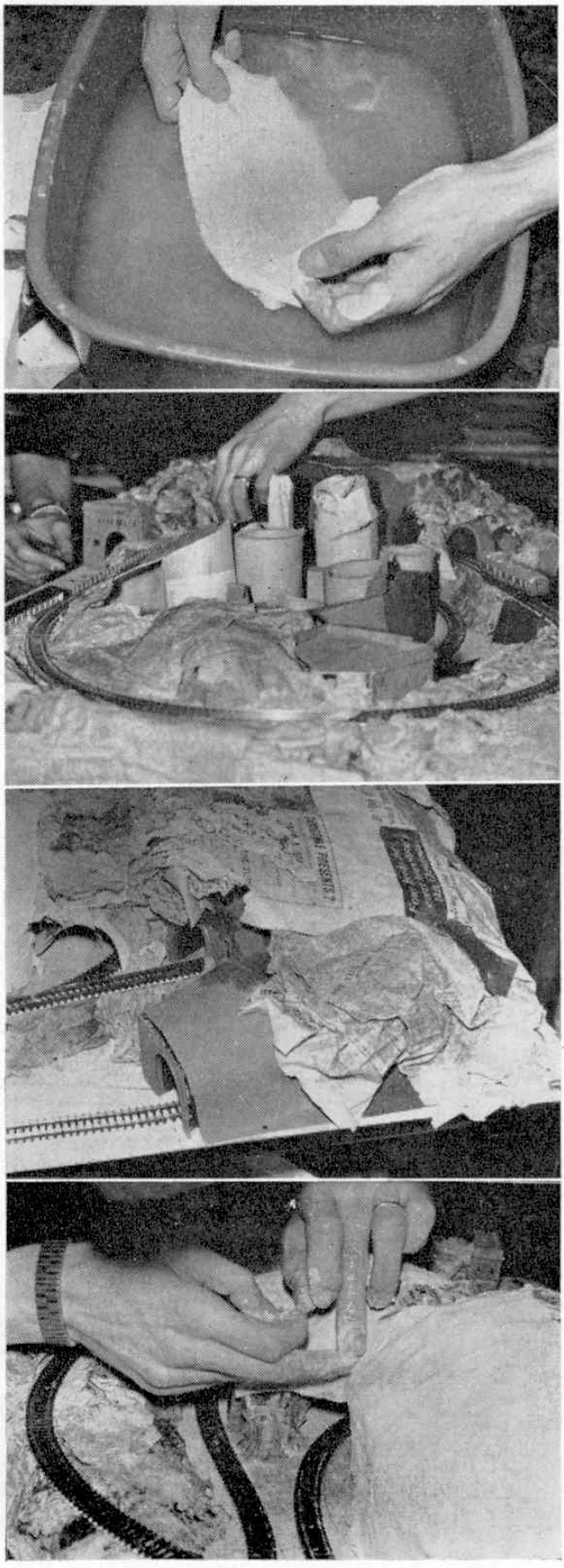
cardboard became steadily wetter; the laminations separated, and the whole lot duly collapsed on to the track, where it was found unexpectedly by a "trial" train! The Mod-Roc "ground surface," however, stood fast, and is firmly in place to this day, with no means of support underneath whatever.

In the centre of our layout we wanted a large and impressive mountain, and to add strength to this otherwise vulnerable feature, we filled in the centre of it with a weird assortment of old cardboard tubes and screwed-up newspaper. The resultant mountain has since proved as solid as the proverbial rock.

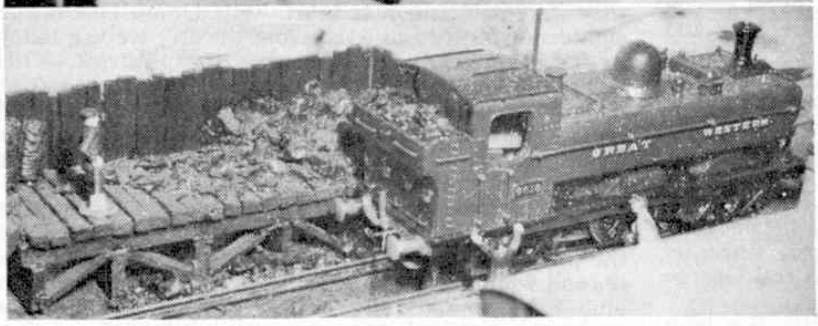
Successful scenery on a model railway is usually the result of keen observation of the real thing on the part of the bulider. Always keep your eyes open when travelling through the countryside, noting the shapes of various natural and man-made formations. Have you noticed, for instance, that if your train passes through a chalk cutting, the sides of the cutting are probably very much steeper than those of an ordinary earth one would be? This is because chalk will stay firmly in place at a more vertical angle; cutting sides of earth, at a similar angle, would inevitably slip, causing a landslide. Rock cutting sides are often even sheerer still. Always remember that, in real life, the scenery came first, and the railway much later, and the path of the railway was literally cut through the hills and valleys along the route. On our model railways, the railway must come first, and the scenery later, and making the whole picture look as though the reverse was the case is the main battle of the scenic modeller.

