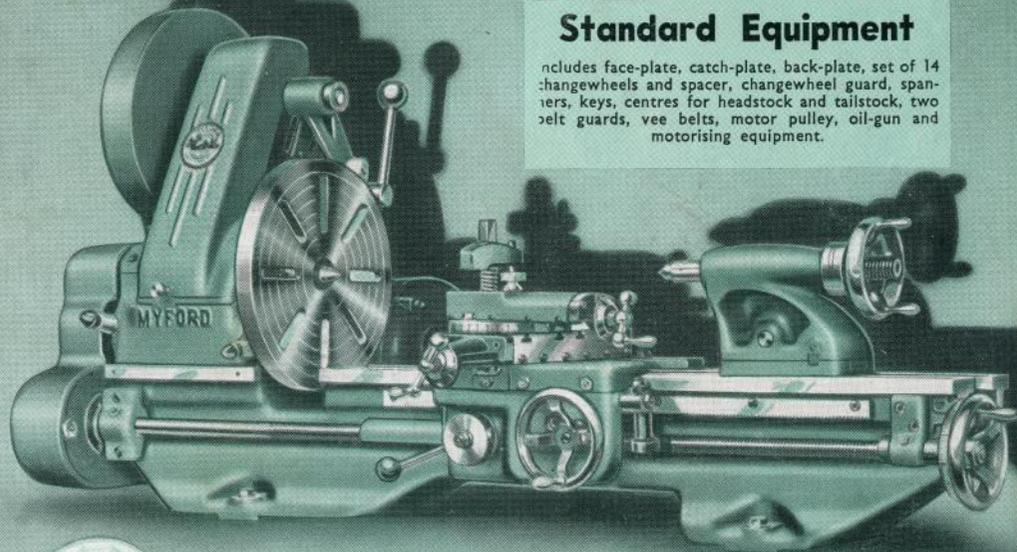


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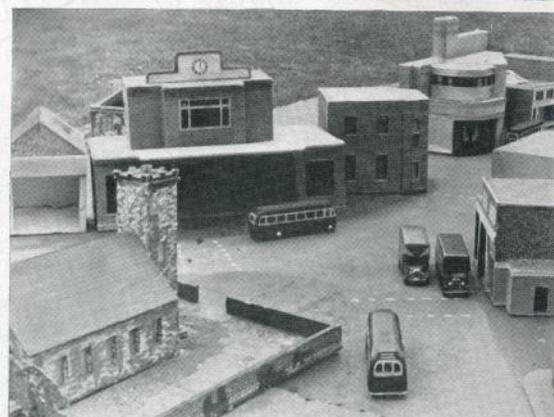
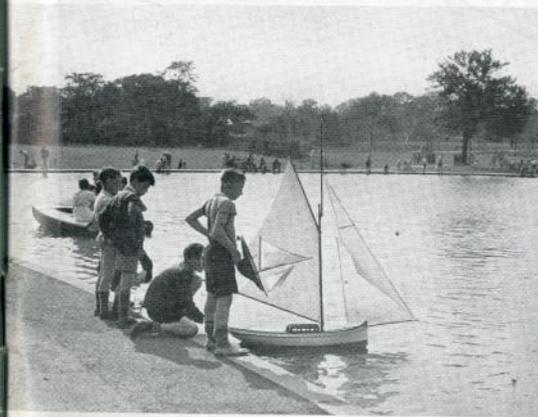
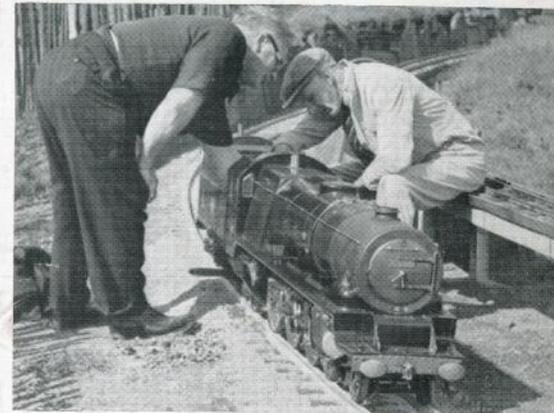
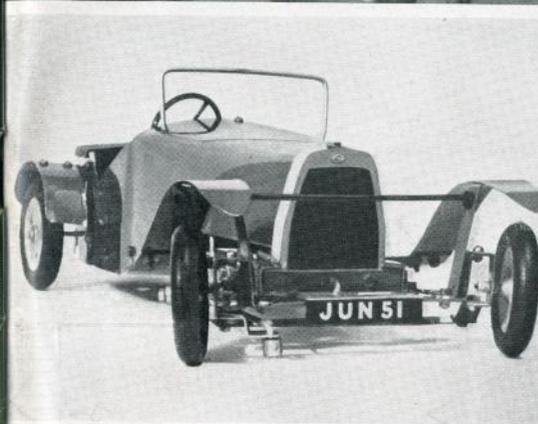
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VOLUME 2 NUMBER 13

DECEMBER 1951

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Small Space 0 Gauge Layout : Eastern Electric Rolling Stock : 0 Gauge Electric Diesel Shunter
Model Fire Engines : Push Sticks for Model Cars : Model Skoda : Ship Modelling in "Perspex"
Jewelled Ship Models : Simple H.R.G. Model : Ford T as Prototype : Home Workshop Demagnetiser
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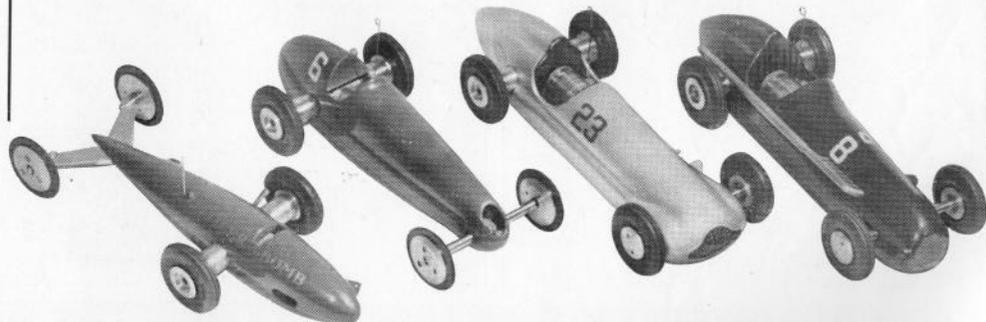
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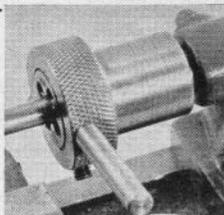
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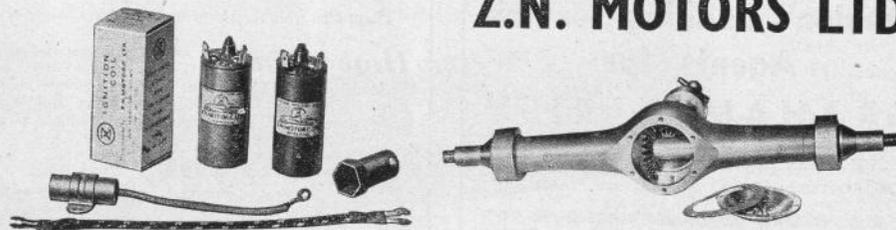


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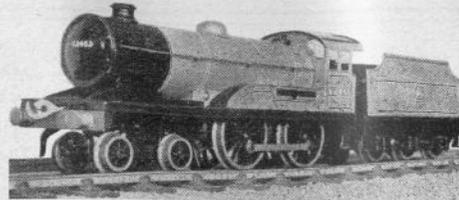
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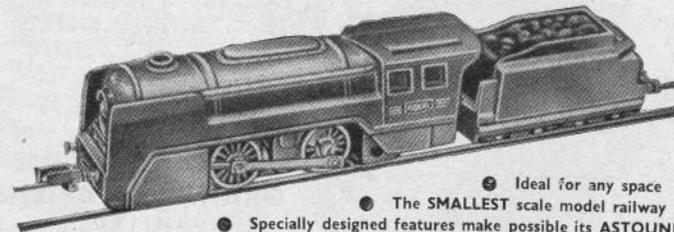


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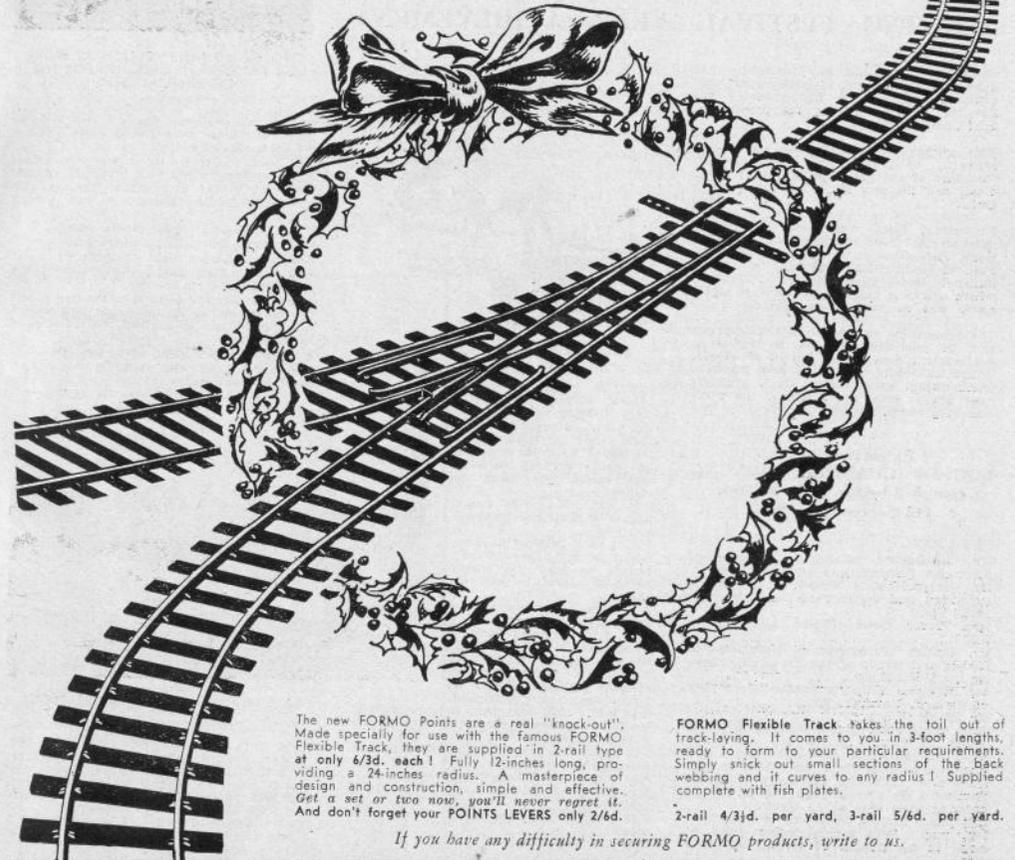
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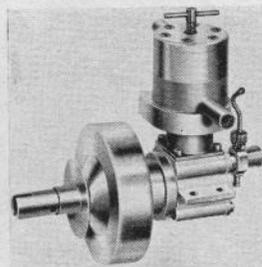
This gargantuan project was undertaken primarily to prove the exceptional performance of the prototype Mk. V. 4.5 c.c. diesel and the new Mk. IV Radio Control Unit.

Preliminary tests were made over the 15 mile stretch from Richmond to the South Bank Exhibition in conjunction with the Festival authorities, and at the International Model Boat Contest, Fleetwood, where a 9 mile run around the Wyre Lighthouse was successfully negotiated.

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Extracts from the
LOG OF CHANNEL CROSSING
compiled by Mr. J. E. Ballard.
6th September, 1951.

THE CREW:
Mr. J. Ballard (Managing Director of Electronic Developments (Surrey) Ltd.)
Mr. George Honnest Redlich (E.D.'s Radio technician and designer of the Radio and Model Boat).
Mr. Trevor Owen (Radio assistant to G.H.R.).
Mr. Gordon (Proprietor of Hammersmith Models and owner of the *Sea Gull* following the Model Boat).
Mr. Bowness (Reporter and photographer of Percival Marshalls Ltd.)
Mr. Smith (Pilot).
11.30 a.m. The Radio controlled model launch is placed in the sea and after check on radio and engine is started and launched, heading for France at 11.39 a.m.
11.59 a.m. Crossing the entry of Dover Harbour. We are 100 yards behind model.
Entering open sea at 12 o'clock.
1.36 p.m. English coast out of sight.
1.45 p.m. Seas rough, losing sight of model in big troughs of waves, but radio



THE NEW E.D. MK. V. 4.5 c.c. DIESEL

operation working wonderfully. Radio control working overtime to steer straight course.
2.5 p.m. Model did complete circle, as it was swerving round by force of waves, but radio working perfectly and model put back on course.
2.25 p.m. Seas very rough. Angle of boat more than 45° at times.
2.35 p.m. Difficult to keep model in sight at 250 yds. ahead, as seas too rough. Bring it nearer to 100 yds. ahead.
2.40 p.m. Big patches of seaweed encountered.
2.43 p.m. Engine stopped by seaweed. Seaweed cleared and engine restarted in 4 minutes. Cross Channel steamer sighted. People on board seem quite intrigued.
3.15 p.m. Mail boat from Belgium sighted.
4.8 p.m. Tramp Steamer from France passing close to us.
5.5 p.m. Compass N.B.G. We are lost. Steering by sun position.
5.54 p.m. Model behaving perfectly.
6.10 p.m. Sun gone and still not aware of position.
6.45 p.m. Model wonderful. Sea a little calmer.
6.59 p.m. Land sighted.



GEORGE HONNEST REDLICH AT WORK ON THE BOAT HE DESIGNED FOR THE CHANNEL ATTEMPT.

6.55 p.m. Sighted position marked as north of Calais near Dunkirk we think—we hope. Model perfect.
7.25 p.m. Calais lighthouse recognised which means we are well north off course.
7.45 p.m. Owen at controls, darkness descending. Getting nearer, 50 yds. behind model.
8 p.m. Calais Harbour mouth seen.
8.30 p.m. Enter Calais Harbour.
8.34 p.m. Losing sight of model.
8.35 p.m. Find model in rays of torch still plugging along merrily.
8.39 p.m. Arrived quay side, brought model by side of launch by radio and took superstructure off to stop engine. Engine stopped by hand.
8.43 p.m. Model lifted aboard to *Sea Gull*.
8.55 p.m. Leave *Sea Gull* for shore. All very tired and happy.



SAFE AND SOUND IN CALAIS HARBOUR.

THE BOAT: *Miss Edees*, 5ft. long 2ft. beam, weight 70lbs. Police launch type.
THE ENGINE: A 4.5 c.c. water cooled new E.D. engine. Internal water tank fitted, syphon system for cooling, direct drive. R.P.M. approximately 6,500.
THE RADIO: The new E.D. 3 Channel 3 reed unit.

MODEL MAKER

incorporating
THE MODEL MECHANIC & MODEL CARS

THE MONTHLY JOURNAL
FOR ALL MODEL MAKERS

Managing Editor:

D. A. RUSSELL, M.I.Mech.E.

Co-Editors:

G. H. DEASON

D. J. LAIDLAW-DICKSON

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"... BUT ONCE A YEAR"

MAY we take this opportunity of offering our growing band of readers the very heartiest of Christmas greetings, all the right sort of presents on that festive occasion, and success in their model endeavours in the New Year. We have unashamedly donned our paper hats and provided a selection of articles in far lighter vein than usual, for Christmas is a time when we must all put aside our dignity and enter wholeheartedly in jollity and parlour games without thought of advancing years and the comfort of the old armchair by the fire.

This is a season when the model maker is in particular demand from the youngsters who will request in sublime confidence: "Make me something please!" One or two little somethings that can be produced in an odd half-hour are provided to preserve sundry reputations in their infallibility. Other items can be made as really seasonable model making gifts. Again, for those willing to devote a little more trouble to the subject, there is an interesting little Doll's Bungalow: the furniture to match should, we feel, most certainly be contributed by the distaff side!

More serious readers bent on making the most of what should be the longest uninterrupted bank holiday of the year—for many of us will be able to claim Christmas Eve Monday to round off the long break—will find that they have not been entirely forgotten. There is J. W. G. Brooker's conclusion to his useful Bits & Pieces article, another part of A. H. Dadd's 4 mm. Rolling Stock, an 0 Gauge Diesel Electric, magnificent "Perspex" Ship Modelling, a Juneero car, and the beginning of a two-part Skoda constructional article, besides many of our usual features.

Still preserving our Christmas attitude, what about that long delayed present for the Editors? In between the excitements of the holiday there should be an opportunity for many of our readers, who have as yet proved mute, to burst into print with articles on their particular model making angle. As we crawl back to our editorial desk heavy with Christmas surfeit, nothing will serve better to freshen us up than a nice fat stack of contributions on every subject under the sun. Here are a few angles we should like to see covered early in the New Year: Model Stage Coaches, any practical aspects of Model Yachting, Model Guns, modern or period, Working Model Canal Lock, some good Dioramas, scale model cars of less usual prototypes, more on TT and 000 railways — some of those new layouts should be operating by now... in fact just send what is closest to your hearts at the moment... we can usually come over and take pictures if your photographic skill lags behind your modelling.

ON THE COVER . . .

Top right: Making the Cutty Sark in "Perspex". Centre left: A rubber driven H.R.G. model evolved from a standard design. Centre right: The "Duchess" 7in. gauge loco getting up steam at the Bryhouse S.M.E. Open Day. (Photo Contest picture by A. Allan, Bryhouse). Bottom left: Scene on the Bourneville M.Y.C.'s water. Bottom right: "Sutton Village" models and layout by Victor Sutton for a local Road Safety Week.

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KINDLY MENTION "MODEL MAKER" WHEN REPLYING TO ADVERTISEMENTS



A
LIGHTHEARTED
REVIEW
&
CONSTRUCTION
PIECE
BY THE EDITORS

That Nellie and her train are more than a shadow of the imagination is demonstrated by the pictures of the substance on the right. The upper picture gives an intimate glimpse of Mrs. Bristowe and Col. Cutlet, two really first-class passengers.

IT all started with the picture on our October cover. Were we, several readers enquired, aware that the Emmett railway thereon depicted was in fact made from a Puffin cut-out book? Amongst those who wrote was the designer of the model, Victor Keeling himself, and if we inadvertently denied him the credit which is his due when captioning the original picture, there's plenty coming to him now.

As the father of a very scissors-and-paste-conscious family I have the greatest respect for the Puffin series of "cut-outs", if only for the hours of peace and quiet they have afforded me in the past. Moreover, for years I have been a keen student of Emmett and his delirious railway in the pages of *Punch*; long before the Festival of Britain made the name of Nellie and the Far Tottering and Oystercreek Railway a household word. Without more ado, therefore, a course was set for the nearest booksellers, and the appropriate Puffin publication purchased. I too would own my own branch.

A pleasant hour was spent in studying the constructional details of the "pride, joy and bulwark of the F.T. & O.", the sequence of operations and not least the charming but anonymous preface, the final paragraph of which is worth setting down here, as it sets the key in which the enterprise must be tackled by the right-minded builder. "In an age when the other railways seem to be getting drabber and drabber, the Directors earnestly hope that the example of Nellie will be taken to heart, and that perhaps there will be a return towards engines which, besides transporting the body, will have something for the eye and mind." Could you fail to put your best into the job after that?

Besides deriving much aesthetic pleasure from viewing Nellie "in the flat", so to speak, I was much impressed by the care and thought that had gone

into the task of rendering her and her train three-dimensionally in paper, and perhaps this is the place to speak a warning word. The F.T. & O. is no infants' plaything, and let no fond uncle delude himself that he can knock one together for a nephew after dinner on Christmas Eve. An engineering enterprise lies in front of you, requiring, as I feel the Directors would wish, considerable care, craftsmanship and thought. Believe me, several long evenings spent in the peace of the Cloud Cuckoo valley will prove a soothing antidote to present world affairs.

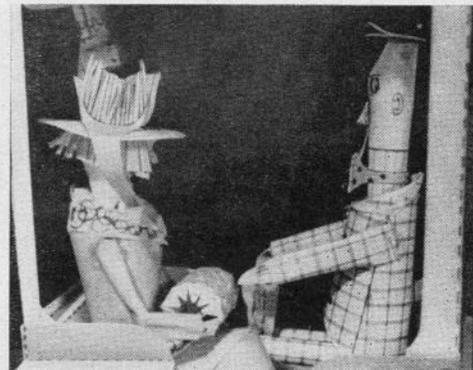
To commence with "that desirable prime-mover", Nellie is built on sound locomotive lines, with underframes and footplate of approved fashion. To enable her to cope with the more serpentine sections of the F.T. & O.'s way, which is apt to pass over tree roots and circumvent rabbit holes, a short wheelbase is employed, having an 0-6-0 wheel plan. Her designer momentarily lapsed into the more mundane world when he planned his train to be adaptable to standard 4 mm. gauge track, but in most other respects the whole conception is out of this world. The frames are of braced paper, stiffened by tubular axle bearings, and I cheated here to the extent of two reinforcing strips of $\frac{3}{16}$ in. square balsa, as there was a scheme in mind for electric drive which later proved that the designer knew best, by refusing to function satisfactorily. Wheel construction is simple but effective, circular discs being glued together, with strips of tyre glued round them, the wheels running on $\frac{1}{8}$ in. dia. dowel. And whilst on the subject of wheels, I have a small bone to pick with designer Keeling, who speaks airily of cutting them out by means of a sharpened nail fixed in a pair of compasses. Maybe we didn't use the same sort of nail, for sharpen I never so cunningly, the affair did not prosper, and I was reduced to cutting my wheels with scissors, the tongue protruded with

a circular motion the while. However, if the perfect circle wasn't achieved, no doubt the result would be received with equanimity down Friars Fidgetting way.

Above the Plimsoll Mark Nellie soars to heights of delicious fantasy. A fairly normal smokebox has a flap-down conical door, boasting an enormous key-hole, and the humped boiler casing has various fatigue fissures liberally patched or sewn with brass wire. Atop of the casing is the characteristic F.T. & O. dome, a graceful Grecian urn, containing tastefully arranged flowers, whilst above the firebox is the Far Tottering version of the Ramsbotton safety valve, a large brass tea kettle. The cab front, thoughtfully blended to the contours of the Company's oldest servant, Driver Firebrace, is rococo in its embellishments, and the single spectacle is swung to the angle most efficacious to keep cinders from the driver's eyes. Cab fittings, in addition to several rather tiresome levers required by the Board of Trade, include tasteful chintz curtains for night use, and the cab interior is furnished with a floral wallpaper. Nellie's gracefully proportioned smoke stack is, of course, as well-known a feature of the local landscape as Abbots Grumbling church spire, and the efficiency of this feature has caused Chief Engineers of other systems furiously to think.

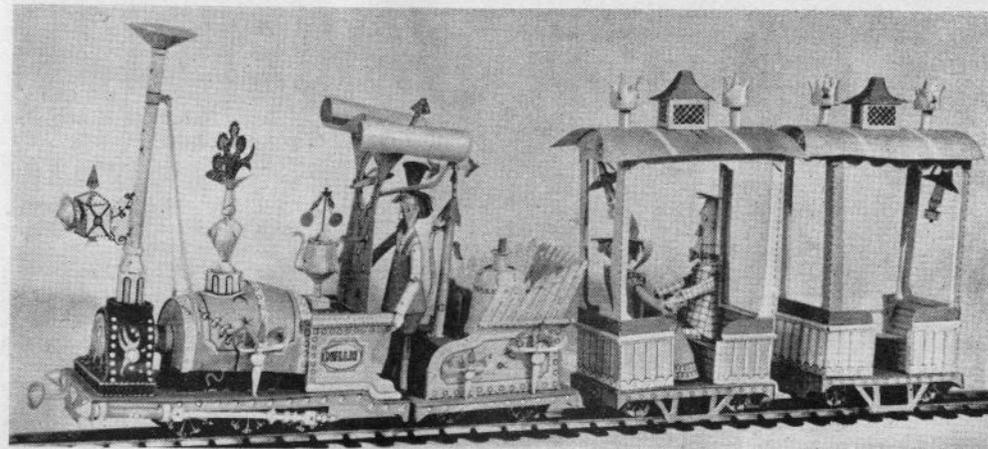
The tender is carried on four wheels, and apart from providing a rest room for Driver Firebrace, is equipped with a wash house copper and a village pump. Like the locomotive, massive external springs are employed, and since there is only one train per day on the main line, and none at all now on the Witch-hollow loop, single buffers are considered adequate by the Directors.

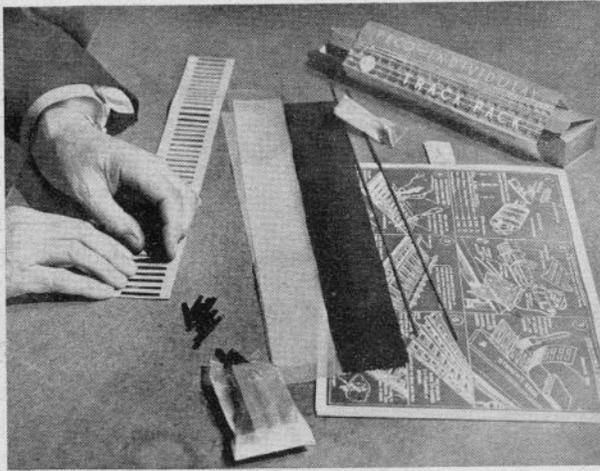
Passenger stock is represented by two first class coaches, there being nothing second rate on the F.T. & O. In view of the proverbial refinement of



the Company's passengers, considerable attention has been paid to both ventilation and illumination. So far as the former is concerned, fresh air is supplied free, and as to the latter, after some thought and experiment oil was decided on as most reliable, a decision probably influenced by the fact that supplies are readily obtainable at Wastecote Fancy Post Office.

Two really first class passengers, Col. Cutlet and Mrs. Bristowe are included in the Puffin pages, and until you try you wouldn't believe it possible to capture the Edwardian age so successfully in a few small cones and cylinders of paper. Finally, watchful of his charges' safety and comfort, stands Driver Firebrace himself on the footplate. By the time you have progressed so far, hardened model maker though you may be, I will guarantee that you return with the ghost of a sigh from this enchantingly Cloud Cuckoo railway to a harder and less ornamental world. The fare, to you, is 2/6 $\frac{1}{2}$ d., inc. P.T.





IN more senses than one the trackway upon which trains run is the very basis of a railway—miniature or otherwise. This is true not only of the mechanical, but also of the realistic aspect of a model railway.

In building a model railway, what we set out to do, consciously or otherwise, is to present a picture of a railway scene. Considering our model railway as a whole, there may, of course, be many pictures combining to form the big picture. Thus there may be a section representing open country, another showing off some feat of civil engineering such as a cantilever bridge spanning a harbour, a third depicting a goods yard or the vicinity of an iron works, shipbuilding yard or factory and yet another portraying a passenger station, whether a wayside halt or a city terminus.

But in each case the essential feature in the picture, so far as we are concerned, is that it shall represent a railway scene and, this being so, the whole object of our scenic work is—or should be surely—to display the railway in a convincing setting. As artists we shall probably spend much time and thought upon getting our perspective and proportions right. We should not include human figures taller than the buses in which they are supposed to ride, or “kill” the whole picture by giving undue prominence to some feature that should be kept in the background.

If, then, we give so much thought to ensuring a correct setting and “context” for our picture, does it not follow that the focal point of the picture itself namely, that part of it which proclaims it to be a railway scene—shall come in for an even greater amount of care and study? And the focal point of our picture is the track.

Please! This does not mean to imply that, provided the track work is right, the rest of the picture,

including the trains and lineside buildings can be dismissed as unimportant. But it does mean that the track work is one of the important elements in securing a satisfying and convincing picture—perhaps the most important.

What we are exhibiting is a model railway and, therefore, the attention focuses naturally upon the railway or track. The duty of the scenic work is to suggest locality and the duty of the train in motion is to give life to what otherwise might well be a painting in oils or water colour. The scenic work can be largely two-dimensional, i.e. painted on a backcloth. The trains must be three-dimensional, but they move across the scene, create the impression of a living picture and then disappear from view into a tunnel or cutting.

But the track is three-dimensional and static: it cannot excuse clumsy or slipshod construction under the guise of being “only put in to give the general effect sort of thing”, nor can it get up and run away out of sight. It is there for you, your critics, and the camera to examine in searching detail.

All these facts being generally known and appreciated, it is surprising to find that many constructors are content to jog along with track of the kind provided with the “box of trains”—track which while undoubtedly excellent for its designed purpose, was never intended to play a part in a model maker’s scenic railway. One can only conclude that such folk are unaware:

- that the laying of scale track in miniature is very definitely model making, yielding rich rewards of satisfaction for the expenditure of no more than ordinary care and patience.
- that the use of track-laying components confers upon the modeller complete freedom to copy full-sized layout practice accurately, observing “natural” curves that can be made to blend convincingly with the picture as a whole.
- that, apart altogether from appearance, well laid track can improve the mechanical performance and the appearance in motion of locos and their rolling stock beyond belief. If scale track and scale wheels are used in conjunction, the loco driving wheels get the benefit of full adhesion (thus enabling maximum tractive effort to be developed) while at the same time the drag exerted by the coach and wagon wheels is reduced to the

On the Right Track

R. WATKINS-PITCHFORD'S REGULAR FEATURE
FOR OO ENTHUSIASTS DEALS WITH TRACKLAYING

minimum. Finally, assuming that electric traction is being used, a well-laid, even, rail enables the loco wheels to maintain a steady electrical contact and to run smoothly with an absence of jerks or full stops.

