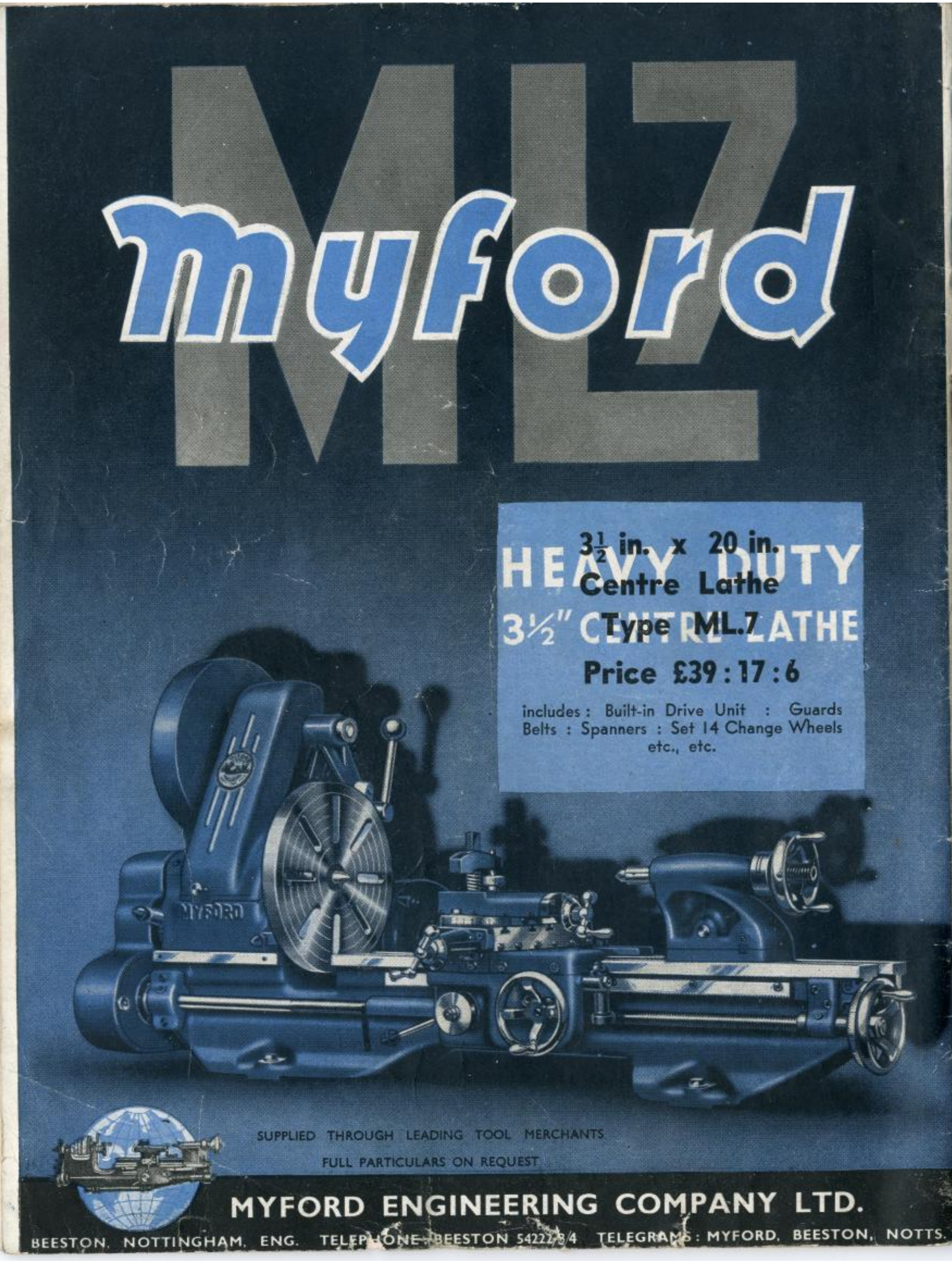


# MODEL MAKER

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VOLUME 1 NUMBER 1 (New Series) DECEMBER 1950

IN THIS ISSUE : Coastal Sailing Barge : 36in. Restricted Class Yacht : Camera Tips and Workshop Improvements : An Inexpensive "Five" : Model Car Review '46-50 : An E.R.A. Model : SS100 Prototype : Puffing Billy on Tracks : Better Miniature Layouts : Drilling Machine : Making Tyres and Wheels : Model Car Meetings : Famous British Miniature Railways : Kitchen Table Concours Features : Test Bench : Dope and Castor : Scrap Box : Query Service : Book Review, etc., etc.

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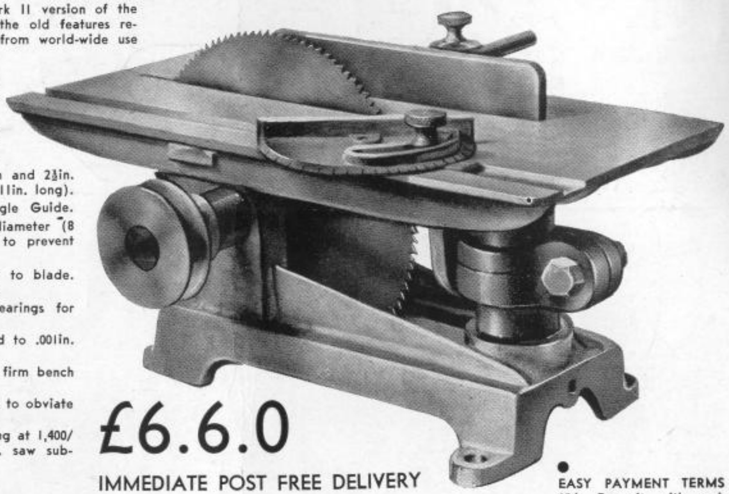

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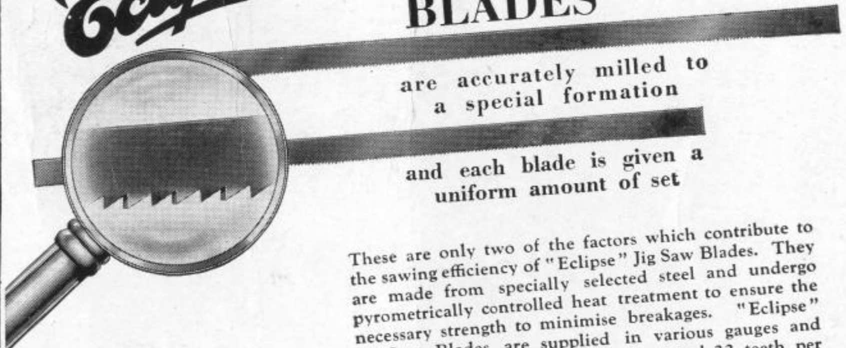

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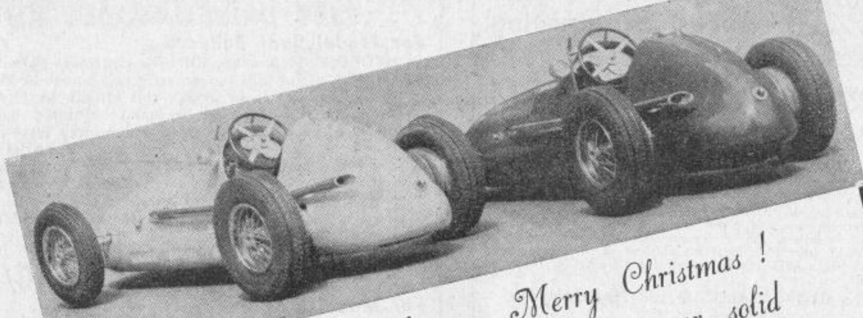

*To Modellers Everywhere, Merry Christmas!*
*And whether you are land, water, air or solid*
*Good Luck for 1951.*
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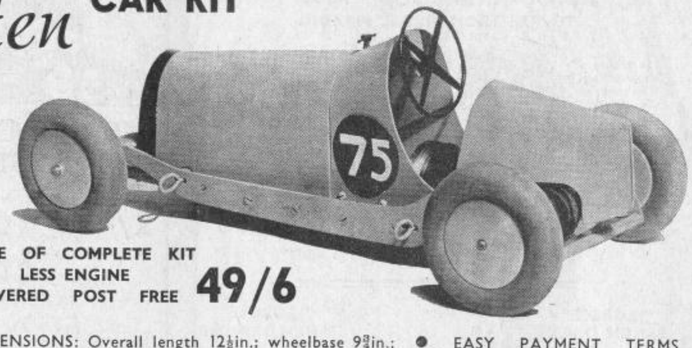
# MASCO *Kitten* CAR KIT



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**Skirrow.**—Scale model of popular British speedway car. Another mainly wood built beginner's model for engines up to 2.5 c.c. Price **2/6.**

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**Jetmobile.**—Jetex pewered semi-scale model of all wood construction—an excellent introduction to model car building. Many sold as kits. Now available as plan. Price **1/6.**

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Each car in this series designed to make fullest possible use of prefabricated commercial parts, thus avoiding the need for an elaborate home workshop, is drawn on two sheets, each measuring 30 x 20 ins., and embodying side, front and rear elevations and all details required, and sells at the standard price of 10/6 for each car featured.

**D Type E.R.A., 2-litre.**—Overall length 17¼"; Overall width 6¾"; Wheel base 11½"; Track 6"; Tyres 3½" diameter. Independent coil springing; or alternative half-elliptic on rear wheels. Suitable for 5 c.c. engines.

**Maserati Type 6c.**—Overall length 18"; Overall width 7¼"; Wheel base 12¼"; Track 6⅜"; Rear clutch drive. Coil or leaf springing. Suitable for 5 c.c. engines.

**M.G. Midget (based on T Type).**—Overall length 16⅞"; overall width 7"; Wheel base 11¾"; Track 5⅞"; Tyres 3½" diameter. Rubber or half-elliptic springing. Spare wheel, wings and lamps optional. Suitable for 5 c.c. engines.

**Auto Union 1938 Grand Prix.**—Overall length 17⅜"; Overall width 7"; Wheel base 11½"; Track 6¼"; Tyres 3½" diameter. Underslung coil springing. F.W.D. with clutch or alternative layout for direct drive off the rear wheels. Suitable for 5 c.c. engines.

**E. Type E.R.A. Grand Prix.**—Overall length 18⅞"; Overall width 6¾"; Wheel base 12½"; Track 6"; Tyres 3½" diameter. Coil springing. Horizontally mounted engine driving by clutch through rear wheels. Suitable for 5 c.c. engines.

**Gardner Record Car.** — Overall length 19¼"; Overall width 6¼"; Wheel base 9⅞"; Track 4¾"; Tyres 3" diameter. Horizontal engine mounting. Coil springing. Suitable for 5 c.c. engines.

**The Buck 6-volt Starter.**—Designed by one of the leading British experts, the Starter is a simply constructed accessory that has proven extremely handy to both the individual and groups. Utilising an ordinary car starter motor, this "gadget" makes for exceptionally easy starting of your model car engines. Price **3/6.**

**Prototype Plans**—drawn from the original cars give scale outlines of famous marques, and are suitable for scale models utilising popular wheel sizes (mainly 3½in. dia.). Cars in the series are as follows:—4CLT/48 Maserati, 4½ litre G.P. Lago Talbot, Alfa Romeo (Monoposto P3), Bugatti (35B), E.R.A. (D Type), E.R.A. (E Type), Mercedes Benz (G.P. 1938), M.G. (Gardner Record Car), Auto Union (G.P. 1938), Maserati 6-cylinder, 1½-litre, Type 6C, 1½-litre Mercedes Benz, 1½-litre Delage, G.6 Amilcar, 350 h.p. Sunbeam, 120 XK Jaguar, Alta G.P., Alfa Romeo Type 158, S.S. 100. Drawings, size 28½ x 21 in., are available at 2/6 post free.

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**Coastal Sailing Barge "Will Everard"**—¼in. scale plans on five sheets for exhibition model—finest detailed drawings of their kind ever published. Per set **17/6.**

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**13in. Sailing Sharpie.**—A scale model of a 13ft. Bermudan rigged three-quarter decked sailing sharpie. Having no centre-board is suited to shallow waters. On two sheets, size 40in. x 28in. Price **7/6.**

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# MODEL MAKER

*incorporating* THE MODEL MECHANIC & MODEL CARS

VOLUME I No. I (New Series)
DECEMBER
1950

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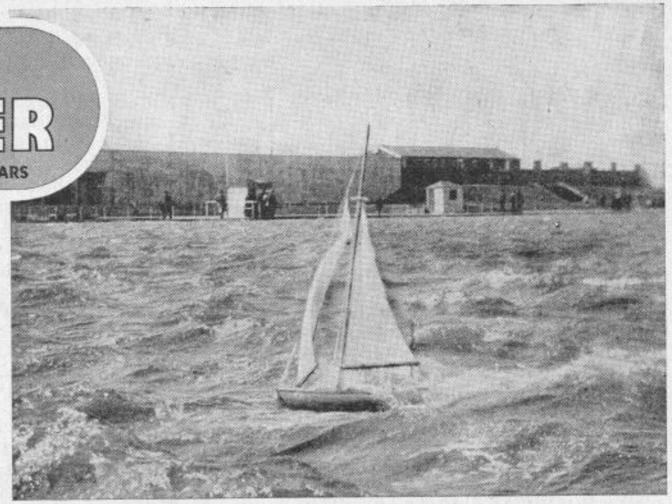
Useful Contact! Our cover picture, taken during the rush and hustle of a model car team race at Eaton Bray, illustrates graphically a mechanical aid which has taken much of the 'grind' out of starting miniature engines, and relegated the old bootlace to the limbo of the past.



"Elusive" designed by A. W. Littlejohn, and sailed by P. H. Fellingham and T. J. Lance, winning the 1950 British Open Championship Marblehead Class at Brighton in September. Run in a gale our picture gives some impression of the stormy waters and the speed at which the model is planing.

## Contents

# EDITORIAL

## They Come In All Sizes

FROM our birth upwards we all tend to place a great importance upon size; whether our portion at table is quite so large as that on another's plate, whether our infant trousers are still as large as necessary. . . . And so on ad infinitum throughout our days. It can occasion no surprise therefore if we open our first message to readers of *Model Maker* with a reference to our increased size. We are frankly very pleased with the 68 pages that we can offer month by month: for the first time we feel really on terms with our associate journal *Aeromodeller* and no longer impelled to promise all kinds of pleasures in store "when we grow up".

Today we *are* grown up! Our welcome is extended to all our readers, old and new, to our contributors, and certainly not least, to our advertisers, who are so essential a part of modern journalism.

What can we offer you? These pages are the answer—a full and variegated mixture of all aspects of model-making. Our editorial committee have spent many hours discussing just what our title *Model Maker* should embrace, and have come to the decision that it should include not only the models, but the tools that make them. These tools in turn are seldom limited so rigidly as to make nothing but models and in fact are used for a multiplicity of useful tasks. Where we feel, therefore, that our model making readers would be interested in such kinds of enterprise we shall have no hesitation in so entertaining them.

In the same way, as models are so often replicas in minature of some full size object or machine, we feel justified in presenting from time to time, worthy prototypes for their skill, such as famous racing cars for the model car enthusiasts, locomotives and traction engines for the steam enthusiasts, down to such things as windmills or water wheels for the scenic modeller.

With so many more pages at our disposal, we hope to ring the changes month to month and so give every reader a full opportunity of indulging his own particular modelling bent no matter how curious or unusual. Naturally, our aims will be centred about the more strongly supported branches of our hobby and pastime, but we rely on gentle prompting from time to time, to induce us to explore less frequented byways. Our customers, the readers, will always be right and it will be their privilege and indeed duty to guide us in the way they would like us to go.

Our correspondence columns will be ever open to their letters, and our hearts never hardened against their contributions. We know only too well that the finest model maker is often hard put to it to explain his brainchild—but let us put him at ease without delay, and suggest he lets us hear from him, if only on the back of an envelope. Should his model have the faintest glimmer of potential interest we will be hot foot after him for more information, and by correspondence, and even an editorial visit, build up the full story for our pages.

## The More the Merrier

We are printing enough copies of *Model Maker* to meet what we consider the immediate first demand, including specimen copies to those who desire them. To display them as our readers would no doubt prefer on every bookstall throughout the country in sufficient quantities to make a splash would tax our resources to breaking point without any certainty that the right people would buy them after all. Indeed their displayed life might last only from morning opening until the arrival of the midday-specials obscured their bright covers from view for ever. Nor, under existing trade arrangements, are we permitted to indulge this orgy of display—every copy sent out to a retailer must have been ordered by him on a firm sale basis—no returns are permitted. The task of educating every book shop manager and stallkeeper to the sales possibilities of *Model Maker* is one that we must delegate to our readers.

They must badger for their copy, express dignified disbelief at its absence, hint at under-counter copies of so valuable a product for more favoured customers, in fact make the poor man get a few copies in next time just to see!

Meanwhile, if there is any difficulty in securing casual copies, the careful reader will pass on the loose slip enclosed to his friends, rather than lend his own precious issue, and so ensure that one more regular reader joins the fold. The same slip can be used for subscription orders which save all the agonies of a fruitless hunt for a stray number. They can be sent to us direct or passed through the usual newsagent, the method is immaterial, but we would like to feel that something positive has been done about it.

As a last service from our readers, a note of the name and address of any retailer who does not stock, has not heard of, or does not know where to get *Model Maker* will be greatly appreciated here, and enable us to plan more effective promotion campaigns for the future.



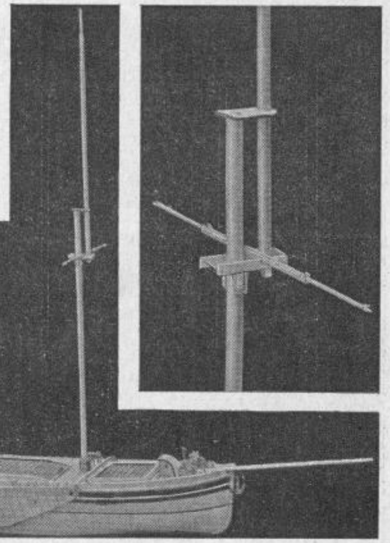
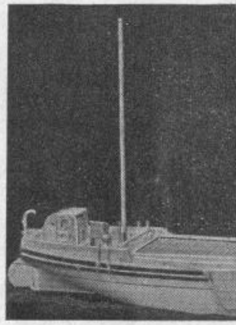


THE COASTAL SAILING BARGE

# "WILL EVERARD"

## PART III : MASTS & SPARS ★

BY BERNARD REEVE, M.S.N.R.

The hull with appropriate deck fittings added and masts stepped. Inset shows close up of yoke with hinged cross-trees.

HAVING carried out the sequence of operations as outlined in Articles I and II our model will, by this time, be taking on the appearance of a real ship, and pride of achievement will be asserting itself.

All being well you are now ready to proceed with the masts, spars and rigging.

The first step is to gather together the necessary material. Dowel rod for mast and spars. Metal for blocks, mast head yoke, cheeks and cross-trees. Small pieces of the same chain as used for the anchor cable. Mast hoops, thread, fishing line and phosphor bronze rigging wire. In fact all those items as are shown on Sheet 4 of the plan.

**Main Mast**

Material 18½ in. of ⅜ in. square birch or ash. Dowel is not convenient for this spar as the heel must be a full ¼ in. x ¼ in. square which cannot be obtained from ¼ in. round dowel. Square off the bottom for ¾ in. and round off the remainder by means of a small spokeshave, completing the operation by means of coarse abrasive paper and then by polishing with a fine grade paper until a dead smooth surface is obtained. Finally cut the square on the top of the mast to accommodate the square hole in the floor of the mast cap; this square is $\frac{3}{16}$ in. x ⅛ in. high.

The best finish for all spars is french polish. Half a dozen coats well rubbed in, allowing a few hours to harden between each coat, will produce a perfect result. The thumb cleat carved from a piece of hard wood is fitted to the mast after the yoke and cross-tree assembly is in place.

The yoke and cross-trees are now made from brass sheet and 16 gauge brass wire.

The drawing on Sheet 4 will make the fabrication of this part clear, but for the benefit of my less expert readers the successive stages from marking out to the finished article is shown in Fig. 1. For the floor take a piece of flat brass sheet, 20 to 22 gauge will be suitable, and mark out. Before cutting to shape drill a ¼ in. hole for the mast and drill and file up the shaped hole for the heel of the top-mast. Cut two slots on either edge opposite the ¼ in. mast hole to accommodate the cheeks which are fitted inside the outer rim and not outside as shown in the drawing.