When you have completed the application of the Mod-Roc, your layout will present a very attractive "snow scene" and you will feel disinclined to paint it—we were! However, although you may think that the result looks like Austria in the snow, your friends will merely mutter "Couldn't be bothered to paint it even," so paint it you must. Humbrol paints are ideal for this, and you can supplement these with flock powder or similar substance, to roughen the surface texture a little. We do not intend to say much about colours in this article, as this subject is largely a matter, once again, of personal observation. Be careful, though, not to make your grass too "green"—look at the nearest plot of grass, preferably in sunlight, and half close your eyes. It's almost yellow in places, isn't it? The actual colour varies enormously with the texture. Before painting your favourite hill, practise on a spare piece of plaster first, and decide what colour you want. Vertical faces can be made to look like rock or chalk with a few dabs or streaks of grey or white in the right places.

After painting, the completed landscape can be embellished with trees, fences, telegraph poles, houses and all the things which go to make up a scene. In HO and N many ready-coloured plastic building kits are available from the Continental manufacturers like Faller, Pola and Quick. Trees can be obtained from Britains or Minitanks or you can have a go at making your own. Do not overcrowd the scene, as this usually effectively kills realism; if in doubt, leave it out.



At right, top to bottom. The cloth is immersed in a bowl of water for three to four seconds and gently squeezed out, it must not be wringed out! Next, an assortment of tubes and old junk to act as supports for our centre hill in a display layout. Next, the cardboard tunnel roofs and newspaper hill foundation. See text for problems encountered here, the roof fell right in on us! Right, applying the Mod-Roc and pressing it into the finally required shape over a tunnel portal. This material takes up to eight hours to fully dry so there is no need to rush ahead and risk spoiling anything by skimping to save time. Note the Pola building in the background, we obtained this from Beatties of Southgate.