In our earlier chats in this series we agreed that it was desirable for the newcomer to model railways to gain some preliminary experience in actual operating before finalising on a scale layout. Ready-made track consisting of units which can be clipped together to make up a layout affords a convenient means by which a working railway can rapidly be brought into being, and there can be no doubt that planning and operating such railways does form a very useful, not to say an indispensable introduction to the subject. But, once the general principles of layout and operating have been mastered, the model maker will feel the urge to tackle something a bit more like “the real thing” and one of the first things to engage his attention will be the laying down of scale track. Just how does he set about it? How can he try his hand at this most fascinating and instructive side of railway modelling without making too heavy an initial outlay?

Well, he must first decide upon the gauge and modelling scale in which he is to work, assuming that electricity is to be his motive power, whether he will use the two-rail system or one of the variants of the third-rail system (i.e. centre or inside third, outside third, stud contact, or overhead). In previous articles we have already covered pretty fully the pros and cons of these various types, and readers will recollect that the beginner to the hobby was advised to choose the OO gauge (with its associated modelling scale of 4 mm. to the foot), and to lay down two-rail track. This system of OO gauge two-rail has many features to recommend it, not the least of them being the wide selection of components of all kinds that the market has to offer.

In the matter of trackmaking alone, there are several manu-

The first stage: Slipping the fibre sleepers into the slots in the cork “ballast unit”. When all sleepers are inserted, a strip of “drybond” is laid on top and a strip of grey backing paper on top of this.

Here the “sandwich” of cork ballast, drybond and backing paper are pressed against a straight edge, while an iron—not too hot—is being passed slowly over, with several thicknesses of newspaper for protection. Under heat the drybond adheres to the backing paper on one side and to the sleepers and ballast unit on the other.

facturers, each of whom puts forward components of a high quality claiming a greater or less degree of realism and reliability in service. In selecting a particular make for demonstrating our early tracklaying efforts, it is not implied necessarily that the type chosen has all the advantages, but simply that your present scribe has, from a fairly extensive experience, found it to meet the bill on most counts that make for a good and lasting permanent way. Also, for our present purposes, we shall not concern ourselves with the many matters affecting baseboard design and construction, important as these are to good results. We shall assume that there exists at least a wooden table top, shelf, or even plank having a tolerably even surface to which our experimental section of track can be secured.

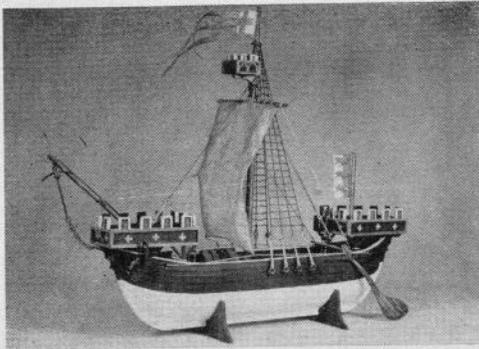
The next question we have to decide is whether our rails shall be of the “bull-head” or of the “flat bottom” variety. There is still a great deal of both kinds in use on our British railways and we shall probably be many years older before the bull-head is entirely superseded.

So if we start by making up some flat bottom track now and wish to try our hand at bull-head for a change later, we shall be quite in order in using the two types side by side on adjacent tracks, or even end to end on the same track.

But apart from the rail itself being of different cross section in each type, the method of fixing it down to the sleeper is different in the prototype and we must try to imitate this in our model if our finished work is to bear inspection. So let us go to our model shop and ask for the correct equipment to build up a specimen length of 3 ft. of OO gauge flat bottom track. The shop will probably have this all ready made up in a convenient carton called a Track

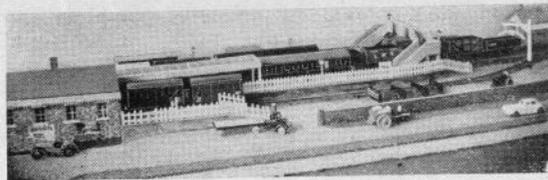
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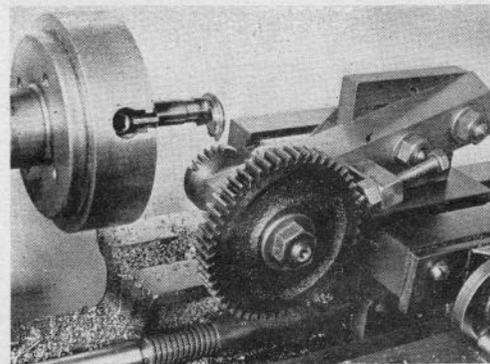
Section II. Early English Warship bearing the Royal Arms of those days by M. Garnett, of Horfield, Bristol 7 : a district that has produced ship-modellers from time immemorial.

Section IV. Semi-scale 750 c.c. Austin with balsa body submitted by L. B. Gilbert of Market Harborough, Leics.



Section I. "Milton Station" a section of an all home made layout (except road traffic). Taken with a 127 Box Camera using window lighting and 75-watt fill-in lamp. By H. Swindell of Weymouth, Dorset.

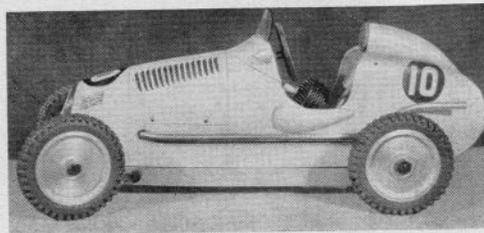
Section V. One of a set of change wheels for a miniature lathe being cut on simple indexing rig with a homemade single point cutter. Operating lathe is a 3 in. Randa. By L. C. Mason of Winchmore Hill. Winner of this month's contest.



MODEL MAKER'S

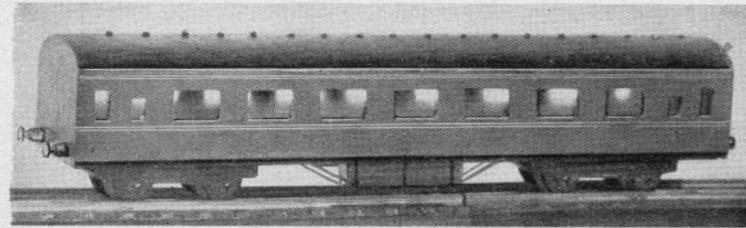
Photo
Contest

These are the last of the year's Contest Photos. Winners of the "Model of the Year" Contest will be published in our January number, and, providing our Judges are prompt in their decisions, we will endeavour to despatch winners' cheques in time for Christmas.



Section III. Freelance Cabin Cruiser built by E. G. Wilson of Winchmore Hill. All fittings handmade from brass. Power—Bassett Lowke electric motor. Hull 23½ ins. long, beam 6 ins., made from the solid. Photographed by L. C. Mason, as above.

WHITHER
TT
ASKS
"MANXMAN"



NO one who is in the position of being able to feel the pulse of the miniature railway movement in this country will deny that there is an unmistakable increase in the tempo of heart beats when TT gauge is mentioned.

Its grip on the public imagination is undeniable and — pursuing our clinical analogy — there is every sign of an epidemic setting in.

That highly esteemed contemporary *Model Rail-roader*, in compiling its "Statistical Survey on the Market of America's Fastest Growing Hobby", noted only 1.7 per cent of its readers professing the TT gauge as against 69.3 per cent for HO gauge and 22.2 per cent for O gauge. But that Survey was conducted some sixteen months ago (at the time of writing), and it would be interesting to have these figures brought up to date, bearing in mind that in a rapidly growing movement like ours sixteen months is a long while.

But whatever may be the trend "across the herring pond", we can be sure that this diminutive gauge of 12 mm. will forge ahead in popularity over here, once its many virtues become apparent. It is not so much a matter of fancy as of hard practical fact. We may have the time to give to our hobby, we may even be undaunted by Purchase Tax but, for the great majority of us, the space in which to put down a model railway is even harder to come by than either time or cash.

What space we have, therefore, must be exploited to the utmost, and the great advantage of TT is that it enables us, in a given space, to bring a greater area of country to view and to lay down a more complete,

more realistic railway system, whilst still preserving a favourable relation between the gauge and the radius of curvature employed. But, as model makers, one of the first questions we shall ask is, "If I decide to go in for TT, shall I find plenty of scope for modelling?"

Well, the answer is that at the moment the market has not a wide range to offer in the way of some of the necessary components in this scale. To the best of our knowledge, true-to-scale items, such as axle guards, bogies, couplings and transfers for those who wish to build coaches and wagons, and chimneys, domes, outside valve gear and mechanisms for the loco builder have yet to make their appearance.

But there are already signs that our manufacturers are quickly becoming alive to the possibilities in this gauge and, as rapidly as the present difficult circumstances allow, are tooling up and preparing their dies for casting.

So far as concerns the important item of track, the Peco people, as was to be expected, anticipated the trend of the market by many months and produce not only a special rail section, which is nearly to scale, but a neat tied-sleeper strip in black fibre, which, when laid upon suitably roughened and coloured cork base, forms a highly realistic track-way. We hope to deal with the whole subject of TT track laying and point making in an early issue.

Then there are rumours (at the moment neither confirmed nor denied) that a set of coach building kits in this scale is on its way. And, if this be so, it will be very surprising if we do not soon have bogie sides, axle guards and other castings to suit.

Heading : New CCW/LMS coach kit for TT, using Rokal bogies, available as spares, and True Model Company's buffers. Made in an evening against time from materials supplied by courtesy of H. G. Cramer Ltd. and True Model Co.

Right : Some of the new Rokal lineside accessories now being offered by wholesalers Darby Distributors Ltd., forerunners of an ever widening range of TT supplies that the trade is expected to provide.



Perhaps rail section for sole bars would be slightly out of scale but, in this diminutive size, not so much so as to offend gravely. Mention of scale accuracy compels us to observe that the modelling scale so far adopted for this gauge is 1/125. This represents 2.43 mm. to the foot—an awkward number that has not even the merit of a convenient equivalent in fractions of an inch. Now 12 mm., which is our gauge, is taken to represent 1,435 mm. (4 ft. 8½ in.), and this implies a scale reduction of 1/119. If for the sake of round figures, we call this 1/120, our modelling scale should be 2.53 mm. to the foot or, for short, 2.5 mm. Therefore, if we should adopt the 2½ mm. modelling scale for TT, we should not only have a more convenient figure in which to work, but we should, in fact, approach nearer to the true gauge-scale ratio than is represented by modelling to 1/125. Or, if we come to that, why not adopt 1/10 in. to the foot, which represents 1/120 exactly, as against our gauge ratio of 1/119.

In 00 gauge work the gauge is 16.5 mm., and the modelling scale is 4 mm. to the foot.

Here we are badly out and we should theoretically in the interests of accuracy, either keep the 4 mm. scale and increase the gauge to 18 mm. (EM gauge) or 19 mm. (as in American 00) or else suit the scale to the gauge by working to 3½ mm. to the foot (HO gauge). But, in practice, we do not do this for the following reason. The 16.5 gauge enables us to use sharper curves than we could in 18 or 19 mm., and 4 mm. scale allows us more room on our locos for the bogies and pony trucks to clear the cylinders and frames on the relatively sharp curves we are obliged to use in model railways. So the 00 gauge, although a complete hybrid, has come to stay and the "Trade" has settled down cheerfully to supply us with components galore.

At least they have nowadays, but for a long time

they were uncertain which way things were going to shape and knew not whether they ought to back EM, HO, or 00 and, pending a settlement of this knotty problem, it was difficult to find a full range of components for any of the three sizes.

But where TT gauge is concerned we are making a fresh start and are going to profit by past muddles. Before too many firms are manufacturing to fancy modelling scales of their own devising, the matter will, we hope, be cleared up by some central authority once for all and some agreed standards will be laid down not only as to scale-gauge ratio, but also to such important items as back-to-back measurements, check rail clearances, loading gauges and what not. Meanwhile, it is to be noted that the market already offers a proprietary railway system in TT, which covers a wide scope in the matter of track, locos, rolling stock and lineside accessories and will, as time goes on, increase this scope considerably.

Moreover, among the components available for separate sale in this range, are insulated (for two-rail running), and bogie assemblies, which could be used as the basis for home coach or wagon modelling; although it should be noted that any home constructed track upon which these coaches or wagons were set to run would have to be made so as to conform with the wheel dimensions as to flange depth, flange thickness and back-to-back measurement. But, if we ignore for the moment what some may consider to be the more academic aspects of scale and gauge ratios—and after all the difference between a station building constructed to 1/125 and one constructed to 1/120 should not be such as to worry many people—the fact remains that the TT gauge offers very decided scope for home modelling and enables a very satisfactory amount of layout and countryside to be depicted in a relatively small space.

MODEL MAKER CHALLENGE CUP FOR MINIATURE RAILWAY LAYOUTS

For the benefit of more recent readers we republish below a summary of the rules pertaining to our Layout Challenge Cup. Now is the time to consider projects for entry; we await these with keen anticipation. Note that closing date has been extended to February 28th, 1952.

Particulars of Entries

1. Individual or group (club) entries eligible, either amateur or professional modelers.
2. All gauges up to and including 0 Gauge may be entered.
3. Superficial area of layout that may be entered is as follows:—
000 - - 25 sq. ft.
00 - - 50 sq. ft.
0 - - 100 sq. ft.

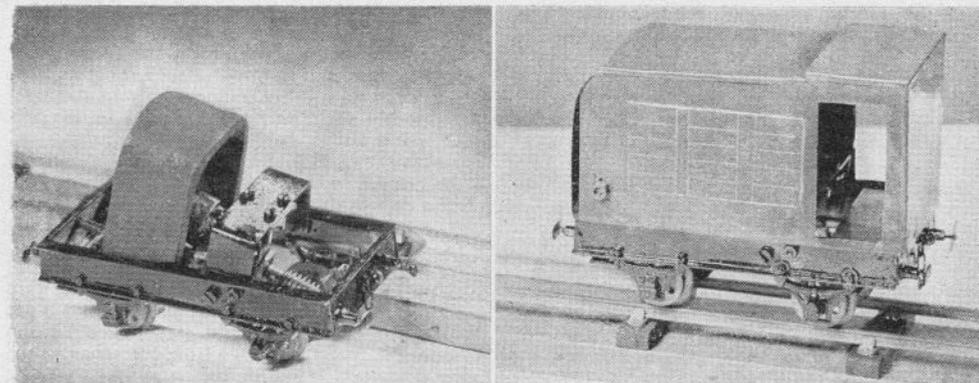
Where layouts exceed this size a continuous area not greater than specified may be selected by the entrant and will be judged without consideration of that part not entered.

4. Each entry must comprise three items:—

- (i) Plan of layout showing track, lineside features, gradients and railway buildings, stating loft, basement, club premises or other general location.
- (ii) Photograph of layout in operation, or part thereof.
- (iii) Description not exceeding 500 words of purpose, objects, running and general operation of layout.

Scope of Award

5. The "Model Maker" Challenge Cup will be held for one year by winner and an annual cash award of Five Guineas will accompany it.

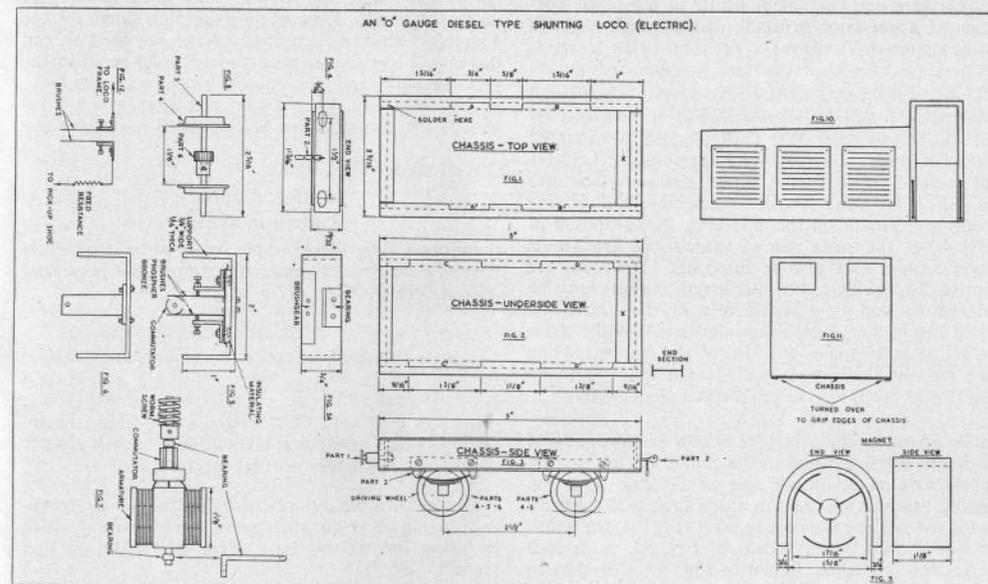


DIESEL ELECTRIC SHUNTING LOCO

FOR 0 GAUGE
BY WM. WILLIAMSON

TODAY the young model railway enthusiast is confronted with the high cost of equipment. With this in view the writer has designed this electric loco. It can be built quite cheaply, especially if the reader has on hand an old electric motor of reasonable power. Should it be of the wound field type, conversion to a permanent type is fairly simple.

Now first of all the size of the motor determines the chassis details. Assuming, therefore, the motor has a wound field, remove the armature, bearing brackets and brush assembly and carefully measure the outside diameter and length of the pole pieces. Next, obtain a piece of tool steel; the width of this should be the same as the length of the armature



poles. A blacksmith would bend this horseshoe shape as shown in Fig. 9. The air gap should be approx. $\frac{3}{32}$ in. all round. When the steel has been bent to shape have it well magnetised, not forgetting to keep a piece of soft iron across the ends of the two poles until it is fitted in position later on, otherwise it will lose a lot of its residual magnetism.

Having reached this stage the gears should be obtained. Those used for the purpose, described in this article, are made by Juneero Co., one is a worm screw and the other is a 15-toothed pinion, list Nos. 157 and 151 respectively. The bore of these two gears is approx. $\frac{7}{16}$ in., which is suitable when used in conjunction with their rods, list No. 109 or 110, this is used for the two axles of the loco. Reverting again to the motor, the next job is to fit the worm screw to the armature shaft. Should the diameter be under $\frac{7}{16}$ in. a bush made from thin brass foil should be fitted, and the worm screw fitted and made secure by means of the two grub screws making sure it is true.

Lay the armature aside for the time being and proceed with the construction of the loco chassis which is as follows. The material is brass curtain rail, flanged along both edges $\frac{1}{4}$ in. width and $\frac{3}{8}$ in. total depth. Cut two pieces 5 in. long for the sides, and two pieces $1\frac{1}{8}$ in. long for the ends, file away both flanges near each end of both short pieces as shown in Fig. 4, so that they fit neatly between the flanges of the side lengths, shown in Figs. 1 and 2. Now set up the frame and see that the corners are perfectly square and the solder firmly in the inside corners. If a good job is made of this, stiffeners will not be required.

The four buffers and the two couplings are fitted next (parts 1 and 2), shown in Fig. 4, followed by the axle guards (part 3). These should be mounted in the positions shown in Fig. 2 at points C-C1, D-D1 and secured by 8-10 B.A. bolts and nuts (see also Fig. 3). Our next job is to assemble the driving wheels and pinion on the axle (Fig. 8), composed of parts 4-5-6, the other pair of wheels and axle (parts 4 and 5 only) may also be fitted up. The axles are approx. $2\frac{1}{16}$ in. long, but this length may have to be reduced so that they turn freely in their bearings. When fitting the wheel assemblies see that the axles are set at right angles to sides of the frame. When o.k., try out the chassis unit on the track to make sure it runs easily on the curves and over points.

The layout of the armature is now planned. Hold the worm screw meshed to the pinion on the driving wheels axle at about an angle of 20 deg. with the bearing brackets on the armature shaft and measure up for the bearing support bracket (Fig. 6), the width for this should be as shown in Fig. 5a, as it also carries the brushgear shown in Fig. 5. Cut slots in

the chassis flanges as shown in Fig. 1 at A and A1, and bolt the bracket in position. Next fit the back bearing plate shown at X in Figs. 1 and 2. By the way, the dimensions shown are taken from the writer's model and will no doubt vary from those required to suit any other motor used, but for the purpose of this article they are only given as a guide. The slots shown in Fig. 1 at B and B1 are only cut if the magnet width is 2 in. Should it be less, appropriate shoes (brass) should be made and soldered to the sides of the frame. The magnet should lay at the same angle as the armature.

When the fitting of the motor is completed, turn the armature by hand and see that the gears work freely. No detail is given regarding the pick-up shoes as the type and fitting of these depends on the position of the live rail on the track which may be central between the running rails or on either side of them. A rough idea of a diesel type body is shown in Figs. 10 and 11. This of course, is only a suggestion.

Finally, a word regarding the running speed of the loco and the voltage of the motor, using the gears described in this article—the speed of the loco will not be high but fast enough for shunting or even a slow goods train. As to the voltage of the converted motor, care must be exercised to see that the voltage at the motor itself is not in excess of that at which it is rated. Quite a number of small motors require only 4½-6 volts, therefore before using it on the track it will be as well to get an electrician to measure the current in amps. the motor takes when running at correct voltage. Take as an example—rated voltage 6 volts — current 2 amps, voltage supplied to rail track = 12 volts, we must drop 6 volts between the pick-up shoe and the motor brush normally connected to it (Fig. 12). To do this a resistance is inserted, the correct value is calculated as follows:—

$$\text{Resistance value in ohms} = \frac{\text{voltage dropped}}{\text{current in amps.}}$$

therefore taking the example, volts to be dropped is 6 volts — current consumed 2 amps., the resistance should be 3 ohms, i.e. $\frac{12-6}{2} = 3$

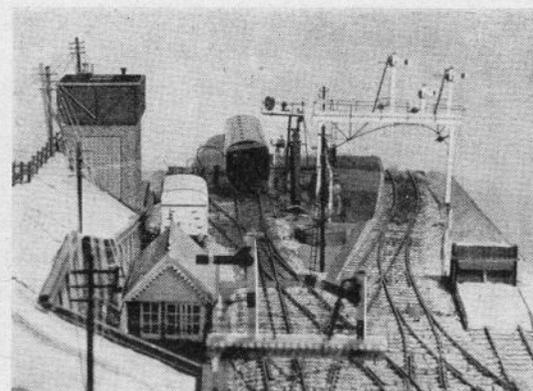
Now a suitable resistance to carry 2 amps. would be 2 yds. of 23 s.w.g. Eureka resistance wound on a pencil, spiral form, which is connected as shown, providing it is kept clear of the loco frame, the insertion of this resistance allows other 12 volt electric locos to be run under normal conditions.

During this period of austerity the writer is endeavouring to retain interest in model railway work by using the old wartime adage of "make do and mend".

SMALL SPACE 0-GAUGE LAYOUT

BY G. H. LAKE

The author's railway interests extend over thirty years. He founded *Railways* in 1939 and was Editor for seven years; founded *Railway Pictorial* in 1947 and was Editor until its incorporation with *Railways* in 1951. Has been Hon. Secretary and Treasurer of M.E.T.A. since its formation in 1945, and Hon. Secretary of B.R.M.S. Bureau since its formation in 1941.

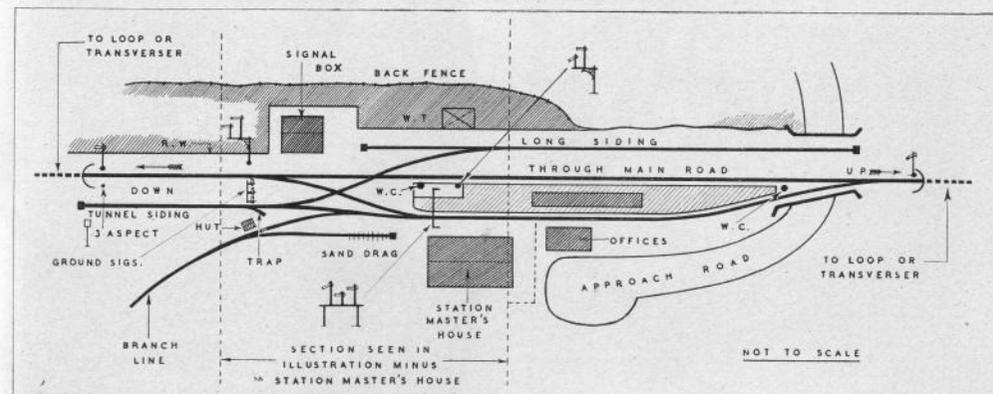


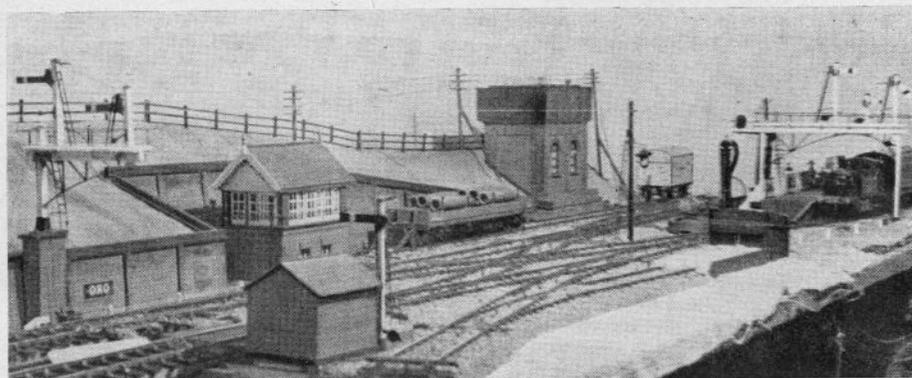
BEFORE the war I indulged in a fair amount of model railway construction, mostly out of doors, originally in 1 gauge and then in 0 gauge. These layouts became part and parcel of the gardens in which they were built and therefore had to remain *in situ* when I moved away to other houses. As my last move was in 1941 to a London flat there has been little opportunity to do any practical modelling since that time. However, in my daily contact with the model engineering trade during the last few years I have frequently felt the urge to once again do a spot of construction, and so about a year ago I decided that it might be possible to build a layout, or a portion of one, in a small boxroom, size about 10 ft. x 6 ft. One may wonder why I decided to build in 0 gauge fine scale with so small a space at my disposal, but there are several reasons for this. Firstly, I have never really cared for the small HO and OO gauges, the former I feel being too small, and it is practically dead in this country anyway, and the latter functions on the wrong gauge for the scale;

18 mm. gauge track has removed this objection I know, but even so I still prefer the "weight" of the larger gauges. It is a matter of personal taste anyway. Secondly, I do not like the continuous type of layout laid around a room with the trains going round and round without rhyme or reason.

Right through my interest in model railways, I have always had a leaning towards a certain type of layout, and one or two other fundamentals of railway civil engineering. My idea of a layout that will give a lasting pleasure is one that can be worked in a proper railway-like manner, and such a layout I have fostered in my mind for a very long time. Anticipating that one day, with average luck, I shall have the necessary space in which to complete a working model railway, I felt that the best and wisest course was to work to a proper plan of the entire ultimate scheme, so that any work now done within my confined space available would readily fit into the scheme of things when removed to the larger site. It was also necessary that the section to be built

Heading picture: Looking down on the layout at the down end of Lumber Junction. Below: Sketch plan of the author's layout with proposed extensions.





would be such that some running could be obtained and not be just a static piece. Therefore, having finally settled the principle of the layout as a whole, I planned the details so that the principal section containing the bulk of the point work could be included on one portion not exceeding 6 ft. 6 in. in length x 2 ft. 6 in. in width. This was the space which could be accommodated nicely in the box-room, and also I had by me a cast-off door, 2 in. thick which I thought would make an excellent and substantial baseboard, plus a covering of $\frac{1}{2}$ in. insulating board.

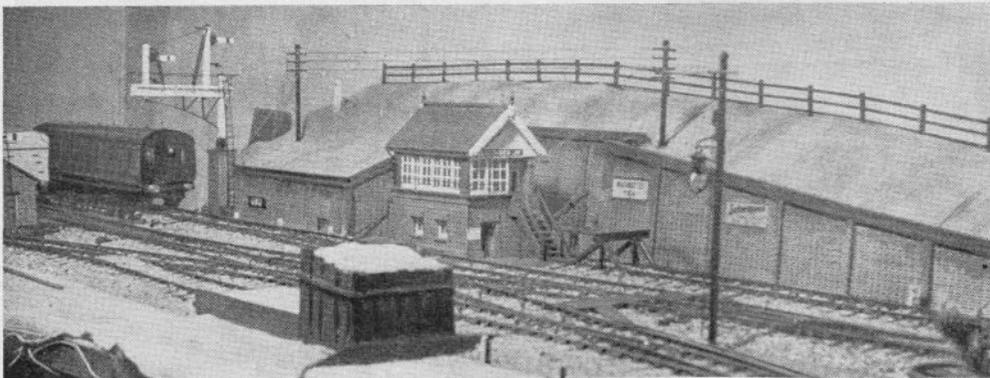
The idea of the plan is that the station represents a small junction on a single-tracked main line, such as the Highland lines, or the Western Region main line beyond Plymouth. The station is deemed to serve a small village, so little goods accommodation is necessary. The branch line is to serve a small town with a terminal station, therefore, although the traffic offering from the district is very small, a fair number of passengers and exchange of parcels, etc., take place at the junction. A refreshment room and

good waiting rooms will be included in the station buildings, situated on the island platform, the whole being on an embankment which has given way from a cutting with tunnel beyond. The booking office and parcel office, and a separate station master's house will be at the road level which is about 15 ft. below track level. A subway from the booking office will lead to the platform. This arrangement should lend itself to effective treatment and give scope for architectural features.

When it is possible to complete the layout, with branch line and its terminus as well, some interesting running and shunting operations will be possible with three passenger trains and one freight train. Working to a timetable (proper time that is, and not the hectic mad rush of scale time), we can take an example of the movements of the first train period in the morning, say between 7.30 and 8.30. The first move would be to bring in a through freight train from the up end, run it into the tunnel siding, and

(Continued on page 26)

Upper picture : General view of the junction showing push and pull train in the loop road platform ready to depart along the branch line.
Below : Lumber Junction signal box, with sand drag buffer stock in foreground.