The sides are bent up from one strip of brass 3½ in. long by ⅛ in. wide. This is now soldered to the floor. The easiest way to do this is to hold the parts together with small cramps; or bind with thin wire and use a solder paint such as Frysol. This is a combined solder and flux in thin past form which is painted upon the surfaces to be joined and heated by means of one of those little blow torches which fit on to any gas point. Needless to say all metal parts to be joined must be scrupulously clean.

When complete, slot the sides with a flat file to accommodate the channel for the cross trees and solder into place before removing the cramps. This channel is bent up from thin brass which is marked out as shown in Fig. 2.

The cross-trees are formed from $\frac{1}{16}$ in. brass wire. Anneal the ends by heating to redness and quench-

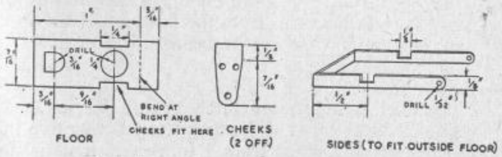
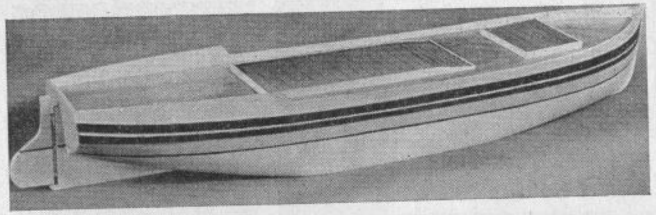
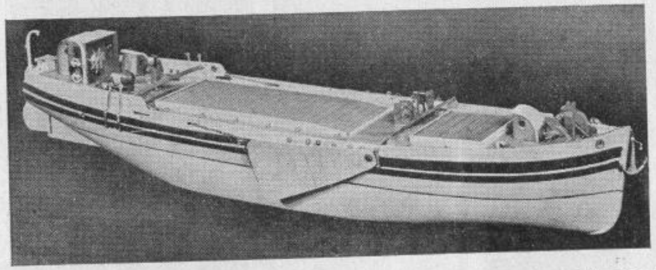



FIG 1 MASTHEAD YOKE.

★ Parts I and II of this series appeared in the "Model Mechanic", the two back numbers of which may be obtained from the publishers, price 2/- each, post free.





Two views of the hull, before and after deck fittings and leeboards have been added.

ing, flatten with a light hammer, slot the ends and file finish. Drill a $\frac{1}{32}$ in. hole $\frac{3}{4}$ in. from the forked end and insert a piece of 22 gauge brass wire formed into a hook as shown in the drawing "Enlarged detail at mast head". This carries the cross-tree lift and down haul.

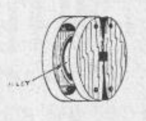
Drill another $\frac{1}{32}$ in. hole in the inboard end of the cross-tree for the hinge pin. Finally drill the ends of the sides for the bar of $\frac{1}{16}$ in. wire which carried the peak blocks. Finish—silver lacquer.

The yoke and cross-trees should now be fitted to the mast $2\frac{1}{2}$ in. from the cap. Shape a pair of wooden bolsters between cheeks and mast, curved to fit the mast on the inside and flat to fit the cheeks on the outside, glue and pin into position. The thumb cleat glued and pinned into position on the after side, and the cap of $\frac{1}{16}$ in. ply drilled, shaped and fitted. Always drill and cut holes before shaping these small fitments.

The fitting of the jack stay may now be proceeded with. Use model screw eyes and a thin cycle spoke which is dead straight and made of rustless steel.

**Top-Mast**

Material $11\frac{1}{4}$ in. of $\frac{1}{4}$ in. sq. birch. It is a peculiarity of the barge that the top-mast has a forward spring and this should be set by steaming the finished top-mast and setting by pinning to the requisite curve. Shape the pole mast as shown, but drill the top with the $\frac{1}{32}$ in. drill to carry the flag stick before shaping to avoid splitting.



PROTOTYPE BLOCK

It should be noted that the heel of the top-mast is square on the side nearest the main mast and round on the face facing forward. The shape of the hole in the floor of the masthead yoke will give the exact shape. Drill a $\frac{1}{32}$ in. hole $\frac{3}{16}$ in. up from the top-mast base for the "fid" of 22 gauge wire. Finish as for other spars.

MAST HOOPS. Seven are required and usually a jeweller will be able to supply. They may be brass or white metal, and if the joints are open they should be spot soldered. If these rings are brass or other coloured metal they must be dipped in silver lacquer.

A. SHAPED OVAL & MARKED OUT
B. CUT & DRILLED
C. DRILLED & GROOVED.
D. SLOTTED FOR STROP.
E. STROPPED & FINISHED.

FIG 3. MAKING SMALL WOODEN BLOCKS.

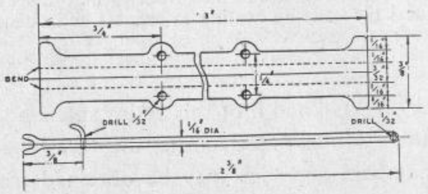


FIG 2. CROSS-TREES & ARM.

**House Flag or Bob**

This measures $\frac{3}{4}$ in. x $1\frac{1}{4}$ in. The scale is too small to make up in separate pieces so use white sail material and after hemming the hoist end (i.e. that part nearest the mast) to take a piece of wire with a horizontal loop at each end to fit around the mast, paint two red sectors with cellulose paint, the red sections are those at hoist and fly (in a horizontal plane).

**Head-Stick**

Material $\frac{1}{8}$ in. dowel, 3 in. long. Form into an oval $\frac{1}{8}$ in. x $\frac{1}{16}$ in. and bend up a band of thin brass—shim brass is about the right gauge—into the shape shown, solder the two ends together and drill $\frac{1}{32}$ in.

**Sprit**

Material $\frac{1}{4}$ in. dowel 16 in. long. Taper upper end to $\frac{3}{16}$ in. starting 5 in. from the top. Taper butt down to $\frac{7}{32}$ in. starting 6 in. from the bottom. Make up a band similar to that on the head-stick and fit 9 in. from the heel.

**Bowsprit**

Material $\frac{1}{4}$ in. square birch or ash $8\frac{5}{8}$ in. long. Although this spar is $\frac{3}{16}$ in. diameter tapering to $\frac{1}{8}$ in. full it must be shaped from $\frac{1}{4}$ in. square material to obtain the $\frac{1}{4}$ in. square heel which is $\frac{5}{8}$ in. long.





Drill $\frac{1}{32}$ in. hole $\frac{1}{2}$ in. from the butt for the fulcrum pin of 22 gauge wire. A cleat is fitted $1\frac{1}{4}$ in. from the heel and a gammon iron made up with lugs top and bottom to carry the top-mast stay and bob-stay. It is drilled through each side to carry the 22 gauge wire eyes from the shrouds. Half an inch from the outboard end drill again for the jib stay eye.

The enlarged detail of the bowsprit end on Sheet 4 will make the above clear, but do not forget to polish the spar before fixing these fittings.

**Mizen Mast**

Material $\frac{1}{4}$ in. square birch or ash 12 in. long. Here again we must use square material to obtain the square heel $\frac{3}{4}$ in. long which is drilled $\frac{1}{32}$ in. for the hinge pin $\frac{1}{8}$ in. from the butt. This spar is $\frac{3}{16}$ in. round for 9 in. then tapers to $\frac{1}{8}$ in. for the remainder of its length leaving a shoulder where the taper commences. Half an inch from this shoulder is the jigger for the throat blocks and $\frac{3}{8}$ in. above that is a mast band for the peak halliard blocks.

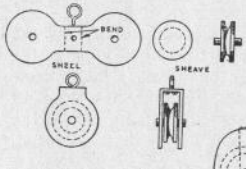



FIG 4. SINGLE IRON BLOCK.

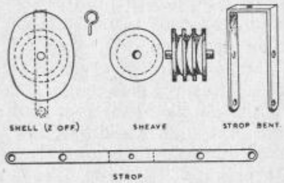



FIG 5. STAY FALL BLOCK.

Immediately below the shoulder is the jumper strut. This has the end flattened and drilled to carry the stay. These struts should be made from thin cycle spokes which are forced into holes drilled in the mast.

**Goose-Neck**

This band is fitted at the lower end of the mast of the wheel house. It consists of a metal band fitted to the mast and drilled to take a piece of brass wire with an eye formed in one end. This is forced through mast and band and the other end cut off and turned down to engage with an eye on the end of the boom.

The jumper stay is of fine wire taken from the top of the mast, through the strut and terminates in a cringle. This is lashed to the ring on the goose-neck band to tension the stay.

**Mizen-Boom**

Material $\frac{3}{16}$ in. dowel $6\frac{1}{2}$ in. long tapering to $\frac{1}{8}$ in. at each end, the inboard end being $\frac{1}{8}$ in. full. Fit a band $1\frac{3}{4}$ in. from the outer end with an eye for the mizen sheet block, and an outer and inner band at each end fitted with eyes for topping lift and goose-neck. A small wire cleat is fixed on the under side 1 in. from the mast end of the boom.

**Gaff**

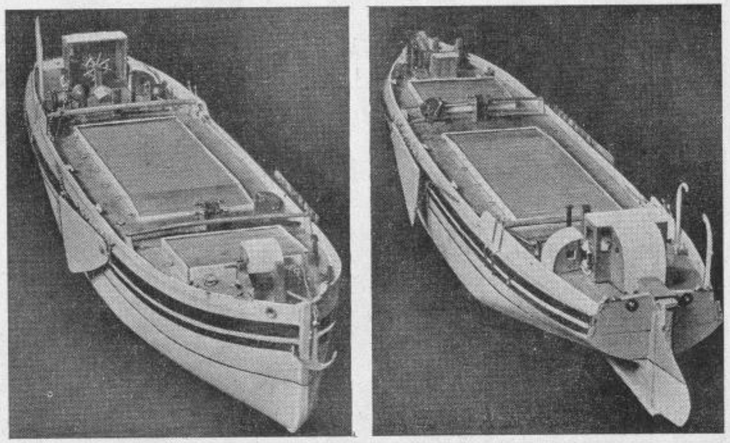
Material $\frac{3}{16}$ in. dowel $5\frac{3}{4}$ in. long. Taper to $\frac{1}{8}$ in. and taper the inboard end for the gaff jaws. These are made from a piece of $\frac{3}{16}$ in. hard wood. Mark out as shown on Sheet 4 and drill the $\frac{1}{4}$ in. hole before cutting the jaws to shape. Cut out with a fret saw and securely glue to the tongue cut on the gaff. If the fit is good—as it should be—there is no need to pin; when the glue has hardened file all edges to blend with the gaff.

Three bands are required, one 3 in. from the outboard end, another 1 in. from the end and one at the tip.

These bands are best made from shim brass bent round a metal rod of the correct diameter—I use a drill shank for these bands—spot soldered and dipped in silver lacquer. Brass tube can be used but unless it is fitted flush by reducing the diameter of the spar it looks out of scale owing to the thickness of the tube. If you can get hold of some very thin tube this objection disappears, but in this case it must be mounted on a wood rod before cutting otherwise there is a danger of the saw flattening the tube.

**Blocks**

On a model barge we are concerned with two main types of blocks; the orthodox wooden ones and special metal blocks of the single and treble variety. Small wooden blocks are not difficult to make if the



Bow and stern views of "Will Everard" after the installation of main deck fittings, but before stepping masts and attaching bowsprit.

constructor is content to have them in a simplified form. Fig. 3 shows the progressive stages of fabrication which will produce a block of sufficient accuracy to satisfy all but those constructors who demand nothing but true to scale work no matter how small the scale being worked to.

The triple main sheet block is a wooden one of a design peculiar to sailing barges as the sheave axle is extended on either side of the shell—this is detailed on Sheet 4. This block is made as described and illustrated below with a piece of 22 gauge wire inserted through the shell.

Iron blocks are of two kinds, single for brails, etc., and the triple stayfall block. Fig. 4 gives full details of the single type.

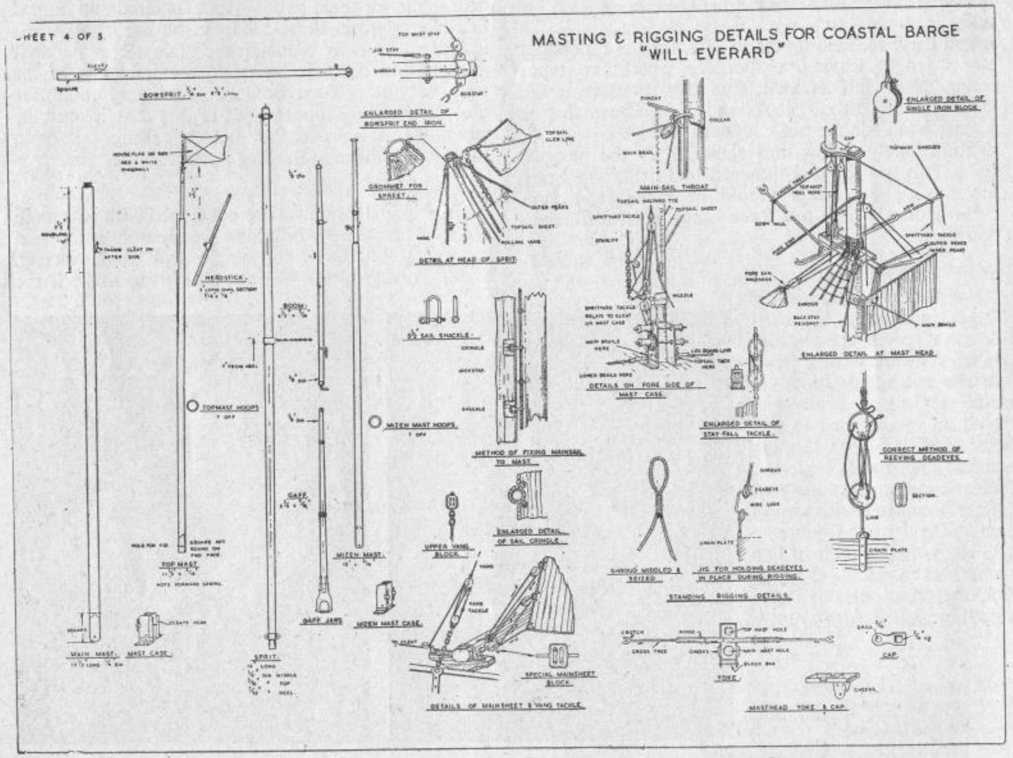
In each case the shells and strops—where fitted—are cut from 24/26 gauge brass. Sheaves are turned from brass rod of the appropriate size leaving a "pip" on each side to form the axle.

The description of the triple stay-fall blocks which follow will serve to illustrate the methods used for the manufacture of all types of metal blocks used on the *Will Everard*.

The general appearance of this block will be apparent from the enlarged detail on Sheet 4. This is one of the cases where a lathe is essential for the turning of the sheaves. Fig. 5 shows the successive stages of fabrication. To make the sheaves chuck a piece of brass rod in the lathe and with a 60° vee thread tool cut the necessary groove, but leave a $\frac{1}{32}$ in. land between each groove, this will be clear from Figs. 4 and 5 which also show the axle pips. If the lathe tool has a slightly rounded nose so much the better as a sharp vee tool leaves a groove in which the sheet or halliard is apt to jam. When parting off do not forget to leave the axle pip on the other side of the sheave.

The shells for the single sheaved iron blocks are not stropped, but they are fitted with a ring at the top of the shell which may be a very small screw eye soldered in and the shank filed off, or a loop of brass wire passed through the hole in the top of the shell, the ends turned at right angles and soldered, then filed clean.

Some small items such as the collar just under the cross trees to which the throat of the mainsail is bent, or the muzzle at the foot of the main mast to which the sprit is anchored have not been touched upon as their fitting is quite clear from the details given on Sheet 4.








# An Inexpensive "FIVE"

by L. J. Mills

HAVING built a $2\frac{1}{2}$ c.c. clutch car, the natural sequence of events was the construction of something a little more powerful. However, being a man with a large family, cost was obviously a prime factor, hence the sale of the $2\frac{1}{2}$ c.c. job to provide capital for the new project.

The odds and ends department in my workshop yielded some odd chunks of scrap dural and aluminium, also four 3 in. E.D. wheels which had been originally used on the $2\frac{1}{2}$. With this nucleus, plans for the new model were evolved, beginning with the choice of a suitable engine. The Frog 500 seemed to be the ideal for the job as by all reports it developed good power and, what was more important, the price was extremely reasonable.

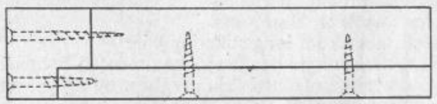
Plans were drawn to the appropriate scale for the wheels in stock, and in view of limitations of equipment and skill, design and body lines were kept simple. The general idea was a car with a definite G.P. look, a spur gear drive, independent front wheel suspension, and a pan type chassis, and after the eraser had been well used the drawings were completed. Now as to construction details.

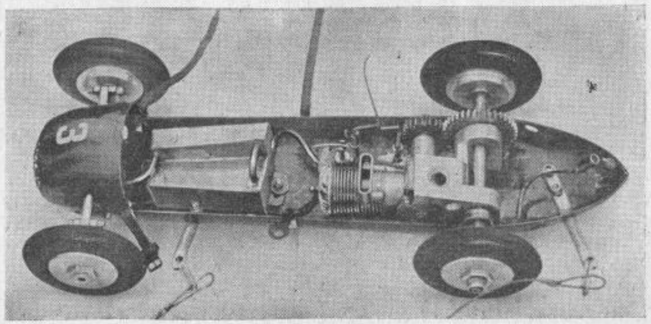
A wooden former for the whole car was made up in three sections, using pine for the body and pan, with a piece of oak to form the radiator. Two pieces of pine were cut carefully square, the first 13 in. long by 3 in. wide by $2\frac{1}{2}$ in. high, the second 14 in. by 3 in. by 1 in. This latter was screwed to the larger block, allowing the 1 in. overlap to facilitate mounting the radiator block. The oak block was trimmed to 3 in. by 3 in. by $2\frac{1}{2}$ in., and then let into the main former as shown in the sketch.

*Body, Pan and Radiator Former Block*

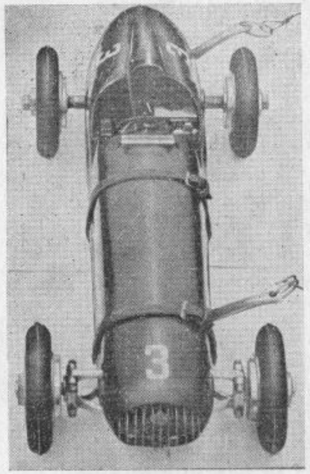
The rough outlines were marked and after much carving, filing and sand papering the complete outline was produced and the former taken to pieces.

"Metal bashing" not being one of the writer's strong points, so the making of the pan was ap-





(Above) The author ready to give his new 'Five' a trial run at Weybridge. (Right) A general view of the chassis which is very much in the modern tradition. The sketch shows the sections of the wooden body former before carving.



Head on view showing the suspension arms, and the new section given to the E. D. wheels.

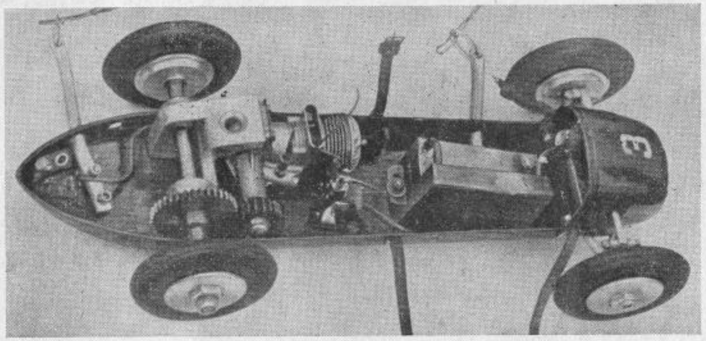
(Opposite page top) The Frog 500 is in no way obtrusive and a full facia is fitted.

Close up of the neatly made engine mount and fuel cut off gear.