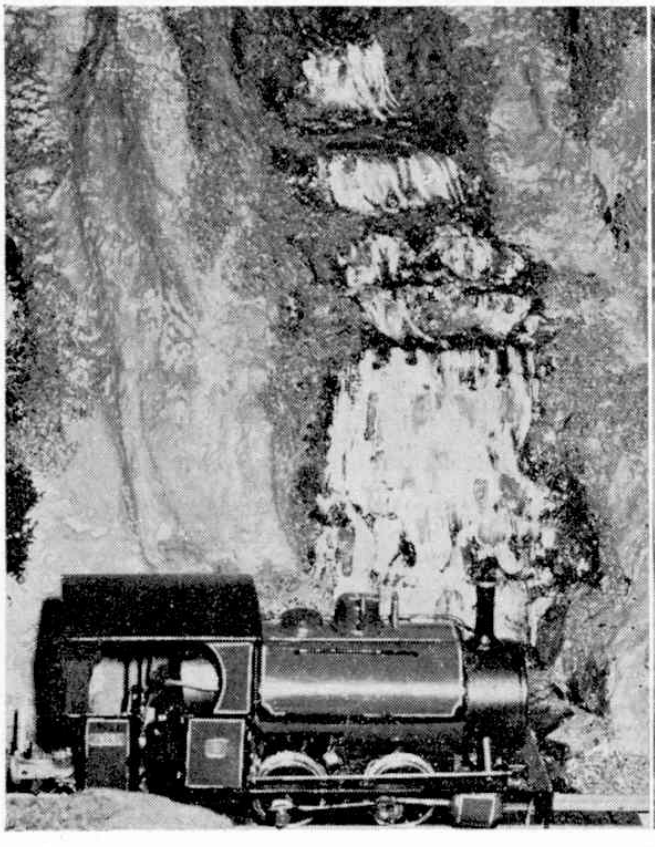


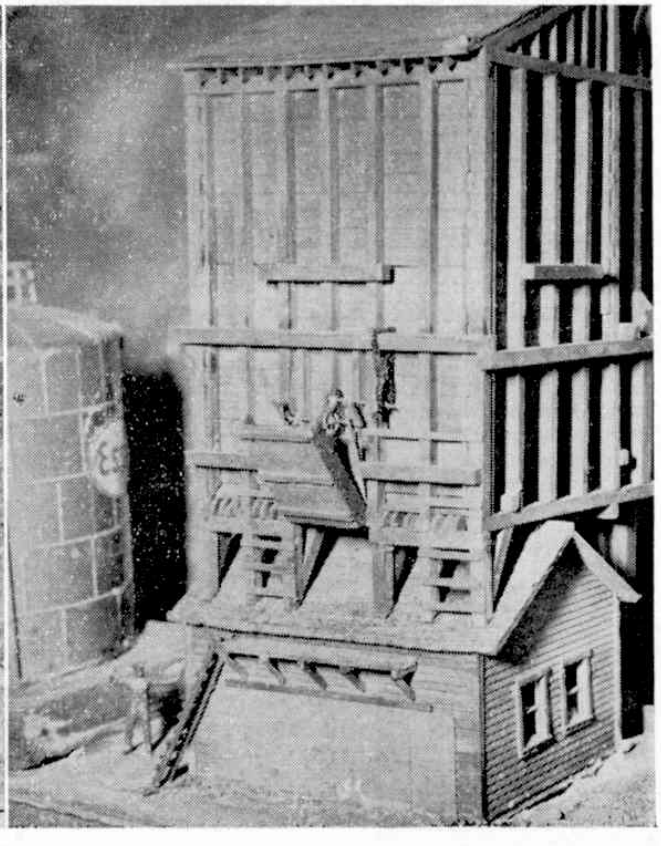
TRACKSIDE CONSTRUCTION PHOTO HINTS

Some of the many models seen at The Model Railway Club's Easter Exhibition at the New Horticultural Hall, London W.1.

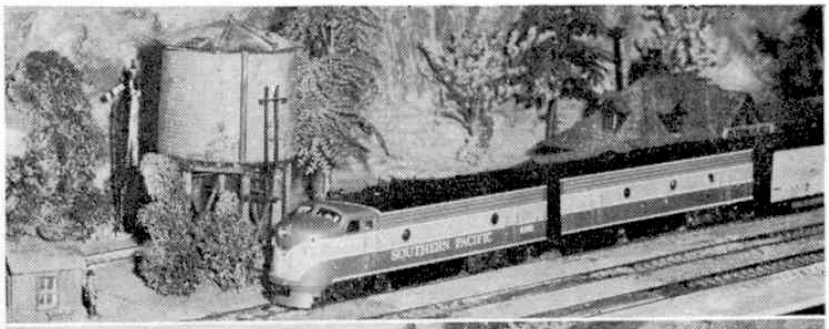
Top left, this attractive set piece which represents a scene on the Great Western about forty years ago, proves that scenic modelling does not have to be involved to be effective and authentic. This scene is very simple and uncluttered; the bridge itself is a very attractive model. Note the stone abutments and " splay walls " which retain the earth of the embankment. The old-time gas lamp adds the final touch to a very realistic scene.

At left, this Great Western pannier tank is having its bunker replenished from a wooden coaling stage, which contrasts vividly with the American coaling tower shown below. Construction is simply of strip balsa, and the whole thing can be made in a pleasant evening's modelling. One nice touch: the track is almost buried in coal dust, with the sleepers completely invisible.





At right, the HO scale " Denver and Southern ", a big two-unit diesel rolls into " Peyton Place " depot, with its outsize water tank. The tank itself stands on a wooden staging (balsa again!) and could easily be made from a handy-sized cylindrical tin or carton, wrapped around with paper to provide a good surface for painting. Some of the trees in the background are Britain's plastic products, which are very realistic.



This long and impressive viaduct shows how the time-honoured brick-paper can be put to good use. The viaduct piers are of solid 2 in. x 1 in. timber, and the resultant construction is very strong. All the surfaces of the wooden structure must be nice and smooth, so that the brick-paper covers them evenly, without wrinkles and tears.

The impressive Swiss hotel behind the trees on Barry Harper's EM gauge Swiss layout is merely cut from a poster—an easy and effective method of obtaining a very realistic backscene. Note that the sharp edge of the bottom of the poster is hidden from view by the grass bank in the foreground.

Another Mid-Western building at " Peyton Place ". This is a kit-built job, but careful painting makes it look really outstanding. Possibly a " flatter " paint should have been used on the roof, though, there's quite a shine on those tiles, but perhaps it's been raining !

The attractive waterfall, seen on the opposite page, was on the narrow-gauge layout of John Kimber and was made by a lady, Miss Ann Twitchen. Construction is simple, using cellophane and careful use of a paint brush.

Also on the opposite page, is a typical American locomotive coaling tower from the " Denver and Southern " layout of Messrs. Holroyd, Martin and Harris. Wooden structures like this are typical of the American railroad scene, but are not unknown in this country. Construction is best carried out with balsa or obeche stripwood, in exactly the same manner as the original was built. No internal framing or strengthening is needed, as the frame of the building is outside on the prototype, as the picture shows. The fine boarding of the shed at the base of the structure is best represented by individual strips of card or Plastikard, as wood is rather thick for this use, especially in OO or HO scale.