★ EASTERN ELECTRIC STOCK. Pt. II

A. H. DADD, B.Sc. CONCLUDES
HIS 4 mm. SCALE ARTICLE ON
EASTERN REGION ELECTRIC
STOCK

THIS month, drawings of the remaining two coaches of the three car set, are reproduced. Construction follows closely that given for the "Pick-up Coach", but for the benefit of the less experienced a few alternative methods of construction will be suggested. These apply equally well to the "Pick-up Coach" described in Part I.

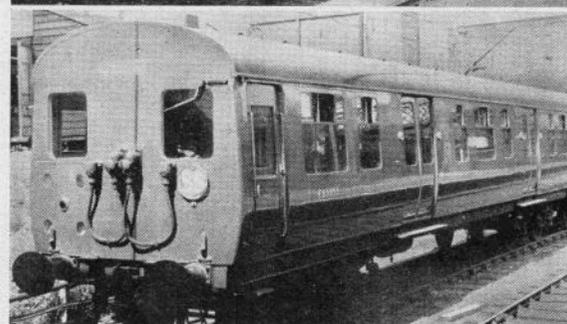
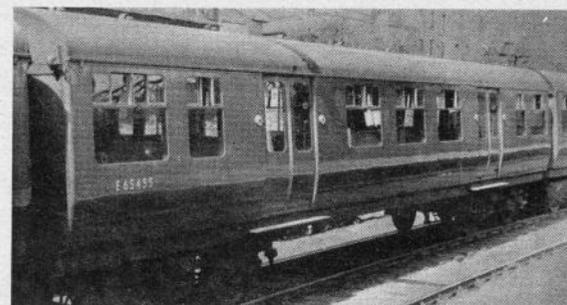
For those who prefer cardboard to metal for the bodywork the following idea may help to make the job of cutting out the windows a little less troublesome. Using good quality card, cut out the whole of the window outlines, without retaining the cross bars for the sliding windows at the top. Strip up some card to the width of the cross bars and glue in position. When dry, cover the whole side with a "faced" paper, being careful to ensure that the paper is firmly attached to the card throughout its area. This covers the joins in the card. Now re-cut the windows, a job best done with a sharp razor blade. This may seem a long procedure, but it does result in cleanly cut bodywork.

If the construction of a motor bogie is beyond your capability, there is no reason why you should not use a commercially built Southern Electric one. The well-known Romford motor bogie can be adapted. The side frames will have to be lowered, but this is a comparatively simple job. After cleaning off the paint, add the detail in the form of blobs of solder and file to shape. The axle boxes require re-shaping.

If pick-up from the overhead line is intended, using a three-rail type bogie, remove the third rail pick-ups, and join the connection which runs from the motor to these, on to the overhead pick-up gear by means of fine insulated wire. Allow plenty of slackness in this, so that the bogie can pivot easily.

Fixing the bogie is easy if metal construction has been used. A strip of 18 s.w.g. brass is soldered across the coach in the appropriate place. A hole is drilled in it to take the bolt which protrudes from the top of the bogie and the whole is fixed by a

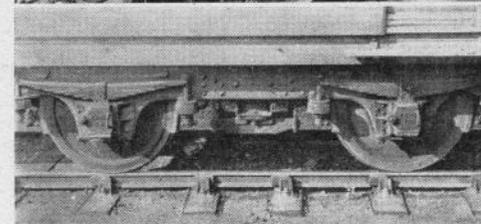
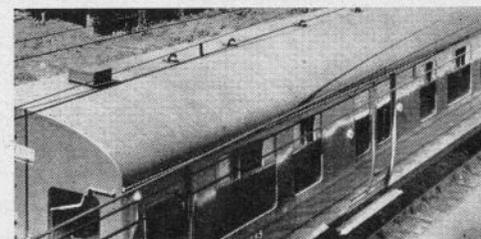
★ *Continued from October issue.*

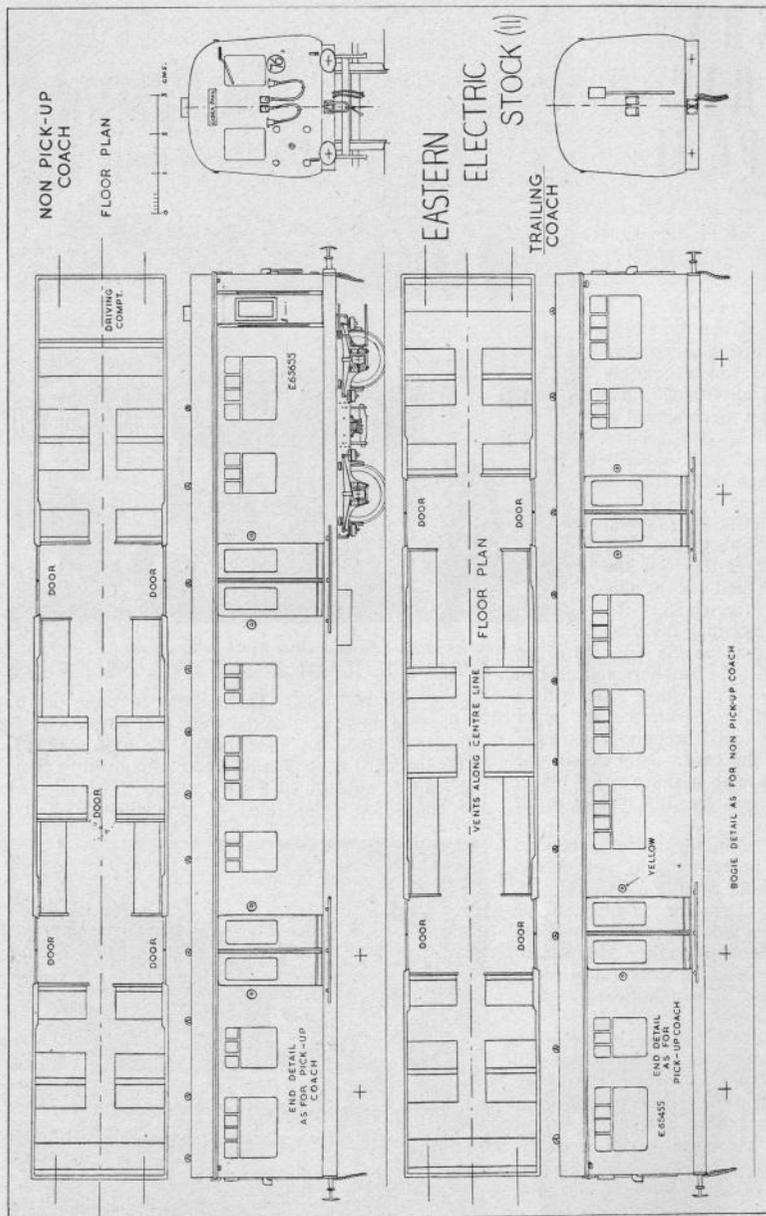


Above : Trailing Coach and Non Pick-up Driving Coach.
Below : Unusual "footbridge" view of Non-Pickup Driving Coach showing roof detail, and, bottom, bogie detail of a Trailing Coach.

washer and two nuts. Do not tighten these down, or the free movement of the bogie will be prevented. All this is done, of course, before the roof is added.

If cardboard is used, a plywood strip glued in position can be substituted for the metal. The sides of the bodywork should also be strengthened on the





inside with millimetre ply or failing this, card. Cardboard can also be used for the roof, but it must be correctly shaped before being fixed in posi-

tion. A method of shaping the card which results in a sound job, is as follows. Make a wood former to the correct shape, but a little larger than the roof all round — about $\frac{1}{8}$ in. all round will be about right. Cut a piece of card to fit over this, but see that it does not overlap. Paint one side only with a thinned solution of balsa cement, obtainable at any model shop. The thinners can also be obtained here. The job must be completed very quickly and the coat must be applied evenly. Immediately place, coated side downwards, on the wood former, which should have been well coated with wax to prevent from sticking. Retain in position with a liberal number of tight rubber bands. Allow to dry out. When removed, the card will remain correctly shaped and the surplus can be trimmed off.

Painting and Finishing

Correct preparation before the application of paint, is the secret of a satisfactory job. On metal coaches, all flux must be removed. This is easily done with a rag soaked in an organic solvent such as benzine,

xylene, etc. This will at the same time remove any grease on the metal. All soldered joints should be smoothed down, and the whole job given a final wipe

ON THE RIGHT TRACK

(Continued from page 13)

Pack. In these uncertain days the lengths of rail themselves will probably have to be bought as a separate item of four 18 in. lengths, but the total cost of the outfit, with its fully illustrated instruction folder and including the necessary rail, will not exceed half a guinea.

There are two things above others that make a track look "right", and they are the spacing and alignment of the sleepers, and the ballast. Of course, it is quite possible to stick the sleepers down on the base board, run glue around them and then pour on loose ballast of granulated cork before the glue dries and press it down to shape. Carefully done, this can be made to give a very realistic road bed, but there is no denying that it is apt to be a tedious and a messy business. Our sleepers will have to be laid about $\frac{1}{4}$ in. apart if they are to look right, and it is a job getting them equally spaced and parallel, even if we stick them down upon outlines already printed for us on "foundation tapes".

"What could be simpler" you say, "than to have the ballast in the form of solid cork with slots machine cut at regular intervals into which the sleepers can be laid?"

Well, that is just what you will find in this Track Pack. There will be two of these cork strips (called Ballast Units) each 18 in. long, so let's make a start on one of them.

Lay it out flat on the bench and slip a sleeper into each of the slots, laying it in upside down, i.e. with the grooved face of the sleeper to the bench and the smooth sleeper base uppermost. We now want to hold these sleepers firmly in the slots and we can do this in either of two ways.

The first is to coat the whole of the exposed surface of ballast unit and sleeper bases with "Seccotine", lay over it a strip of good strong paper, weight it down and leave to dry. Strips of suitable paper

are provided in the kit, and although these have the outlines of sleepers printed on them, there is, of course, no need to attempt to register these outlines with the sleepers in the ballast unit. The function of the paper backing is merely to hold the sleepers and the ballast firmly together.

The alternative method of doing this is to use the strips of dry bond supplied with the kit. There are two of these strips and care is necessary to distinguish between them and the somewhat similar strips of interleaved put in to keep the two adhesive strips from sticking together.

The adhesive strip of dry bond is laid down on the exposed base of the ballast and sleepers, the grey paper strip is laid on top of this, a couple of thicknesses of newspaper put on top and the whole is pressed down with a hot laundry iron.

If the domestic equipment boasts of an iron whose temperature can be regulated, setting this to "cool" or minimum working temperature will avoid overheating the adhesive. Failing this, it is usually possible to fall back on the experience of some fair partner who will indicate when the iron is at a temperature suitable to dainty fabrics.

Pass the iron slowly and deliberately up and down the assembly, taking care to keep the ballast unit pressed up against a straight edge (a lath of wood tacked to the bench top will do), so that ballast unit, adhesive strip and grey paper backing all lie straight while the adhering takes place.

This is a quick, clean method and, provided excessive heat is avoided, it will be found on removing the newspaper that ballast unit, sleepers, and backing paper are firmly held together and the unit can now be turned upside down for the next process, which is the roughening of the cork to simulate ballast.

(To be continued)

EASTERN ELECTRIC STOCK

(Continued from page 22)

over with a soft brush to remove any small particles of metal and dust.

Cardboard requires treatment before painting can be undertaken. To prevent the paint from soaking into the card, a coat of shellac must be applied. This is purchased in the form of flakes and is dissolved in methylated spirits. Apply with a soft brush. This fills the pores of the card, and a good surface for the paint is obtained.

As in previous articles of this series, I recommend the use of oil bound paints in preference to the cellulose base ones which are common today. The latter are not easy to apply except when sprayed, and their power of adhesion, particularly to metal surfaces is not good. An oil bound paint applied to a clean surface, will last a very long time, and never flake off.

It is essential that a suitable paint be used—one

that gives an eggshell finish, and is of fine texture, being the ideal. Specially prepared paint of this type is available, and is to be recommended.

Spray painting is, of course, the ideal. But even this must be well done. If you are spraying for the first time, try it out on an old piece of metal so that you can adjust the consistency of the paint to the correct level before you start on the model.

Hand painting is none too easy, but it can be done. The essential thing is to work quickly and evenly. Use a soft brush, and apply one thin coat at a time. Two or three coats will be needed on metal, but more may be required on card. Getting the paint thinned correctly is again the biggest secret, and that's just a case of trial and error.

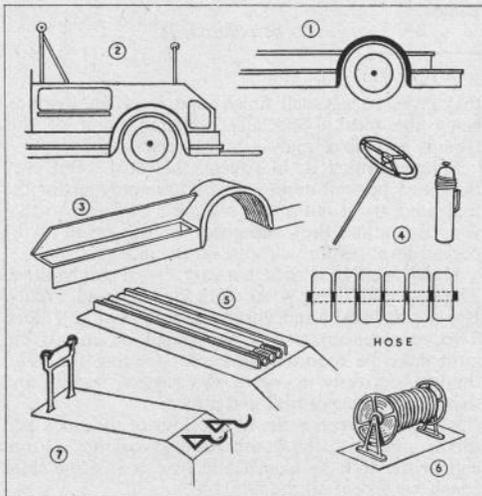
Malachite green is the base colour of the stock and this is similar to the South Railway colour. Front end of the Pick-up Coach and rear end of the third coach are green; all the rest, black.

PT. II OF VICTOR SUTTON'S

FLEET OF MODEL FIRE ENGINES



Author Victor Sutton poses with the fully extended Merryweather Turntable Ladder illustrated in our last issue.



SO far we have built the bonnet, panels at rear of bonnet and arranged the seat for the open type fire engine. If you have fitted the mudguards then try the wheel and see if the ground clearance looks correct. Note the space between wheels and guards and these should look correct in conjunction with the tool boxes which are always spaced between the rear and front wheels. You will see, by study of any fire engine that ground clearance is very shallow and particularly in the case of the escape carrying type. Very heavy tools are carried in these boxes, and this counterbalances the weight of the escape.

In the next sketch will be seen the shape of the main body, and here you have a sloping rear section for clearance of escape. Most appliances are so built that both 60 ft. or 40 ft. ladders can be carried on the 60 ft. escape. I make this section from $\frac{1}{8}$ in. "Hobbies" wood, and keep the edges on the centre panels so that they do not show. According to type, lockers are cut away and hinged on linen. Note the position of footboard on the side. This I make from $\frac{1}{4}$ in. wood, as it is fairly robust on the real thing. Fix through with pins besides glueing.

I next run along each side a strip of $\frac{1}{4}$ in. obechi, and then build the tool boxes in $\frac{1}{16}$ in. sheet thin wood as I like these to open and show the contents which I like to fit in. From the side view in Sketch No. 0 you will see that the model is taking shape. The step at the back is added and on this is mounted the rear pump. I make these up with a main part from a cotton reel, watch wheels, paper fasteners, parts of galleons, wire and beads for knobs on handles, etc. To show the intricate work here I have produced the picture of a rear mounted pump (see photograph). Odd pipes and bend sections of fittings I find are easily made with sticks of solder. Difficult shapes in the make-up of the pump I work in with plasticine.

The steering wheel I make up with a small curtain ring, cut the shape of stays from tin and then fix on wire with a bear glued above and below steering column. Gears and other handles are simple and made from galvanised wire. All seats I line with passe-partout or leatherette paper. Running boards and where men step on and off I line with the reverse side of a cork shoe sock. Modern engines now have a ribbed rubber material. Sometimes this is red and sometimes white. Most engines carry at least six extinguishers. Fire extinguishers are red and the foam ones cream. These I make from $\frac{1}{4}$ in. dowel rod well rounded at the top. The spray part I make from wire, with levers from thick pins. Handles are tin cut to shape. All these I fit on with a pin in base apart from glueing. Hoses I make from $\frac{1}{2}$ in. wide tape bound round a $\frac{1}{4}$ in. length of dowel. Make them in sections of six as shown and they make a better job for the lockers.

Suction hose I make from model aircraft fuel tube with connecting ends in silver or bronze paper. Most engines carry at least four lengths. In my drawing I

have shown them carried on the top of lockers and housed in two $\frac{1}{4}$ in. x $\frac{1}{8}$ in. truss effects.

Practically all engines carry the first-aid hose reel which is used whilst the main pump is being connected and operated. On most of my engines I actually have the water tank fitted in, and with the cover off at exhibitions I create quite a stir. Not many people even today know that a fire engine does carry some water.

The hose reel I make with a short length of $\frac{1}{2}$ in. dowel rod $\frac{3}{8}$ in. long, and I cut a disc of tin for the end as shown, and this fitted to the two curtain rings make the correct shape. From one end I run off the water supply pipe and this runs to the water tank. I make the hose of white string as smooth as I can get it. I paint it with thick dull red poster paint. On modern appliances the hose reel is twice as long and probably two are carried.

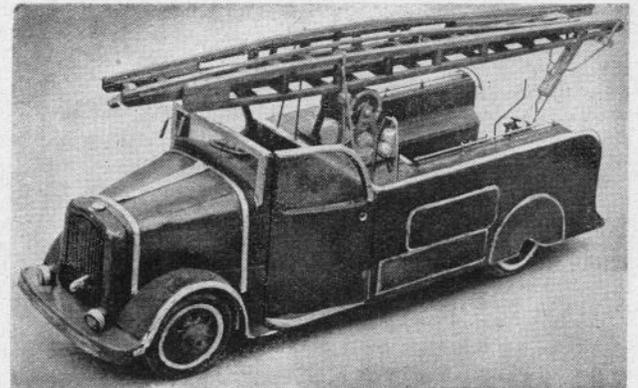
The windscreen is made with thick mica, and the outer framework I make from silver paper strip.

If you are adding an escape, this is carried on the stanchions as shown, mostly situated behind the driver's seat. A further set of grips is also fitted on the rear of engine and so balances, so that the escape drops away when released from the front supports. If you intend to carry ladders, then the main supports should be made something like those in No. 0 sketch. Searchlights, floodlights, breathing apparatus and much other gear is also carried, and I suggest that interested readers should contact their local Fire Commander and ask if they can inspect the appliances. A very courteous letter I am sure will always get you this facility, and firemen like to chat to someone when on duty. Curiously enough, a very large proportion of firemen are keen model makers, a craft they took up during the war years.

As a proof of the variety in fire appliances I have only described one engine. My next article will explain the many other types briefly, and also the large number of vehicles which form part of the fire fighting force.

All my engines have a coat of flat grey and then one of brown, as this gives good coverage for red. Keep enamel, when used, off the metal parts. It will only crack and split off in time leaving the bare wire and metal. Give these parts a coat of fairly thick flat paint. I use a good thin coat of scarlet enamel first and a second one if necessary.

All gold lining I put on with this gold paper strips on card. Lamps I make from nose bosses off model aircraft (solid) and these are often black. Mudguards are also very often black on appliances used in country areas where they get scratched in traversing undergrowth.



If you visit a fire station they will probably show you the interior lockers of the appliances. In these you will find a wealth of odd items you can make. There will be nozzles galore, tools, buckets, spades, crowbars, lengths of hawser, and quite a bit of lifting tackle.

Insides of lockers should be grey although some are grained. You may find some appliances have part-red bodies and beautifully grained lockers and surrounds. Fire engines are not all red. We did hear of one Fire Chief who had his new fire engines olive green because he contended that scarlet did not go well with chromium-plated fittings. Being colour conscious myself I rather agree, and in any case before the war all German appliances were olive green. It is only tradition that defines that a fire engine ought to be red.

Above: Dennis Light Six Ladder Appliance, one of the standard machines in use by County Fire Brigades all over the country. Below: Home Office Heavy Pump, a wartime appliance that has a continuing sphere of usefulness today.



SMALL SPACE '0' GAUGE LAYOUT

(Continued from page 20)

then back it over into the long siding, to wait the passing of the passenger trains. The next train in would be the branch push and pull, with a through coach to be attached to the *up* train. This runs direct into the loop road, waits for station work, detaches the through coach, runs around it and then takes it into the tunnel siding in a position to be backed on to the *up* train when that arrives. The *down* night express, probably with sleeping car, T.P.O. and a van of parcels, etc., for the branch then comes in on to the through road, the engine drawing up for water. The parcel van is detached.

The *up* train then comes in and runs into the loop road, after which the through coach from the branch is backed on to it, the *p.* and *p.* again retiring into its siding. After the necessary interval of time for station work, the two trains depart on their respective journeys, both at the same time if necessary, the *down* train leaving the parcel van at the end of the platform. After an interval to allow for signalling work, the *p.* and *p.* runs out to attach the parcel van, and then works into the loop road, to pick up the exchange passengers, etc., after which it can proceed to its destination. The freight train can then be worked out on to the main line, allowing time for the engine to water, and then it can proceed in the *down* direction, and peace descends on the scene once more. (The tracks in the two tunnels at each end will have to be on a traverser, or else a loop.) This cycle of events can be repeated more or less at intervals during the day, with different types of trains to suit the traffic, i.e. the mid-day *down* train could have a buffet car on it, to be detached here, and wait to be attached for return as a tea car on the *up* afternoon train (the staff in the meantime indulging in a well earned afternoon nap). The timetable would be arranged so that the *p.* and *p.* is available to do shunting duties at the junction as required, but is normally housed at the branch terminal. There would also be the daily pick-up goods, for which an odd wagon could be dropped for the branch, or picked up from it and worked to the terminal by the *p.* and *p.* as a "mixed".

In the illustration the temporary tracks seen are added to allow some running for the time being, and I can only work the *p.* and *p.* train and a short freight one. The branch line is to the right of the small hut, and I have a temporary piece for this when required.

The signalling (which is complete and accurate, I hope), is for working both station roads in both directions. The signals are mixed (i.e., lower and upper quadrants), to give variety to the scene). I claim this is quite in order after having studied some prototype stations.

The track is Rocket Precision bull-head chaired, laid on scale wooden sleepers ($\frac{1}{4}$ in. x $\frac{1}{8}$ in.), in turn laid on standard coarse battens ($\frac{3}{8}$ in. x $\frac{1}{4}$ in.). I

still stick to this method as I can remove any portion of the track as laid without damage. I also prefer to make it up independently on a bench and then lay it completed in position on the layout, with just a pin here and there to hold it in place. The electrification is by stud contact. I had no previous experience of this method, but I liked the idea of it, and I am glad to say I find it works exceedingly well in my case. I fix my studs ($\frac{1}{2}$ in. x No. 2 round head brass screws) into the sleepers, so that the studs are part and parcel of the track, and then any movement up or down on the part of the track does not matter, the tops of the studs remaining constant with the running rails under any condition.

Pending a permanent location, the points are at present manually worked by 00 gauge point levers, the lever portion being cut down as low as possible, thus making them look like little prototype point motors. The whole is ballasted with fine aquarium grit, the portions around the platform ends and water columns being left well and truly greasy and dirty.

The only items purchased from trade sources are the track and signal parts, a locomotive (a 0-4-0 ex-L.S.W.R. tank), Exley coach, and fittings for the wagons seen in the background. The work has taken about twelve months of spare time which one normally gets these days, and the first section is now complete, having given me much pleasure in the building of it, and so far in the working within the limits available. In any case there are still plenty of items to make, such as the two tunnel mouths which I hope one day will form the extremes of the visual layout. One is complete already.

One final word. I have found no difficulty whatever in working to fine scale. Indeed, in some respects the track work is easier, but I think the springing of the rolling stock is worth the trouble involved, as it improves the running.

A CHRISTMAS GIFT

One gift that will keep your memory green the whole year through, and prove your friendship month by month as regularly—and as welcome in its way—as a salary cheque is an Annual Subscription to "Model Maker".

Cost including postage is 25/- for the twelve issues, which can begin when you instruct. Overseas subscriptions can be calculated on this basis in local currency and a remittance made accordingly—though care should be taken to see that an appropriate International Money Order valid in U.K. is obtained.

Apart from the usual friend to friend gift, a subscription is a very nice gesture from a Vice President to his Club; from a Schoolmaster to his scholars; a Librarian to his readers, we could go on indefinitely.

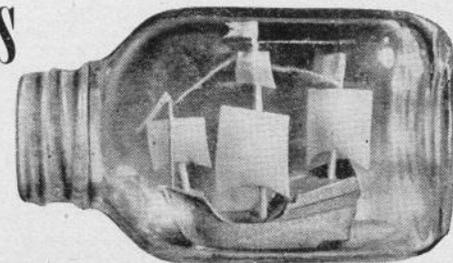
MODEL MAKER

(Subscription Dept.)

ALLEN HOUSE, NEWARKE STREET, LEICESTER

JEWELLED SHIP MODELS

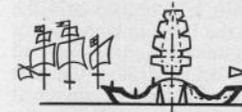
BY W. ALEXANDER MARSH WHO DEVELOPED THIS MINIATURE "SHIP IN BOTTLE" TECHNIQUE DURING ENFORCED RESIDENCE IN A MILITARY HOSPITAL



I CALL this modelling ship jewels because the main size of the model is 2 in. The colours I use are as bright and contrasted in tone (light and dark) as possible, and because I have found that the comparatively thick, clear glass of the bottles gives a brilliance matching most jewels.

An excellent ship for this class of modelling will be found in the *Golden Hind* depicted on the Ship Halfpenny.

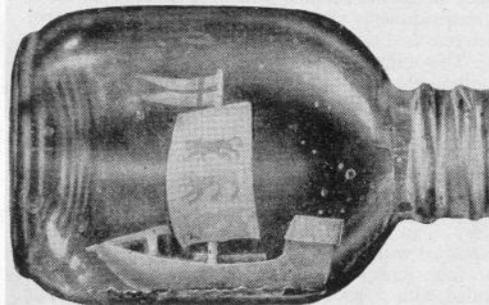
It will take about two hours on and off to make this up. You need the following materials: A small piece of notepaper or drawing paper (not too thin), two match sticks, a tube of Croid or similar (not acetate), and a 25-aspirin bottle (or similar). Tools required are a pencil, a pair of nail scissors, a pair of tweezers, a few water colours, a small brush and a piece of thin wire about 6 in. long.



"Ship Halfpenny" model parts approximately full-size.

The hull has three pieces, the main deck, the hull proper and the fore-castle deck. Do not trace or cut the sails until they are required. Score along the dotted fold lines shown with the back of the scissor point and make all creases sharp and clean. Stick the stern deck flap flush with the dotted line shown on the hull stern piece and whilst this is drying close the darts in the stern with a piece of creased and glued piece under each one. Allow the pieces to dry hard before proceeding.

Glue all the side main deck flaps, bend the deck to the dotted line shown on the hull side, glue along each inside of the bows and hold the hull until dry.



Finish the hull by gluing the top edges of the fore-castle and dropping the bow deck into position. Allow plenty of time for the hull to dry. Meanwhile the sails may be traced and cut out and each match-stick split and whittled to the sizes shown. Allow the full below deck lengths of the masts in your whittling. Belly-out the sails by rolling them against a pencil then touch the top and bottom of the back of the sails with glue, set in position on the masts and allow to dry fully. Pennants and flags should be painted before attaching to the masts.

When the hull is dry let yourself go with your water colours. Remember that the ship is 1 in. long and lots of detail and muddy colour destroys any hope of a jewel-like finished effort.

Step the masts in holes in the decks made by a small pin and join them by a very fine thread fastened to the stern bulwark by glue and passed once round each masthead which is slightly glued. Take the thread finally through a hole pierced in the bows bringing it out finally just below the bowsprit. Leave about 4 in. of thread over and leave the ship to set.

Use the piece of wire with a small piece of card or wool on the end to transfer a generous amount of glue to the inside bottom of the bottle, and whilst this is getting tacky collapse the ships masts and rigging so that they point over the bows. Hold the ship by the masts and put it carefully into the bottle.

When the model is firmly fixed in the bottle use the tweezers to pull the master thread carefully through the bow hole, helping the masts to erect by pushing them gently into place. Fix the master thread in its final position by putting a spot of glue over the thread where it emerges from the bows. Let the glue set really hard and then cut off the surplus with the nail scissors.

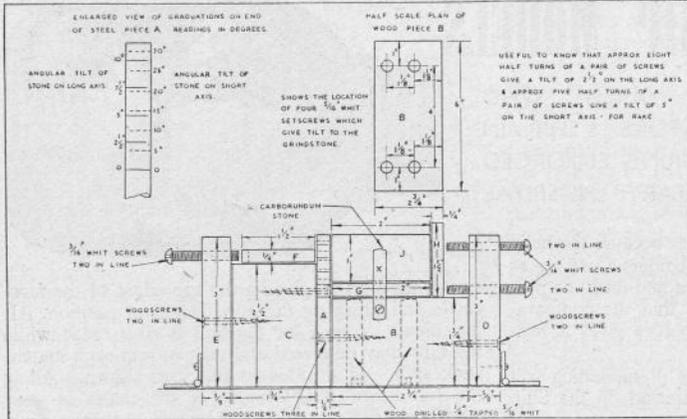
To seal the bottle drive a cork well in and cut off the end flush with the bottle mouth. You can seal it if you wish with a pad of sealing wax.

The model of the Crusader's ship has no paint used on the bottle at all. The bottle used was of poor quality glass and the small bubbles were considered to be an advantage in producing catchlights.

The bottles may be mounted in a groove cut into a small wooden block. The cement used must be acetate (balsa cement). A coat on the bottom of the bottle and one on the groove allowed to dry then a second thinner coat on each makes them stick.