(Below) Chassis from the near side, showing gearing arrangement.

proached with some trepidation! However, remembering sundry hints and tips about the use of washing soap, rubbed in streaks on the aluminium, followed by heating until the soap turned mid-brown, then quenching in water, the task was commenced.

The pan former was screwed to a piece of scrap wood, held in the vice and the pan beaten from a piece of aluminium $\frac{1}{16}$ in. thick to the accompaniment of some protest re smell of hot washing soap and general mess from long suffering wife!



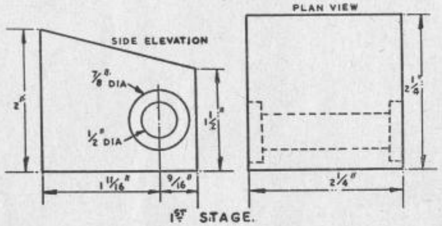
Next the spur gear unit was commenced by marking out a piece of dural 2 in. by 2 in. by $2\frac{1}{4}$ in., and roughly sawing it to shape. Machining was done on an ancient round bed Drummond lathe procured through the good offices of a friend, following the sale of a diesel engined A.S.R. Launch.

The main dimensions will be seen with the aid of the sketches. As a gear ratio of 1.75 to 1 was to be used, gears were purchased, also two $\frac{3}{8}$ in. by $\frac{7}{8}$ in. ballraces to carry the axle.

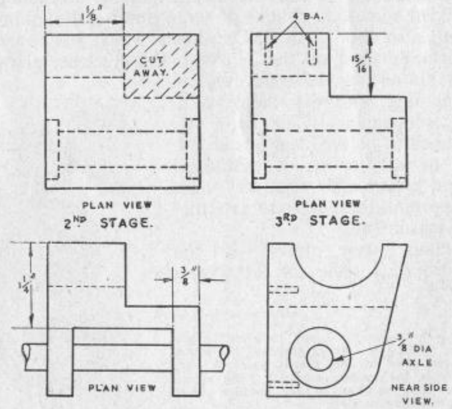
The axle position was marked and the block bored $\frac{1}{2}$ in. diameter, each side being counterbored to take the races. Next the recess to take the engine crankcase was machined, this boring being taken sufficiently far into the block to give comfortable clearance for the engine bearers. The remainder of the metal was then sawn off and the mounting trimmed up by filing. The sketches show the progress of the work and should give a clear picture of the stages of construction. Engine holding bolt holes were then drilled and tapped 4 B.A., also the three holes for securing the unit to the pan. Finally as much excess metal as possible was removed by drilling, sawing and filing, in order that the finished unit should be as light as possible.

*Construction of the Spur Unit*

As the existing taper hubs on the wheels were to be used, a piece of $\frac{3}{8}$ in. diameter silver steel was turned to a corresponding taper, the end $\frac{3}{8}$ in. on each side being turned parallel and threaded $\frac{1}{4}$ in. B.S.F. to take the Simmonds wheel securing nuts.




1ST STAGE.




FINISHED UNIT.



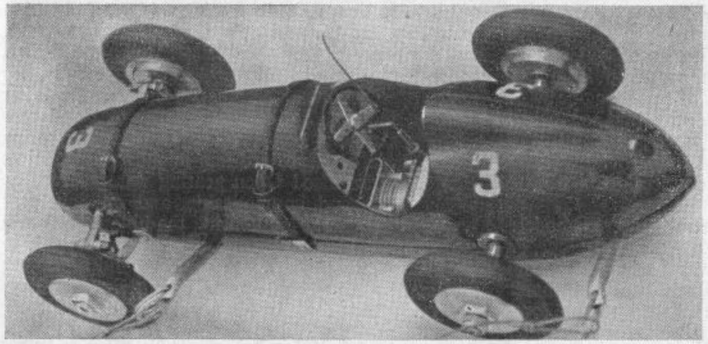


The axle was assembled and the large spur gear fitted, secured by a 4 B.A. Allen screw let well into the axle shaft.

No flywheel was fitted to the engine and some difficulty was experienced in securing the small spur gear to the crankshaft, as the Frog engine has a driving disc with a D centre. Several of these discs were drilled, countersunk carefully, hardened, and secured to the small spur gear by countersunk 4 B.A. screws.

However, all the discs split and the only way out was to make a split collet. The gear was bored with a 5° taper and a collet made up, fitted by securing with a $\frac{1}{4}$ B.S.F. Simmonds nut. The engine was then bolted to the unit, correct meshing of gears being looked after by means of shims. One point is that the crankcase holes were enlarged to 4 B.A. clearance.

The I.F.S. was modelled on the well known M.C.N. pattern with suitable modification in dimensions to suit the model, the only difference being that the wishbone arms were sawn and filed from the solid instead of being tubular steel brazed together. The front wheels run on plain bearings, the existing stub axles supplied with the wheels being used.



Tether brackets were made up from $\frac{5}{16}$ in. dural tube, carefully bent and held to the pan by 4 B.A. bolts with Simmonds nuts.

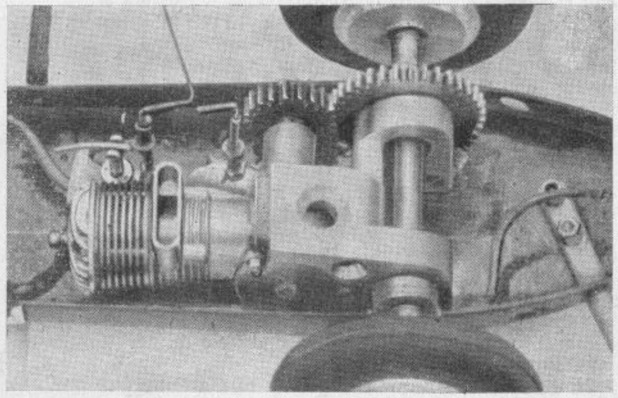
A word now about alterations carried out to the wheels and tyres. In order to improve appearance new backplates incorporating dummy ribbed brake drums were turned up from dural, the interior being bored out to leave $\frac{1}{16}$ in. metal all round. The front plates were flattened and the holding nuts thinned down and in the case of the front wheels, drilled for easier lubrication between runs. It is intended to drill and file these front plates to indicate a Bugatti type wheel.

As the E.D. wheels carry very thick section tyres, a rather crude but effective method was used to reduce them. The wheels were spun in the lathe at fast speed and the rubber removed by means of a small piece of concrete; the whole thing being finished with fine emery! A rather laborious job but well worth while as appearances proved.

Next the radiator was beaten from thin gauge copper in two pieces which were soldered together, slots for the arms and wishbones of the I.F.S. being drilled and filed out. A further slot was made in each side of the pan to take the rear arms of the wishbones. An angle piece was soldered on the inside of the radiator shell after being drilled to take the 4 B.A. screws holding it to the front suspension frame. The grille was made up by soldering lengths of small diameter welding rod in after bending to shape, this being backed off by brass filter mesh, two holes being made to enable a thin screwdriver to be used to tighten the holding screws. These holes were covered by a dummy radiator blanking as shown in the photograph, the whole job being finished off by a small diamond-shaped badge soldered to the grille.

Last, but by no means least, the body. As my attempts to beat a body in two halves over the former were a miserable failure it was decided to make it of laminated paper. Strips of newspaper were cut and successive layers were formed over the body former, each layer being covered with shellac before

(*Continued on page* 56)



# What's Gone Before

PART I by G. H. DEASON

T:e Russell Trophy, organised annually by the B.M.C.C., encourages looks as much as speed. Here are some entries in an early contest, being judged by Harold Pratley (back to camera) whose drawings of full-sized cars were well known features of "Model Cars".

THERE are folks who feel that looking back is an unprofitable business and a Bad Thing. In the case of a pleasant recreation, such as our model car building and racing, this can hardly be so, for our recollections of the past cannot be anything but happy and worth little reflection now and then, if only for th·t reason. Moreover, this first number of the *Model Maker* will be introducing the hobby to several thousands of readers who, though they may know something of its history in broad terms, are probably hazy as to the progress that has been made in the past years, and may welcome a recap.

It is certainly true that the first successful practitioners were, almost to a man, recruited from the ranks of that experienced band of small engine wizards, the model power boat fraternity, and somewhat natural that they should prove more successful over a number of years than any of their friendly rivals who hadn't served a hard apprenticeship in a pair of leaky waders!

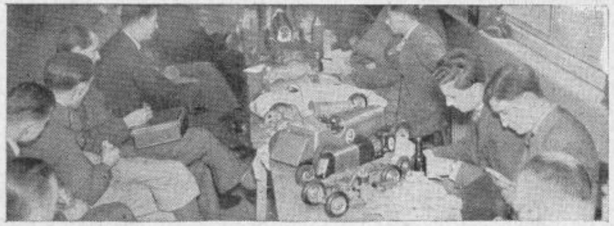
The first competitions for petrol powered models organised by our associate journal the *Aeromodeller* in 1942, and run off in 1943, was a triumph for the speed boat trained men, F. G. Buck, Jim Cruikshank and Bob Curwen coming immediately to the fore. (The latter entrant had certainly been running model cars as a lone hand prior to this time.) The *Aeromodeller* contest, won by Gerry Buck's No. 2 car in the 10 c.c. class and by Jim Cruikshank's M.G. in the 6 c.c. (yes, 6 c.c.) class, led to the demand for a club catering for members, from all parts of the country, and the B.M.C.C. came into being, running its early contests on the Kodak Hall at Wealdstone, and on the roof of the Institute for the Blind. Amongst other leading lights of those early days were A. F. Weaver, Jack Gascoigne, W. P. Jones, Jack Morgen and Dermot Wright, the latter being the Club's first secretary. The demand for a club in London, with a limited membership of strictly model engineering interests, led to the formation of the Pioneer Club, who operated in the Royal Horticultural Hall to "packed houses" of guest spectators, and these two clubs, whose members are very largely common to both, undoubtedly put model car racing on the map.

Nineteen forty six saw the opening of the Eaton Bray track where the B.M.C.C. have held monthly meetings ever since, and a glance at some of the models at that first meeting gives a useful cross-section of the trend of that time.

Even then the American proprietary engine was to the fore, although the disciples of the home constructed and British commercial units were there in about equal numbers. All the competing models used the centrifugal clutch popularised by Bob Curwen, and 90 per cent had conventional frames of channel or angle section, sometimes stiffened by a full-length undertray. Jack Gascoigne's "Red Arrow" however, was a pioneer of the "tray chassis", with the springs concealed inside, and the upper part of the body was made of sheet metal and papier mache, the latter forming the tail. Springing of both front and rear axles was almost universal, the simple leaf spring taking pride of place, and one might say that joints were universal also! Open gearing was regarded as highly crude and impracticable, and oil tight gear boxes were general for housing the ubiquitous bevel drive. These gearboxes were fine pieces of work in most cases, all shafts ran in ballraces, and remember that they had to be home-made, as in those early days the trade hadn't really got cracking on model car

A well-known figure in model racing from its earliest days, R. R. H. Curwen was the M.C.A.'s first Chairman, and is seen here on the roof track with his petrol engined special.





Left: E. P. Zere appears to have lost the winding key of his Dooling Hornet in this 1946 photo. Right: The first meeting of the small band of enthusiasts who formed the B.M.C.C.

components. Spur drive was something we knew they used in America, but it didn't obtain a footing on this side of the Atlantic for quite some time. There were, of course, other forms of transmission, Arthur Weaver for one clinging to an ingenious friction drive, using a coned driving member to alter his drive ratio, the cone being in one with the clutch drum, whilst Bob Curwen had had a session on friction drive earlier, but had discarded it. The writer had built a chain drive model some time prior to this, and now two other exponents of chains came into view, in the shape of Carl Wainwright from Leicester, and James Batten from Bridport. Actually another Wainwright model preceded the chain drive, this being an Alta, using a speedometer skew gearbox for its front drive, but "Black Wasp" was the better known car and ran for several seasons, a little troubled by heavy chain wear due to "fling", but highly successful for all that.

Fuel tank problems were rife on early models, and much thought was given to the problem of defeating the ever increasing figure of "G". Early designers, still emulating the full-sized scheme, endeavoured to put the tank in the tail or elsewhere above the engine, and ran into instant trouble with flooding, mixture variation and complete starvation. Bob Curwen, ever resourceful, pioneered the "chick feed" tank, using a sealed main container, the supply being controlled by the falling level of the fuel which uncovered an air vent at a predetermined point.

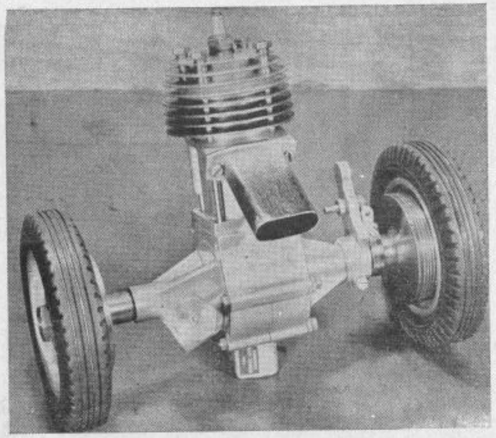
Engines, as previously stated, were a mixed lot in 1946. You paid your money, and if you knew the ropes you took your choice: and if you knew the run of the game you chose an O.K. Super 60, unless you wanted to design and build your own engine from scratch, or modify an existing design. That is, of course, if you had set your heart on competition successes. If you simply wanted to have lots of fun running your model, there were plenty of engines available, designed for aero work, which would fill the bill. Mostly these were three port two strokes, rather temperamental, rather unsubstantial by comparison with the squat and husky power plants of today, and all relying on coil and batteries. As an alternative to the three port layout, rotary induction via the crankshaft was quite popular, but the disc valve wasn't yet general.

With the British market so limited the soil was very fertile for the private production of engines, and some fine examples come to mind. Pride of place should go to Bob Curwen, whose twin-port engine vied with Jim Cruickshank's Westbury designed Kestrel at meeting after meeting for honours in the 5 c.c. class. The Curwen engine was a sturdy heavily finned motor, with rotary valve induction, and the design subsequently distinguished itself by proving equally happy as a compression ignition motor.

Other home built engines that spring to mind as outstanding were C. E. E. Smith's 10 c.c. "Griffon", C. W. Field's o.h.v. four-stroke of superb construction and finish, and Carl Wainwright's motors, which owed their inspiration to the Curwen design.

These engines apart, a number of tuning wizards practised their art on various proprietary units, with varying degrees of success. For example P. D. MacDiarmid, until Nemesis overtook him, conjured a prodigious output from a 10 c.c. Brown Junior well past the first flush of youth, and a variety of Hallams, Reeves, Ohlssons and the like had their crank and piston speeds and compression ratios increased beyond the wildest dreams of their original creators, and the introduction of alcohol fuels followed hard on the heels of these developments. Well ahead of this school, and in fact well ahead of anyone else in the country, came Gerry Buck and his much modified Gwynn Aero, basically a 7.5 c.c. American engine of quite modest performance which went from strength to strength under Gerry's ministrations, and at the end of 1946 left the 10 c.c. record at the then unapproachable figure of 75 m.p.h., way out ahead of the original Eaton Bray course record of 57 m.p.h. set by W. P. Jones with his O.K. engined Alfa Romeo in the early summer, before "Jonah" departed, complete with Alfa, to the Middle East. Most other contestants stuck around the 50 m.p.h. mark, the top line 5 c.c. jobs being almost as fast as the "tens".

During the later part of the season, however, a "cloud no bigger than a man's hand" appeared on the horizon, harbinger of events to come. This was the



Jim Cruikshank broke new ground with this high compression unit which, with a 16in. gear, successfully powered "Mercury Ten".

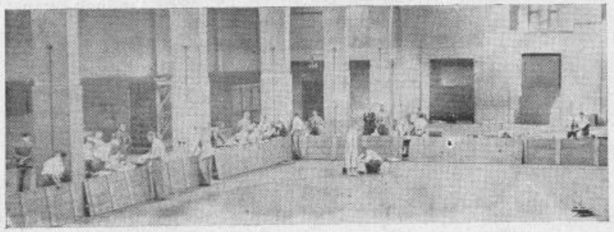
appearance of a Dooling Hornet, wrapped round with fearsome legends, in the hands of E. P. Zere and V. Middleton. Its reputation was considerable, but throughout the season it repeatedly failed to live up to it, and when after various viciscitudes it really got cracking it was the victim of a most spectacular crash at about 70 m.p.h. on the Horticultural Hall track, in the course of which it demolished a car accumulator and the panelling of the walls. Nevertheless, it represented the advance guard of an American invasion which was destined to have devastating effects on the course of model car racing history.

The 1947 Season found a greatly increased number of models ready to run, and several new racing tracks ready to receive them; a very gratifying state of affairs so far as the organisers were concerned, when less than a year previously the Pioneer Club's Lucas Cup race had attracted five entries, one of which was a non-starter, one crossed the line with a broken axle and the winner, Jack Gascoigne's Red Arrow, finished with two broken engine bearers, and the B.M.C.C.'s opening meeting, open to members from all over England, mustered a total of 7! For the healthy growth of the hobby credit must go to the handful of active devotees who had repeatedly demonstrated their cars to a greatly intrigued public, and to the work done by the newly established journals devoted to model car construction, *Model Cars* publishing its first issue in October, 1948.

Probably the most outstanding and significant newcomer to 1947 racing from the technical point of view was Jim Cruickshank's "Mercury Ten", which approached the speed problem from a new angle. This car was a neatly proportioned little "one piece" job with a stout 16 g. aluminium body-cum-chassis, looking rather like a $1\frac{1}{2}$ litre G.P. Delage, with simple flat steel front axle, and a most interesting engine-axle unit rigidly mounted in the tail. The engine had a bore and stroke of $\frac{7}{8}$ in. x 1 in., and ran happily on either pool petrol or alcohol, using a very low compression ratio. The crankshaft was extended on either side in long bearings to carry collet fixed wheels of just over 3 in. diameter, the cylinder was inclined forward into the cockpit and the exhaust port was arranged tangentially, facing upward and rearward. The direct drive called for a push start, quite novel to us then, and mixture control for starting was cunningly arranged by a friction damped choke with a carefully calculated weight, which opened itself as the car gained speed and began to bounce. This little car was highly successful during its all too brief career, and in its day was second only to the Buck 2A being finally developed to a speed of about 75 m.p.h.

Mercury Ten marked the beginning of a new trend towards greater simplicity and rigidity in the out and out speed model, and proved that most high revving high compression engines could, at that time at anyrate, be beaten by a high power/weight ratio, high gearing and a dead reliable motor.

This season also saw a greater variety of engine mountings and a break-away from the "pot upright and under the bonnet" arrangement in many cases, but the governing factor was still the height of the long stroke-motor with its spark plug poking upwards, and the necessity of keeping the flywheel in



Left: The Horticultural Hall has been used by the Pioneer Club since early days. Right: A Concours at the Surrey Club's Normandy track. Judging is Rodney Clark and (extreme right) Guy Rickard, Club President.





an accessible position for the starting cord, since electric starters and the inelegant push-stick were yet to come. Despite, or maybe because of, the increased numbers in competitions, however, starting up and reliable running improved greatly, due in some measure to improved ignition equipment and the use of the mini-accumulator, and not a little to the club competitions which included tests which put a premium on these things.

The season opened with the B.M.C.C.'s memorable Austin Trophy meeting, held indoors at Eaton Bray during the bitter month of March, on an improvised 28 ft. dia. track, and at this meeting "electric eye" timing was tried out with complete success, to the accompaniment of miles of chronograph tape! Gerry Buck emerged triumphant with a speed of 74.3 m.p.h., "Mercury Ten" coming second with 60.5 m.p.h., mostly airborne! A second indoor meeting, the Drysdale Team Race, introduced Dick Thomas from Kinver, who brought two most unconventional motors, a 10 c.c. split single two stroke, and a lethal looking chassis with a four stroke engine having a chain driven cylindrical rotary valve in the head. The latter didn't run, but the split single, aided by Mrs. V. Wainwright's reliable "Black Wasp" won the trophy handsomely.

The Pioneer Club continued to play to packed houses in London, and as the ferocious winter gave way to an equally memorable summer, the Surrey M.C.R.C. held its first meeting in delightful surroundings on the new "Tennis Court" track at Normandy, under the Hog's Back, where Guy and Mrs. Rickard entertained competitors and visitors alike and organised many excellent competitions. This track, alas had to be abandoned eventually, due to the local objection to the noise.

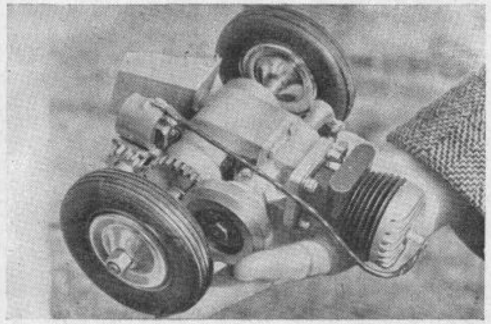
Activity in the Midlands and North was on the increase also, and up in Staffordshire the Meteor Club was getting under way, using the Canteen at Rists Cables, Newcastle-under-Lyme. F. G. Buck had constructed his own 42 ft. track with the help of fellow workers, which enabled him to bring 2A to a high pitch of perfection, by dint of intensive tuning and meticulous preparation. Nevertheless 2A was by this time becoming outdated, and a new car, known later as "Topsy", was on the stocks, embodying most of the points which are accepted as correct practice in current speed models. 2A was still good enough, to win the Russell Trophy with $\frac{1}{4}$-mile at 76 m.p.h.

Towards the end of the season the B.M.C.C. staged a two-day Rally, combined with a Trade Display, and Jaguar Cars Ltd., presented a trophy for annual competition, to be run off on the second day. This occasion was particularly remarkable for the appearance of L. S. Pinder's three-wheeled model, a veritable projectile with a McCoy engine and spur gearing to the front axle. The ruling at that time did not bar three-wheelers, and "Rednip" caused a minor sensation by winning the event at an average of 80.8 m.p.h. doing the $\frac{1}{4}$-mile at 81.5 m.p.h. At this meeting Jim Cruickshank's Mercury Ten put in its best run at 72.2 m.p.h., and two new 5 c.c. cars, the Curwen Diesel and E. J. Pickard's P. & N. Special showed that the small class had a kick in it, the former breaking the course 5 c.c. record at 57 m.p.h.

In October the Surrey Club held its Rickard Trophy meeting where B. P. Winter's little 5 c.c. Alta won its first success, and a month later a new track was opened at the Handley Page Sports ground at Hendon, Sir Frederick Handley Page himself being present to give the meeting his blessing. Fastest run of the day went to Hon. Secretary H. H. Crooks, his McCoy Special doing 80.5 m.p.h.

By now the influx of McCoy and Hornet engines from the States was beginning to have a marked influence on model racing, and for the time being, at anyrate, were to dominate the events in which they ran. In the 5 c.c. class the home constructors were still more than holding their own, and a number of people, including the writer, were beginning to think in terms of an even smaller racing class to encourage the less affluent amateurs and the youngsters. Isolated models with what were then regarded as really diminutive engines had been built and run privately, H. C. Baigent producing a remarkable 0.9 c.c. Austin model, a real "pocket edition", R. W. Flower a tiny diesel car with a one piece casting for body and chassis even earlier, and the writer and C. Vote of the Meteor Club both producing very simple models embodying the popular Mills engine on plywood base "chassis".

Finally and significantly, towards the close of 1947, the need for an authoratitive governing body having been recognised by everyone for some time, a preliminary meeting was held in London to form the Model Car Association, the original gathering consisting of model and motoring journalists, representatives of the principle clubs and representatives of the Royal Automobile Club's competition committee. So ended a memorable year in the story of model car racing, and all was set for a bright season in 1948.



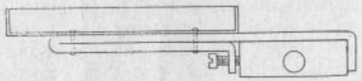
The 1947 season closed with American engines in the ascendancy, but here is shown that F. G. Buck had the matter in hand! In Topsy, this unit still holds the British record.

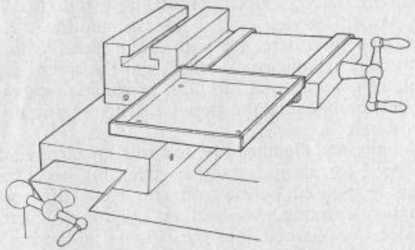
# WORKSHOP WRINKLES

BY S. E. CAPPS

### Instrument Shelf for the Lathe

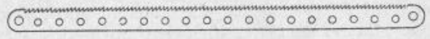
MOST of us from the first time we use a lathe develop the habit of laying the measuring instruments or the job being fitted on the lathe bed, the side of the saddle or the top slide, and in spite of frequent slipping off on to the floor we continue to do so. There is also the risk of damage to an instrument being caught in a revolving lathe or falling on to the floor. The author had an expensive instrument ruined in this way and decided to stop running this risk. But habits of this kind are not easily broken, and in order to keep the convenience of this particular habit the shelf shown in the sketch was made. This clamps on the top slide by screws fitted into steel brackets which have the shelf attached to them by rivets or screws. The shelf is made in box form from aluminium sheet folded up from one piece and is safe and out of the way of the moving parts.

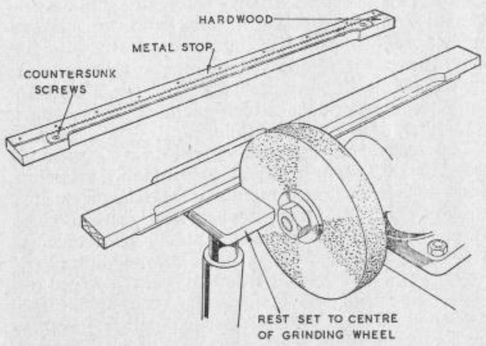




### Hacksaw Blades for Curved and Heavy Work

Normally that useful tool the hacksaw is used for all straight cutting of metal in the workshop as its blade is too wide for anything except large curves. For metal up to $\frac{1}{8}$ in. thick use is made of the piercing saw or fret saws, and with these the work is usually tedious and many blades are sometimes broken. The author had some curved work to do in $\frac{3}{8}$ in. thick steel, and for many modellers the procedure of drilling round the shape and finishing by file is the usual method adopted. This however, is just as tedious and could not be attempted by the type of piercing saws that modellers usually have. The problem for the author was made much easier by reducing the width of the usual hacksaw blade sufficiently for it to be turned round the shape required without jamming or binding. The sketch shows the method employed to reduce the blade width, and it will be seen a simple holder that can be made in a few minutes is all that is necessary. The blade is mounted on the holder against a metal stop the same



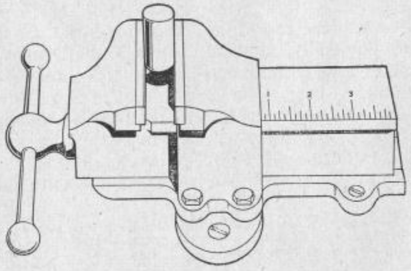



thickness as the blade and secured by screws. The back is then ground away against the face of a grinding wheel the tool rest of which is adjusted to the level of the centre of the wheel. The author has reduced blades to $\frac{1}{8}$ in. wide in this way without endangering the teeth, and considers it a great help, for with careful sawing very little filing is left to do. He

For the hacking off of metal thicker than the saw-blade width the blade shown in the other sketch is a great advantage over the ordinary blade. As will be seen the blade is drilled for its length with holes the diameter of which should not be large enough as to weaken the blade strength. The holes are carefully deburred after drilling.

### The Vice as a Measuring Tool

It often happens that when we want to know the size of a piece of rod or section the rule is missing and the vernier and micrometer are already set to a size. To save time in such a case as this the writer has found the tip shown in the sketch, of use. The vice slide is cleaned up and then with it closed tight is marked out in graduations of $\frac{1}{8}$ in. as shown in the sketch. Opening the jaws and clamping the piece to be measured will give a rough idea of its size on the scale on the back of the slide. The great advantage of this tip is in the fact that the vice is not likely to get lost, and provided the scale is carefully marked out it cannot be far wrong.



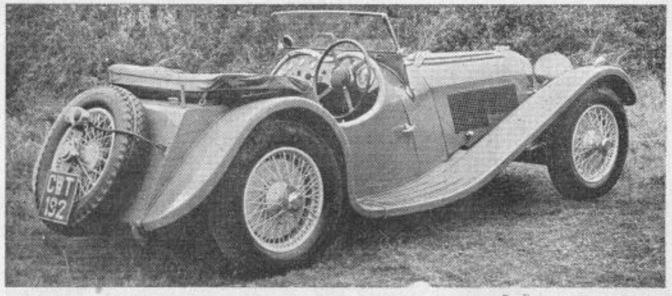


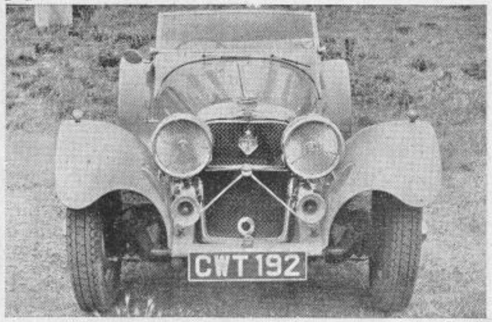


PROTOTYPE PARADE No. 25

# S.S. JAGUAR 100

Described by G. H. DEASON






IN the February, 1950 issue of *Model Cars* I described a car which is rapidly coming to be accepted as one of Britain's hottest cakes in the overseas selling line, notably in America, and probably the finest all round sports car built by a British manufacturer; no less, in fact than the Jaguar XK120, which apart from its unquestioned eye-appeal, has already won the Silverstone Production Car Race twice, the only post-war Tourist Trophy, and the difficult International Alpine Trial, amongst other triumphs.

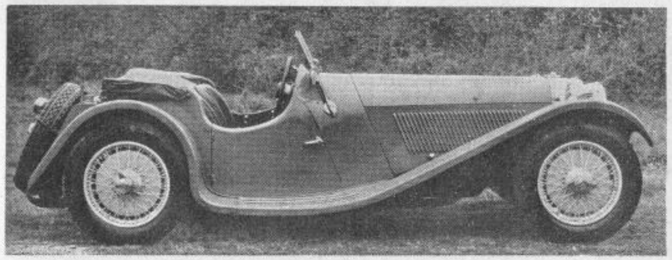
In the course of describing the XK120 is was inevitable that some reference was made to the development work which led up to the modern masterpiece, and this, of course, is applicable to the earlier Jaguar described this month. A brief recap, however, will serve to refresh the memory and to instruct those who still call the Jaguar an S.S. and claim that their elderly S.S.'s are Jaguars!

The S.S. folk originally charmed the public eye with a series of very good looking sidecars, and then in 1932 proceeded to woo the sporting youth from his three-wheeled device by producing a rakish series of motor cars based on engines and components of the Standard Motor Co., a move which met with instantaneous success, the cars selling unashamedly on their looks! These cars were manufactured until 1936, when the S.S. folk drastically re-designed their models, fitted 6-cylinder o.h.v. engines of considerably increased output into a new chassis with much improved road characteristics, endowed them with bodywork which set a style in good looks and comfort for years to come, and the first of these models was known as the $2\frac{1}{2}$ litre S.S. The following year the name of "Jaguar" was applied to the type, the firm still retaining the title of S.S., until, after the war, the title of Jaguar Cars Ltd. was adopted. In 1936 a number of extremely attractive sports two-seaters were built on the $2\frac{1}{2}$ litre chassis, and designated the S.S. Jaguar "100", the $3\frac{1}{2}$ litre version appearing at the 1937 show.

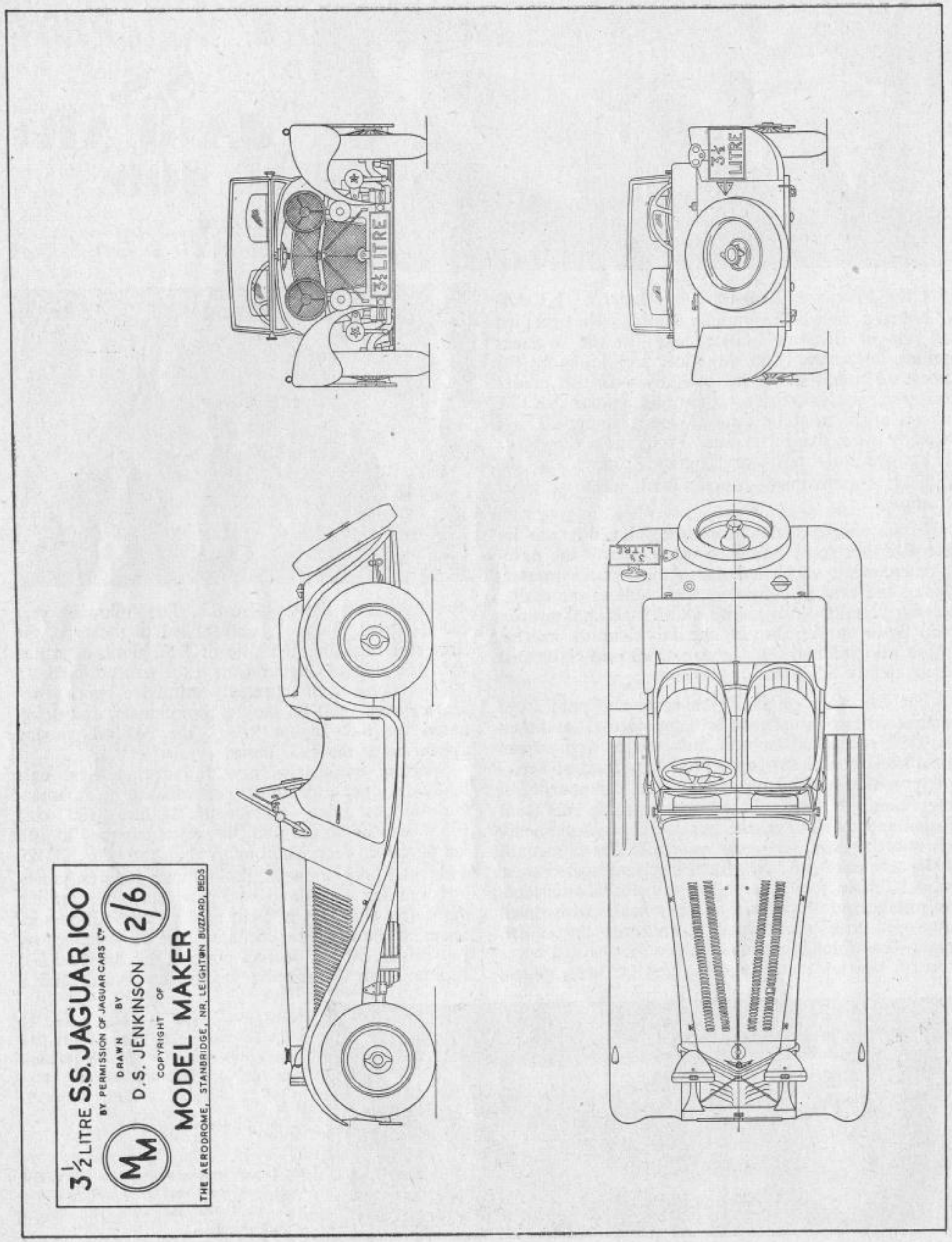
Sporting enthusiasts now found that these cars really did offer exceptional performance at an amazingly modest price—in 1936 the $2\frac{1}{2}$ litre "100" cost £395—and as an out and out sports car they looked the part even more thoroughly than the later XK120 with their long bonnets bristling with louvres, graceful sweeping wings and vast rear fuel tank carrying the spare wheels at a slight angle. Competition successes in the first year included best performance by any British car and second place in the International Alpine Trial, a class win at Shelsley Walsh and a

The most remarkable "speed for money" car of the pre-War decade, and one of the best looking, the two views of the 'Jag' 100 above show its pleasant yet purposeful lines.

Model Maker Photos

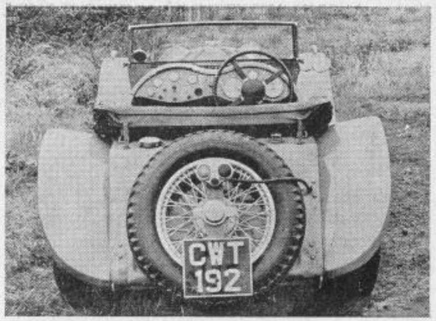


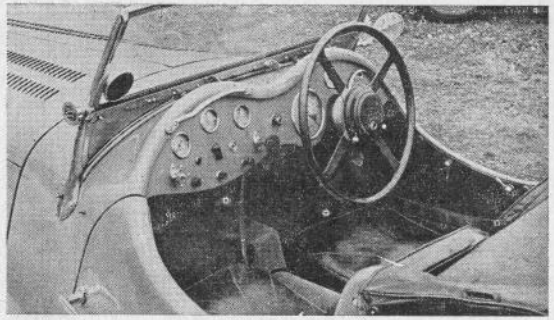
The Jaguar presents a clean side view, which emphasises the length of bonnet and brief bodywork behind the seats, all within a modest wheelbase.









class win in the Grand Prix de la Marne, at 68,98 m.p.h. with Tommy Wisdom at the wheel. Long distance rallies were also easy prey for the new "100's", their speed and handling in the road sections being matched by their instant success with judges in the Concours D'Elegance which followed.

The 3½ litre cars were naturally faster than their smaller brothers, and the catalogue model would approach if not reach the 100 m.p.h. mark. Some of course, were persuaded to go faster than that, and Tommy Wisdom won a Brooklands race on the Outer Circuit in a stripped and tuned example at 111.85 m.p.h., his fastest lap being at 118.02 m.p.h. A standard "100" would reach 50 m.p.h. in 7¼ secs., and do 90 m.p.h. in third gear, with the rev.-counter hovering on the 5,000 r.p.m. mark. And all for under £500!

Reverting to the real thing, here are some of the main details. The engine was rated at 25 h.p., and developed 125 h.p. on the brake. Valves were push rod operated and coil ignition was fitted as standard. Two S.U. carburetters were fitted on the nearside of the head. On the offside two separate 3-branch manifolds led off to two independent tailpipes. A unit 4-speed gearbox and open propeller shaft carried the drive to a spiral bevel rear axle.

The frame was of robust box section, and passed beneath the rear axle. Half elliptic springs were used at front and rear, the front axle being damped by hydraulic and friction shock absorbers, hydraulic only being employed at the rear.

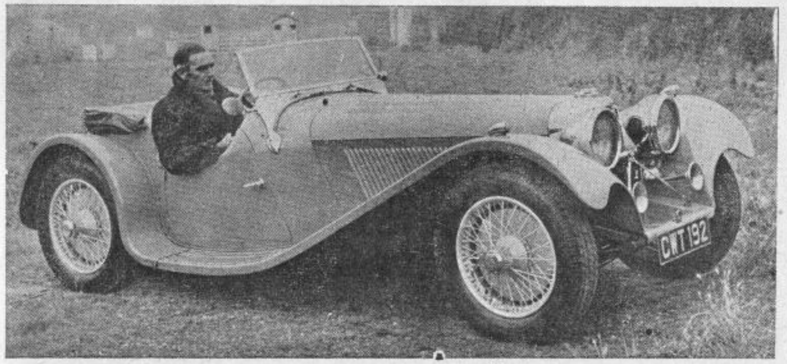
Girling brakes operated in 13 in. ribbed drums.

The wheelbase was 8 ft. 8 in., track 4 ft. 6 in., overall length 12 ft. 6 in., width 5 ft. 3 in., height with the folding screen up, 4 ft. 6 in. Tyres fitted as standard were 18 x 5.25 on centre-lock wire wheels.

The two-door body is fitted with separate bucket seats, upholstered in unpleated leather. The full width instrument panel conforms to the curve of the wind deflectors on the scuttle and the layout of the instruments and controls can be clearly seen in our photographs. Hand brake and gear lever are central, and the prop. shaft shaft tunnel runs through the cockpit centrally.

The 17 gallon tank has a quick release filler and a coiled vent tube. The distinctive section of the wings will be noticed, the outer edges having a sharp radius running into vertical valances.