BITS & PIECES

PART II BY J. W. BROOKER, M.I.Mech.E. ON TOOL SHARPENING DEVICES TO HELP THE TYRO



"BITS" prepared in the Holder in conjunction with "coarse" and "fine" oiled carborundum stones may be thought by some operators fully satisfactory for brass. I was not content, however, to stop at this point and went on to design and construct a Frame in which in conjunction with the Holder "bits" could be produced with the other angles constituting the complete article such as a top-side, i.e. cutting angle, a side clearance angle and rake.

The Frame featured in the drawings seen above is constructed to take 6 in. length carborundum oil stones each 2 in. in width and 1 in. in depth. This is a stock size readily available. I have three, coarse, medium and fine, and they do not differ from standard size by more than 1/32 in. on any dimension. The Frame allows for variations of this order.

The wood required is as follows:—

- One piece 1 3/4 in. x 2 3/4 in. (B).
- One piece 1 3/4 in. x 2 1/2 in. (C).
- Two pieces each 3/8 in. x 3 in. (D & E).
- All pieces 6 in. in length.

The two large pieces can be cut from well-seasoned, medium-soft wood which must not split and can be finished to a smooth surface. The two pieces D and E were made from war surplus plywood. This has the advantage of pliability.

The metal required is as follows:—

- 6 in. length steel flat 3 in. x 1/2 in. (A).
- 6 in. length steel flat 2 in. x 1/2 in. (G).
- 6 in. length brass flat 1 1/2 in. x 1/2 in. (F).
- 6 in. length brass flat 1 1/2 in. x 1/4 in. (H).
- Nine wood screws 1 1/2 in. length, size 10.
- Four 1/8 in. Whitworth set screws, 2 in. length.
- Six 1/8 in. Whitworth set screws, 1 1/2 in. length.
- Two small brass or steel hinges and some small screws for fixing them to wood pieces D and E.
- The small end—retaining pieces X and Y—can be made from any fairly hard wood scrap. I used a broken coat hanger.

The first job is to clean up the steel flat A—the

backbone of the frame, and scribe two parallel lines, one on each side, to indicate the positions for fixing the wood pieces B and C. Scribe also two parallel lines, one on each side on which to set out the centres for drilling the holes for the wood retaining screws. Three holes are needed for piece B with counter sinking for screw heads on the right hand side of A and two holes with counter sinking on the left-hand side. Full countersinking is essential and it is most important also that the top faces of B and C be exactly parallel to each other although, of course, at different heights. Both top faces must necessarily be exactly square to the backbone A. Should I point out that whilst it is best to drill the five holes in A in one spell, the holes in wood pieces B and C must be one at a time, i.e. drill one and screw up moderately tightly before drilling the next and so on? With care there should not be any great difficulty in fixing B and C to A, to conform to the scribed lines and therefore parallel to each other.

No special accuracy is called for when screwing piece D to piece B and piece E to piece C, each with a couple of screws. The same applies to the attachment of the two end-retaining pieces X and Y, and to the two small hinges which are for holding the frame to the bench when in use. Of course, steel piece G and brass pieces F and H are quite loose and removable. F has two small recesses cut in the side to mesh with two 1/8 in. Whitworth set screws to restrain end movement. According to the job in hand, slight height adjustment will be necessary to piece F, easily done by slips of card cut to size and inserted between the brass flat and the top face of wood piece C. This adjustment for height will be noticed in the photo opposite. It is a good plan to mark by drill or punch every piece in the frame—a spot on the top of each at one end suffices. My markings are visible in the photo. The work is completed by fitting the four 1/8 in. Whitworth screws to piece B. The position for these is given in a drawing, page 000. Drill 1/4 in. through the wood and follow with a dry 1/8 in. tap. The thread can be cleaned up and smoothed with a long 1/8 in. set screw. The heads of the four screws are cut off, the ends cleaned and slotted with a hacksaw to take a screwdriver blade

which should not be more than 1/4 in. across the blade. The overall length of the screws when finished should be 1 3/4 in. These screws give tilt to the stone either lengthwise in either direction to give a cutting angle or side clearance and upon the short axis to give rake. Scribed lines on the end face of piece A indicate angles of tilt obtainable, and can be seen in the photo which also features a "bit" to which negative rake has been imparted.

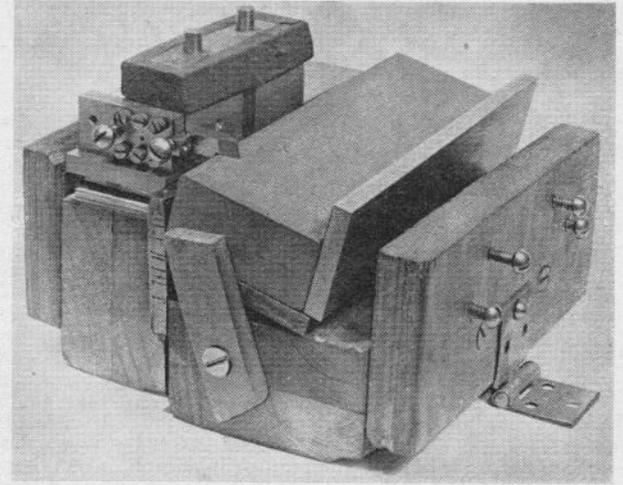
A handle for the holder is a necessity and mine is made from a piece of fairly hard wood 3 in. x 1 in. x 1/2 in., with two short lengths of 1/4 in. brass rod driven through it to act as pegs to engage the two holes in the Holder (see photo).

A so-called "knife-edge bit" which cuts with a slicing action is a straightforward job, and stages in the production of one are clear in the drawing (November issue). All angles depicted are 10 deg. for simplicity and not for any inherent virtue in this figure. I have two "bits" meeting most of lathe needs with cutting angles of 3 deg. and 10 deg. respectively. Other angles are similar for both "bits", viz. front-front 10 deg., front-side 5 deg., and side clearance (tip relief) 5 deg. There are special jobs, parting-off for instance, for which special "bits" are necessary.

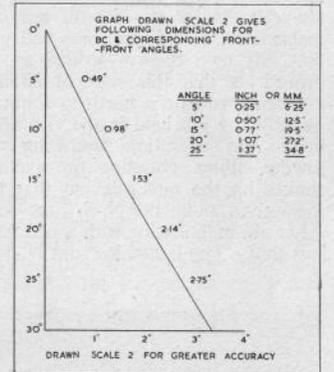
A "bit" for parting-off is shown in the photos. Starting with a blank, a rough cut with any hand-bench grinder will remove most of the unwanted metal. The use of the Holder and Frame together grind the sides of the tongue to the correct shape, the stone being tilted on the short axis to give a waist very slightly narrower than the tip and tilted on the long axis to give slight side clearance. The Holder and Frame are particularly adapted to give these small angles. Rake is an essential as is the front-front angle. The use of the Holder without twist of course, ensures that the broad tip is square to the long axis of the "bit". This is most important, but it is not an essential that the tongue lies on the centre line of the "bit". It can be offset. It is important, however, that the tongue be symmetrical, i.e. with the sides similarly shaped.

Concluding with a few don'ts: Don't omit even

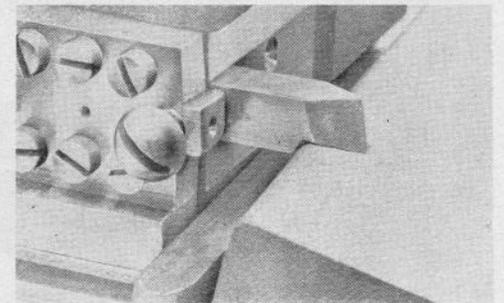
(Continued on page 36)



Above: The Frame in use with stone tilted to "shoulder" a bit.



Below: Enlarged detail of shouldering a bit—shown rather larger than full size.



“ . . . That Fatal Attraction ”

QUITE a number of things in the home workshop can cause the owner to tear his hair, and one of these is magnetism—in the wrong place. A magnet in a loudspeaker, a magneto, or an electrical test meter is a highly useful component, but when a spanner or screwdriver gets magnetised it becomes the subject of hard words. Not only is it a great nuisance to have to pluck off a miniature beard of filings and swarf every time you want to use it, but it becomes a real menace. Magnetism is “contagious” as it were, and very soon drills, taps and other tools will become infected.

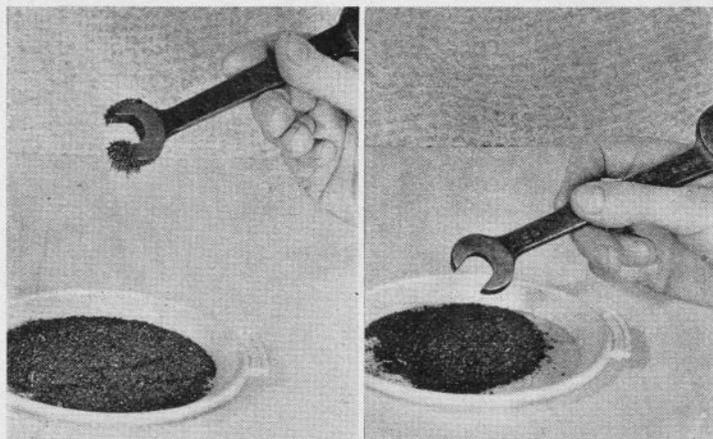
A magnetised drill or tap is useless for work on ferrous metals. As soon as it starts to cut and produces some chips, they cling tightly to the tool and inevitably cause a jam. Then you ruefully discard the fragments.

In my own case, for no apparent cause, things reached a pitch where something had to be done about it. All sorts of tools became quite strongly magnetised, as did steel bars and jobs being worked on. My own theory—scoffed at, but not yet disproved—is that this state of affairs arises because my bench runs in a north to south direction, consequently any job held in the vice lies along the same line. Any operation producing vibration, that is sawing, filing, chiseling or riveting disturbs and shakes up the molecules so that they can arrange themselves along the N.-S. line, becoming magnets. After all, magnetising with a permanent magnet does just that. The lathe also runs N.-S., and quite often

cast iron swarf will come off a job magnetised, festooning the end of the tool. The tool itself does *not* get magnetised, and the theory triumphantly points out that it normally lies east to west. Any objections?

However, be the cause what it may, a little experimenting produced the very effective de-magnetiser shown. Apart from heating to red heat, the most effective way of de-magnetising small articles is to swamp out the existing magnetism in an A.C. field. The gadget to do this is merely an open-ended box, wound with a coil of wire through which the A.C. current is passed. The box is conveniently small, being 4 in. x 1½ in. x ¾ in. inside, and is quite roughly made of ⅜ in. three-ply. This size is large enough to deal with spanners up to ⅞ in. x ⅝ in., any screwdriver, and almost any file. It is glued and pinned together with brass cabinet pins, and rounded off smooth along the corners. A layer of insulating tape covers the outside on which the coil is wound.

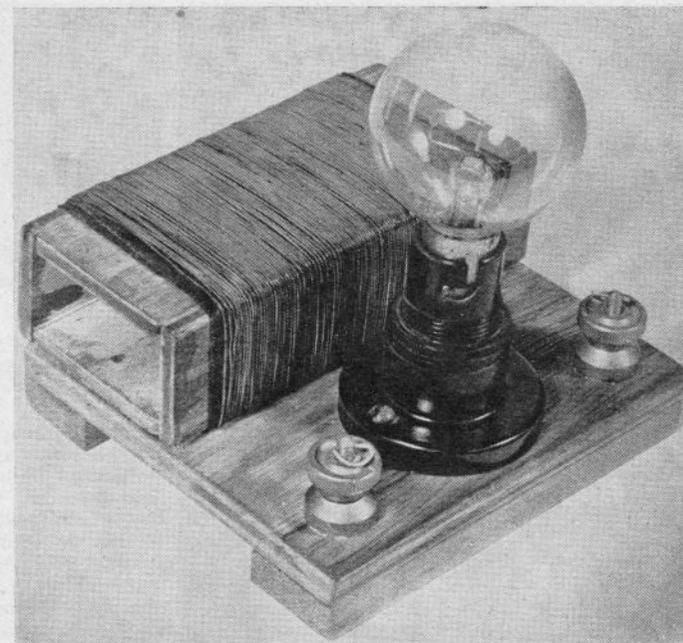
The coil consists of a single layer of 24 g. D.C.C. wire, wound to a length of 3 in. Each end is anchored through a small hole in the box ½ in. from the end, and leads under the miniature baseboard to the terminals. The coil had two or three good soakings in shellac varnish both for insulation and to help keep the turns in place, and the box was then attached by the ½ in. free ends to the base by small brass screws inserted from underneath. Apart from the box, no dimensions need be given, as the mounting plays no part in the action. Dimensions are not critical, anyway.



Left: “Whiskers” of iron filings, clinging to the end of a spanner, showing degree of magnetism acquired in normal use.

Right: Spanner after demagnetising treatment showing its “clean-shaven” appearance after being dipped in iron filings.

L. C. MASON DESCRIBES AN EASILY MADE DEMAGNETISER FOR THE HOME WORKSHOP



The workshop de-magnetiser for small tools—a simple but invaluable gadget that can be made in an evening from materials, in many cases, already to hand.

The photo shows a small batten-type lamp holder also mounted on the base. This carries a car headlamp bulb, which is an easy and convenient way of regulating the current passing through the coil. The lamp, of course, is connected between one terminal and one end of the coil. Best results were obtained by feeding the coil from a 12 v. transformer, passing about 4 or 5 amps. This is a pretty heavy load for 24 g. wire, and the coil gets distinctly warm to the touch after a few seconds working. However, as it need be on no longer than that, little harm is likely to result. It has also been used direct on the 240 v. mains, in series with a 100 watt lamp. This passes a current of some 2/5 amps., which is not powerful enough to deal with anything much heavier than watchmaker's tweezers. The bare terminals are not a good feature for use on the mains, either.

It also works very well on 6 v. A.C., and the source of current will decide the voltage and wattage of the regulator bulb. It need hardly be explained that the current it is desired to pass times the voltage of the supply gives the wattage of the bulb required. Thus 4 amps. on 6 v. calls for a 6 v. 24 watt bulb; 3 amps. on 12 v. needs a 12 v. 36 watt, and so on. If at any time it is required to short out the bulb—for instance if the demagnetiser is being used with an external variable resistance—merely drop a thin washer into

the holder to bridge the contact pins, and plug the bulb in on top of it.

In use, the magnetised article is placed centrally in the coil before switching on. The current is then switched on and the article left to “soak” for three or four seconds. It is then slid gradually out of the coil and slowly taken right out of the coil's field withdrawing it to arms length along the axis of the coil before switching off. The removing should take another three or four seconds. This procedure ensures that the magnetism in the article is continually reversed in decreasing strength, until what little may be left is weak enough to be undetectable. If the current was switched off while the magnetised tool was still in the coil, it is almost certain that the break would occur in a part of the electrical cycle when appreciable current was flowing. This would, of course, leave the article still magnetised in one direction or the other. The gradual withdrawal avoids this.

Long articles, such as files or steel rules are placed in the box so that the coil is around the middle. They are then withdrawn gradually as before. It is unnecessary to remove the handles from files. It may be found with strongly magnetised articles of hardened steel, such as big files, that if a light current is used a small amount of magnetism remains. A second or third treatment will neutralise this.



THE idea of a ship in transparent material evolved some years after watching a glass blower give a demonstration in a department store at Detroit, U.S.A.

While I had few tools a little experience in the finer arts of plastic work, I was a keen ship modeller, so after much practice with pieces of "Perspex", I decided to build the *Santa Maria* in clear "Perspex". This was quite a success and gained an award in the same exhibition as *The Bounty*. Although the *Santa Maria* was not to scale I gained valuable experience, as one always does in the beginning.

I then proposed to advance a little and try my hand at a scale model. At this stage the essential factors of the work had to be decided.

The hull had to be fairly clean in appearance. The deck fittings not too numerous, the rigging not too complicated, and the overall appearance neat and not unusual. The latter point was quite important as I wished to create an impression of unusual material and not an unusual ship.

I finally chose *The Bounty*, and as I had already built it in wood this would be a great help to me.

Plans were decided on, photographs checked, and enquiries made for a block of "Perspex". At last a firm in Kent supplied me with a block of clear "Perspex", 2½ in. x 2 in. x 9 in., and a start was made on my rather ambitious ideas.

Firstly, the block was marked out in coloured



R. A. W. RAY DESCRIBES HIS

Ship Models in Clear "Perspex"

inks, to the shape desired, and the surplus material cut away with a hacksaw. When cutting I allowed oil to flow freely in the cut. This made a clearer and easier cut. With a file I gradually got the rough shape of the hull taking a little off at a time and not attempting too much. A point to remember at this stage is, once you cut a block of "Perspex" you cannot rectify any mistake, so careful checking with templates was the order of the day.

Once the rough shape was acquired the hull was roughed down with emery cloth until the final stage was almost reached. I then proceeded to shave and shape the "Perspex" with a scraper and razor-edged knives. This had the advantage of preparing the hull for polishing without removing the sharp edges of the deck, etc. In point of fact, I rarely use emery to clear "Perspex" prior to polishing.

At last the bare hull was ready for polishing, having no machine tools I used metal polish and elbow grease which was quite satisfactory. The hull was then carefully wrapped up and put away in a dust-proof case.

The next step was to make the deck fittings and all the parts that were needed to complete the hull.

The keel was cut from ¼ in. sheet to fit the outline of the hull, and polished.

The surplus parts such as rudder strip, bulwarks, handrails, deckhouses, mast block and ship's boat were accomplished fairly easily. However, the cannon and cannon beds were not quite so easily overcome, and one or two were scrapped before I got a set of four alike. The canon and lanterns were turned in a hand drill chuck, and these were cut fairly easily this way.

Finally, all deck fittings and parts were ready for gluing to the hull, except the anchors and steering wheel. Six anchors were made before I got an identical pair, and I tried many times to make a steering wheel ⅜ in. dia. However, at last one was made but with only six handspokes.

These fittings and parts were then cemented to the

hull with "Perspex" cement, great care being taken to ensure that a minimum amount of adhesive was used, as should the cement run out of the joints it would destroy the surface finish.

The deadeyes and blocks were then cut out and polished on a needle. These were cut from ¼ in. strip and numbered sixty-odd, however, many more than these were cut out.

A board was then prepared on which to assemble the masts.

The masts were cut from ¼ in., ⅜ in., ½ in., and ⅞ in. strip rounded and polished and lashed together with .007 Nylon catgut.

The yards were cut and polished then lashed to the masts. Sails were cut, warmed to shape, pierced for sewing and stitched to the yards.

A jig was made on which to make the ladders, twelve in all. These were made in nylon, and presented difficulties as the knots came undone, but a trace of cement soon put that right.

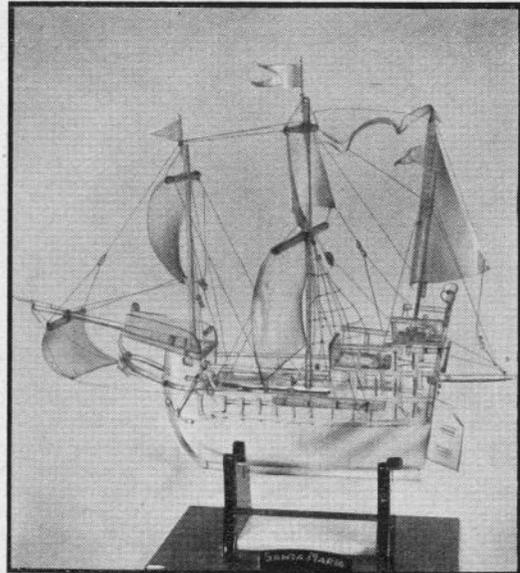
The ladders were tied to the tops and lashed to the masts—all three masts were now complete.

I set the bowsprit on the hull and proceeded to erect the foremast, then the mainmast, and finally the rigging mast with the gaff sail and booms. When these were set the final rigging in .007 catgut was completed. The rigging was attached to the hull by means of tiny "Perspex" rings which were cemented to the hull.

Ship's flags were cut and warmed to obtain a ripple in them, these being attached to the mast heads.

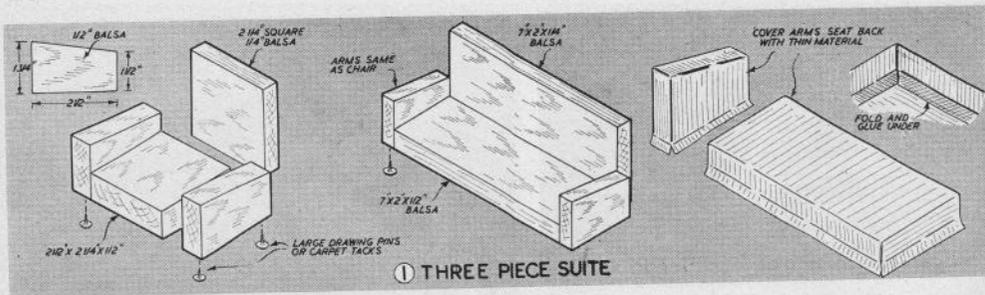
A simple black and white base was made with the word *Bounty* cut into a scroll. My model and its stand were now completed.

In closing I might add that although *The Bounty* had taken a long time to build, and many hours of patient sitting with my eyes straining to see the rigging and high glass surface, that it was well worth my trouble, and at the very least who could deny that I had made that elusive "Something Different".



On the left : The author at work on his latest model the "Cutty Sark". Note completed ladders in foreground. Centre : The "Perspex" models photographed in their glass show-case. The two smaller yacht models flanking the ships were constructed from the "overs". Above : "Santa Maria" and below : "Bounty". These "Model Maker" pictures represent one of our hardest assignments, and are the result of two attempts, considerable conning of photographic literature, and a total of nearly sixty exposures. Photo details for the close-ups : 1 sec. at f.16 Super XX. Daylight, plus 250w. fill in. White cartridge paper background and reflector.





① THREE PIECE SUITE

INEXPENSIVE DOLL'S FURNITURE

ALICE WARRING SHOWS HOW TO FURNISH THAT BUNGALOW

HAVING promised, very rashly, completely to furnish a doll's house and having in mind rising prices and a static spending allowance, I was forced to the conclusion that the only equitable solution was to make the whole lot from the simplest of materials—if possible. My husband and boys—all model aeroplane enthusiasts—were drawn into matters at this stage and made the excellent suggestion that the wood they use—balsa—be used throughout, if possible. This, as I subsequently found, was about the best idea they had had for ages!

Using balsa wood as the main material then, I worked through first a three-piece suite and then a bedroom suite complete with bed and dressing table stool with increasing enthusiasm. The dining room suite was a little more tricky, but by the time I had reached the kitchen furniture I fancied myself almost as a professional at the job. The results, too, appeared every bit up to commercial standards and at a mere fraction of the cost.

Other parents faced with a similar problem to my own should have no qualms about tackling home-made doll's furniture on these lines, for one of the things I do not, and never have claimed, is skill in

carpentry. Building with balsa seems to eliminate almost all of the skilled craftsmanship which would be necessary to duplicate similar pieces in harder woods.

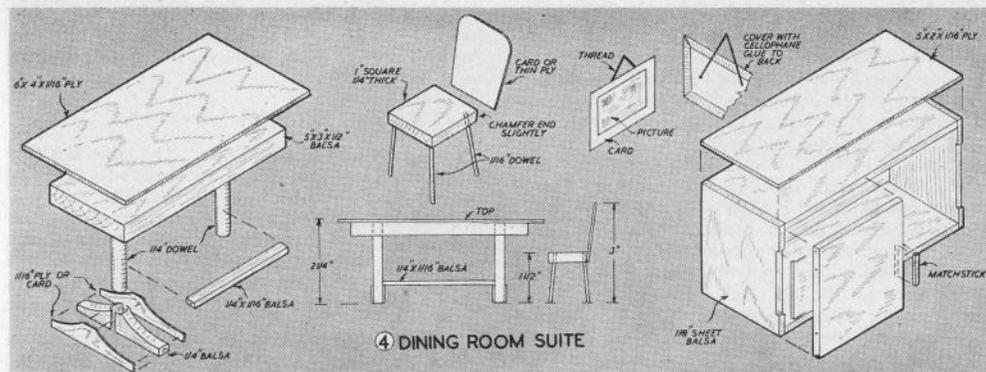
The Three-Piece Suite

The sizes shown can, of course, be varied to suit the individual doll's house to be furnished. Those given suited a house with rooms approximately 12 in. x 8 in. (kitchen roughly one-half this size). For larger or smaller furniture, keep the same proportions and adjust the balsa sizes to suit.

The suite was made in modern style with box arms and back. The arms and seats were cut from 1/2 in. thick balsa sheet, and the backs from 1/4 in. sheet. A small fine saw was used to cut out these parts.

Dimensions for the arms are shown on the drawing. Two are required for each chair and two for the settee. The backs and seats are simple rectangular pieces. The settee length can be increased to about 7 1/2 in. to make it a "three-seater", if desired.

Having cut out all the parts, all that remains to be done is to glue them together with balsa cement and leave them to set. When dry they can be



④ DINING ROOM SUITE

smoothed down with fine sandpaper and the sharp corners rounded off. After this, if you are aiming for a particularly "finished" effect, stain with wood dye and polish with wax polish.

A second suite of furniture made on the same lines was more ambitious in that the chairs and settee were covered with thin material. This should be done before the parts are assembled. Use only thin material or otherwise you will have trouble with bulky folds at the corners. Double all material under and glue down. Seats and backs can be lightly padded with cotton wool.

It is better to pin as well as cement all joints in this case, hiding the pins under the covering. This means that the outside of the arms and back do not have their covering finally attached until each unit has been assembled. This allows the pins to be inserted under this covering and finally hidden.

The Bedroom Suite

The dressing table was simply three blocks of balsa cemented together as shown in the sketch. A small hand mirror was added, forced between the two sides at an angle and held with a spot of glue at each side. The balsa parts were stained with wood dye and polished with wax polish. Dummy

handles could be added to the front to improve the appearance.

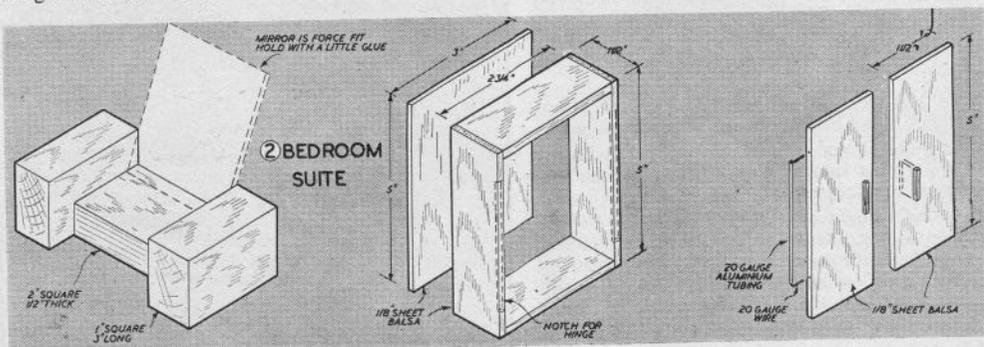
The two wardrobes were a little more difficult, but did not present any special difficulties. All the parts were cut from 1/8 in. sheet balsa using only a sharp razor blade and a ruler as a guide for cutting straight lines. The framework of the wardrobe is built up as indicated, balsa cement being used for gluing again. Provided the back is cut square this acts as a guide for cementing the other parts in place.

For realism, the doors were hinged. A notch was cut in the front of each side and a long hinge made from a small piece of "20 gauge" aluminium tube with a piece of bent wire in it. The tubing is cemented in the notch, whilst the wire ends push into the ends of the balsa doors. The handles for the doors were nothing more than short lengths of matchstick sandpapered smooth and cemented in place.

The larger wardrobe was similar, but 7 1/2 in. high. The width was kept the same for balsa comes in a stock size of 3 in. wide, and it did not seem necessary to court extra work by having to join two pieces for a wider back panel.

The Bed and Stool

The base of the double bed was a simple rectan-



② BEDROOM SUITE

③ BED & STOOL

gular piece of 3 in. x $\frac{1}{2}$ in. balsa, 6 in. long. The headboard and footboard were cut from $\frac{1}{8}$ in. plywood this time (which can actually be cut with scissors or a sharp knife, although a small saw is best). The corners were rounded off with sandpaper and the end boards pinned and cemented in place.

The stool was fitted with a covered seat. The seat itself was a $1\frac{1}{2}$ in. x 1 in. rectangle of $\frac{1}{8}$ in. balsa, which was covered with thin material, doubled over the bottom and glued in place. A "frame" of $\frac{1}{8}$ in. x $\frac{1}{8}$ in. balsa was then cemented around this. The four legs were pushed into holes pierced in the balsa seat and held with a spot of cement. Matchsticks can be used for the legs or $\frac{1}{16}$ in. dia. dowel.

The Dining Room Suite

The dining room table was the most elaborate piece of the whole lot. It was made with a plywood top so that it could be stained and given a good polished finish. This top simply glued on to a smaller rectangular piece of $\frac{1}{2}$ in. thick balsa. The $\frac{1}{2}$ in. dia. dowel legs were glued into holes drilled in this balsa part whilst the feet were built up from thin ply and $\frac{1}{2}$ in. sheet balsa, as shown. Thin card would do as well as ply.

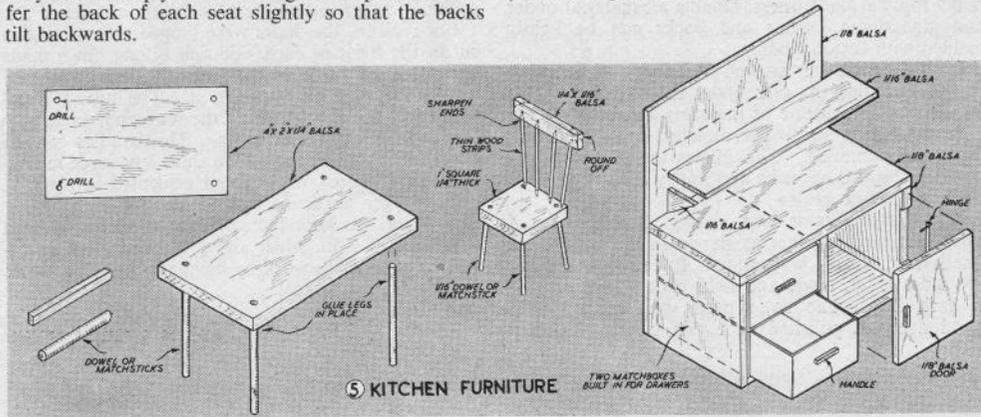
The chairs were quite simple. Square balsa seats (which again could be covered with material) with matchstick or dowel legs. The backs are cut separately from thin ply or card and glued in place. Chamfer the back of each seat slightly so that the backs tilt backwards.

The sideboard was another simple balsa "box" like the wardrobes, with a similar type of hinge for the two doors. A top of $\frac{1}{8}$ in. plywood was added to match the table.

The Kitchen Furniture

Finally, the kitchen furniture. The table was simplicity itself. A 4 in. x 2 in. rectangle of $\frac{1}{8}$ in. sheet balsa for the top, with a hole drilled near each corner and dowel or matchstick legs cemented in place. The chairs were similar to the dining room chairs, except that open backs were built up from thin pieces of wood (matchsticks shaved down), sharpened at both ends and pushed and cemented in place.

For the kitchen dresser an easy way of providing working drawers is actually to build the body of the dresser around two matchboxes, as shown. Small matchstick handles are glued in place. The rest of the assembly is simple with $\frac{1}{8}$ in. sheet balsa parts and a hinged door. The shelf is $\frac{1}{8}$ in. balsa supported at each end by two small triangular pieces. All the parts required can be cut out with a razor blade. Sand down all the pieces perfectly smooth before and after assembly with fine sandpaper. Balsa wood does not take paint very well and so it is best to leave the kitchen furniture unpainted, possibly just staining the table legs.



BITS & PIECES

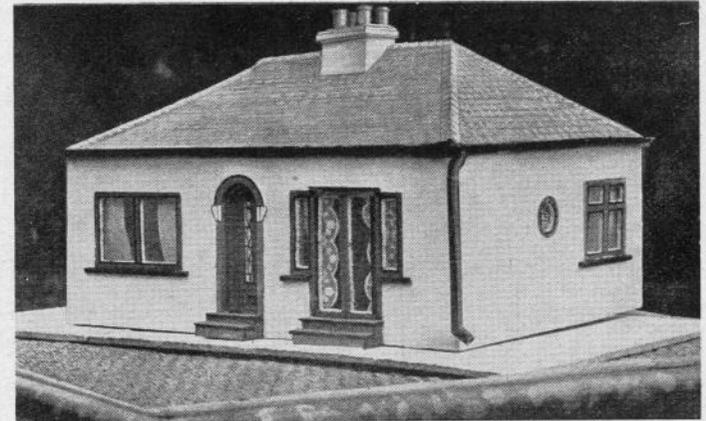
(Continued from page 29)

for a moment to use the metal apron for the protection of the rubbing end of the Holder. Don't rub the "bit" against the stone in a narrow path, but utilise as much of the surface as possible including working from both ends. Don't rub with the stone dry, but keep the surface just moist with drops of thin oil at intervals and apply a drop to the brass flat on which the Holder slides. Don't be in a hurry to start work on a "bit". See that it is correctly placed in the Holder, and that where the stone has

to be tilted the adjustment is correct. Don't start operation on a "bit" without first making sure that the steel flat piece G is borne by the tips of all four supporting screws in piece B. If it rests on three screws a slight rocking movement can be felt. Turning one screw up or down a little will correct this without materially altering the general lie of the flat and consequently the stone which it supports, and once more don't forget the sheet metal apron for the stone when its use is needed.

A DOLL'S BUNGALOW

A TOPICAL ARTICLE BY KEN SMITH



Full size working drawing available from Model Maker Plans Service, price 5/-.

MOST little girls like dolls' houses and as mine is no exception I resolved to make her one for a Christmas present.

However, as she is only a little girl of some three years, it had to be a little house, and able to be transported from place to place by tiny hands, hence the doll's bungalow. The illustration shows a cardboard "mock-up" produced before proceeding with the final design. As my little girl is my severest critic, it had to be an extra special bungalow, complete with real lights. Should anyone wish to build one for their own little daughter, it can offer plenty of scope for their own creative ability in decorating and furnishing. I hope I have achieved something "out of the rut" in the design, and anyway it makes a change.

Construction for bungalow is as follows: Four pieces of $\frac{1}{8}$ in. ply are cut to an oblong of 12 in. x $4\frac{1}{2}$ in. for front and back, and four pieces of the same material to 9 in. x $4\frac{1}{2}$ in. for the ends. Cut out the openings for windows and doors with a fretsaw, or sharp knife and metal straight edge, in two pieces for the front, two for the back and the window openings in the ends using again two pieces of $\frac{1}{8}$ in. ply for each end, keeping to the outer lines (Fig. 1).

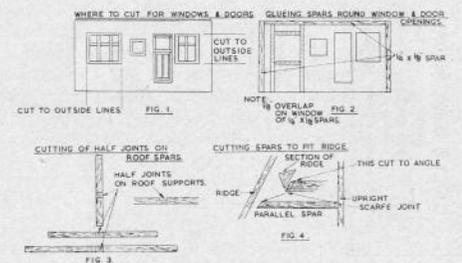
The next step is to glue the $\frac{1}{4}$ in. x $\frac{1}{8}$ in. strips of obechi into place, starting with the front and back first, take one piece of ply for each, glue the strips at each end of the ply and across the top, then fill in all window and door openings overlapping them $\frac{1}{8}$ in.; the strips are shown as dotted lines on plan and Fig. 2 explains how to fill in around windows and doors. Repeat same for ends, except that the pieces of $\frac{1}{4}$ in. x $\frac{1}{8}$ in. obechi should be $\frac{1}{16}$ in. in from each end of the ply so as to allow the front and back to fit flush. Cut out the partitions marked A using two pieces of $\frac{1}{8}$ in. ply for each partition and note that one of these terminates at the arrows marked on plan.

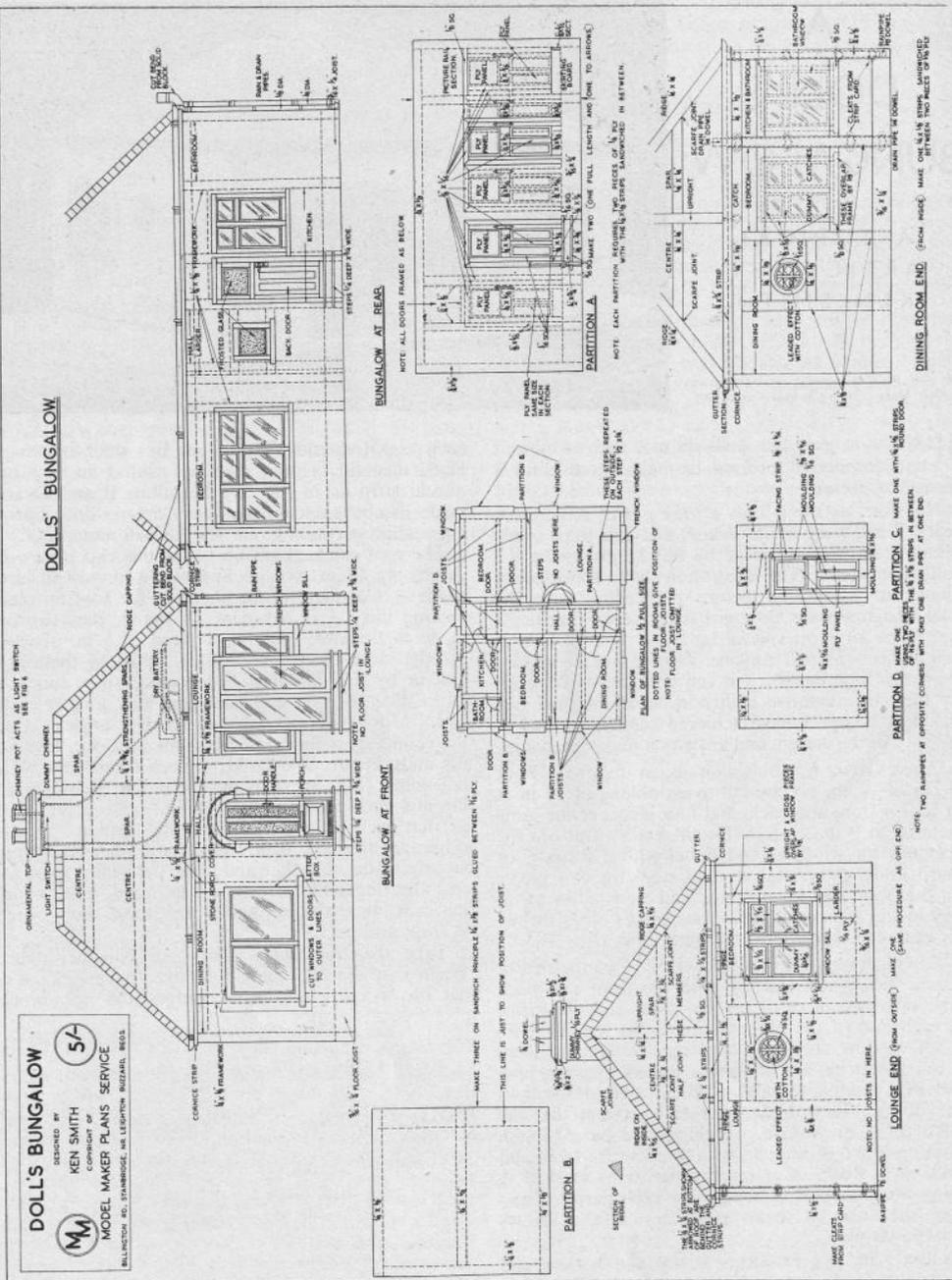
Glue $\frac{1}{4}$ in. x $\frac{1}{8}$ in. strips at top and bottom and

each end (remembering to cut out door openings first), then fill in door openings with $\frac{1}{4}$ in. x $\frac{1}{8}$ in. obechi strip as in Fig. 2. Partitions B and D are made as above except that there are no door openings, while partition C carries the bathroom door.

The roof can be built next: for this two pieces of $\frac{1}{8}$ in. ply 12 in. x 6 in. and two 9 in. x 4 in. are needed. Cut them to the shape of the roof on plan making them $\frac{1}{2}$ in. oversize all round, they can be made to fit later. Taking a piece of $\frac{1}{4}$ in. obechi, cut the spars for the bottom of the roof—these are hidden by the guttering and cornice strip, but are 12 in. long at front and back and 9 in. long at each end. Mitre ends of strips to 45 deg. angles. Cut the centre spars and uprights from $\frac{1}{4}$ in. sq., leaving the ends square, and build up each framework with half-joints (Fig. 3). Cut the pieces for the ridges at top and each corner from $\frac{1}{4}$ in. sq., planing the edge so that each piece has a triangular section. When ridges are finished, lightly glue the frameworks (previously made), together and mark the centre spars so that the ridges fit correctly at each end, marking at the same time the uprights which touch each other at front and back.

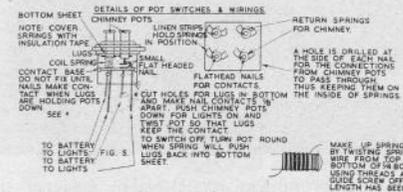
Take the framework apart and cut the joints. When they are all square assemble framework on a flat board and glue the end ridges and framework



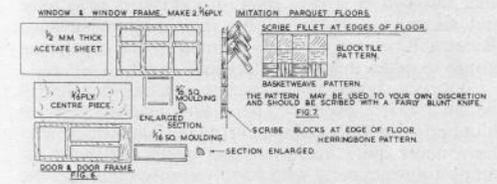


firmly together, then fit the top ridge, paring away uprights and ridges at top joints for a good fit. The 1/8 in. ply panels which were cut oversize can now be made to fit, leaving 1/8 in. margin at the bottom so that the guttering and cornice can be glued to the bottom spar, which by this time will need to be planed down to fit the top of the walls squarely. The ridge capping (pieces of cardboard), can now be glued on to the ridge, and the 1/4 in. x 1/8 in. guttering and cornice strip 1/8 in. square.

The dummy chimney is of 1/4 in. ply with a V-shaped cut at each end allowing it to seat properly. Glue the ends of the ply together to form a box. Then cut the four pieces which make up the ornamental top from sheet obechi (see Plan).



Decide on the form of lighting (shown in the front elevation and Fig. 5). If the former is used, a slot will have to be cut at the side of the chimney and used as a switch to allow the pin on the contact to slide to the one fixed on the chimney wall. In the latter method the chimney pots are longer, and holes must be drilled through the sheets (which should be assembled first), enabling the pots to slide vertically up and down. The holes for the lugs are cut in the bottom sheets. To fit the lugs to the pots, drill through each pot with a thin hot wire, then cut the lugs from thicker piano wire to make a light fit. The rest of the process is explained in Fig. 5. Top each pot with a round of 1/8 in. ply.



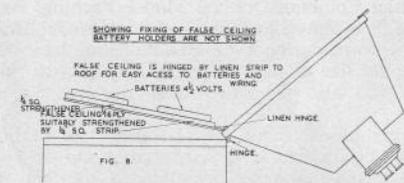
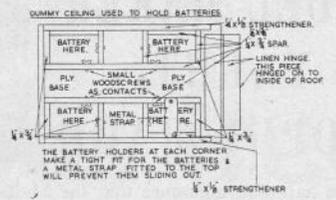
Window frames and door frames are cut as one piece or built from scrap (Fig. 6). The frosted glass effect is obtained by tissue paper fixed to acetate sheet with balsa cement. Make up windows and fit them in the openings, keeping them level with the outer walls. The sills on the outside are 1/4 in. sq. strip, cutting the 1/4 in. x 1/8 in. strips framing the openings to allow for this. The doors are fitted with linen hinges in the same manner, with the hinge on the inside of a room and 1/4 in. sq. strips fitted to the framework at opposite side of the door to prevent it swinging outwards. Make the door a tight push fit in the frame, then fit handles and facing strips. As-

semble and glue the front, back and sides, squaring the job up and leave to set.

Fit the partitions, starting with A and so on, keeping them level with the top of the outer walls. Glue the 1/8 in. x 1/4 in. joints in every room except Lounge

Hinge the roof at end shown on plan with 1/4 in. x 1 1/2 in. built hinges and fit the catch on opposite end. The lights are wired up next, fitting bulb holders to the false ceiling or inner walls; no more than three bulbs should be run from one 4 1/2 volt flat battery.

If you use the method of lighting in Fig. 5 the sequence could be thus: Dining room and kitchen from one switch, lounge and bathroom another; two bedrooms another, and hall and larder from the remaining one. When the wiring and batteries are all



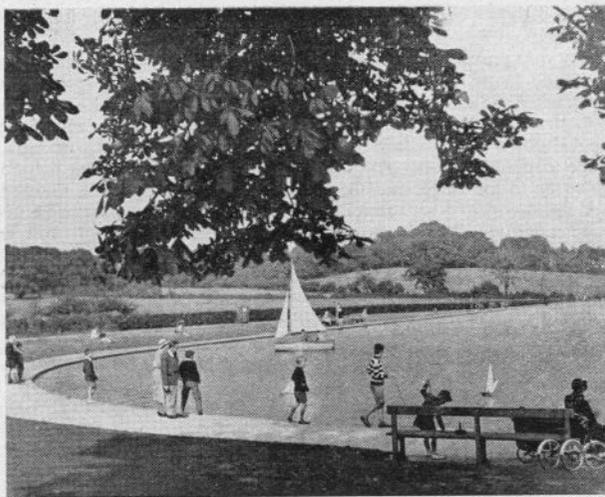
in place and all connections soldered, the inner walls of 1/8 in. ply are fitted.

Measure and cut each panel very carefully to allow the window and door openings to match up. Floors can be of 1/4 in. ply or cardboard, and may be plain or patterned as in Fig. 7, then glued in position. (Note that lounge floor is formed by a baseboard 1 in. larger all round than the bungalow.) The false ceiling is fitted to the roof (Fig. 8), all steps and handrail on inside of lounge door, and the whole bungalow mounted on a 1/8 in. thick baseboard, previously mentioned, the patterned floor in lounge being cut first. The inner walls may be decorated with distemper or small patterned paper, the ceiling painted white, and picture rails and skirting boards fitted after being stained first.

The outside can be covered with brick and tile papers. If you can recruit the help of the "better half" into making curtains, carpets and all the usual knick-knacks with which the little woman adorns the home, you may contentedly retire to the inner sanctum of the "Brick and Tile", or any other local "thirst quencher" and reflect on the type of furniture needed to complete the bungalow.

This should be roughly 1/4 in. or 3/8 in. to 1 ft. scale, so when purchasing it ready-made try to keep within these limits or it will look out of proportion.

MIDLAND DISTRICT COMMITTEE TO RUN FIRST MODEL MAKER YACHT TROPHY RACE



WE are happy to announce that the Midland District Committee of the Model Yachting Association have agreed to organise the first *Model Maker* Trophy Race during 1952. In accepting their offer we should like at the same time to thank the other clubs who also submitted offers to organise this event.

As enthusiast readers will be aware the Midland District Committee is a territorial group of clubs which includes amongst its affiliated members the Leicester, Nottingham, Trent Vale, Coventry, Wicksteed, Bedford, Birmingham and Bourneville clubs. This influential group is therefore particularly suited to the encouragement of the type of event we envisage for the benefit of model yachtsmen who have not yet had the honour of representing their clubs successfully in national and international events.

At this early date it is naturally impossible to give details of date, venue or even class that will be raced. The choice of class rests between the Marblehead and the 36 in. Restricted Class, with at the present time a bias towards the Marblehead, as it is felt this class has the greatest active following amongst keen skippers, without the limitations imposed by the "expert" A and 10-Rater classes. Venue will be on the water of one of the affiliated clubs.

We illustrate the magnificent boating lake at Bourneville above—though this will not necessarily be the scene of the race. It is particularly interesting in view of their Hon. Secretary, Mr. Fairbrother's remarks, who is also Hon. Racing Secretary of the Midland District Committee:—

"The pool is kidney-shaped, a quarter mile round, 2 ft. 6 in. deep dipping towards centre to 3 ft. 6 in. deep, and was built specially for model yachting, at a cost of £26,000 including boathouse. The club is one of the oldest in the country and the home club

of that most prominent model yacht designer the late Mr. W. H. Davey.

"... If you can sail a model yacht at Bourneville you can sail anywhere, not because it is a 'lousy' pool but because it was so designed and positioned as to teach would-be skippers to look to their trims and penalise slovenliness, and last, but not least, a boat is racing from the word 'go' till you take her off at the other end, and you can actually see how her gear has worked all the way."

By the time these words appear, the Model Yachting Association will have agreed their 1952 dates for the main club and national events so that our date and water can be finally decided. We would take this opportunity of reminding would-be entrants that this will be a race *solely* for skippers who have not taken part in any of the main national events. Rules will be very carefully framed by the organising group to make this a true "novice" event.

Skippers should not, however, get the idea it will be an "easy" event. There are dozens—perhaps hundreds—of fully competent model yachtsmen who have never quite made national status together with many future experts who have recently taken up the hobby so that some surprises may be in store. At the same time this opportunity for the "second team" to show their paces may well produce some new blood for the improvement of our national prestige in years to come.

Next month we hope to give more particulars so that valuable winter months can be devoted to cleaning up some of those models which did not quite fulfil expectations this summer, or even to produce a new boat from some well tried designer's board. We should also like to hear from established experts prepared to provide factual articles for the benefit of less skilled brethren.

A FEW SEASONABLE NOVELTIES AND
GIFTS SUITABLE FOR HANGING ON THE



MODEL MAKER

DONATED BY
H. A. ROBINSON &
A. M. COLBRIDGE

Christmas Tree

LOCO LETTER RACK

IT is rather amazing what a number of small novelty items there are with a railway flavour which modellers, interested in this phase of engineering, can make for themselves—or friends. Thus, to mention only some, there are locomotive paper weights, book end that represent tunnel mouths and letter racks in which the envelopes are held by "cut out" engines.

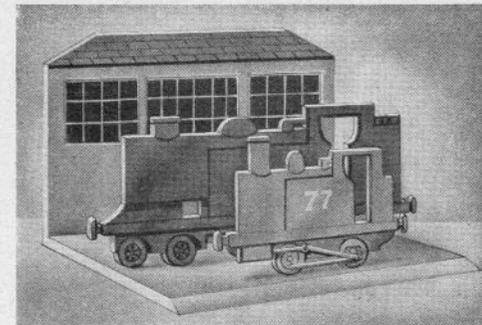
The last-named makes a very interesting accessory for the railway enthusiast's desk or mantelpiece and details for the making of a simple rack are given below.

The sketch of the completed article shows the general idea and should be studied first. As will be seen, a small railway "picture" is built up, with a factory locomotive standing in front, a larger one behind and at the back of both, a signal cabin. These three items are fitted to a stout base and the letters go in the channels formed between the two engines, and the second engine and cabin.

A rack of this type can be made to any size depending upon where it is going to be used, and the type of envelope it will normally be intended to carry—but for an ordinary mantelshelf or small home desk about 6 in. wide will do very well.

Plywood of about $\frac{1}{8}$ in. or $\frac{3}{16}$ in. is used for the engines, which are "cut out", and the cabin at the back is of the same wood; the base, however, is a solid piece of $\frac{3}{8}$ in. material.

The small engine in front is of the class found on dock estates and in factory yards. It has a low set boiler which lets the bigger engine behind be readily seen. This second locomotive, though reminiscent of quite a number of the older type main line tanks,



is from no particular prototype.

Both engines have small extension tabs on the underside which are to fit into corresponding slots made in the base—and where, if they have been well cut, they should grip by friction alone—though the joints are finally finished with glue. The signal cabin back fits straight to the back edge of the base by several fine screws and so has no tabs.

Before finally fitting the four parts together the all-important question of "finish" must be gone into. If a silhouette rack only is required, then all that is necessary is that the sections are stained and polished, but a more elaborate finish of lining and paint can be put on with good effect. Most railway enthusiasts will like the more elaborate lining, etc.

If painting, the various lines along the main frame, tank top, etc., are indicated by grooving with something blunt rubbed backward and forward along a steel edge. This both gives a slightly embossed ap-

pearance and also helps dead straight painting.

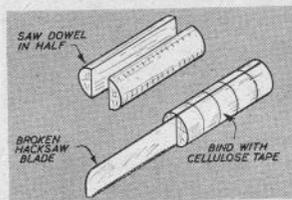
Enamel paint is used, either green or something approaching the London-Midland region's maroon for the boilers of both engines, domes and the tanks. The wheels, chimney tops and bunker rails look well in black, while the tank-side numbers and boiler linings are put in with gilt or white paint. A few thin black lines now run about will help the general finish, as under the domes and other places where a little "picking out" helps to give relief. These lines must be very fine, but if one's artistic ability is not good enough for this it will be found that a broad finish gives quite a satisfactory appearance.

A bright colour scheme of red for the brick work and white for the window frames is used for the cabin. The brick courses are marked in last and a generally lighter appearance is given if these are marked in white instead of black. To get the correct window "look", the area is first painted over with a light grey (a touch of black in a little white will give this), the pure white frames being added after. The base is stained or painted brown.

Paint the backs of the "cut outs" one flat colour, either green or maroon—this so that if the rack is seen empty from any angle it will not look unsightly. Sandpaper and paint all the cut edges also.

When quite dry the four parts are put together (good fitting having been assured before), each tab being given a touch of glue—the pieces then being tapped into position. Finally, glue a rectangle of thin baize to the underside of the base.

HANDY MODELLING SAW



For modelling, a small saw is a very handy tool. Unfortunately it is often difficult to find the right kind of saw in a shop, and even if you can it may be expensive.

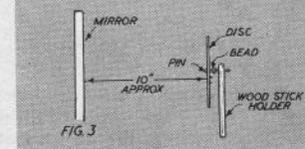
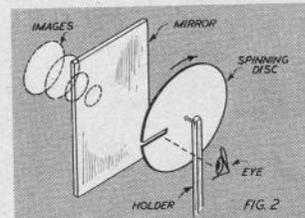
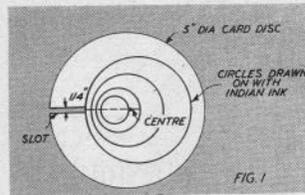
You can make your own modelling saw at a cost of a penny or so. You may even find all the materials you required in the scrap box in your workroom, and these will only take a few minutes to assemble.

The saw part is a piece of broken hacksaw blade, about 5 in. or 6 in. long. You then need a piece of $\frac{3}{8}$ in. diameter or similar size of wooden dowel. Saw or split this down the centre, place one piece on either side of the hacksaw blade, and bind together with cellulose tape. Your model saw is then complete and ready for use.

If you can find no dowel of the right size, carve the two handle pieces from scraps of wood. This will be quite as effective.

A VISION TRICK

This simple scientific "toy" demonstrates the principle of persistence of vision. A circular disc cut from card is marked out with a number of dark circles, as in Fig. 1. A small slot is cut in this card which is then mounted on a small wooden handle. A pin will provide a suitable bearing.



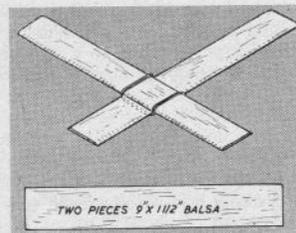
The arrangement of the apparatus is then shown in Fig. 2. The disc is held in front of a mirror with the plain side facing outwards. It is spun and, whilst rotating, the mirror is viewed through the slot. The viewer then apparently sees a series of solid rings, one behind the other, or quite a different pattern from that actually drawn on the inner face of the card disc.

A BOOMERANG

This boomerang takes only a few minutes to make and yet it flies extremely well. With practice, you can make it fly a complete circle and return to your hand again, indoors or outdoors.

It consists of nothing more than two thin rectangular pieces of wood strapped together with a rubber band.

We would recommend that you use $\frac{3}{16}$ in. thick balsa wood for the two parts. This wood is cheap, light, and readily obtainable from your local model shop. It is sold in strips 3 in. wide, and so a 9 in. length, cut down the middle with a razor blade or

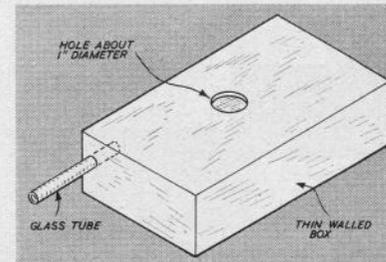


a sharp knife will make the two pieces. Sandpaper off smooth with fine sandpaper.

Lash the two parts together at right angles with a rubber band. The shorter legs of the cross you have formed should each be about 3 in. long. By varying this length you can make the boomerang fly wider or smaller circles.

To launch, hold by one of the shorter arms and throw forward and upwards with a spinning motion. Practice until you can get the boomerang to describe a full circle and return to its launching point.

PERFECT SMOKE RINGS



If you make up this simple piece of apparatus I am sure that any member of the family who is a smoker will be only too pleased to try it out.

All you need is a small box with fairly thin sides or a thin top. A small wooden or card box with a card top would be ideal. In the centre of the top cut a hole about 1 in. in diameter. Into one end of the box fix a small length of glass tubing.

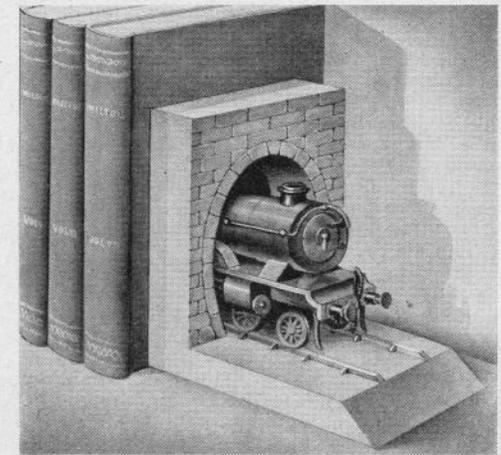
Cover the hole in the top with a piece of paper and get someone to blow cigarette smoke into the box through the glass tube. Uncover the hole and tap the lid of the box lightly with your finger. At each tap a perfect smoke ring will be produced and you can repeat this until all the smoke has been used up.

RAILWAY BOOK-ENDS

HERE are some book-ends which should appeal to the railway enthusiast for his room. The represent a train passing through a tunnel, the engine (which is reminiscent of a L.N.W.R. "Experiment") coming out from the one side, while the rear coach is disappearing in at the other. The pair are very effective and construction not hard.

As the ends are identical except for the superstructure, details for one only are given until this part is reached.

The base (1) Fig. 1, is $4\frac{3}{4}$ in. x 4 in. x $\frac{1}{2}$ in., and is from any fairly heavy piece of material. Leave the inner end square but bevel the outer as shown. Three sections (a), (b) and (c) go to make the uprights (2); each is $\frac{1}{4}$ in. thick, which method of construction allows the tunnel mouth to be readily made



as indicated. Note that the outer layer (a) has the bottom cut away to sit over the inner wood. The three pieces (placed together) are fastened to the base by screws going through into the end.

On the outer layer of the upright, stonework is painted and the tunnel arch is taken out of both the first and second as (3) and (4) Fig. 2; $\frac{5}{16}$ in. screws in from the back hold the three layers together and are located at points about the area as convenient.

To the undersides of each book-end is fitted a rectangle of zinc (5). This is $5\frac{3}{4}$ in. x 4 in., and the protruding bit slips under the outer book of any set, thus making everything perfectly firm. Without the zinc the ends tend to slide about.