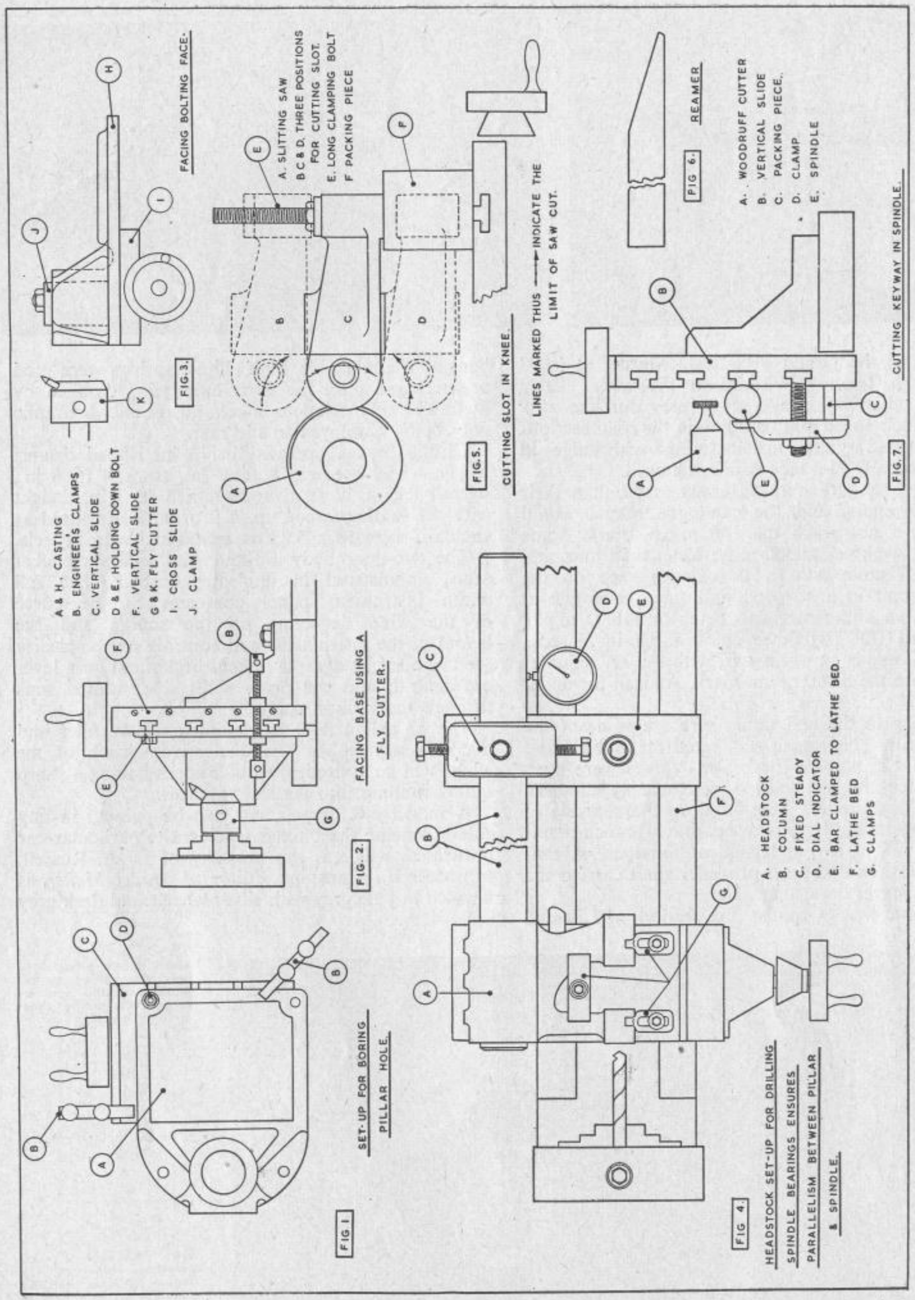
A model S.S. Jaguar 100 can be painted in any colour scheme the builder fancies; the particular car illustrated, which is the property of D. A. Russell, M.I.Mech.E., Managing Editor of *Model Maker*, is finished in pale grey with silver wheels and dark grey upholstery.



Above : Rear view, showing alternative number plates and stop light arrangements, and a close-up of the 'office'.

Model Maker Photos

Left : Although a comparatively big car, the Jaguar 100 is as neat and compact as many cars of half its engine capacity.




**These sketches show our contributor's approach to the problems of machining a set of castings for the Reevesco drilling machine. Castings can be obtained from the manufacturers whose advertisement will be noted in this issue.**

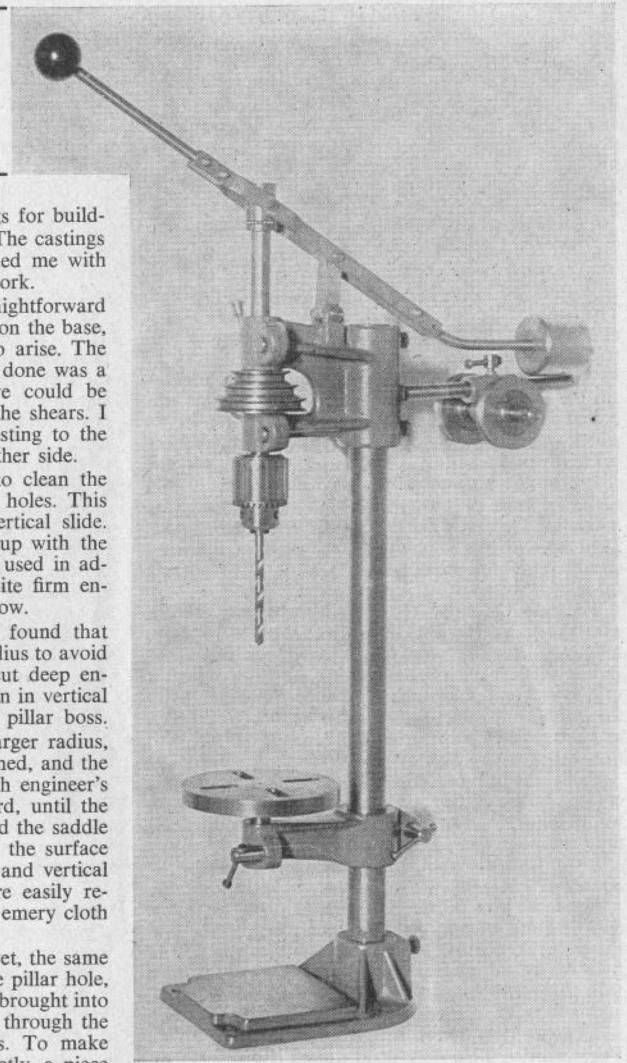




A 3/8th in. CAPACITY

# DRILLING MACHINE

BY DAVID WILLIAMS



Above is shown the completed drilling machine. A set of Reevesco castings were used, all machining being carried out in a Myford M.L.7 lathe.

I RECENTLY received a set of castings for building the "Reevesco" drilling machine. The castings were excellent in every way, and provided me with just over a hundred hours' interesting work.

The pulleys, shafts and table were straightforward turning jobs, but when work was started on the base, knee and headstock, difficulties began to arise. The lathe on which the machining was to be done was a Myford M.L.7, and none of the above could be swung in the gap without fouling the lathe shears. I could find no way of fixing the base casting to the hand-shaper to enable me to machine either side.

After some consideration I decided to clean the underside with a file, and drill the bolt holes. This done the casting was fastened to the vertical slide. Only one of the bolt holes would line up with the tee slots, so two engineer's clamps were used in addition (Fig. 1b), which proved to be quite firm enough for the fly cutting operation to follow.

To start the facing operation, it was found that the cutter had to be set at the smallest radius to avoid fouling the strengthening webs, and a cut deep enough to penetrate the hard skin was taken in vertical direction following the edge nearest the pillar boss.

The cutter was then set to a much larger radius, to enable the whole surface to be machined, and the part already machined was smeared with engineer's blue. The saddle was fed slowly forward, until the tip of the tool just skimmed the blue, and the saddle was locked in that position. The rest of the surface was finished by manipulating the cross and vertical slide feed handles. The tool marks were easily removed with a fine file followed by oiled emery cloth (Fig. 2).

The base, however, was not removed yet, the same setting being needed for the boring of the pillar hole, which was already marked off. This was brought into line to enable a boring bar to be passed through the cored hole, and placed between centres. To make sure that the hole would be bored correctly, a piece of silver steel sharpened to a point and bent to 90 deg. was placed in the boring bar in place of the tool with its point towards the tailstock. The cross and vertical slides were now manipulated until the bent scriber followed exactly the line already scribed on the boss when the lathe was turned by hand. The scriber was removed, the saddle moved forward and the process repeated at the opposite side.

Everything being satisfactory, boring was commenced by taking a cut deep enough to remove the hard skin. The setting was checked and the job completed using light cuts and fine feed, resulting in clean true hole one thou. less than the pillar diameter.

The knee was next taken in hand, cleaned, the hole for the clamp screw drilled and spot faced, and pillar hole bored and faced, the work being clamped to the cross slide and using a boring bar between centres. The slot which enables the knee to be clamped to the pillar was then cut, using a slitting saw also mounted between centres. The only slitting saw available was a $\frac{1}{32}$ in. x $2\frac{1}{4}$ in. This would not penetrate right through to pillar hole, so three separate cuts had to be taken, the work-piece being raised by suitable packing pieces (Fig. 5). The slot was completed using a hacksaw to remove the small portion of metal left. The two slots in the headstock were treated in the same manner.

The headstock now came in for attention. The lugs for the jockey pulley shaft and two fixing bolts were marked, centre punched, drilled $\frac{1}{8}$ in., spot faced then enlarged to tapping size, tapped and bolts fitted. The hole for the pillar was bored in the same manner as the knee. The pillar was now fitted, its length protruding towards tne tailstock. Hère I was lucky to have a fixed steady, which was made for a much smaller lathe, but had a capacity of $1\frac{3}{4}$ in. This was bolted to a piece of 2 in. x $\frac{1}{2}$ in. mild steel (E, Fig 4) which was in turn clamped to the lathe bed. (A piece of hardwood suitably bored and split across the centre of the hole to allow some adjustment would serve the same purpose.) In use, after the centre pop indicating the centre for the spindle bearing, had been lined up with the lathe centre, the pads of the fixed steady were adjusted to just touch the pillar passing through it.

The test dial indicator was brought into contact with the pillar (D, Fig. 4). Adjustments were made until no variation showed on the clock when the saddle was racked back and forth, and the indicator moved up and down the length of the pillar, with the button in contact with the front and top surfaces, and the register pins of the t.d.i. in close contact with the shears of the bed.

Using the self-centering chuck, a $\frac{1}{8}$ in. drill was entered in the casting as far as the length of the drill would allow, followed by drills increasing in diameter until the hole was $\frac{39}{64}$ in. in diameter.

A home-made toolmaker's reamer (a la L. H. Sparey *The Amateur's Lathe*) was made. In this case, a piece of $\frac{5}{8}$ in. silver steel was lapped to minus .003 in. and then ground obliquely across its diameter (F, Fig. 5) then hardened and tempered, and finished on the oilstone. A piece of rubber hose pipe 1 in. long was slipped over the shank of the tool, and put in the s.c. chuck. This gave the reamer a small floating action when cutting without slipping. The resultant hole was dead smooth and true. To finish this part the hole was lapped to size using a home-made copper lap charged with abrasives less coarse each time through, finishing with jeweller's rouge.

The knee was put in place of the headstock, and followed the above procedure, the hole for the table stem was drilled and reamed. No lapping was done on this part, because it is held in position on the pillar via the slot and clamp screw.

The spindle was made from a length of $\frac{5}{8}$ in. silver steel, set to run truly in the four-jaw chuck, and the taper turned by swivelling the top slide. The end was then drilled and tapped 4 B.A. to a depth of $\frac{5}{8}$ in.

The keyway was cut with a Woodruff cutter $\frac{1}{8}$ in. wide, the spindle held by a single clamp to a slot in the vertical slide (Fig. 7).

The drill chuck was clamped to a piece of $\frac{1}{2}$ in. round brass held in a collet. The jaws of the drill chuck were used for this purpose, the base facing the tailstock, and a No. 24 hole was drilled right through, and tapped 2 B.A. The chuck can now be fitted to the spindle and can be easily removed by taking out the 4 B.A. screw and inserting a 2 B.A. screw and turning with a screwdriver. No damage can be caused to the chuck by using this method.

A piece of mild steel was used for the thrust race. This was chucked in the three-jaw, leaving sufficient protruding to allow for parting off the lower part of the race. A Nu-lock boring tool bit was ground and slip-stoned to a $\frac{1}{16}$ in. radius. The tool was placed in the fourway tool-post, the bit being at right angles to the shank of the tool, and in line with the length of the lathe bed. The first groove was cut and readings taken from the cross slide and lead screw indices.

The groove was lapped to remove tool marks, using a piece of hard wood resting on the shank of the boring tool, metal polish being the abrasive. The bottom part was carefully parted off, and the grooving tool set again to the readings already taken, the second groove cut and lapped. The upper part was now parted off to lengths, and the holes for the pinch screw in the base, and the two trunnions in the upper part drilled and tapped.

Case hardening of this part was done in an old glue pot surrounded by asbestos blocks. The race was placed in the pot and covered with case hardening compound, and a gas blowpipe (air-powered by a vacuum cleaner, not forgetting a blow-back valve for safety and local authorities' requirements), was used till the compound fused with the metal, which was dropped into clean water, and cleaned before removing therefrom.

To fit the pillar, it was placed in the vice, and four axial lines 3 in. long were made equidistantly with a grease pencil. A strip of emery, held in each hand was placed half-way round the pillar and worked vigorously with a see-sawing motion, the work turned round 90 deg., until the pencil marks were gone. The "mike" showed that $\frac{1}{2}$ thou. had been removed, so a hole was drilled and tapped $\frac{3}{8}$ in. B.S.F., and a long stud inserted. The base was heated on the gas stove, and placed boss down over the stud, a clamp plate was quickly placed in position and a nut placed on the stud, and the pillar drawn into the base. This gave a splendid shrink fit, ensuring rigidity and leaving the bolt holes free to attach a countershaft at some future date.

The remainder of the work was straightforward and calls for no comment.

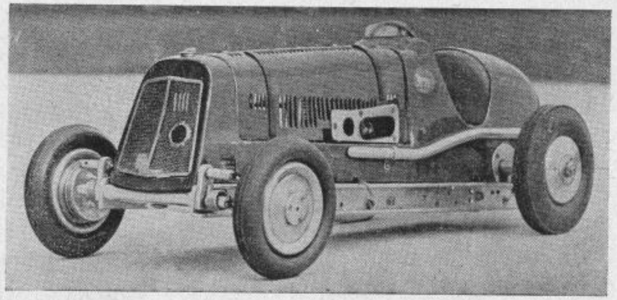
The castings were wire brushed and flashes, etc., removed with a file, given a coat of red cellulose primer, and finished in grey cellulose.

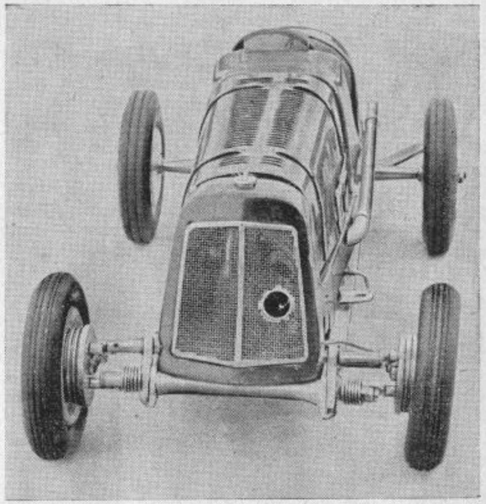




# GOOD LOOKS COMBINED WITH SPEED IN——

Model Maker Photos





## ——L. R. GAWLEY'S

# 'C' Type E.R.A.

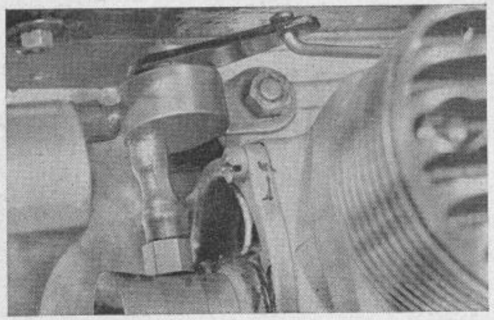
*It has always been our contention that the attainment of high speed in a model car is not necessarily incompatible with good looks and a reasonable degree of fidelity to the original, provided that the subject is chosen with discretion. The older E.R.A. cannot be classed as a highly streamlined type and is not therefore perhaps ideal from this point of view, but nevertheless L. R. Gawley of Luton has achieved a high degree of success with the model described, which is one of the fastest in the country in relation to the amount of detail built into it.*

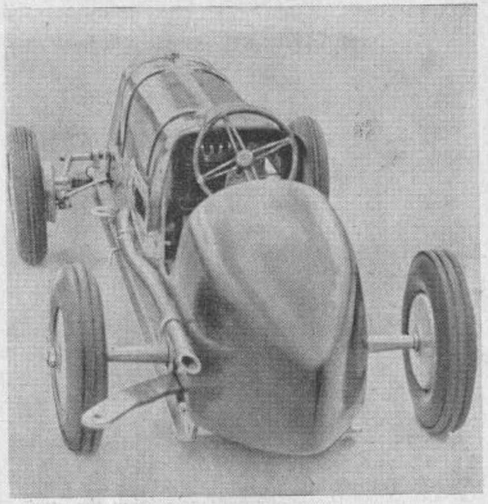
PROBABLY Britain's most consistently successful racing cars in any period of motoring history, the older E.R.A.'s have not really been so popular as they deserve as subjects for both power models and scale miniatures. They lend themselves well to the type of small engine we still rely upon for racing, having an accommodating body form which is at the same time shapely, and they offer a nice variety of springing arrangements upon which to exercise the ingenuity. Those who have chosen to model them, however, have usually done them full justice; *Model Cars* readers will remember the Weaver stable of E.R.A.s, the last of which is just reaching the full flower of detail perfection, as witness the louvred bonnet illustrated last month.

This month we have chosen another example which will probably be well known to most racing men in the midlands and south, the C-type car built by L. R. Gawley of the Chiltern Model Car Club. This model is as nice a compromise between a well detailed scale model and a full blown speed job as we have seen. There is nothing in any way flimsy or impractical about it, yet it is an excellent representation of the original, incorporating much of the detail demanded by the scale-minded folk. In considering this model it must be borne in mind constantly that it is capable of a regular and reliable 90 m.p.h., and is equally capable of acquitting itself well in Concours or pure speed competitions. It has done a tremendous amount of contest running since it was built in 1948, its owner being a firm believer in "having a bash" in any competition within reach, and it must have worn its own grooves in the Chiltern Club's track at Woodside, near Luton!

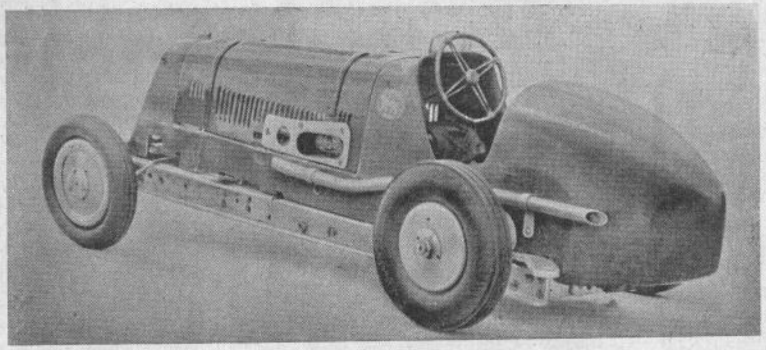
The first item to strike an interested observer is the good old fashioned girder chassis, with its deeply webbed channel-section in dural, a refreshing feature in these days of the punt and the pan. This is braced strongly at four points and is finally stiffened addi-

Right : A close-up view of the fuel cut-off arrangement, which is interconnected with the ignition switch to prevent flooding when the car is at rest, or when the switch is cut at high speed.





Model Maker Photos



Two aspects of the E.R.A., showing the robust channel section frame members, tether plates and needle valve control on the outside of the chassis. The exhaust stub comes flush with the bonnet side. Note also the thinning down of the cockpit sides.

tionally by a full length under tray of 18 g. aluminium, fixed to the underside of the frame webs by numerous 10 B.A. c/sk screws.