The engine itself is made up of the solid cylinder (6) which is $1\frac{1}{2}$ in. dia. and 2 in. long, a rectangle (7) and block (8), together with wheels and buffers. A piece of round wooden pole will do well for the boiler, and the front end is sand-papered to a slight dome thus suggesting the smoke-box door. Below the boiler front comes the saddle (9) and this must be curved out to take the upper piece. The general proportions of these latter (and other) pieces can be taken from the diagram.

Next under (9) comes the rectangular piece (7), and under this again the block (8). Circular shanks $\frac{3}{16}$ in. long and $\frac{1}{4}$ in. in diameter with round heads of $\frac{3}{16}$ in. dia. on the ends make the buffers. They are cut from any suitable piece of scrap wood and are held to the buffer beams (11) by glue and a small "draper's" pin carefully pushed down the centre of each into the beams which in their turn are held by the triangular strips (12). Glue for holding is used here with a small pin or two.

The wheels, which are glued to the block (8) are each made of two discs, the one $\frac{3}{4}$ in. dia., which forms the wheel proper, is $\frac{1}{16}$ in. wide, and the inner disc representing the flange $\frac{1}{8}$ in. dia. and about $\frac{1}{16}$ in. wide. Eight wheels are required in all.

MODEL
MAKER

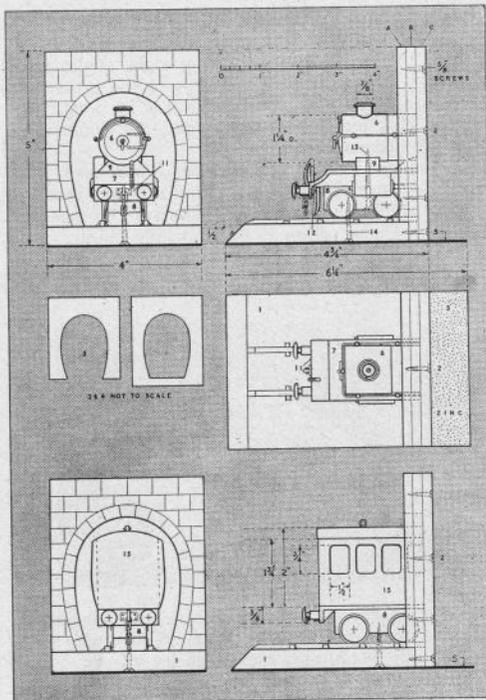
Finally come the rails and chimney. The former are $\frac{1}{8}$ in. high and $\frac{1}{8}$ in. wide, and the latter is shaped as shown from a section of dowel of $\frac{3}{8}$ in. dia. It is $\frac{3}{8}$ in. high and curved on the underside to meet the wood below.

Assembling the parts is clear from the diagram. Base and upright together, the block frame (7) "saddle" (9) are held to the boiler by the single screw (13) below, while after the wheels are fitted the whole engine is held to the base by a second long screw (14). The chimney is secured by a single screw down the centre and glue.

The coach book-end is an exact replica of the locomotive as far as the rails, wheels and frame are concerned—the only difference being the upperwork.

A central block (15) 2 in. x $1\frac{1}{8}$ in. in section and $2\frac{3}{4}$ in. long forms the main body, this then being rounded for a $\frac{1}{4}$ in. down. On the sides of this, two strips are secured from which windows $2\frac{1}{2}$ in. x $1\frac{3}{4}$ in. have been cut as shown. These overlays are glued to the sides of the block and the top edges bevelled to correspond with the curve of the roof. There is an inward slope also from the waistline downwards as can be seen in the cross-section.

The ends are now complete, and a good all-over stain looks well as a finish, but some enthusiasts might prefer to paint in correct railway colours. Lines like the inner end of the smoke-box can be indicated with advantage by a slightly embossed mark, made by rubbing some blunt instrument backwards and forwards till the desired impression has been obtained.



COLD SOLDER . . . BY HERBERT ARNOLD

HAVE you ever worked with cold solder? If not it is worth giving it a try for it can be very useful to the model maker, especially if the items being dealt with are small.

Cold solder has its own characteristics, however, and to get the best out of it these must be understood. It has its limitations too, and many persons not appreciating these have tried to use it for jobs beyond its capacity and having been disappointed have put the preparation on one side as useless. But it is far from this.

One of the greatest advantages of this interesting preparation is that it can be employed about models where the hot iron and fluxite of ordinary soldering methods would do damage to surrounding paintwork, or where these methods are far too cumbersome. The solder is also useful to the photographer for mending and making light-tight dark slides that have become faulty and other small jobs about a camera, such as, say, filling an unwanted screw hole.

As we say the characteristics of the solder must be known and allowed for and the two major ones are that it (a) takes quite a long time to set really

hard and (b) reduces in bulk during the drying out process. Thus it will be seen that cold solder work cannot in the main be fast work, but allowing for these two idiosyncrasies it can be perfectly satisfactory.

The modus operandi of soldering is simple. The items to be treated should be wiped well to remove all grease, and the solder applied as needed from the end of the nozzle, remembering to put on rather more than would seem necessary on account of the shrinkage. This being particularly essential if anything like a hole or depression is being filled up. The solder soon jellifies and becomes fairly solid and in this state can be pressed with the finger well up to and round a job.

When perfectly hard the preparation looks and acts exactly like ordinary solder. It can then be filed, scraped and indeed treated as the real thing. The surface takes paint well, and any small job can be readily touched up to match with the surrounding surface. The tendency to remain plastic for some considerable time means that the solder is not too good for jobs under stress, tending to pull the sections apart.

BOOK REVIEWS

The Modern World Book of Hobbies

Sampson Low, Marston & Co. Ltd., 25 Gilbert Street, London, W.1; 160 pages size $10\frac{1}{2}$ in. x 8 in., printed photogravure; 212 illustrations plus 46 diagrams and eight coloured plates. Cloth and card bound. Price, 9/6d.

IN producing this *Book of Hobbies* intended largely for a teenage market the publishers have wisely recruited the best possible talent to deal with the wide range of subjects covered. In our own sphere of interest there are chapters on Model Aircraft, Model Railways, Flying Kites, Miniature Armies, Puppets and Marionettes, Model Car Racing, Model Ships and Setting up a Workshop. Amongst the subject authors acknowledged we find such names as Rev. Edward Beal, Rev. F. Callon, G. H. Deason, F. C. Camm, L. H. Sparey, G. W. Arthur-Brand.

Many other handicrafts, field sports and amusements are also covered in its twenty-five chapters, so that the compilers must have had a bitterly hard task cutting each part to the very essence of its subject. Consequently, we can truthfully say we have seldom read a book with so little "padding" and so much factual information and advice.

A Half-Timbered Village

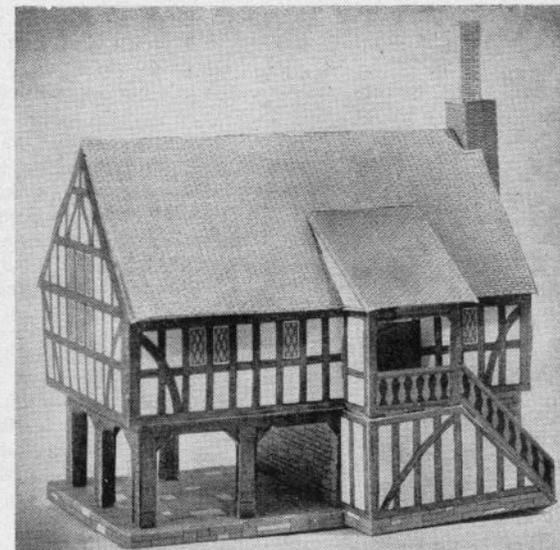
By L. A. Dovey, with Notes and Drawings by Margaret and Alexander Potter. *A Puffin Building Book*. In three parts each $14\frac{3}{4}$ in. x 10 in. Price per part 4/4d. (including 10d. P.T.).

A new Puffin Building Book is always an event. This new series gives scope to those as yet too modest to attempt any of their more advanced cut-out publications. No paste or glue is required to make up any of the models, which fit together by a series of slots and tabs. This may seem flimsy, but in practice produces models of surprising rigidity.

In spite of paper problems they are printed on stout card, something between cartridge paper and cardboard in strength and quality. Model features are in three colours, with a good overlap of colour beyond the cutting edges to take care of any slight errors of register during printing.

Book I contains Hall House, Tiled Cottage, House with Gable, House Built on Crucks and The Market Hall. Book II has Pair of Cottages with Outshut, Coaching Inn, and a Row of Shops. Book III contains Manor House, Tithe Barn, Cottage Row, Farmhouse with Outbuilding. Progress diagrams are given in each book dealing with the models portrayed.

We chose the building which seemed least likely



to be successful in this glueless card medium, and built the Market Hall illustrated above, in a quiet evening's work. It was entirely trouble-free—everything fitted, though this is a normal Puffin quality—and will certainly find a place in our layout.

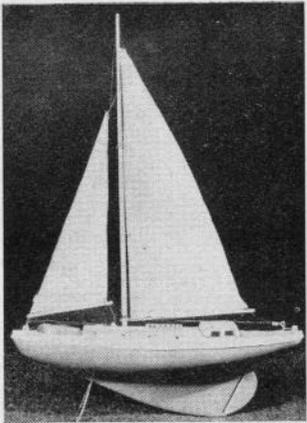
The 1952 Gadgets Annual

A Post-Lib Publication, Swan House, Kingsbury, London, N.W.9; 352 pages, $7\frac{1}{8}$ in. x $4\frac{1}{2}$ in. Over 300 illustrations in line; 500 gadgets. Bound in "Linson" water-grained plastic, gold-blocked title on spine, embossed on face. Price, 12/6d.

We were fascinated by this well-produced little book, and have been regretting our folly in not buying one last year when we saw its 1951 counterpart advertised. Then its description seemed too flattering to be true; now we know if it was anything like the 1952 Annual a good chance was missed!

Open it where you like—it is one of that sort of book—you will find something new, amusing or practical for the house, the garden, the model maker, the mechanic, the conjuror or the handicraft enthusiast. Some items are short such as the fishing lie-detector, which urges anglers to mark off a foot rule in inches on their rods (or longer if catches warrant). Simple, amusing and practical! Others occupy a page or more, such as the simple letter balance. In the main articles are slightly less than one page giving opportunity for a wide enough selection of material to suit all tastes.

This is certainly a book to have at hand in the workshop no matter how clever you are, or how little you know, there will be answers in it to many a daily problem, and suggestions for many a space, time or trouble saver in your work or play.



One of Model Maker's own suggestions: Penguin 16 in. Bermuda Rigged Ocean Racing Yacht—a marvel of modern plastic moulding that sells at 29/6d. We hope to review it next month with sailing tests.

IN order to provide this Christmas "Shopping List" for our readers we sent round questionnaires, with postage paid envelopes to some 89 wholesalers and retailers in the model trade, including those who advertise in our columns, and quite a number who as yet do not. Twenty-five enterprising traders returned our questionnaire in time to be represented in the list. With the exception of those suggesting diesel engines, who were legion, all duplicated items are printed in full, from which readers will observe the enormous range of items available to give or receive. The small amount of duplication suggests that retailers in general selected their own special "star" items: many went out of their way to take special trouble in choosing "out-of-the-rut" presents that will give our donors special pleasure in avoiding those "same as everyone else" sort of gifts that *do* turn up on these occasions.

We are very grateful to our friends who have responded so happily, and hope this list of over one hundred and forty present suggestions will ease many a troubled mind. Pressure of space prevents our listing full addresses of firms contributing, but should any address not be known to our readers we would be happy to pass on either simple enquiries or remit orders—in which case postal orders, etc., should be made payable to the firms in question to avoid endorsement delays.

.. PRESENT PARADE

UNDER 2s. 6d.

- 1 Ball Pen and Refills
- 2 Blades for cutting tools
- 3 Boat Kit—Micro Models "Cutty Sark"
- 4 Boat Kit—Modelcraft "HMS Cossack"
- 5 Book—"British Locomotives in Action"
- 6 Book—"Miniature Race Cars"
- 7 Buffer Stop (00)
- 8 Buffer Stop (00)
- 9 Buffers (JR), Wagon (0)
- 10 Buffer Stop (Railbuilt)
- 11 Cement and Dope Thinners
- 12 Engineers' Data Chart (Zeus)
- 13 Figure Sets (Britains') (00) Farm, etc.
- 14 Gauge for EM or 00 (Rogergauge)
- 15 Jetex 50 Fuel and Wicks
- 16 Keyring Penknife
- 17 Locomotive Drawing (GEM)
- 18 Leads (High Tension)
- 19 Modelspan Tissue
- 20 Oil (Three-in-One)
- 21 Platform Accessories
- 22 Pocket Spirit Level
- 23 Saw and Blade (Eclipse)
- 24 Screwdriver (Combination or insulated)
- 25 Screwdriver (Romford 00 Axle Nut)
- 26 Track Bases (ELK) (0 or 00)
- 27 Tweezers (4 1/2 in. Nickel plated)

- Ripmax Ltd., Camden Town
- Model Shop, Redcar
- "Hal" Stourbridge
- Union Supply Co., Aberdeen
- Ian Allan Ltd., S.E.I
- Rowell Motors Ltd., Dundee
- Attenborough Model Rly., Nottm.
- A. E. Peters, West Wickham
- James Rogerson, Guildford
- Acro Supplies, Coulsdon
- Model Shop, Redcar
- Caledonia Model Co., Glasgow
- True Model Co., Putney
- James Rogerson, Guildford
- Arthur Mullett, Brighton
- Ripmax Ltd., Camden Town
- Geo. E. Mellor, Rhos-on-Sea
- Z.N. Motors Ltd., Harrow
- Arthur Mullett, Brighton
- Model Shop, Redcar
- B. J. Ward Ltd., S.E.I
- J. Chappell, Salford 5
- Ripmax Ltd., Camden Town
- Ripmax Ltd., Camden Town
- Wally Kilmister Ltd., Wembley
- Killick Supplies, Tonbridge
- Geo. Bradshaw, Hove

UNDER 5s.

- 28 Abrasive Strip Holder
- 29 Atom Spray
- 30 Axleguards, S. & B. Sprung (0)
- 31 Book—"Trains of Britain"
- 32 Book—"Trains Illustrated Omnibus"
- 33 Books by Peal for Railway Modellers
- 34 Blowpipe, gas (Target or Davijet)
- 35 Cutting Tools (Swann Morton)
- 36 Cutter and Blade (Multicraft)
- 37 Drills (Carbon steel) 1/16th - 1/2 in.
- 38 Flux Powder (Lib. Easy Flo)
- 39 Fuel Can (Alton Valvespout)

- A. J. Reeves & Co., Birmingham
- James Rogerson, Guildford
- James Rogerson, Guildford
- Ian Allan Ltd., S.E.I
- Ian Allan Ltd., S.E.I
- Ian Allan Ltd., S.E.I
- Whitewoods, Surbiton
- Caledonia Model Co., Glasgow
- Model Shop, Redcar
- Ripmax Ltd., Camden Town
- Ripmax Ltd., Camden Town
- Wally Kilmister Ltd., Wembley
- Ripmax Ltd., and Model Shop, Redcar

- 40 Jet Needles (McCoy, Hornet, Dooling)
- 41 Level Crossing Gates (00)
- 42 Loading Gauges (working) 00
- 43 Oil Dispenser (Hypodermic)
- 44 Oilers (Dermic)
- 45 Points Lever for Formo Points (00)
- 47 Rule (6ft. Steel Tape)
- 47 Platform Accessories
- 49 Signal Cabin Kit (00)
- 50 Station Platform Unit (ELK)
- 51 Point Sleepers, set, for 00 2-rail
- 52 Track (Pecoway)
- 53 Track, Ready-made (ELK)
- 54 Toolholder, Rietter Universal
- 55 Water Crane (00)
- 56 Water Standpipe (00)

UNDER 10s.

- 57 Balsawood Parcel
- 58 Bogies, Sprung Coach 00
- 59 Building Kits for Lineside 00
- 60 Bridge, Two-way or Over, 00
- 61 Book—"Trains Annual"
- 62 Book—"Boys Book of British Rlys."
- 63 Book—"Miniature Locomotive Constrn."
- 64 Cutting Knife (Xacto & blades)
- 65 Electrical Kit
- 66 Frame, Zenith, 4 lever 00
- 67 Fretwork Outfit, Hobbies
- 68 Finger Tools, Acru, Set 0, 2, 4, & BA
- 69 Galleon Kit (Killicraft)
- 70 Mini-plugs, K.L.G., C2LR
- 71 Signal (00)
- 72 Station Kit, "Brookdale" 00
- 73 Station, Halt, 00 or 0
- 74 Solenoid Motor, Type C (JR)
- 75 Signal Box, 00
- 76 Track Pack, Pecoway
- 77 Turnout (L or RH) 00
- 78 Van (Graham Farish)
- 79 Van, Wagon or Tank Kit (Masterpiece) 00
- 80 Wagon (Graham Farish)

- Caledonia Model Co., Glasgow
- Ripmax Ltd.; A. E. Peters; "Hal"
- Rowell Motors Ltd., Dundee
- A. E. Peters, West Wickham
- Graham Farish Ltd., Bromley
- B. J. Ward Ltd., S.E.I
- James Rogerson Ltd., Guildford
- B. J. Ward Ltd., S.E.I
- Pritchard Pat. Prod. Co., Seaton
- Union Supply Co., Aberdeen
- Attenborough Model Rly., Nottm.
- Killick Supplies, Tonbridge
- Attenborough Model Rly., Nottm.
- Z.N. Motors Ltd., Harrow
- Attenborough Model Rly., Nottm.
- Attenborough Model Rly., Nottm.

- Ripmax Ltd., Camden Town
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- Geo. E. Mellor, Rhos-on-Sea
- Pritchard Pat. Prod. Co., Seaton
- Killick Supplies, Tonbridge
- Geo. Bradshaw, Hove
- Attenborough Model Rly., Nottm.
- Acro Supplies, Coulsdon
- Roland Scott, St. Helens
- Acro Supplies, Coulsdon
- True Model Co., Putney
- B. J. Ward, Ltd., S.E.I
- Ian Allan Ltd., S.E.I
- Ian Allan Ltd., S.E.I
- Wally Kilmister, Wembley
- Arthur Mullett & Geo. Bradshaw
- A. E. Peters, West Wickham
- Geo. E. Mellor, Rhos-on-Sea
- Model Shop, Redcar

UNDER £1

- 81 Auto-couplings, 1 doz. prs.
- 82 Bogies, Equipping Coach GEM
- 83 Book—"Scale Model Ships"
- 84 Book—"Locomotive-Exchanges"
- 85 Book—"B. Locomotives . . . Footplate"
- 86 Book—"Live Steam Book"
- 87 Electric Motor, Frog Whirlwind
- 88 Electrical Kit, Trix
- 89 Engine Test Stand
- 90 Fretwork Outfit
- 91 Files, Grobet Swiss, Set
- 92 Gantry Signal Cabin (00)
- 93 Goods Depot 0 or 00
- 94 Jetex 50 Outfit

- Acro Supplies, Coulsdon
- Geo. E. Mellor, Rhos-on-Sea
- Union Supply Co., Aberdeen
- Ian Allan Ltd., S.E.I
- Ian Allan Ltd., S.E.I
- A. J. Reeves & Co., Birmingham, 12
- Wally Kilmister, Wembley
- True Model Co., Putney
- Model Shop, Redcar & Ripmax Ltd.
- A. E. Peters, West Wickham
- Ripmax Ltd., Camden Town
- Attenborough Model Rly., Nottingham
- B. J. Ward Ltd., S.E.I
- Arthur Mullett; Model Shop, Redcar
- Roland Scott; Whitewoods
- Jameson & Co., Liskeard
- Killick Supplies, Tonbridge
- Graham Farish Ltd., Bromley
- Attenborough Model Rly., Nottingham
- J. Chappell, Salford, 5
- B. J. Ward Ltd., S.E.I
- James Rogerson, Guildford
- Caledonia Model Co., Glasgow
- A. J. Reeves & Co., Birmingham, 12
- "Hal", Stourbridge
- Pritchard Pat. Prod. Co., Seaton
- Rowell Motors Ltd., Dundee
- Z.N. Motors Ltd., Harrow
- Arthur Mullett, Brighton
- A. J. Reeves & Co., Birmingham, 12

FROM £1 to £3

- 110 Bevel & Spur Gear Drive
- 111 Coil, Ignition
- 112 Coil, Rowell Hotspark
- 113 Coach (Hambling) various 00
- 114 Coach, Pullman, Graham Farish 00
- 115 Coach, Wagon Lit., Graham Farish 00
- 116 Cabin Cruiser Kit
- 117 Driving Wheels, pr.
- 118 Engines, Diesel
- 119 Files, Grobet Swiss, set
- 120 Galleon Kit, "Blue Ribbon"
- 121 Knife Set on Stand (Xacto)
- 122 Loco Kit, Acro 2-6-2 00
- 123 Loco Boat Kit LMS 2P 4-4-0 00
- 124 Loco Construction Kit (various) 00
- 125 Mechanism, Zenith 00

- Z.N. Motors Ltd., Harrow
- Z.N. Motors Ltd., Harrow
- Rowell Motors Ltd., Dundee
- Attenborough Model Rly., Nottingham
- Graham Farish Ltd.; and Attenboro'
- Graham Farish Ltd.; and Attenboro'
- Caledonia Model Co., Glasgow
- Z.N. Motors Ltd., Harrow
- (Too many to note)
- Ripmax Ltd., Camden Town
- J. Chappell, Salford, 5
- Arthur Mullett, Brighton
- Killick Supplies, Tonbridge
- Acro Supplies, Coulsdon
- H. Jamieson & Co., Liskeard
- G. E. Mellor; A. E. Peters;
- True Model Co.
- Union Supply Co., Aberdeen
- Geo. Bradshaw, Hove
- Wally Kilmister Ltd., Wembley
- James Rogerson, Guildford
- Pritchard Pat. Prod. Co., Seaton
- Ripmax Ltd., Camden Town
- Rowell Motors Ltd., Dundee
- Caledonia Model Co., Glasgow

FROM £3 to £5

- 134 Car Body for 5 cc. Spurgear Drive
- 135 Galleon Kit—"Ark Royal"
- 136 Engine Castings, Seal 4-cyl.
- 137 Foden Lorry
- 138 Hobby Chest (Xacto)
- 139 Lathe, Super Adept
- 140 Loco Kit with motor unit & running gear 00
- 141 Loco complete, Prairie Tanker 00

- Z.N. Motors Ltd., Harrow
- Union Supply Co., Aberdeen
- Caledonia Model Co., Glasgow
- James Rogerson Ltd., Guildford
- Arthur Mullett, Brighton
- J. Chappell, Salford, 5
- H. Jamieson & Co., Liskeard
- Graham Farish; True Model Co.; Whitewoods
- Attenboro' Model Rly.; Peters
- Geo. E. Mellor, Rhos-on-Sea
- Pritchard Pat. Prod. Co., Seaton
- A. E. Peters, West Wickham

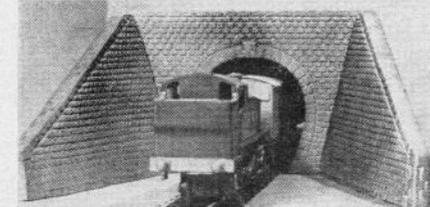
TOO LATE FOR CLASSIFICATION

- 146 Modelling Tool (under 2/6)
- 147 Moustail Abrasive (under 2/6)
- 148 Spitfire Gas Blowlamp (under 5/-)
- 149 Lathe Tailstock Dieholder (under 10/-)

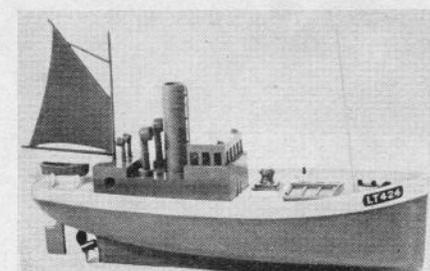
- Staines Model Shop, Staines
- Mechanical & Model Supplies, St. Leonards-on-Sea
- Mechanical & Model Supplies
- Mechanical & Model Supplies



Some of B. J. Ward's platform accessories, station name-board, lamp standard, porters trolley with milk churns and bicycle. Taken on Brookdale Station with E.R.G. coloured Wills's poster in background.

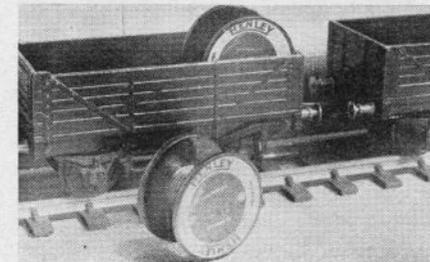


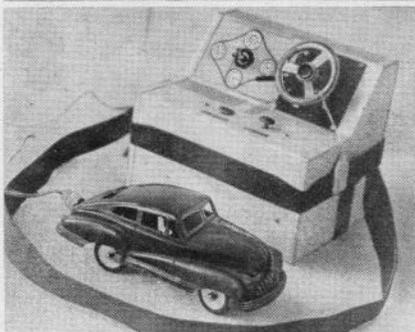
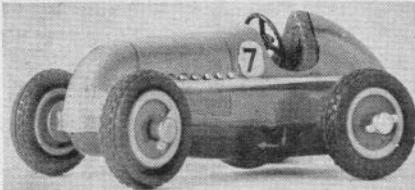
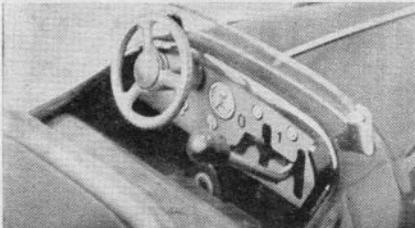
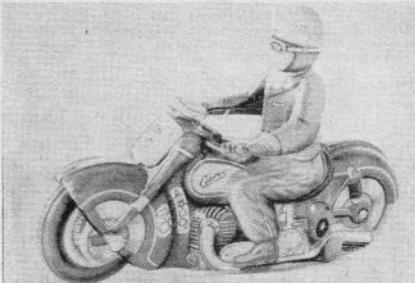
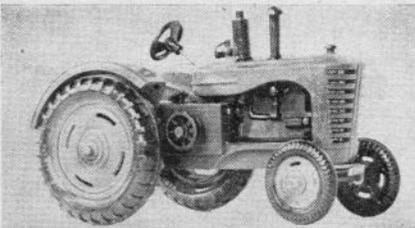
Graham Farish Prairie Tanker entering Scalecast Single Tunnel Mouth with medium retaining walls—these latter sets retail at 7/6. Double tunnel mouths are also available. These are another Model Maker suggestion.



Above: Penguin Clockwork Drifter selling at 7/3. Winder is located on deck under removable capstan forward of deck-house.

Below: More platform accessories by B. J. Ward in shape of Henley Cables, displayed in Graham Farish open wagon on Formo track.





MODEL MAKER VISITS HARRODS

Left : The top picture shows the advantageous use of plastics in toy making. This large tractor model is clockwork driven and is excellently detailed. The three centre views show the Schuco motor-cyclist, gear controls of the four-speed "Examinico" car, and that old favourite, the Schuco Mercedes racer. Below is the Dulci car with its control panel.

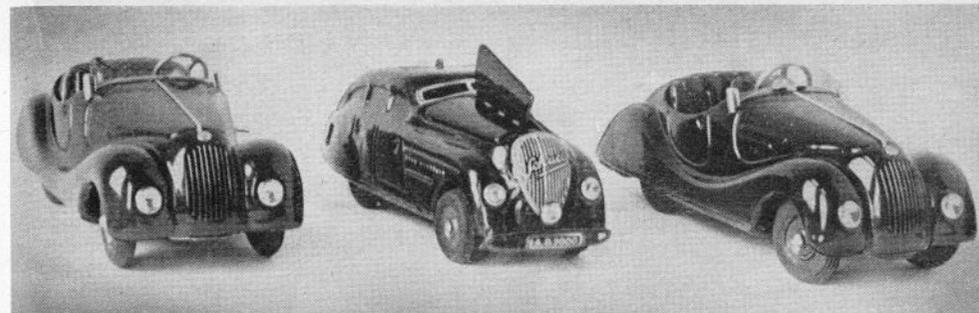
CHRISTMAS displays, like the preparation of Christmas numbers, are apt to start considerably in advance of the Festive Season itself, and *Model Maker* betook itself to London in mid-October to play that ever popular game of window shopping. This is the time when the ownership of a son or nephew is very desirable, as he will make a magnificent excuse for winding up and playing with everything that works. In the case of our visit to the great Knightsbridge concern, however, this was rendered unnecessary by the kindness of Harrods' management, who allowed us to pick the items which took our fancy, and laid on strong men to stagger upstairs with the booty for subsequent photography. It was all rather like those wonderful childhood dreams when one had the run of the shop, expense no object!

One of the first items to attract us was the latest Lionel railroad from America, and its popularity with the younger generation was tremendous. Built in Gauge 0, the American locomotive burns smoke pellets and carries its own whistle in the tender, the toot from which is so true to life as to be uncanny. Amongst some very well detailed rolling stock is a milk wagon, which when run alongside a loading ramp opens its doors to reveal a tiny man, who pops in and out with milk churns until the van is empty. To repeat the performance the churns are simply replaced through a hatch in the roof.

Among the more conventional models we were immediately struck by the range of tinplate clockwork powered ships, of the type and size which were popular before the war, but which seem to have been missing since those days. Two of these are illustrated, one a modest freighter, very well finished, about 12 in. in length, and selling for 14/6, and the other a much more elaborate craft, a tanker, about 18 in. long and equipped with plenty of deck fittings, costing three guineas. A small and most diverting submarine, *The Snort*, costs a mere 7/11, and will give your hours of wet but happy entertainment in the bathroom, controlled by a bulb and a rubber tube.

A very fine range of model yachts was on show, and among these we were particularly impressed by the new range by Bowman, an example of which is illustrated. The construction is sound and robust, automatic steering is fitted,

Opposite page, top : Three of the Schuco range of car models, that on the left being the horn-blowing version, centre the voice-controlled "Command" car, and right, the model with change-speed mechanism and clutch. Below : Two of the clockwork ship range, the Bowman sailing yacht with full automatic steering, "The Snort" bulb-operated submarine, and a fascinating prairie wagon, beautifully made which complete with driver and foot escort, costs 39/6.

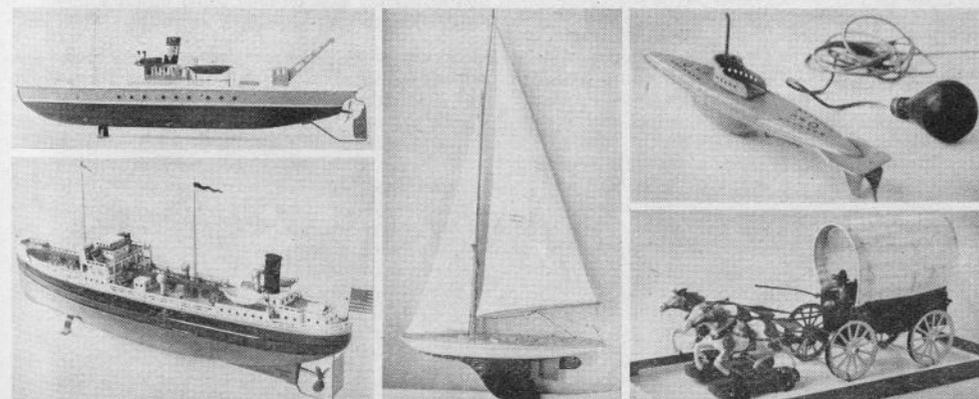


and the boat looked as if it would be a very practical sailer, for the reasonable price of £2/19/6, which in these days represents good value for money.

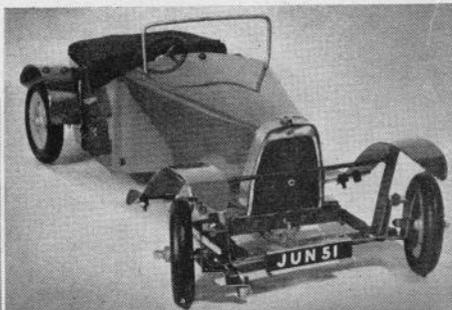
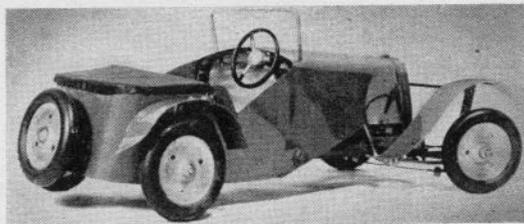
Then, of course, the Schucos are back in force and variety. Those uncanny little clockwork cars which charmed so many motor-minded folk before they disappeared in war days will find plenty of buyers this Christmas, and not only amongst the youngsters. The original Schuco Mercedes, stubby and out of scale in many respects, continues almost unchanged except for the price (27/6), which brings back nostalgic memories of the days when they were bought up in quantity at five bob (or was it 3/6), and run in mass-start races by enthusiasts. Be that as it may, the features that used to charm us are still there, including the kit of tools, hub nuts and hammer, and that fascinating working differential. Other models in the Schuco car range include the 4001, known as the Examinico, which has working clutch and four speed gearbox with a lever working in a dashboard gate, the Command model (2000), which starts and stops at the owner's word, by means of an ingenious diaphragm control, a saloon which performs a series of horrific rolls as practised by American stunt men,

and of course the popular remote steering model, which at 25/- is the least expensive. New to us is the Schuco motor-cyclist, who proceeds briskly on a square course, broadsiding his corners in an incredibly lifelike manner. We can imagine speedway fans getting lots of fun out of this at 19/11 a time.

One novel item we had the greatest difficulty in tearing ourselves away from. This was the Dulci car, which really brings remote control to a fine art for a modest sum of money. The car is a saloon about 10 in. long, with a small electric motor on each axle. The operator carries a control and battery-carrying unit slung round his neck by a strap, rather reminiscent of a portable barrel-organ. On the front of this is a complete dashboard, fitted with a steering wheel, steering column gear lever giving four forward speeds and reverse, an ignition switch which isolates the driving circuit, and two small thumb-operated keys representing clutch and footbrake. Thus equipped, he can carry out every evolution possible with a full-sized car, working the controls in correct sequence, his miniature vehicle responding on the end of a long lead coupled to it through a three point plug. We haven't a nephew, but at £3/13/- we were sorely tempted!



"JUVAUTO" INTRODUCES



Juneero in General

THOSE lucky folks with warm and well stocked workshops, complete with every mod. con. are apt to regard the "Kitchen Table" worker as the lowest form of model making life, so far as facilities go. Now you and I know very well that this isn't strictly correct; I do at anyrate, and from painful experience, for the man or boy who can claim the undisputed use of the kitchen table whenever his leisure permits is regarded as a fortunate mortal indeed by many less happily placed modellers. A far larger proportion of our number than is generally realised have to be content with the corner of the sitting room table, on sufferance, after the evening meal has been cleared away, and on the strict understanding that there are no bangs, sawing or filing noises, dirt or other interference with the family peace. Under such circumstances it takes a very determined type to model anything at all, and it reflects great credit on our fraternity that their ardour is undiminished. All of which leads up to the subject of Juneero as an aid to making things, either as an adjunct to other materials or as the whole process.

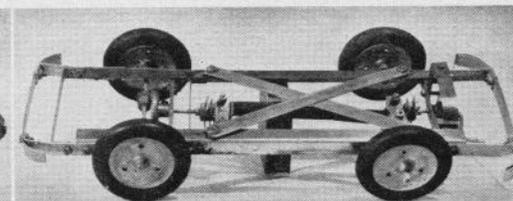
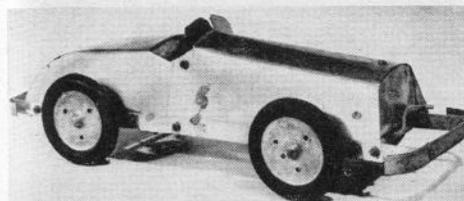
I have been a Juneero addict in one form or another for some time now, and although there are times when I have access to a workshop, there are also times when I haven't, and this ingenious "machine shop in miniature" has often proved a blessing. Looking back to the days when I have been in "digs" up and down the country, and have resorted to niggling little bits of model making on the corner of a much cherished dressing table, in fear and trembling of discovery and instant eviction, the handy Juneero tool would have solved my problems time and again. Your true-blue model engineer tends to despise such methods, of course, but since they enable those with a creative urge to get on with the job of making something with hands and brain, I would hotly defend them. The fact that the materials are not always strictly suitable for the job in hand adds to rather than diminishes the interest, since ingenuity has to be employed in adapting them for one's purpose.

The Basic Car

Some little time ago Juneero Ltd. brought out a design for a very plain and homely little rubber-driven racing car, and sent it along for inspection and comment before putting the design on the market. Now I have always had a weakness for rubber propelled model cars, on the score of their cheapness and simplicity, and the scope they provide for development, and I cannot count the number I have built in my time, some successful, some otherwise. The little Juneero job wasn't exactly breathtaking in its beauty of line, but was soundly constructed and had a number of interesting features. The sample sent along was seized upon by various staff members with aeromodelling proclivities, and there was a fair share of rough treatment and "from me to you" in the office corridors, all of which the little car accepted with good nature and without damage. It was certainly rugged enough to take all this and like it. Having proved itself a practical design it was put aside and more or less forgotten for a time, but your scribe, who is never able to leave well alone for long, caught sight of it one day, recalled that it must by then be on the market, and immediately began to wonder if something could be done about its rather "utility" appearance.

A quick look over revealed its simple make up. A plain rectangular chassis was formed from angle, with flat strip X bracing. Drive was on the rear wheels through standard Juneero gear and contrate wheels, the 35-tooth contrate wheel driving the 15-tooth gear on the axle, which ran in holes in the side members direct. The wheelbase seemed very short, particularly for a rubber drive car, where one usually makes the most of every inch available, but this was partly accounted for by the fact that the front wheels were carried on separate stub axles set in the side members some way behind the front of the car. The stubs were fixed, and no form of steering was possible. The driving rubber was a single strand of stout $\frac{1}{4}$ in. x $\frac{1}{8}$ in. catapult stuff, ingeniously clamped at either end by an arrangement of bolts and short strips, threaded and nutted to the drive and

Variations with Juneero



winding shafts. The winding arrangement was very neat, this being effected by the starting handle, which was prevented from "unwinding" by a neat and simple ratchet, contrived from a 50-tooth gear and a pivoted curved strip acting as a pawl. This works 100 per cent reliably, and the starting handle adds to the fun, so this was retained complete.

The H.R.G. is Evolved

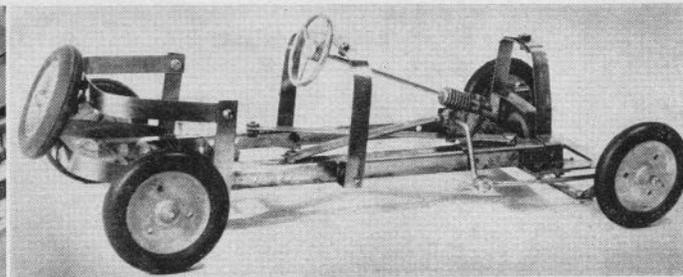
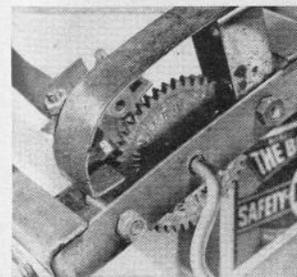
I decided to attempt a general course of beauty treatment, so out came the old Juneero multi-purpose tool, and a resolution made to work strictly with standard tools and materials, so far as possible; at any rate for Mark 2, although I had several ideas in mind for Marks 3 and 4. As a first step the twopiece body was removed, and the chassis considered. Although no attempt was intended to build anything approaching a "scale" job, I always prefer to have some particular full-sized prototype in mind, however humble the model I am constructing, and in this case I had to cast about for a suitable subject. Obviously the chassis was of the Old School or Vintage persuasion, but since it might be that some of my readers would want to carry out a similar conversion, and so few of the younger generation have either knowledge of or veneration for "vintage" machinery, I regretfully abandoned several enticing ideas, and searched for something more modern, yet

retaining the straightforward bodywork called for by the materials in hand. It didn't take long to decide on the H.R.G. Sports two-seater, and a start was made forthwith by roughly scaling down the side elevation from a *Model Maker* plan, to match the model's $2\frac{1}{2}$ in. wheels. This, of course, gave a wheelbase greater than the original, which was all to the good, both as regards appearance and increased rubber length. I decided to use the existing frame if possible, and found this quite simple, as the entire rear axle and gear bracket assembly could be moved bodily rearwards and re-bolted to the frame, using the holes already punched for the now discarded bumpers. It was desired to fit working steering and at least some semblance of springing, but as the back end went together so providentially it was decided to leave it at that, and concentrate on the front end.

Chassis Modifications

Accordingly, two short angle pieces were cut, and bolted to the outside of the chassis after removing the stub axles, to act as anchorages for the quarter-elliptic springs as worn by the H.R.G., and three-leaved springs made up from strip. The front axle is made from two strips, bolted together, the lower one straight and the ends of the upper one bent through two right angles to form the pivots for the

Above: (left to right) Two views of the "rejuvenated" Juneero rubber drive car, inspired by the sports 2-seater H.R.G. Both track and wheelbase have been increased, but the original chassis remains unaltered. On the right is the standard car and its chassis, before rebuilding. (Below) The ingenious ratchet and pawl in the winding mechanism, and the converted chassis with body frame and details of the worm-gear non-reversible steering visible.



Ackerman swivels. These were made from strip in an angular C-shape, the pivot holes being punched before bending. The old stub axles were then fitted to these, being double-nutted on the inside. This rather put paid to my original idea of king pins, as the inner projections of the stubs fouled them, so rather than increase the width, separate bolts with nuts and lock nuts were fitted top and bottom. Short cranked steering arms were fitted at the same time. "Steering box", column and drop arm came next, the gearing being by worm and 15-tooth gear. The drag link is made from standard rod, threaded at one end and having a brass collar screwed on, using the grub-screw threads. The forward end is bent at right angles and passes through the offside steering arm, which is cranked down and punched to receive it. A collar and grubscrew locate the rod in the arm.

Steering Column & Radiator

The steering column passes through a bracket on the scuttle hoop, which is bent to conform to the correct H.R.G. section amidships, and a skeleton frame for the body is built up from strip, though this was more a guide to the body pattern than an aid to rigidity, and could be modified or partly discarded, if desired. The scuttle hoop and two side uprights are necessary, however, as a basis on which to bolt and joint the body.

The radiator is made from strip, carefully bent to the approximate "Hurg" shape, the bolt and two nuts which form the cap also serving to clamp a short inner strip on which the bonnet rests. The front is sheet metal, cut to a close fit in its frame and painted to represent the honeycomb, leaving a bright rim as required. This front is held in place by sandwiching the lower edge between the two front cross members.

Bodywork

The bodywork is made of sheet tin in two halves, with vertical lap joints behind the driving compartment, both halves being bolted through the frame uprights. The shape of the halves was determined in the usual way using thin card patterns, marked and trimmed to requirements by the usual trial and

error methods. The front portion is further attached at the top of the scuttle hoop and at the bottom edges, but could also have a tab for attachment to the radiator. The rear half is bolted to the uprights at top and bottom, and through the back of the frame where the spare wheel reinforcement strip is attached. So far as the wings are concerned, no attempt was made to copy the H.R.G. shape except in the general curve, but with some thought and care it would be possible to fit valances if required. Motoring purists will no doubt take exception to the fact that as a temporary measure the forward stays of the front wings were taken to the front springs, and rightly so, but I can assure them that new and improved struts have since been devised, attached to the chassis side members! A windscreen frame of rod, threaded at each end, is secured by nuts to the scuttle hoop after passing through holes in the body.

Final Painting

Finally, the model was painted, using a sample of Brushing Belco, in Lawn Green, which certainly exceeded all expectations. No particular precautions against dust were taken, and the paint was applied direct to the metal after a perfunctory clean down, but the finish obtained was fully equal to that obtained with a spray gun, all brush marks flowing out and the coat being glass hard within an hour.

Whilst I do not claim that the little H.R.G. is anything of a work of art, I think it can be regarded as a recognisable attempt at a "real" motor car. It retains its brisk rubber driven performance, and is capable of more development by anyone who is interested. I see no reason at all why it should not ultimately house, say a 0.5 c.c. diesel engine, if modified here and there, but I should not expect nor wish far a performance in excess of 15-20 m.p.h., which would be just right for a car of this type. However, plans for a Cooper 500 are afoot, to be built in the same materials of which it may be possible to say more at a later date.

Dimensions

Principal dimensions of H.R.G.: Wheelbase, 9 $\frac{3}{4}$ in.; Overall length 12 $\frac{1}{2}$ in.; Wheel dia., 2 $\frac{1}{2}$ in.; Weight, 1 lb. 6 oz.; Track, 5 $\frac{1}{2}$ in.; Max. body width, 4 in.; Rubber length, 6 in.

MODEL RACING MEETINGS

WHILST it is not possible for *Model Maker* to be present at every club racing fixture, the Editors will be glad to have reports of these, preferably accompanied by one or more good photographs and if possible brief general notes on conditions, records claimed, and other items of interest. Club secretaries should note that we close for press on the first of the month prior to publication, and they should if possible indicate that their reports will be forthcoming at least ten days in advance, in order that

we may make provision for them.

Model Maker is also desirous of publishing a list of Club Tracks, both permanent and temporary, together with their location, diameter, surface, etc., and details of track records, and would be grateful if Club Secretaries would forward this information as soon as convenient. They should also indicate whether facilities can be granted to non-members for running cars, and if so to whom application should be made.

LIVERPOOL "OPEN" MEETING

THE English Electric and Napier Model Engineering Club held their third Open Invitation Meeting on Sunday, October 28th, in the very large Work Canteen which had been made available to the Model Car section, by the Works Management. The track was officially opened by Mr. A. F. Parker at 2 p.m., and racing started a few minutes later. In view of the large entry of 72 cars it was decided to reduce the time allowed on the line from four to three minutes.

The 1.5 c.c. class was won by G. Mellors of the Nottingham Club at a speed of 42.84 m.p.h. with a home-built special powered by a 1.49 c.c. Elfir engine. The 2.5 c.c. class cars were next to run, many well-tried and proven cars were entered, also a number of new and experimental jobs. J. R. Parker put in a nice run at 68.70 m.p.h., followed by Ken Proctor of Sunderland at 67.66 m.p.h. Mrs. J. Catchpole of Surrey then really showed the way home, her Oliver Tiger engined special doing a cracking run at 82.56 m.p.h. Excitement ran higher when Alec Snelling of the Edmonton Club came to the line to run his Oliver engined Streamliner, his run at 69.20 m.p.h., much below previous performances, being obviously due to wheel spin, the track surface by now having become fairly slippery. The last of the 32 runners in the class, W. K. Crow of Nottingham, put in a run at 69.33 m.p.h. to pip A. F. Snelling for second place.

The 5 c.c. cars were run under two sections, i.e. British and Open. After the track had been thoroughly cleaned off by a squad of experts, racing recommenced once more. It was rather unfortunate that the first five cars on the line either failed to start or complete a satisfactory run, but these things happen in the best of regulated circles, C. E. Craig



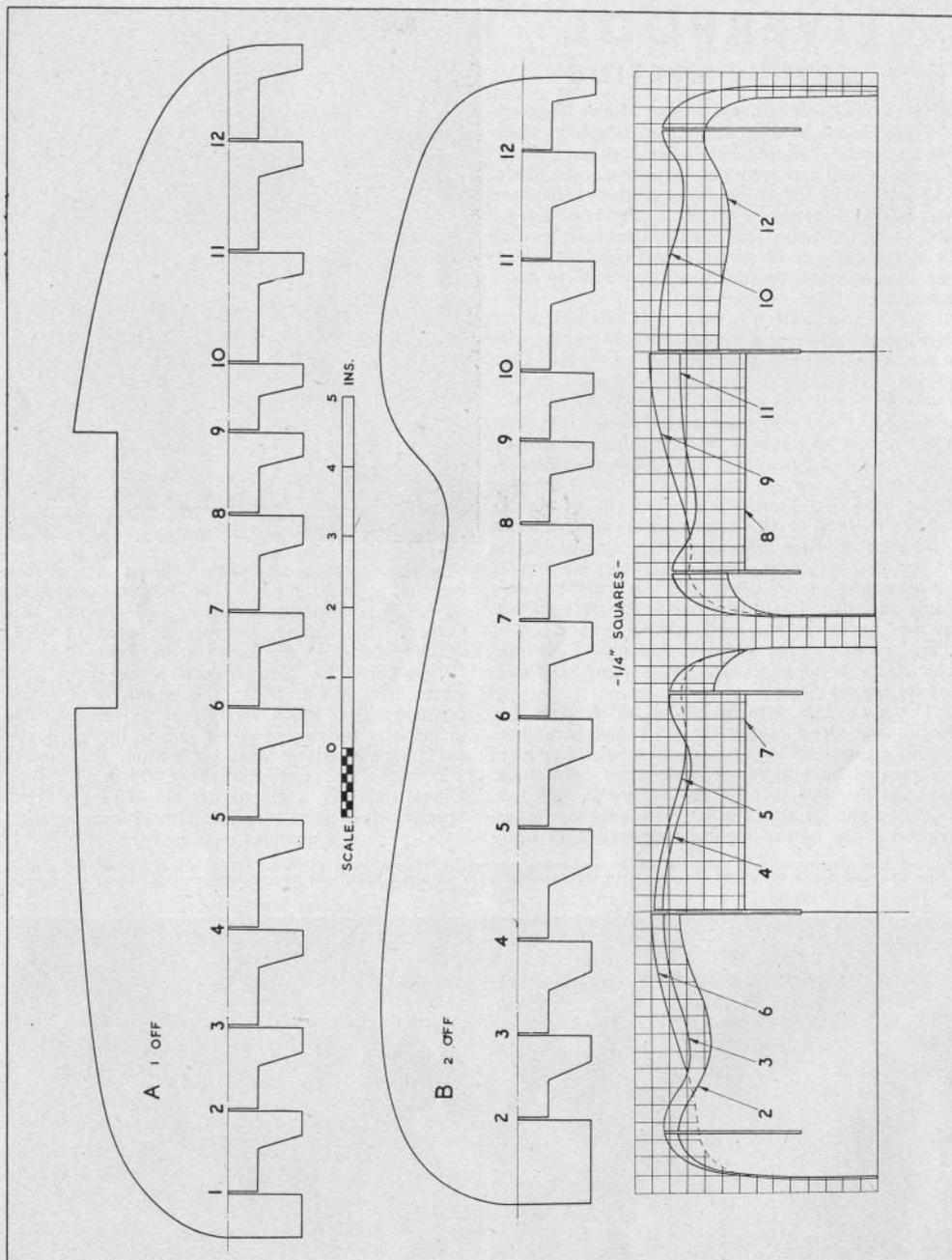
of Meteor running an E.T.A. engined car put in a nice run at 84.90 m.p.h. J. R. Parker also running an E.T.A., improved on this at 89.28 m.p.h., Jack Cook of Sunderland, returned a speed of 88.23 m.p.h., which was the fastest in the Open Class.

John Oliver Junr. then produced a very pretty front wheel drive tear-drop car, the prototype of a new production job which we believe will be available in the near future, the power unit in this particular car being a bored-out Mark 2 Tiger unit, the capacity 3.25 c.c. The speed returned was 75 m.p.h. John Oliver Junr. then came to the line with his 5 c.c. Special twin-engined car, the alternate firing arrange-

(Continued on page 64)

Above: John Oliver Junr. looks delighted with his experimental "Twenty six thousand bangs a minute" twin. Below: A nice looking bunch of the boys, and they've won all the prizes too. Mrs. Catchpole has taken the biscuit barrel, and Harry Howlett looks particularly coy clutching his timepiece.





SKODA COMP. 2 STR.

PART I. MOULDING THE BODY
BY D. J. LAIDLAW-DICKSON

BY ARRANGEMENT WITH OUR CZECH
CONTEMPORARY "MLADY TECHNIK"

QUITE a long time ago when Co-Editor Deason was persuading Maurice Brett to produce a Morris Minor in Celastoid sheeting there was a certain hankering in the office to produce something on the lines of the XK 120 Jaguar by a similar process.

That was the position when we received plans of the two-seater sports Skoda from friends in Czechoslovakia who had produced the complicated body—which resembles that Jaguar in many ways — by means of papier mache moulding on a plaster of Paris former.

Our only recollection of plaster moulding harked back to the days when a broken leg was thus encased. We remembered in particular that the Sister rolled up her sleeves and positively wallowed in the stuff. This was just as well for with our first attempt the kitchen and dining room were liberally coated with plaster together with most of our person. In fact everywhere but in the mould. With a fine disregard for experiment we had mixed the whole of our 7 lb. bag of plaster of Paris in a large enamel bowl. This set off long before we had anything like smoothed it to shape in the formers, and was written off to experience.

A fresh set of formers required another evening's work. Incidentally, any old cardboard will do: we used the sort that the better class laundries sometimes use when returning shirts. Those who like something better can, of course, use ply, but it is rather a waste of good wood unless there is some very cheap source of supply.

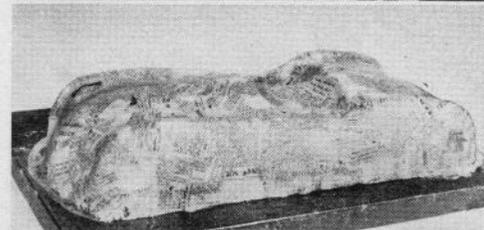
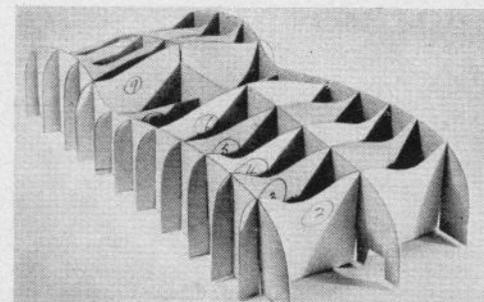
We then found that plaster of Paris which costs about 1/6 per 7 lb. bag from a builder and decorator goes up to 10d. per lb. when bought from the chemist.

For our second essay we mixed up only about four tablespoonsful at a time in an old shaving mug—just sufficient to fill one of the egg box recesses. Progress was slower, but an evening's work produced most of the job. Our 7 lb. was too little and required another 2½ lb. to complete.

The job then looked like our illustration and required rubbing down with glasspaper and a file.

The mould had been produced on a piece of old steel shelving and this was kept in use as the base during covering. Next step is thoroughly to vaseline the whole of the mould, and then cover with a sheet of model tissue, pressed well into the vaseline.

Now with some flour paste—we used Tapwata



decorator's paste—and several newspapers torn *not* cut into 1 in. squares soaking in a bowl of water it is necessary to cover the whole mould with a mosaic of paper and paste. A single thickness of paper should be thus laid and left to dry. When dry another layer is added in the same way, until some 15 to 20 thicknesses have been added.

Still leaving it on the mould the papier mache body is then covered with any acetate cement, balsa cement or Durofix will do, well rubbed in and left to dry. The body can then be prised off the mould. A few more layers are added to the inside—say five or six and again dried off one by one. The body should then be painted or sprayed with five or six coats of clear dope to strengthen it. It is then strong enough to stand rubbing down smooth with wet and dry paper.

Next month we shall describe the making of base-plate, cutting away of driver's compartment, engine installation and the like, but there is nothing to stop would-be builders making a start now, as at one layer per day there is nearly a month's work ahead.

ANOTHER TRACK SCHEME

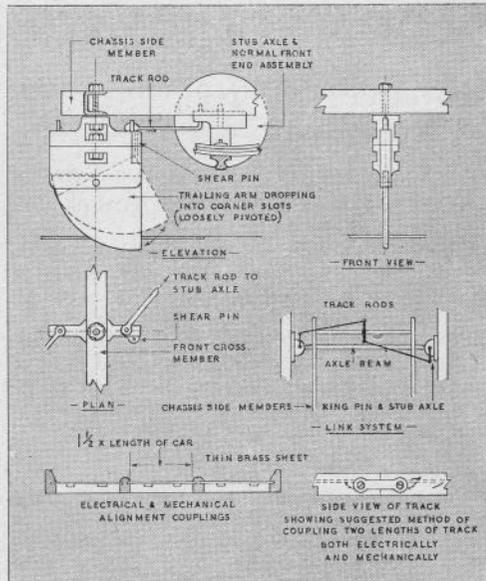
SOME NOTES BY E. G. CLARK & FROM ABROAD

THE frequency with which we receive from readers details of or ideas for self-steering model racing car tracks is some indication of the keen desire most of us feel to produce a really practical arrangement which will allow the cars as much freedom as possible whilst being under the "driver's" control. Not all of these schemes have been demonstrated as practical propositions, nevertheless we feel that by publishing such ideas from time to time other readers may be inspired to experiment on similar lines, and the result may yet be a true "fireside racing course", capable of being built by the amateur without undue complication or expense.

The latest of these is from B. E. G. Clark, of Newbury, Berks, whose method is of more than usual interest, since it allows of greater freedom for the car than is normally the case, and dispenses with any form of visible rail or projecting guide in the centre of the track. It is intended to apply to electrically driven cars only.

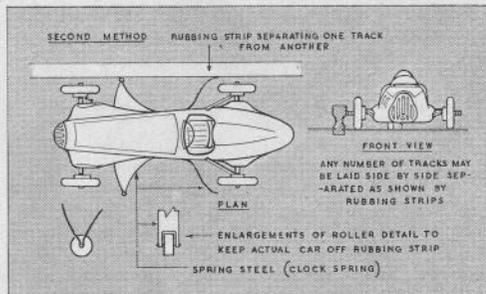
Mr. Clark writes: "I have long been interested in obtaining maximum realism in model car racing, and with this in view put forward the following suggestions which I hope will provide readers with food for thought. The general principle is shown in the accompanying sketches, which are not to scale, but are given merely as a guide. The track can consist of any desired plan, with varying types of bends, the whole being assembled in a similar manner to that of a model railway track, the surface being thin sheet brass or any other conducting material. The cars would be powered with electric motors picking up current from the track by means of the usual travellers, the speed being governed by means of a rheostat controlled by the 'driver'.

"I have two alternative steering arrangements in mind. In the first, a continuous slot runs through the middle of each individual track, in which the car's guide is placed at the start, thus keeping the car continually on course, by means of the guide's connections to the steering pivots as shown in the sketches. In the alternative scheme the slots are only located at the commencement of and through the bends. Each car races in its own track, these being concentric to one another and separated by low 'retaining walls' about hub height, along which are rubbing strips. Each car is started in the straight and is fitted with small spring 'bumpers' on the body sides, clear of the wheels. Thus the car will run round the track with one or other of the bumpers running on the rubbing strip. At the bends there are a number of parallel slots, about 1/8 in. apart and 1/8 in. wide. To avoid running 'out of road' the travelling contacts would have to be a little over 1/2 in. wide.