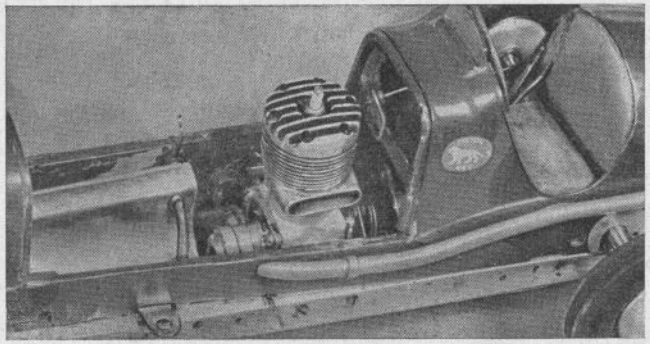
Scale fanciers will be charmed to find that Porche type suspension has been fitted at the front end, and here the builder has really "gone to town" to make a copy of the original which at the same time does its job very well at speed on the track. The illustrations give a clear idea of the realism attained, and when tested by hand one is struck by the extreme softness and comparatively slow return, despite the lack of damping arrangements or hydraulic cylinders as on the original. The trailing arms and their pivotal ends are hewn from the solid and very well finished and proportioned, and provide surprising fore and aft rigidity. The front wheels are not of course made to swivel, but the correct E.R.A. divided track rods, allowing a rising and falling movement, are fitted, and are anchored centrally behind the radiator.

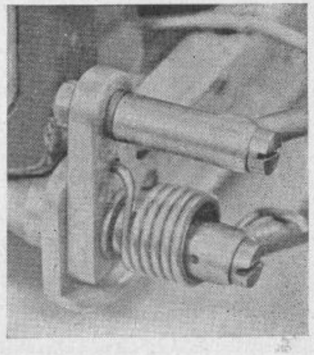
The husky McCoy 60 comes well forward, and is accessible by removing the bonnet, and the flywheel protrudes through an opening in the undertray allowing for an electrical or mechanical starter to be applied for testing and warming up. No clutch is fitted, drive being direct through a massive universal joint and short propeller shaft of $\frac{3}{8}$ in. diameter, running in ballraces, to a pair of Z.N. heavy duty open steel bevels giving a drive ratio of 2 : 1. The rear axle as will be seen, is of the tapered shaft type, also a Z.N. product, $\frac{1}{2}$ in. in diameter at the centre, and carrying Z.N. wheels and 3.75 x .81 in. tyres. The rear axle is not sprung, and runs in a robust U-shaped housing in heavy-duty ballraces. The front wheels are standard "1066" components so far as discs and tyres are concerned, but the centres have been modified to take ballraces.

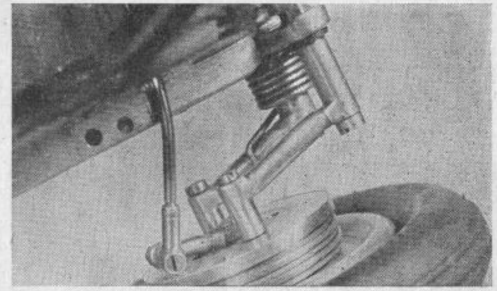
Electric ignition is fitted, supplied from a battery pack carried on an inclined platform inside the tail, while the coil is mounted in the cockpit, on a saddle fitted over the flywheel. An interesting feature is the





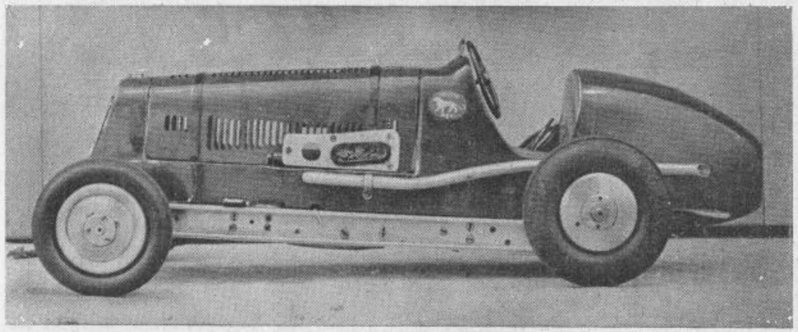






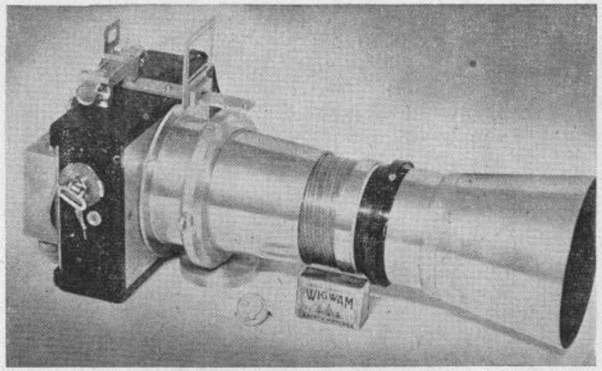
switching arrangement, operated by dual arms projecting from the driving compartment. One arm operates a tumbler switch carried inside the frame, whilst a second arm, interconnected with the switch arm is coupled to a neat little shut-off valve in the short fuel line from the carburettor to the forward placed brass tank. This arrangement prevents flooding of the crank chamber when the ignition is switched off. The arrangement can be seen in the close up illustration of the chassis.

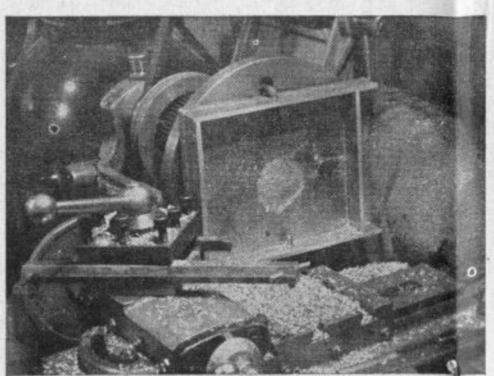
The bodywork of the E.R.A. is decidedly handsome. The portion from tail to scuttle is carved entirely from balsa with suitable reinforcements of plywood at scuttle and seat-back. The tail is hollowed out from below sufficiently to clear the battery. The radiator shell is again of that accommodating material, balsa, with a cleverly executed mesh and beading. The bonnet is of aluminium sheet, removable in one piece, and kept in place by two piano wire clips which lock into the louvres. Here the builder has compromised by fretting the louvres out completely, but since this has been very neatly done and the shaping of the apertures is clean and uniform, the result is not unpleasing, and probably provides a better ventilation of the engine compartment than would more accurate copies. Again in the interests of a cooling flow of air, an instrument panel is not fitted, the short dummy steering column being attached to a narrow bracket. The wheel is neatly made, using the usual curtain rod for the rim, and is offset as on the originals. A full length dummy exhaust pipe leads the beholder to forget the real stub exhaust which comes flush with the bonnet side. Final details include the rear view mirrors, windscreen, circular intake grille in the radiator mesh, and the neat "Chiltern Lions" on either side of the scuttle. The finish achieved on the balsa bodywork is very good indeed and speaks of much energetic work to prepare the surface. The final finishing colour is, of course, E.R.A. green.

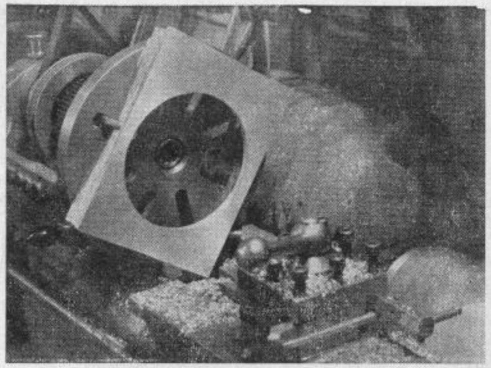


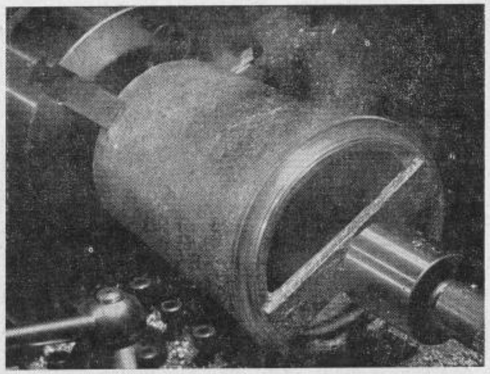
Model Maker Photos

Above : The engine is completely accessible with bonnet removed. Details pictures show the excellent workmanship of the coil - spring controlled Porche suspension.
(Left) The model is slightly 'nose-up' with the suspension at rest.



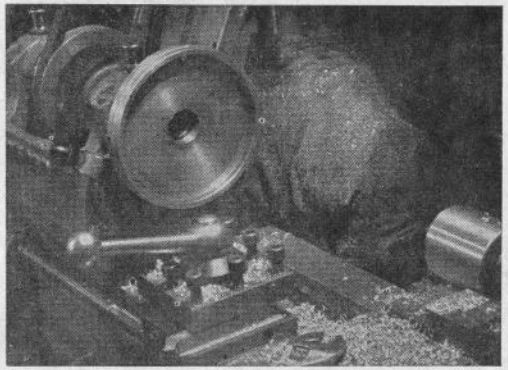


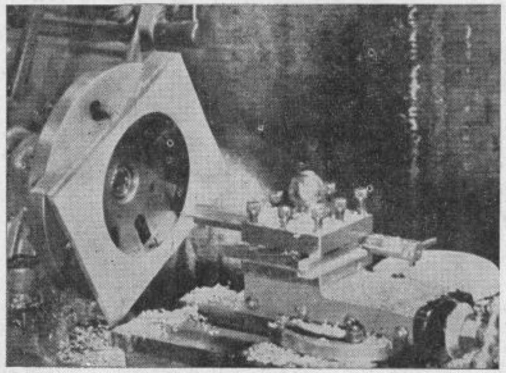


# UNIVERSAL CAMERA

## FOR STILL PHOTOGRAPHY WORKSHOP ADAPTIONS

BY J. F. CROLL





REQUIRING what may be termed a universal camera for most classes of still photography I acquired a second-hand Press Nettel as this has a focal plain shutter with three speed ranges giving exposure periods from ½ second to 1/2800. This camera was originally a quick action folding type intended for use with the focusing screen which could be swung out of the way, a plate holder inserted and clipped in position by replacing the screen.

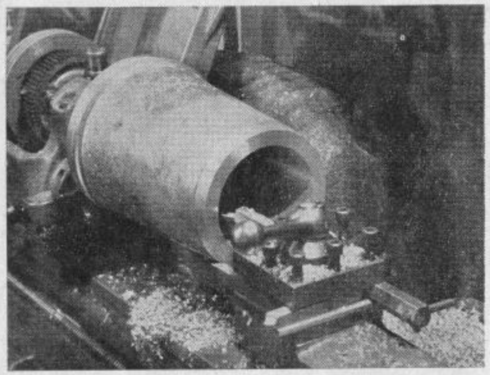
Its main frame being only 2½ in. it appeared it could be used with a wide angle lens of 2⅜ in. and all the rest of my battery of lenses giving different degrees of coverage and sizes of image comprising 4 in. and 6 in. anastigmat lenses, 8 in. Pentac and 12 in. Dallon telephoto, the last two being ex-Government aero-equipment.

Attempts to fit an accurate focusing scale to the lazy tongs carrying the bellows proved too uncertain so the bellows and front were removed and replaced by an aluminium casting fitted to take a series of lens cones 4⅛ in. diameter, screwed 24 threads per inch. With the exception of the wide angle lens all these cones were fitted with multi-thread focusing screws chosen to give a range of focus, in the case of the 4, 6 and 8 in. lenses of from 5 ft. to infinity, and in the case of the 12 in. lens from 15ft. to infinity. It was found that the same lens cone would serve for the 6 in. and 12 in. lenses, but a separate screw was made for each so that the shoulder could be marked with the appropriate focusing scale.

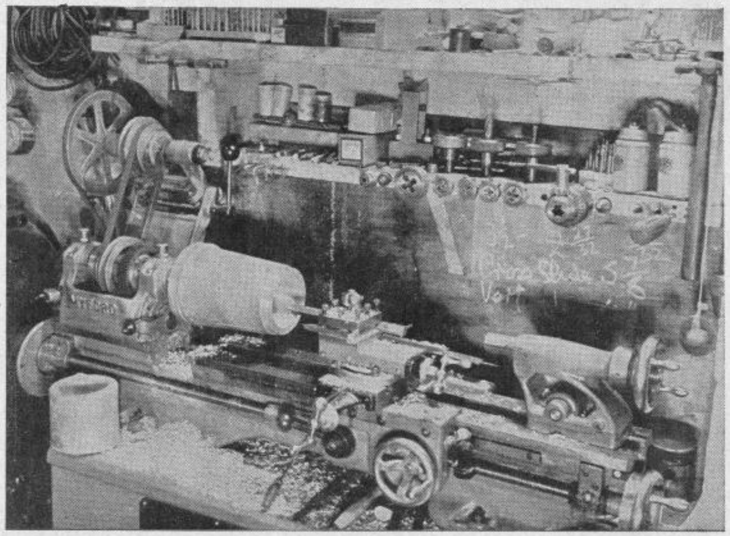
The back of the camera was also dealt with as it was intended to use it with 3¼ x 2¼ roll film, ¼ plates and ¼ plate cut film and also 9 x 12 cm. size in the last two. It was necessary, therefore, to bring all these sensitive material carriers to the same position in the camera plus or minus .003 in. To hold cut film flat the studio type wooden double book form plate holder is the most reliable, and as this was also the thickest of the various carriers all others had to be lined up to match. The plate carrier was easily corrected by the insertion of a metal plate of suitable thickness which at the same time brought the focusing screen to the correct position. The roll film carrier was specially made of a casting of ⅛ in. sheet aluminium.

The various accessories were also made comprising a cap for each lens, filter carriers for the 4, 6 and 8 in. lenses, and a large hood for the 8 in. lens. A range finder was fitted on top of the camera and also a view finder, the front member of which slid along a scale to suit the particular lens in use. Later it was found that the weight of the Pentac lens was so great that both the camera sling and the stand socket had to be moved forward on to the lens cone and this was achieved by pressing on a cast aluminium ring.

All the parts mentioned were designed and cast in my home workshop and machined on my M.L.7. A considerable knowledge of photography is necessary to get the best out of an instrument of this type, but that is a photographic problem.



• *A further instalment dealing with the preparation of moulds and castings required for these ingenious adaptions will appear in our next issue.*



Top left : The converted Nettel with 8 in. Pentac, focussing screw 1¼ pitch.

Centre left: Screwed machining fixture attached to lathe mandrel.
Bottom left : Boring outside of camera front.

Top (2) Facing back of camera front.

Top (3) Facing outside of camera front.

Top right : Cutting the 24 T.P.I. thread.

Centre right : Cone on jig for roughing, finishing and screwcutting.

Bottom right : General view of machining operation.

# FAMOUS BRITISH MINIATURE RAILWAYS

BY TREVOR HOLLOWAY

Sir Berkeley Sheffield's 1 in. scale garden railway at Normanby Park. The locomotive is a model of the famous G.W.R. "Great Bear", which was later converted to a 4-6-0.

Photo: Courtesy of Bassett-Lowke Ltd.

THE Duke of Westminster's light railway built by Sir Arthur Heywood over sixty years ago, was the forerunner of Lilliputian passenger-carrying lines in Britain. It connected Eaton Hall with the neighbouring station at Balderton, near Chester. Sir Arthur's purpose was to demonstrate the usefulness of a minimum gauge line which could be worked by steam locomotives.

Numerous American "toy" railways had been exhibited in Britain, but the Duke of Westminster's 15 in. gauge layout aroused great interest, for here was a Lilliputian line that was much more than a toy. It was not long before progressive seaside resorts such as Blackpool, Southport and Rhyl, alive to the possibilities of miniature passenger-carrying lines for attracting visitors, proceeded to lay down track and place orders for 15 in. gauge "Atlantic" 4-4-2 locomotives.

The first of these, the "Little Giant", was of freelance design, built to a scale of 3 in. to the foot. It was given exhaustive tests on the Eaton Hall track and surprised everyone by attaining a speed of over 26 m.p.h. on several runs. The weight of the engine in working order was less than 30 cwt. including 56 lb. of coal and 35 gallons of water.

It was designed to haul four open bogie coaches with 48 passengers representing a load of 3½ tons. When in operation at Blackpool the engine averaged 120 runs a day, carrying something like 1,500 passengers.

The experience gained in building the various seaside miniature railways proved of great value in building the now famous Ravenglass & Eskdale Railway, in Cumberland. This line was originally built as a 3 ft. gauge light railway to handle the iron ore found in the hills below Sca Fell. When the ore became exhausted the line went out of use, but after the first world war it was reopened as a 15 in. gauge with more attractive miniature express locomotives of the 4-6-62 "Pacific" type.

Before long this novel little railway became one of the chief holiday attractions of Cumberland, hundreds of people arriving daily through the summer months to see the fascinating locomotives and to take a trip through some of the county's most lovely scenery.

Two of the Eskdale locomotives, the "Colossus" and the "Sir Aubrey Brocklebank" were later joined together to form an articulated locomotive with one boiler, on the lines of the well known "Garratt" engines.

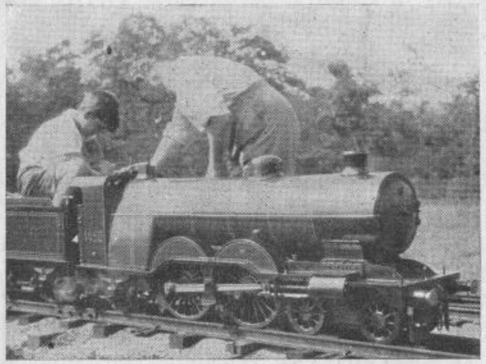
In order to make the railway an economic proposition during the winter months, the company opened a stone-crushing plant beside the line at Beckfoot and ordered the building of a new locomotive of one-third full scale. This was the famous "River Esk" 2-8-2 weighing nearly eight tons, and incorporating the new "Lentz" poppet valve gear which later was applied to many main line locomotives with great success.

Another locomotive, rebuilt on the lines of the "River Esk", aroused great admiration by hauling on one occasion a total load of 252 passengers. One engine was converted to oil firing with the object of eliminating smuts — but the passengers preferred a few smuts to the smell of the oil!

Some readers may recall that when the Romney, Hythe and Dymnchurch Railway was nearing completion, our present King, then Duke of York, visited his boys' camp at Jesson and unofficially opened the line by driving the first train into New Romney.

In the first years of its existence this very popular miniature railway carried nearly a quarter of a million passengers over the 8¼ mile track from New Romney to the Cinque Port of Hythe. The seven engines covered over 106,000 miles with an average consumption of only 11½ lb. of coal each per mile. Fuel costs—2½d. per mile!





Mr. H. W. Franklin driving the 10¼ in. gauge Atlantic locomotive on his Radwell Railway.
Father and son prepare their 9½ in. gauge locomotive for a run on their railway at Harness Grove, Nr. Worksop.
Photos: Courtesy of Bassett-Lowke Ltd.

The original engines included three two-cylinder "Pacifics", a four-wheeled shunter, two 4-8-2 mixed traffic locomotives and two three-cylinder "Pacifics".

During its trials over the Eskdale line, one of the three-cylinder "Pacifics" put up the remarkably fine speed of 35 m.p.h. "Typhoon", one of the best known of the Romney engines, once carried the record number of 327 passengers from Dymnchurch to Hythe.

Sir Arthur Heywood's contention that miniature railways of minimum gauge were something more than "toys" has been fully justified. At any rate, Bradshaw's considered the Romney and Eskdale lines to be of sufficient importance to have their time-tables included with those of the main line companies.

For many years the privately-owned line of Mr. H. W. Franklin, at Radwell, Bedfordshire, has been regarded as one of the most interesting in its class.

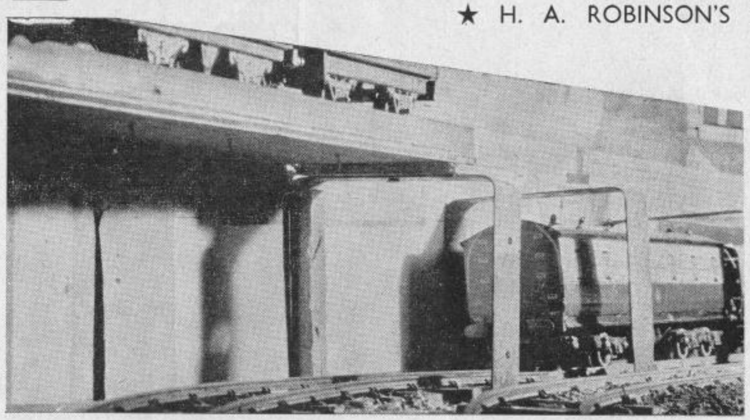
The line was built over undulating ground in circular form with a length of about ¾ mile. A viaduct of 65 ft. having four 16 ft. spans is one of its many interesting features.

The gauge is 10¼ in., the principal locomotive being an "Atlantic" modelled on the lines of the old North Eastern 3-cylinder 4-4-2 engines.

Some years ago, a most interesting test was carried out by Mr. Franklin. This was in the nature of a non-stop run of two hours' duration, the load consisting of four empty coaches. The maximum water capacity of the tender permitted a run of 29¾ miles. An average speed of 15 miles an hour was attained. This represented the very fine performance of 88½ m.p.h. in a full-scale model.

This well known light railway is a feature of the Southsea front.

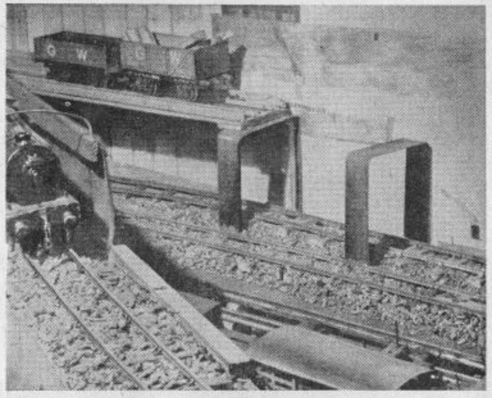
Photo: Courtesy of Southsea Publicity Bureau.



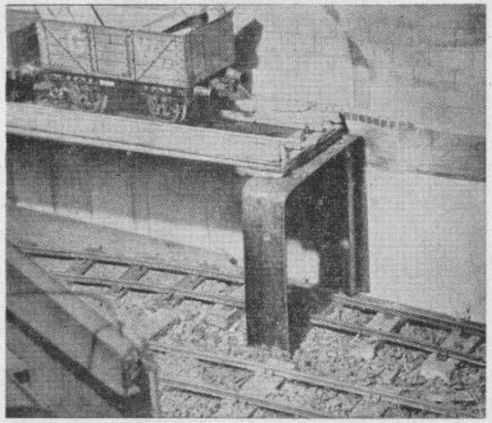
★ H. A. ROBINSON'S REGULAR FEATURE

# IMPROVING THE MINIATURE RAILWAY LAYOUT

**Lengthening the Run**



The elevated track seen in various stages of construction. These unretouched pictures give an excellent idea of the realistic appearance of the "bed-lath" brackets.



THERE is little doubt but that the main trouble with many indoor model railways of gauge 0 size is shortage of space, and the nearer to scale the equipment used, the more apparent the cramped conditions become. With 00 matters are easier.

To run truly scale trains on gauge 0, a layout has to be really big, as the length of a 12 or 15 coach main-line express with a scale locomotive of the "big" class alone works out to several yards—while station platforms should be longer still.

All this is, of course, outside the scope of the enthusiast who has to use a medium-sized room for his models, and as such generally strikes a compromise by running shorter trains, not full length stock and introducing tank engines, or smaller classes in the place of massive and ultra long main-line express locomotives. In fact, what can be done by compromise of this sort to give an illusion of length where none really exists is rather remarkable and the question of "illusion and track length" will be dealt with at another time.

But with all remedial factors in full play it is safe to say that most model railroaders working in small or medium-sized apartments are sooner or later faced with the problem of getting a longer terminus-to-terminus journey for their ever-increasing stock.

Greater length of run, inasmuch as the train does not pass over exactly the same rails can be secured by laying closer circuits of track within the main one which in most cases will hug the walls. But although the trains on their second and even third journeys round may be on a different set of metals, it is not very noticeable to the observer in the middle of the room and the train still seems to be going round and round a single circle, which is an appearance that should be avoided like the plague.

Tackling the problem logically, therefore, if the "circle within circle" layout is to be taboo, the only thing to increase the end-to-end run is to send the track up or down, that is above or below the general baseboard level.





Taking a line below has a number of disadvantages. The under track must drop low enough to clear joists, etc., that run transversely across the base to give strength, and the less a new track has to rise or drop the better. Tracks taken up do not have to climb as far as those taken down have to drop.

Tracks under a base level, too, are fairly difficult to suspend satisfactorily and the train is out of sight when negotiating them. And on this characteristic of invisibility, subterranean lengths are so much waste footage as far as the system as a whole is concerned. Furthermore, if derailments occur on such lengths the trains are sometimes hard to get at and the reason for the derailment difficult to trace.

When a track is taken to a point above the general base level, most of these conditions are reversed, and this is undoubtedly the better way of increasing length. As the height need not be so great proportional to a drop, the track is an *addition* to the obvious footage, being in sight, and the trains are always in view. The line on the baseboard level immediately underneath is also fully seen and elevated sections are really very easy to make.

The nearest that the underside of the base of any upper length should sit above the rail level below is 4 in., and if the method of construction shown is employed, the upper rail-heads need not be more than ½ in. above this again.

To get the trains to the necessary height, as long a gradient as feasible should be used, but this can be steeper than in real railway practice without looking too bad or causing inconvenience to gauge 0 locomotives of any strength, especially if electric. In the matter of gradients gauge 00 scores a lot over gauge 0.

The aim at all times is to get the upper track sitting as closely as possible over the lower so that the trains do not have to climb even a fraction of an inch higher than absolutely necessary. To this end the brackets as seen in the photographs and diagram are used, supporting a thin plywood strip upon which scale track is laid direct, with imitation sleepers as described on these pages some time ago. Thus by eliminating thick cross-bars underneath, using thin plywood for the upper base and pinning the rails straight down on to this a good inch of vertical climb can be saved.

Material for the brackets is found in discarded metal bed laths, which is little short of ideal for the purpose. Bed laths, it will be found, cut readily, are easily bent to a neat but slightly rounded right-angle at the desired points and take a drill comfortably.

From the side, brackets of this material look solid, but being thin the other way they sit extremely well at their base between tracks that are close together, which is a big advantage.

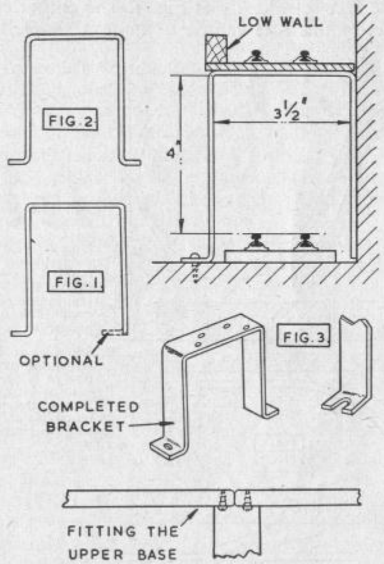
When the brackets have to straddle a track but are not near a wall, the lower ends are turned out as Fig. 2, but when the offside upright comes tight against a wall (as it often will), there is no need to have a "foot" at all on that side, or if it is desired to give extra firmness, it must be turned in (Fig. 1).

As there is a certain springiness in bed-lath metal, a foot as Fig. 3 can be made. This is a slot which goes round the screw in the base, and the elevated section can then always be removed by squeezing the uprights and lifting away, which is handy for getting at the lower track. With this finish the elevated sections should not be too long.

The plywood above is held by small screws going through holes drilled in the cross-bar of the brackets, with their upper ends filed off if they come through the top surface. Where two lengths of plywood come together on one bracket there must be four holes drilled, but only two are necessary if the bracket is in the middle of a strip. An edging of some sort must be given to the upper base.

In all, bed laths will be found very satisfying to work with. Their pliability is good, while the "squareness" of the brackets made from them allows of snug fitting against walls, and the thinness of good standing in apparently impossible places.

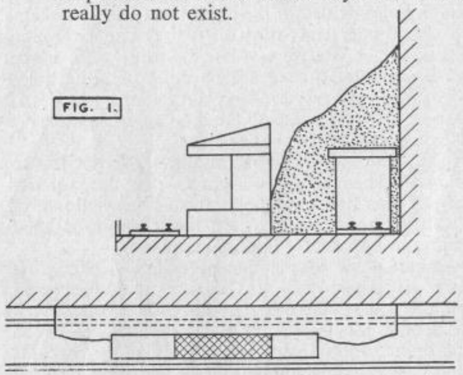
A final word about the necessary gradient. It should be taken from an outside track (one that skirts the wall) as here there will be the greatest possible length for the climb. Any parallel track can come round on the inside and slip under the brackets at the first possible moment. The end of the raised portion can be a terminus set into some otherwise unusable corner. If the grade has to be very sharp, take your trains up double-headed. Double-heading will lift a really weighty train up almost impossible heavy grades, and is very interesting to watch.



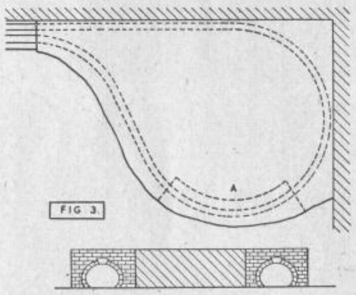
## Tunnels and their Uses

QUITE apart from giving a true-to-life appearance, tunnels can be put to several definite uses by the model rail-roader. Thus they can:

(1) Camouflage short lengths of unwanted track.
(2) With advantage sharply divide sections of line having widely diverging characteristics.
(3) Hide "reversing circles" at track ends.
(4) Be used in the form of "dummies" to give the impression of more tracks beyond — which really do not exist.




A typical example of how a short length of track can be hidden with advantage by a tunnel is if a line has to pass right behind a station from which a train has but recently departed. In this case it is well for the train not to be seen near the station again so soon, and a short camouflaging tunnel can be built over the rear set of rails as Fig. 1. The entrances to a tunnel of this sort can be of quite a simple type



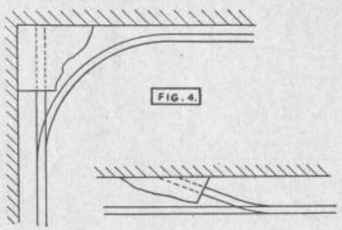
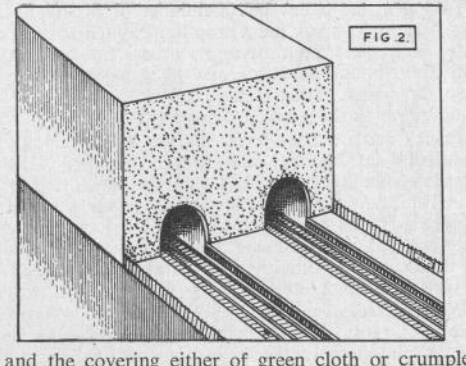




Fig. 1 Camouflaging tunnel behind station to disguise early return of train.
Fig. 2. Neat tunnel portals at terminal station.
Fig. 3. Tunnel hiding reversing circle —train may reappear at A.
Fig. 4. Dummy tunnel giving impression of larger layout.
Fig. 5. Details of tunnel mouths and card construction.




and the covering either of green cloth or crumpled wrapping paper. When one becomes tunnel-conscious other locations where it is helpful to have the line out of sight for a few feet soon suggest themselves.

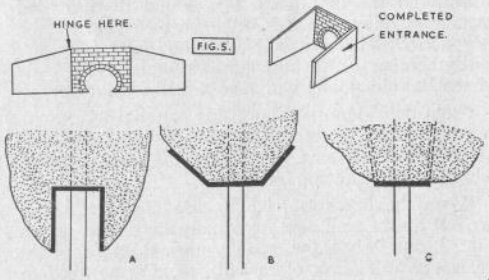
Terminal stations often look better and far more compact if the tracks disappear straight into a "rock face", having at its foot neat tunnel portals (Fig. 2).

Fig. 3 shows clearly how a tunnel can be used to hide an end-of-track reversing circle. This kind of train-reversing scheme is only possible where there is plenty of room as in a hall or garden. Getting trains round like this is good as into the tunnel they go on one track only to emerge a few moments later on the other track as completely different trains from the opposite direction.

If desired trains can be made to reappear for a brief space at (A) without spoiling the general scheme. There are two portals here with a rock wall at the back of the short length of line between them, and portals and rock face can conveniently be made from a single strip of card as shown, the entrances being turned out at the required angle, and the intermediate strip given the necessary curvature.

Short lengths of tunnel mouth that lead nowhere, as Fig. 4, can be very useful in two ways. In the first case they can, if carefully placed, be made to give the impression that the whole system is much longer than it really is, for when anyone sees rails emerging from a portal the general reaction is to feel that they come from somewhere far afield.

(*Continued on page 63*)



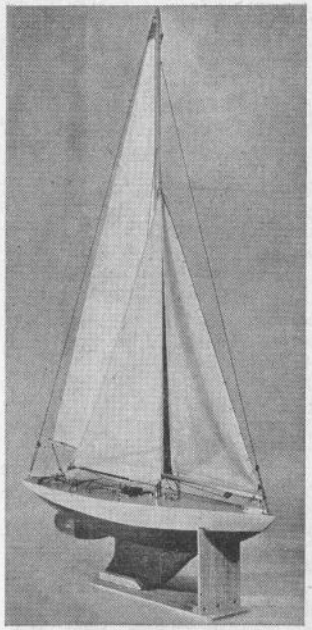





# "LADY BETTY"

## Part III describes How to Make Fittings for this 36 in. Restricted Class Yacht

BY "SHIPWRIGHT"



★ *Parts I and II of this series appeared in* The Model Mechanic *dated August, 1950, and Sept. / Oct., 1950. Part I deals with construction of the Hull: Part II covers Mast and Booms. Copies are available at 2/- each from the publishers. Dyeline full - size drawing of hull, profiles, body plan and half - breadth plan also available price 7/6 from the publishers.*

This illustration shows completed yacht "Lady Betty" with spinnaker set and all sails "sheeted home" — not in the correct running position.

MODEL yacht fittings are called upon to bear considerable strain and if anything gives way it is always during an important event. For this reason I advocate that all such fittings be silver soldered.

The average novice seems to fight shy of this method of joining metals. There is no reason for this as silver soldering is as easy as soft soldering and far more satisfactory in use. If a few simple rules are followed, as set out below, the tyro need not hesitate to commence operations.

The tools and materials are few:—

GAS BLOW TORCH.—I can thoroughly recommend the torch marketed by The Target Manufacturing Co. of Wollaston, near Wellingborough, Northants, which I have used for all my silver soldering work with complete success. Its price is 3/6.

The solder used is "Easyflo" made by Johnson Matthey Ltd., of 78 Hatton Garden, London, E.C.1. It is obtainable in either wire or strip.

You will require a common brick and some pieces of asbestos; a broken gas element in small pieces arranged around the job to conserve the heat is excellent.

To prevent oxidation of the cleaned parts make up a "pickle" by diluting 1 oz. of sulphuric acid with 20 parts of water in a 2 lb. jam jar.

The modus operandi is as follows:—

Polish the brass parts to be joined with "blue back" emery cloth, clamp together, heat slightly and drop in the pickle for a few minutes. Take the job out of the pickle with a wire hook, and mix the flux into a paste with water, smearing this over the joint. Arrange in the "frog" (the hollow part) of the brick with the pieces of asbestos around it with pieces of the solder wire on the join.

Now heat slowly. When the flux fuses turn on full heat and the solder will suddenly run. Keep the torch on for a few seconds to ensure that the solder has run well into the joint. Turn off the heat, allow to cool slightly and drop in the pickle again. When cold wire brush the parts to remove surplus fused flux.

There is only one finish for model yacht fittings—chromium plating—it makes the job look professional; brass fittings savour too much of the toy shop model, which our boat most definitely is not.

MATERIALS FOR FITTINGS.—Brass rod, strip, tube, etc., etc., may be obtained from:—

Clay Bros. & Co., 247A Hammersmith Road, London, W.6.

H. Rollett & Co. Ltd., 32/36 Rosebery Avenue, London, E.C.1.

who will supply the small quantities required.

MARKING OUT.—Every job must be accurately marked out for cutting or drilling. You will require a steel square, 2 in. or 3 in. will do, a scriber, a centre punch and a pair of dividers. To drill a row of holes first scribe a line, set off the centre distance between holes, pop mark with the centre punch and drill to the requisite size.

To bend, mark off the bending line and gently tap over using a piece of mild steel as an anvil. Interpose a piece of hard wood between hammer and metal to prevent hammer marks and bruising.

Thick metal should be annealed, i.e. softened by heating to a dull red. Quench for copper; allow to cool and then quench for brass.

Always polish the job after fabricating to ensure a good finish for the chromium plating. Do not forget to let the plates have all fixing screws so as to match the finished job.

JIB RACK. Fig. 11.—Make of 20 gauge brass. Mark off and drill as shown and silver solder a foot at either end.

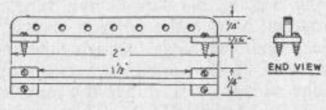



FIG. II. JIB RACK.

MAST TUBE & SLIDE. Fig. 12.—The slide is of 24 s.w.g. brass sheet. A piece of ½ in. *inside* diameter brass tube will be required, a hole to accommodate the outside diameter drilled in the plate (a garage

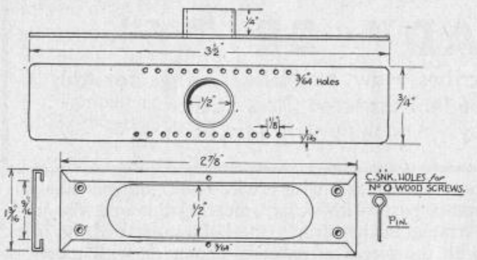



FIG. 12. MAST SLIDE & PLATE.

will do this for you as not many amateurs possess a drill of this size) and the tube soldered in. See that it is flush on the under side otherwise the slide will bind on the plate.

Mark off and drill the deck plate in 24 s.w.g. brass as shown. Countersink the holes for the four holding down screws so that their heads are flush to allow the slide to move easily. Carefully mark off and drill the $\frac{3}{64}$ in. pin holes, noting that they are offset to give finer adjustment. The pin is bent up from 20 s.w.g. wire. This will give rather a slack fit. A more precision like job would be to drill the plate with a No. 55 drill in place of the $\frac{3}{64}$ in. and make the pin of 18 s.w.g. wire. If the constructor has to purchase a drill I certainly recommend the latter method. Anneal the deck plate to facilitate bending the edges.

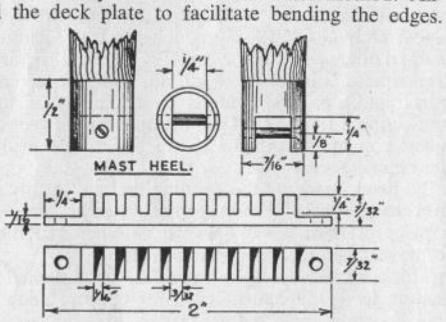



FIG. 6. MAST HEEL & STEP.

MAST HEEL & STEP. Fig. 6.—Below deck level the butt of the mast is tapered slightly so as to fit inside a piece of $\frac{7}{16}$ in. diameter brass tube ½ in. long. Fit the mast inside this tube tightly then drill a $\frac{1}{16}$ in. hole in the position shown. Cut a slot ¼ in. deep and ⅛ in. wide through tube and mast and fit a piece of $\frac{1}{16}$ in. wire to act as a stop which will engage with the slots cut in the mast step.

THE MAST STEP.—This is made from a piece of $\frac{7}{32}$ in. square brass. Cut the steps at the end and drill for No. 1 x ⅜ in. brass screws

To form the slots for the stop drill a series of holes on the side face and cut down into them from the top face. Clean up the slots and polish off all burrs.

The location of this step is important as it must be central with the fore and aft line and directly under the slot cut in the deck for the mast slide otherwise the mast will not be upright.

When the positioning is correct, screw down to the bottom of the hull with the ⅜ in. screws.

DECK PULLEYS & PLATES. Fig. 13.—Although a drawing of pulleys for the steering lines is given their manufacture is beyond the capabilities of most beginners. The plates are easy to make from 24 s.w.g. brass, but the pulleys should be purchased from either of the following firms:—

Bassett-Lowke Ltd., St. Andrew St., Northampton.
Lance & Mullett, 16 Meeting House Lane, Brighton, Sussex.