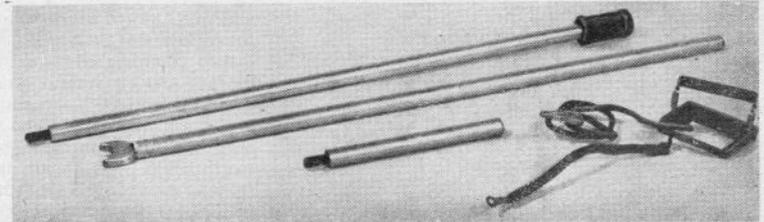


As the car approaches the bend the guide would drop into any one of these slots which are wider at the approach end to facilitate this, and the car is steered round via the steering connections. As in real practice the bend may be approached too fast, resulting in the inevitable drift or actual revolving. To prevent damage to the steering mechanism or track under extreme circumstances, a shear pin of thin wood or fuse wire is located as shown. If this breaks the car is free to spin with the trailing arm in the groove and the wheels at full lock, the only subsequent replacement necessary being a new shear pin. I am at present trying to perfect some method of controlled electro-magnetic braking at the approach to the bends, and with that done, I have visions of multiple car races run on proper lines, with compulsory pit stops for wheel changes, etc."

(Continued on page 58)



C. M. CATCHPOLE WRITES ON



PUSH STICKS FOR MODEL CARS

ONE may see many diverse types of push-stick in use at race meetings throughout the country, some really neat and well made efforts; others range from a length of old broom stick, a golf club, a R.A.F. dinghy mast and even a disused Hoover vacuum cleaner handle, and whilst many are so flimsy that they are entirely unsuitable for the task, others are built more on the lines of pit props.

Generally it will be found that a really efficient model car operator has neat and sensible equipment which can be easily stowed and carried about without inconvenience to himself or his fellow travellers. A nicely balanced push-stick can be made in a few hours, at low cost and the advantages gained will more than compensate for the time and trouble taken over the job.

Before getting down to the actual construction it will be advisable to consider all the pros and cons, making certain that your push-stick will not be useless or obsolete should you change the type or design of your car; doubtless you will agree with this reasoning, and with this view will decide to make one that can be adapted to suit almost any type of car.

For cars running in an anti-clockwise rotation a single-ended stick will be found very efficient and easy to use, due to the fact that most operators are right-handed and push off on the inside of the running circle; in consequence the tether is kept in tension all the time. For cars running in a clockwise rotation, in most cases, a fork-ended stick is a necessity and will greatly assist the operator to keep the tether in tension and get his car away cleanly with a minimum of trouble. Various experiments showed that a push-stick approximately 42 in. in length was most suitable for general use.

The photograph shows a stick constructed from 1/2 in. outside dia., 10 gauge duralumin tube, the joints being made by threading the tube inside and fitting 5/16 in. B.S.F. or Whitworth studs, the single fork end being cut out of a small piece of 1/2 in. dural plate which is shaped up and made with a spigot, which is a tight fit in the tube. The plate is then locked in position by two pins, the rubber hand grip being a motor-cycle footchange pedal rubber.

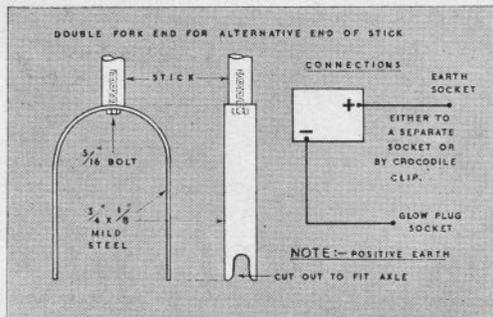
This bottom end has regularly been used when pushing off either a 10 c.c. Dooling or a 2.5 c.c.



Top: The neat and easily transportable push-stick with bracket for a Nife battery, constructed by the author, and above: I. W. Moore of Derby with another type of stick, carrying a dry battery for Glow-plug heating.

Oliver, both cars running in an anti-clockwise rotation.

An alternative and interchangeable double fork end was made up for use when starting a 5 c.c. Dool-



ing car using glow-plug ignition and running in a clockwise rotation. A short length of mild steel $\frac{3}{8}$ in. x $\frac{1}{8}$ in. was bent to suit the car shape and width, two slots were then filed, one in each arm end and made a loose fit over the axle shaft. These slots should be rather deeper than the axle diameter so that any chance of slipping off when pushing the car away is eliminated.

Experiments again proved that it paid dividends to fit the glow-plug heater battery low down on the stick, the best position being approximately 6 in. above the top of the fork end. With the battery in this position you will have a much greater degree of control over both stick and car and will not suffer from the nuisance of a weight waving about on high when kneeling to fit the plug-in lead into your car on the track when in front of a critical crowd of spectators.

A small bracket to fit the battery, a Nife in this instance, was made up from $\frac{3}{8}$ in. x $\frac{3}{8}$ in. brass angle (this being the only material on hand at the time)

ANOTHER TRACK SCHEME (Cont. p. 56)

Such is Mr. Clark's idea, and though it may be a "castle in the air" at the moment, it has several practical advantages which may appeal to other experimenters.

Whilst on the subject of track schemes, we came across another approach to the problem whilst scanning the current copy of the Czech hobby journal, *Mlady Technik*, which looked most ingenious. Briefly there are two tracks, one directly above the other, for each car. The lower one consists of a normal small gauge railway track, probably of cheap tinplate type, on which runs a small four-wheeled bogey, electrically driven in the normal way. The front axle of the bogey is free to swivel on the bends, and mounted directly above it and moving with it is a hefty horseshoe magnet of permanent type, the poles of which have a small clearance from the underside of the upper track surface, which is of celluloid.

and was screwed into position on the stick. In order to reduce time taken to change over batteries a spring loaded clamping bar was made up and fitted to the bracket and on several occasions proved a blessing when the battery faded and the car was due on the line in a matter of seconds.

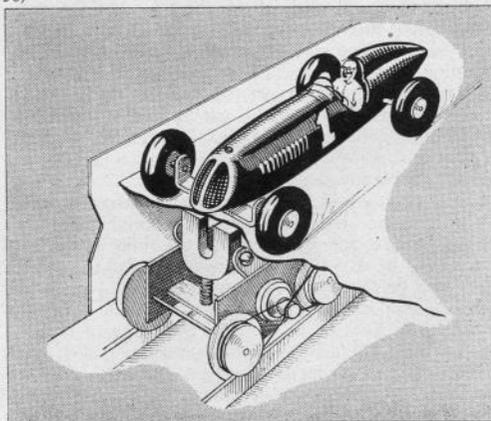
A word here on the subject of batteries may be worth while. After many tests with a variety of dry cells it was proved that they were very unreliable and would not stand up to the job; lead-acid type cells proved to be a continual source of trouble, the worst snag being spilt acid or free gas, and no matter how carefully handled there always seems to be a degree of seepage from various joints, etc.

The answer to the problem is to use a jelly acid or a Nife type cell so that leakage troubles do not arise.

In an endeavour to cut wiring to a bare minimum a single lead was run from the battery to the plug and the stick used as an earth return. This however proved to be most unreliable, starting was very uncertain. Batteries, wiring and plug were carefully checked and no trouble was found, the fault being eventually traced to bad earthing through the axle shaft ball bearings. As soon as a separate earthing wire was fitted the trouble was completely eliminated.

One very important point is to make certain that the glow-plug socket connections are placed in such a position that when the car is thrust forward and goes away from the push-stick, the battery leads pull out in a straight line; an angular pull will constantly tear the plug away from the wire or cause a break which may not show up until too late, and a run may be ruined.

Always carefully examine and clean the battery and wire terminal tags, as dirty or corroded connections here will cause a serious voltage drop at the glow-plug and be the cause of bad starting.



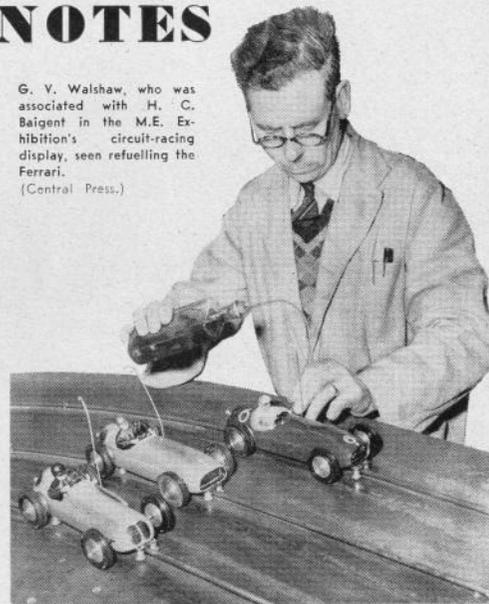
RAIL RACING NOTES

AS was only to be expected, our contributor's provocative article, "I'm sick of Speed", published on page 765 last month, caused a certain amount of argument amongst correspondents, as in fact we rather hoped it would. Particularly did this apply to the comments on rail racing. Amongst a number of replies from disgruntled folk who are prepared to let things alone as they are, and who appeal to our correspondent to "be practical" and to "Keep his feet on the ground", etc., came a very interesting letter from F. G. Buck, who, as readers will know, is already doing more practical development than most in this particular line, and is responsible for the most successful and elaborate "Grand Prix" circuit at present in existence in this country. He and his fellow workers have for some time been exercising their minds on the question of capacity classes for rail racing, and working meanwhile with a maximum engine size of 1.5 c.c. There has been much discussion over the limit most suitable for a smaller class, but being practical folks, they see plainly that an arbitrary limit in these smaller sizes is likely to result in what would be virtually "one engine" classes, since few intending competitors would build their own power units for the job, and whether the smaller class be set at, say 1 c.c. or 0.75 c.c., there would be perhaps one commercial engine only to fill the bill in each.

On the other hand, a second class is called for, and in the view of F. G. Buck and his confederates, this should be of considerably smaller size, to justify its existence. They feel that a 0.5 c.c. class should meet the case, in view of the fact that there are at least four commercial engines in existence or on the way to fit this limit. There is also the advantage of low cost, which should attract new contestants to the game.

This leaves everything from 0.5 c.c. to 1.5 c.c. to race together in one category, and this is where two birds are likely to be killed with one stone, and our last month's correspondent should feel that at least one of his grouses is being met. We mentioned elsewhere in the issue that experiments were progressing with automatic braking, but had no details of results at that time. It can now be revealed that Gerry Buck has been obtaining satisfactory answers in this line, by means of a very simple device which could easily be standardised on all cars built for this type of circuit. Briefly, this scheme consists of the substitution of blocks of Ferodo or similar friction material for the rear pulleys on the swinging plate, which set up a retarding friction through the curves, causing the cars to slow appreciably, and to accelerate away rapidly as soon as the straights are reached. Now this is most ingenious in itself, but the great beauty of the scheme lies in the fact that the degree of retardation is proportional to the speed at which the

G. V. Walshaw, who was associated with H. C. Baigent in the M.E. Exhibition's circuit-racing display, seen refuelling the Ferrari.
(Central Press.)

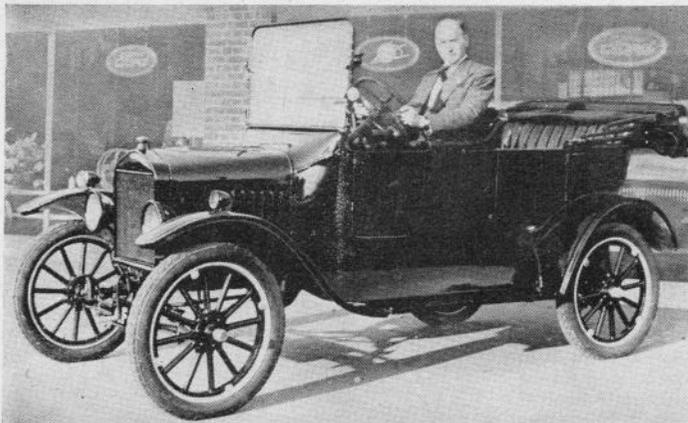


bend is entered, thus considerably penalising the faster machines. This, then, should prove the answer which will allow most sizes of engines up to 1.5 c.c. to race side by side with some degree of equality, whilst still putting a premium on adhesion and acceleration. There is likely to be considerably more experimentation before the idea is perfected, and this may not be the last word by any means. It certainly represents a step in the right direction, and an answer to others beside our contributor of last month who are "Sick of Speed", at any rate in the wrong places.

It is still not the whole answer, however, for those who seek realism, for obviously a car travelling really fast down a straight is unlikely to be materially slowed until it is well into the bend, which is just where the best drivers *don't* brake, so we are still liable to witness the distressing spectacle of plastic Bob Gerards being hurled out at 500 m.p.h., until some other form of braking can be devised, which will start the process before the corners and release at least by the apex of the bend. Yes, we realise that our feet are now well clear of the ground and our heads invisible in the clouds, but these problems are not insoluble. We would hastily add, also, that we have as yet to witness the new arrangement in action, but intend to remedy this if possible at the Stoke club's last circuit racing fixture of the year on December 2.

There are continuing signs that more clubs are taking this circuit racing seriously and have their own tracks planned for the future, and the public

(Continued on page 64)

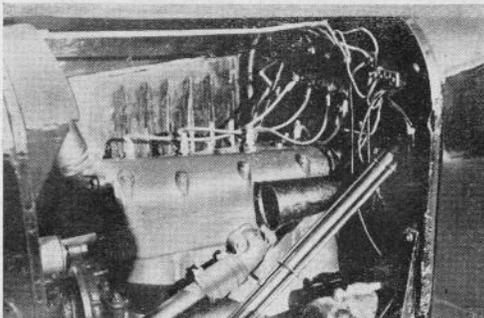


PHOTOTYPE PARADE NO. 3

THE Ford T MODEL

DESCRIBED BY G. H. DEASON

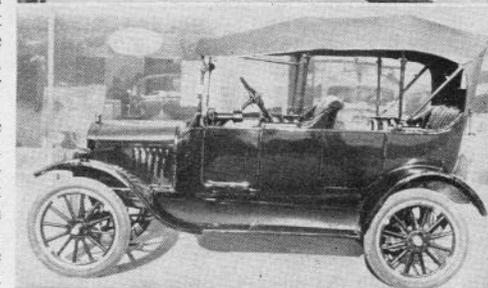
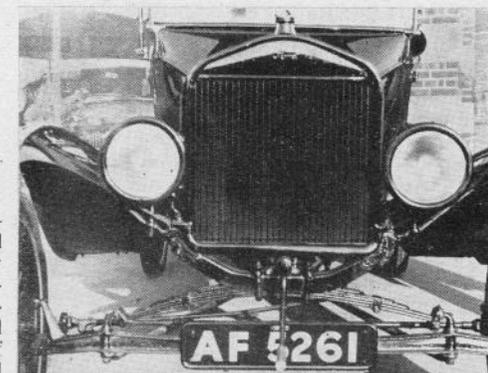
Above : A member of the Luton Motor Co.'s staff grasps the wheel, which carries its reduction gear in a small casing immediately below the spokes. Centre : One of the seven million 'T' series engines, a plain and practical s.v. unit. Dust raiser of the gay, twenties. Note the spare tyre and rim.



PROTOTYPE PARADE, and more recently Phototype Parade, has dealt with a wide variety of cars with famous names and fabulous reputations, but never before have I described so illustrious a prototype as this month's subject. With neither hesitation nor exaggeration it can proudly claim to be the world's most famous motor car, and get away with it. To my older readers it may hardly need description, for many of them must have owned and driven one or more in their hey-day, but to younger generations the Model T Ford is now but a dimly remembered music-hall joke. Perhaps to the lay and non-motoring public the good-natured jests that surrounded the Model T tended to obscure the fact that in almost every way it was a revolutionary conception and a quite staggeringly successful piece of engineering and design. As such, quite apart from its historical interest, I would unhesitatingly offer it to motoring model makers as a "must" for any collection which is intended to show in miniature the great cars of the past.

For so well known a car, made and sold all over the world in vast quantity, present-day specimens in anything but a state of mouldering decay are very rare indeed, and I am indebted to a member of the Chiltern Model Car Club, Mr. Ivett, who rang me up one day to tell me of the fine example illustrated. I set out hot-foot in pursuit, and found it in the very good hands of the Luton Motor Co. Ltd., who are Ford Dealers in their area. AF4261 was discovered by them in the West Country, very far gone, was brought back to Luton and most lovingly restored regardless of time or expense, although I have little doubt that this process was facilitated by the fact that spares are still fairly freely available in most parts of the country, despite the fact that the last Model T left the factory in the middle Twenties.

The Model T Ford was produced some years before the "Kaiser" War, as the motor car for the



Above : The familiar black radiator, and a view of the undamped transverse spring, shackles, and the light axle beam, which stood up to the worst roads in the world. Centre : The short wheelbase is clearly seen here, accentuated by the height of the hood. Below : This picture shows how beautifully the car has been restored to its original condition.

million, and it succeeded in being just that. It penetrated into every quarter of the globe where a wheel could turn, and often where it couldn't, usually packed in a crate and ready to be assembled by virtually unskilled labour, and such was its unique design that it could be driven by anyone with the normal quota of arms and legs, more or less, irrespective of intelligence or experience, and the abuse it would stand was beyond belief. Backed by a magnificent world-wide spares and repair service it proved to be a long liver with an endless capacity for hard work, and if all that doesn't add up to a very great motor car, I don't know what does.

Like most great pieces of engineering genius, the Ford was masterly in its simplicity. The engine, throughout the fifteen or more years of its production, remained practically unchanged, a light yet rugged 22.4 h.p. side-valve four cylinder unit with nearly "square" bore and stroke of 95 x 102 mm., and no inclination at all to anything but moderate revolutions. The cylinder head was detachable, a far from usual feature in those days, and the camshaft operated through non-adjustable tappets, the valves having cast iron heads.

The chassis was the plainest of plain rectangular frames, with wide transverse leaf springs fore and aft, shackled to either axle at their extremities, the four wheels being kept at each corner by triangular tie-rods terminating in ball joints. The wheels themselves had twelve rather spidery wooden spokes apiece, and the 30 by 3½ in. high pressure tyres were carried on bolt-on detachable rims. The wheelbase was fairly short, being 8 ft. 3 in., by comparison with a track of 4 ft. 10 in., which doubtless fitted in nicely with the wagon tracks of countless desert roads. Braking of a legitimate kind was provided by a pair of extremely inadequate-looking external contracting band affairs on the rear wheels, but our Elizabeth had other resources, of which I shall speak later.

Returning to the engine unit, ignition was supplied



by a low tension trembler coil and battery for starting purposes, but as soon as you had commenced your Model T you rushed round to the driving compartment and switched over to h.t. current supplied by an ingenious flywheel generator, which also supplied direct A.C. current for the lights as required. No battery was interposed in this circuit, and it was a notorious characteristic of the Ford that in low gear it provided magnificent illumination, whilst at anything below full bore in "high" the result would have shamed a couple of healthy glow-worms. Earlier models relied, in more senses than one, on oil side and tail lamps.

In unit with the engine was the gear-box, which was again unique. This consisted of a system of epicyclic gears carried immediately abaft the cylinder-block, controlled by three contracting friction bands operated by pedals. The method of driving the Ford was quite unlike that of any other car, and is worth a brief description. There was no gear lever, no clutch in the normally accepted sense, and no foot accelerator. On the driver's left (in the case of the left-hand drive version) was a hand brake with trigger type ratchet release. On the floor-boards were three pedals, and beneath the steering wheel were two very utility looking levers of steel rod with flattened ends, the right hand one being the throttle lever, the left the ignition advance and retard control. The left hand pedal operated the forward speeds, with neutral in the midway position. Application of the handbrake to "full-on" held the pedal in neutral. Thus, with the engine running at "take-off" speed one held the clutch in neutral, released the hand-brake and pressed down the pedal to engage low gear by means of the appropriate friction band. Having achieved terminal velocity in low gear, which from memory was about 8 to 10 m.p.h., the pedal was released fully and top gear came into play. Reverse was obtained by pressing the middle pedal, the right hand one operating the aforementioned band brakes. When these wore out, a process expedited by the free entry of water, mud and grit, one did not despair, but augmented the braking with the low gear, and when that in turn failed, much could be done with reverse gear and a good handful of throttle. I personally used all three methods in

turn during one descent of Shap Fell at midnight, driving a G.P.O. mail van during the General Strike of 1926.

The bodywork most generally favoured was the 4/5 seater tourer as we show it here, but a closed sedan of almost Emmet-like proportions was also available in this country after the war, and from earliest days a spidery but sportive roadster was a popular alternative. From about 1910 to 1914 this version boasted a cylindrical petrol tank on the tail, and the pre-war cars had smart brass radiators and windscreens with raked-back lower panels and stout bracing stays. Cape-cart hoods were fitted to the open models, the early ones having straps which ran forward to the front wings. Even the post-war model shown here measures some 6 ft. 7 in. to the top of the hood, and two good upward strides are necessary to enter the driving seat, from which a magnificent view of the road and surrounding country is obtained.

Owners and accessory manufacturers alike went to endless trouble to disguise the Model T, all their efforts being quite without avail. The unwearied joke of small boys, seeing an owner rugging up his radiator against the cold was to cry gleefully, "Too late, guvnor, I've seen it". Whole books of Ford jokes were published in America, said by rumour to be Works sponsored, and the Model T thrived mightily on them. In all, up to the time of its being discontinued in 1923, seven million engines are said to have been built. From 1918 onwards the British version was assembled at the Ford plant at Trafford Park, most of these being left-hand drive models.

It is interesting to remember that particularly in the States some very fast Model T engines were built, and elaborate conversion kits were obtainable which provided both push-rod and O.H.C. heads, the most notable being the Frontenac, whilst many variations were played on the body styling and transmission. I myself drove a weird sports two seater which had innumerable ratios obtained by hand, foot and combinations of both, whilst one enterprising firm provided the wherewithal to couple two engines together as a straight eight. But a plain and unadorned Flivver was good enough for most folks, and we are unlikely to see another car so universally known and loved by the world and his wife as the old Model T, "obtainable in any shade of black".

DOPE & CASTOR (Continued from page 63)

During the pleasant little cocktail party that followed the Exhibition's opening by Earl Howe, lots of people admired the embryo 4-cylinder 10 c.c. engine which "Jonah" brought along in his pocket, and Jim Dean found no takers amongst the big-car men to his suggestion for a match between a 10 c.c. model and a real racer over a standing quarter-mile. If you think it out, you'll see why. I don't believe any standing quarter mile record exists in the model world, but a good little 'un should beat 80 m.p.h.,

I imagine.

Before signing off with my best wishes for a rousing Christmas to all my registered readers, here are two secretarial changes, at least one of which is somewhat belated. H. Pickersgill of 15 Golcar St., Leeds, 6, is the man to contact on behalf of the Guiseley M.E. Club, whilst Harry Howlett has handed Meteor Club secretarial affairs to Norman Stanton of 44 Peel Terrace, Stafford, who will be coping with the forthcoming Open Day.

DOPE & CASTOR

By JERRY CANN

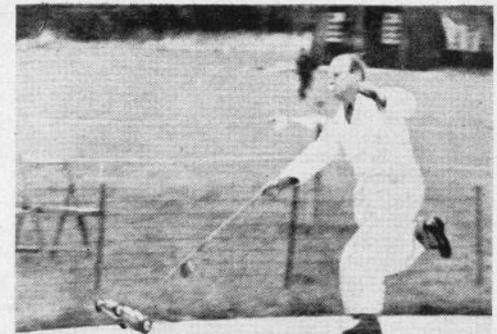
THE Xmas season will be upon us any moment now, and as yet there seems to have been little or no slacking off in racing activities. This ability to keep going certainly helps the winter along nicely, and is largely made possible by the number of excellent indoor tracks made available by various kindly-disposed individuals and organisations up and down the country. The recent meeting at Liverpool is a case in point. We should have been very sceptical, a year or two ago, of the chances of seeing 120 mph come up on an indoor improvised track, but now we take it in our stride. The southern contingent were very much in evidence at the English Electric and Napier's meeting, winning the 10 cc. Open and 2.5 cc. classes at cracking speeds, but the Northerners always put up a grand show in the home-built category, and although Jack Cook proved unbeatable in the Open 5 cc. class with his Dooling, John Parker's E.T.A. put up a fine show.

The new Oliver jobs will be competitors to watch next season, and so, I fancy, will that very promising little car which Mrs. Catchpole ran at Liverpool. This is in effect two Oliver bottom-half body castings with the normal direct drive Oliver lay-out tucked inside, and it looks like being a highly successful combination. Mrs. Catchpole herself is a most enthusiastic competitor, besides being an expert time-keeper and organiser of race meetings, and she and Mrs. Snelling have missed very few of the season's Open meets. All round, these two family teams must have covered a phenomenal mileage throughout the year, Cyril Catchpole's trim Morris Minor and Alec Snelling's cream coupe being a regular part of the track scenery. This month's D. and C. picture, incidentally, depicts Alec in full flight during the Russell Trophy at Eaton Bray this year, our photographer having caught the Talbot in a more than usually skitish attitude. Someone to whom we showed the picture thought he was taking the dog for a run! All we can say is that for a Russell Trophy entry it's a shockingly non-scale take-off!

Talking of D. and C. illustrations, cartoonist Manwaring can come out of hiding again, as his last month's victim merely complained that he is of more manly proportions than shown, and always works with his shirt-sleeves rolled up.

Press dates being what they are, there just isn't time to give a report of the Edmonton meeting at Rego Works this month, but *Model Maker* will be there, and an account will appear in the next issue, not forgetting the Vintage event mentioned last month. Quite a number of models have been snatched back from Junior, had the string removed and been refurbished up for this refreshing event.

Looming up on the horizon shortly is the Meteor



You've heard the expression "rarin' to go!" — well, this is obviously what it means! We are adding this picture to our collection of Eaton Bray ballet scenes, captioned simply "Snelling in Springtime".

Open at Newcastle under Lyme. This hardy annual has been fixed for December 9th, a later date than usual, and is usually one of the best attended fixtures in the calendar. The Meteor rail track will not, I understand, be demonstrated on that occasion, but has its last outing of the year on the previous Sunday.

Speaking of the Meteor Club, Gerry Buck has now acquired the Grandfather of all musical-boxes, which stands four feet high, devours vast quantities of pennies, and has been consigned to the out-buildings by his wife as unfit for human consumption (the musical box, I mean), Gerry's workshop is now working overtime producing iron washers as a substitute for pennies.

Visiting Simpson's of Piccadilly recently for the opening of their British racing car exhibition, I found nearly as many model racing enthusiasts as full sized ones. (Well, you know what I mean). There were a number of fine models, both true-to-scale and speed types, including the handsome Rex Hays E.R.A. Trophy, the St. John Horsfall Aston Martin Trophy, an exquisite little E.R.A. model, said to be the first made, and the Hays 4½ litre Bentley model, alongside W. P. Jones' Bugatti, Alec Snelling's two streamliners, Jim Dean's new 2.5 c.c. streamliner and E. P. Zere's latest speed jobs. The big stuff was principally shown on the ground floor, but the various Half litre racers were on view upstairs, including the Stirling Moss Kieft, J.B.S., Cooper and Arnott. Downstairs attention was divided between the veteran Whitehead E.R.A., the H.W.M. and the new all-enclosed Cooper record car, which is a real masterpiece of aerodynamic bodywork. I prophesy that we shall see plenty of miniature replicas of this machine on the tracks by next season. It should offer the speed men almost everything they want in a prototype.

(Continued on page 62)

LIVERPOOL "OPEN" MEETING

ment resulting in approximately 26,000 bangs per minute, giving a very polished run at 80.35 m.p.h.

Due to the position of British and Open regulations not being clearly defined, it was decided to clarify the position with a re-run. J. R. Parker unfortunately was unable to get his car away within the time limit of two minutes, so did not complete a run. Jack Cook really got the Dooling screaming this time and put in a run at 97.50 m.p.h. and took 1st prize in the Open Class, J. Parker winning the British Class with his first run of 89.28 m.p.h., C. E. Craig being second and J. S. Oliver third.

The track was again cleaned off and the 10 c.c. class came to the line after the tea interval. H. Cook of Bolton, running a Dooling Arrow, recorded two runs at 107.78 m.p.h. A. F. Snelling's Challenger Dooling followed with 112.78 m.p.h., then C. M. Catchpole of Surrey, running a Dooling Special, put

(Continued from page 53)

in a run at 120.80 m.p.h. to set up a new track record, and on his second run recorded a speed of 119.04 m.p.h. A. F. Snelling on his second run improved his speed to 118.42 m.p.h. Joe Riding of Blackpool put in two identical runs at 105.88 to win the British class. H. Howlett was second with his home-built job at a speed of 95.33 m.p.h., and D. James of Worcester running a Rowell engined car third at 87.37 m.p.h.

The meeting closed with the presentation of a very fine selection of prizes which were presented by Mr. F. R. Smith representing the Works Management.

Joe Riding having won his class, i.e. 10 c.c. British for two years running, generously decided not to accept his prize, which was then handed to H. Howlett of Meteor. This altered the placings and D. M. Eaves of the Blackpool Club qualified for third prize.

RAIL RACING NOTES

(Continued from page 59)

demonstration of H. C. Baigent's track at the Model Engineer Exhibition recently gave the movement a considerable fillip, as one might expect. Material may prove something of a problem, but it can be obtained at present, so those who intend to have a go are advised not to leave their plans too long in the talking stage. Incidentally, so far as actual fittings for tracks and cars are concerned, the originator H. C. Baigent, has started a concern in Bournemouth

to cope with these items amongst other things, and his address is Hut 200, Hurn Airport, Christchurch.

No one so far has constructed an outdoor track, taking advantage of the natural rise and fall of the ground to add to the excitement, but this is an obvious step, which we shall doubtless see by next summer. If any such plans are in fact afoot, we shall be most interested to hear of them, and to assist in any way we can.

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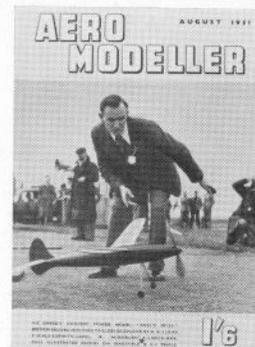
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