FIG. 13. DECK PULLEY & DECK PLATE.

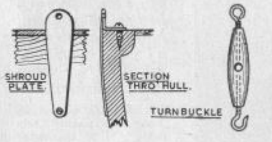



FIG. 21. SHROUD FITTINGS.

Another fitting which should be purchased is the turn-buckle. Four are required and they call for left and right hand taps. It is unlikely that such taps will be found in the average kit of tools, and the purchase of these items for one job would outweigh the cost of the finished turnbuckle. Fig. 21 shows a type in common use.

STEERING QUADRANT.—This is shown fully dimensioned on the lines plan, a perpective sketch is also given of the assembled job in Fig. 14.

Use 20 s.w.g. brass for the quadrant. Mark off, cut out, using an abrafile; drill for quadrant hooks, drill a ¼ in. hole and silver solder in a piece of brass tube from which the rudder tube is made. This should project ¼ in. above the quadrant and $\frac{1}{16}$ in. below, and is drilled 6 B.A. clearance. Drill and open out with a rat-tail file the slot for the rubber cord in the tail, and bend down at right angles as shown.

RUDDER, POST & TUBE. — The rudder tube is long enough to extend from the bottom of the skeg to ⅛ in. above the deck. Below the hull it is cut away and the skeg routed out with a rat-tail file to accom-

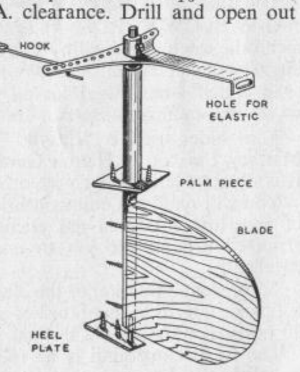



FIG. 14. QUADRANT & RUDDER ASSEMBLY.





modate the curve of the tube; three No. 1 brass screws ½ in. long well countersunk and filed flush, will secure it to the skeg. A rectangular plate, or palm piece, is soft soldered to the tube at such a position as to lie on the floor of the hull to which it is secured by four brass screws, using white lead to form a water tight joint.

Arrange a deck beam so that the tube can rest against it, and secure the tube by means of a U-shaped clip screwed to the beam. The rudder post is a piece of tube which is an easy fit inside the rudder tube. Blank off both ends with a brass plug sweated in. Drill the lower one with a $\frac{1}{16}$ in. clearance drill for the pintle bearing. The hole must be short enough to allow the pintle of 16 gauge wire to bear on the top of the hole. The rudder must swing as friction free as possible, and must not bear on the pintle plate.

Drill and tap the upper plug 6 B.A. so that the quadrant is fixed to the stock by means of the bolt passing through both post and tube on the quadrant.

RUDDER BLADE.—This is of mahogany. The back edge must be the same width as the skeg, tapering to $\frac{1}{16}$ in. at the after edge. Hollow out the back to fit the rudder post and attach the blade to the post with brass screws filing the countersunk heads to conform to the curve of the post. (See detail on plan.)

THE PINTLE PLATE of 16 s.w.g. sheet.—Recess the bottom of the skeg to take this plate and silver solder a piece of 16 gauge wire to form the pintle bearing. Two No. 1 ⅜ in. brass screws will secure the plate to the bottom of the skeg.

I cannot stress too strongly the importance of free, but not sloppy, fit of the whole rudder assembly as the performance of the boat under sail is dependent upon the return of the rudder to the central position at all times.

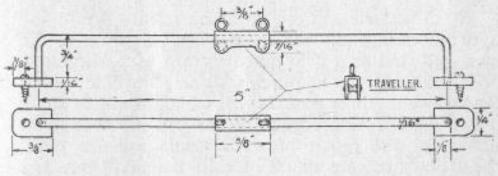



FIG. 15. FORE HORSE (5" LONG). MAIN HORSE (4" LONG).

FORE & MAIN SHEET HORSES. Fig. 15.—The bars are of 16 s.w.g. brass wire and the feet of 20 s.w.g. brass plate. The fore horse is 5 in. long and the main horse 4 in. long, other dimensions as shown. Each is fitted with a traveller and this must be made first. Use 24 s.w.g. brass, annealed, for the body. A small bobbin or pulley is turned to run on the 16 s.w.g. wire bar. This can be done by chucking a piece of ⅛ in. brass rod in the hand drill. Clamp the drill in the vice and cut the grove with a rat-tail file. Make two, drill for 20 gauge wire axle. Rivet ends of axle. Silver solder two eyebolts on top and clean up. Small screw eyes as sold by model shops are used for all eyebolts.

Measure length of $\frac{1}{16}$ in. wire required for bars, slip on traveller, bend wire at right angles as shown and silver solder to the feet of 20 s.w.g. brass. These are drilled to take No. 1 ⅜ in. brass screws.

GUNWALE EYE BOLTS. Fig. 16.—These are made from 20 s.w.g. brass plate and small screw eyes. Drill for shank of eye. Silver solder and cut off shank. File smooth and clean up. This figure also describes the spinnaker hook and various sail and boom hooks. These are made from 20 s.w.g. wire and need no further description. Attach to gunwale with No. 1 ⅜ in. screws.

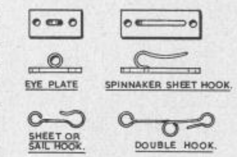



FIG. 16. HOOKS & PLATES.

MAST BAND & GOOSE-NECK. Fig. 7. — The lower mast band is a piece of ½ in. inside diameter brass tube as used for the mast tube. Silver solder a screw-eye to the after side for the kicking strap, but drill the sides for similar screw eyes. These are screwed in after the band is in place on the mast to keep it in position. These loose eyes and all sheet hooks are chromium plated along with the rest of the fittings.

The goose neck is bent up from 24 s.w.g. brass sheet, the tongue drilled for 6 B.A. clamping bolt and nut. The hook is $\frac{1}{16}$ in. brass wire silver soldered in place as shown.

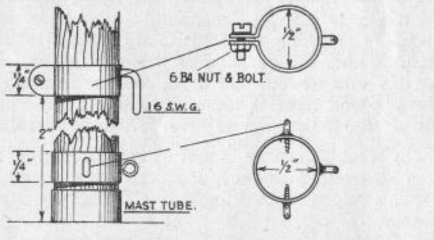



FIG. 7. GOOSE NECK & MAST BAND.

SPAR FITTINGS. JIB CLUB FITTINGS.—The conical ferrule at the outboard end of the jib club is made of 24 gauge brass with a lap joint. The illustration (Fig. 17), shows the marking out form and dimensions and also the finished job. The end and upper eye should be silver soldered in place, but the lower eye can be screwed into the club and will thus prevent the latter from turning. The wood should be

(Continued on page 58)

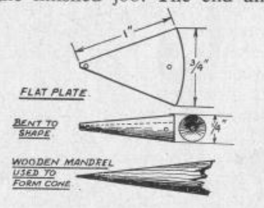
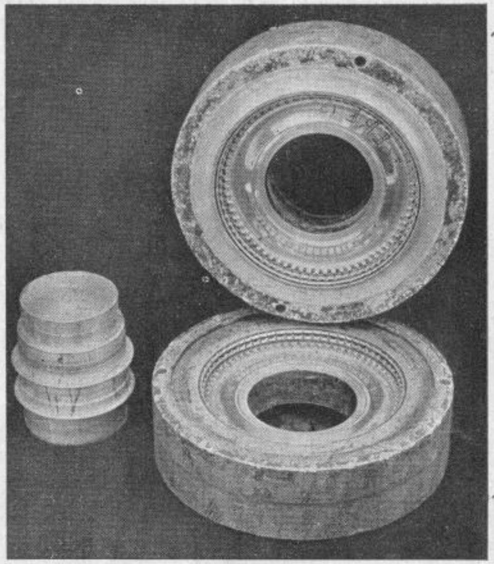



FIG. 17. CONICAL FERRULE FOR JIB CLUB

# Make your own TYRES & WHEELS Pt. I

By H. C. Baigent



This picture shows the core and two mould halves, with tread turned and punched and polished dural faces.

THE factor most often taken into consideration in the early stages of planning a model car, is its wheels. The problems involved are usually twofold. Firstly comes the question of whether the full-sized car has wire wheels, and if so, can the finished job possibly look right, if these are omitted. Nine times out of ten, the answer is "No, it'll look dreadful!"

The second problem is that of tyre sizes; time and again in reading accounts of model car building, the opening stages contain the words: "The job had to be scaled to suit the tyres I had by me" or . . . "was able to obtain commercially". An inconvenient state of affairs to say the least of it. Even fewer than those who boggle at the idea of wheel making are those who contemplate making their own tyres, and indeed the idea is somewhat "bogglesome" at first sight! Such a course, however, would often solve a number of other problems in a single stroke.

Many readers have in the past admired the perfection of H. C. Baigent's little racing models, and the highest praise is always for his perfect little scale wheels and tyres. When our friend offered to describe his own methods, step by step, and added that, although he actually makes these little masterpieces for sale to the public, his methods were within the scope of any average amateur with a home workshop, we naturally accepted his offer with alacrity, and warm thanks for his candid revelations of what some people might justly claim to be "trade secrets".

ANYONE can make their own tyres provided they have a normal workshop, the main essentials in which are a small lathe and a large vice or a small press (a book press will do). There are one or two smaller essentials, but these can be obtained for a few shillings. The main things are two metal plates, as massive as possible to retain the heat; I use two pieces 6 in. wide, 10 in. long, and $\frac{3}{4}$ in. thick—these are of steel and can be bought at most metal dealers as they are cut off standard rolled bar, which also has the advantage of being of equal thickness. Secondly a piece of round dural or aluminium for the mould, the size of this depending on the size of the tyre. If I come up against any difficulty in obtaining large diameter dural I melt a scrap of dural and run it in a deep tin lid and work from that.

Readers may say "it's all right for you to say you only want this and that, but what have you got?" Actually I have a $3\frac{1}{2}$ in. Myford lathe, a small $\frac{1}{4}$ in. drill, a home-made press, and a small tortoise stove, and that's all, so you see special equipment is unnecessary.

As to material, if you go along to any firm doing tyre retreading and tell them what you want to do, you will find as a rule that they are very interested. The material you require is $\frac{1}{32}$ in. "cushion" gum; about two or three pounds will make dozens of small tyres; and a small quantity of pre-stretched cord made for the repair of walls inside full-size tyres. You don't require much of this, but don't buy less than 24 in. lengths, and as the width is about 20 in. this will be enough to last out your "cushion" gum. Both these articles only cost a few shillings.

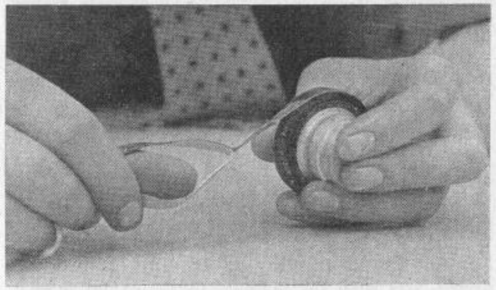
In the following articles I am describing both tyres and wire wheels, but I am dealing with tyres first, as it's no good making beautiful scale spoked wheels if you can't get tyres to fit them.

The first thing to do is make the mould. This can be made from any metal, but dural or aluminium is definitely the best. Should you use brass it must be chromium-plated on the mould faces, or the rubber will adhere to the brass.

I am going to describe the mould with one or two sketches, but add no dimensions as the size depends on your requirements.



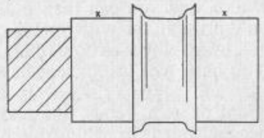




Showing how the "cushion gum" is wound on to the core, the linen non-sticky linen backing being peeled off in the process.

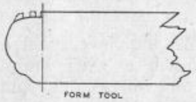
There are three parts to the mould: top, bottom and core. The shape of the core depends on the shape of the rim, and this you must determine first. Mine is like this

and is about $\frac{3}{32}$ in. deep at the deepest points, so my core is thus like this



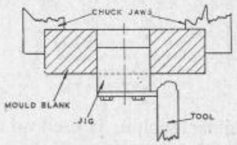
The extra piece shown shaded is for holding in the vice, as the two surfaces marked X have to locate the mould for centralisation and must therefore be not more than .005 in. smaller than the core of the mould and not less than .002 in., otherwise sticking will result.

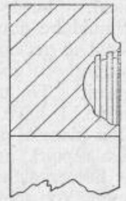
Before making the moulds I first determined the shape by scaling down a full-size tyre and making a cross sectioned drawing to the size wanted. A form tool was now made to match half of this, thus ensuring that both sides of the mould would be the same. The tread grooves have to be put on after



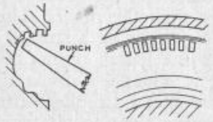
FORM TOOL

the forming. A gauge must be made to locate the form tool to ensure centralisation. I made a plug to fit core of mould (in my case $1\frac{1}{4}$ in.), and bolting to the face of this a plate, using the end of this as a stop to bring my form tool up against before entering. After the form was cut I cut in $2\frac{1}{2}$ grooves, the half of one groove making a whole when we contact the other half of mould, but the design of tread depends on what you wish to copy; you can't very well copy the larger tyre treads exactly as this would mean an engraving machine, but you can simulate the main pat-



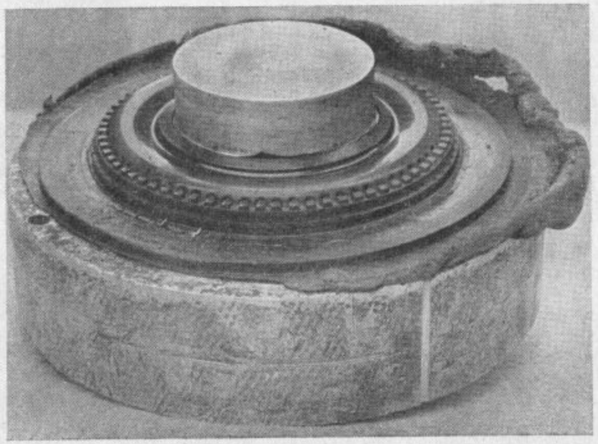

tern. After grooves were turned I put impressions on the mould, as shown very clearly on the photographs, using a punch of the desired shape, and one good sharp tap with a $\frac{3}{4}$ lb. hammer was enough. These impressions were placed like this giving a very realistic effect.




Now the fitting of mould and core which must all come together as shown overleaf.

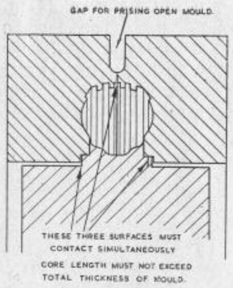
Note that the mould must be highly polished if a really clean job is desired, as every turning mark will show.

Now let's assume that you have everything ready. Plates, mould, rubber, some form of heat, and (this is important) two pieces of thick cloth or carpet to



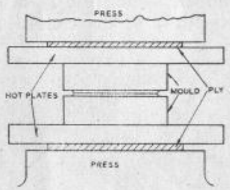
How the job should look when the halves of the mould are knocked apart after heating and "curing" the rubber. Note the clean tread pattern.

hold hot plates and mould with.




First put the two plates on the fire or gas to get hot. The temperature of these is not critical, but it should be about right to get consistently good results. To test mine, I have a thin piece of grade 3 solder, such as is used on wireless repairs, and when the top surface of the plates is hot enough to just begin to melt the end of the solder rod they are just right; if they melt it quickly they are too hot.

Now to commence building the tyre. First cut 5 or 6 strips, complete with linen, off the width of the "cushion" gum, a little wider than the finished tyre, with one slightly narrower than the others. This is the first one to wind on. Now tear off a strip of the cord rubber, tearing down the length of the cords, about 5 or 6 cords wide is enough. Let me stress here one point, don't let the uncured rubber surfaces come together while preparing them, as if they do they will stick beyond separation, so keep the linen on till you actually wind on. First wind on to the core the narrow piece, stretching slightly as you go, as shown in the photo. Secondly, wind the cord fairly tight about five complete winds then continue winding on plain rubber till you have enough; this will be when it *looks* a little too big to go in the mould!




Now put the core in the mould and press together in the cold vice. If it goes right up together you have not enough in. So add some more till it is difficult to close the mould when cold. It is now ready for the press. Have two small pieces of wood ready to go between the hot plates and the press, to insulate heat from the press, otherwise the heat would leave the plates too quickly and spoil the tyre.

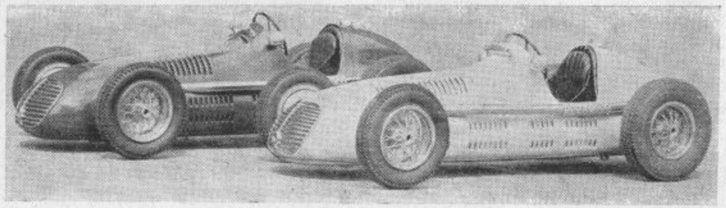
If the plates are now ready, place one piece of wood on the press face, then one hot plate, now the mould and second plate on top of that, and finally the second piece of wood. Now shut the press and pile on as much pressure as you can. Take note of the time and leave the job for 20 minutes, and in this time the rubber melts and takes the form of the mould, and then the pressure cures it, and if all's gone according to plan it should be a perfect tyre. The cord you have put in ensures that the tyre will not stretch by centrifugal force when in motion.

Now for a few if's and but's, do's and don'ts. One of the photos shows how your tyre should look when you take off the first half of the mould. To get the tyre out of the other half, knock the core through from the other side and the tyre will come away with the core, and you can then pull the tyre off the core. Don't prise it off with metal objects, pull it off by hand, using gloves or something to protect the fingers. If you have had insufficient heat your tyre will be all sticky and a proper mess. In this case add a small amount of gum, reheat the plates, a little hotter this time, and put it in again; this has no ill effect on the finished tyre.

If your plates were too hot your tyres will come out all blistered and with a strong smell of scorched rubber, and the tyre is now useless.

If too little material was used the tyre will look cured in places, but with blow holes and imperfections showing. This is also useless, as once the rubber is cured nothing can be done about it. It is better to have a little too much than not enough. You may get all these things right first time, but it's more likely you won't, but always remember that experience bought is not easily forgotten, and by a little trial and error you will be able to produce a perfect tyre every time.

The time and trouble you have spent on this is well worth while as you will see when you put perfect little scale type tyres on your model. And what is more, these tyres will stand all the racing strain that is liable to be asked of them.



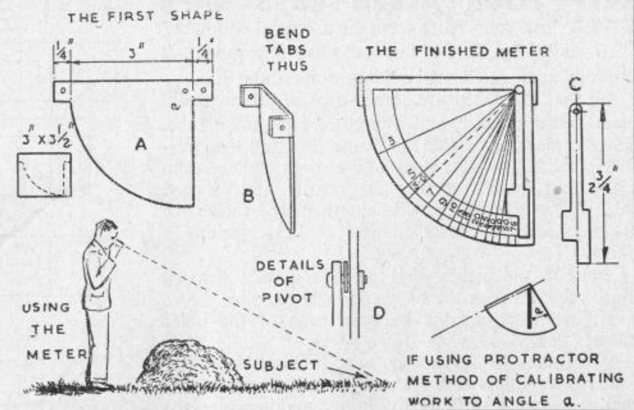
If you want to produce wheels and tyres like this to add the final touch to your model, H. C. Baigent tells you how to do it in your own workshop.





# A SIMPLY MADE DISTANCE METER

BY H. A. ROBINSON




GAUGING distances accurately is a big trouble with many photographers, but range-finders are expensive.

Here, however, is a simple little "distance meter" which anyone can make for himself. A certain amount of care has to be exercised in calibrating, but the trouble taken is quite repaid, for the meter is an extremely useful addition to your kit and once made is there for all time.

The principle involved is that a line taken from the eye to the foot of an object slopes at various angles according to the distance the object is away. Thus, with items near in it will slope sharply downwards, the tilt decreasing as the range increases.

This then gives a variable which, if read against some suitable scale or calibration, can be translated back into terms of range.

To make the meter a rectangle of aluminium is required, 3 in. x 3½ in., and upon this mark out the shape as (A), the lugs at either side being each a ¼ in. long, and the radius of the sector 3 in. The lugs are now carefully drilled at their centre points so that when bent out to a right-angles a line of sight parallel with the top edge will be obtained. Another hole (a) is drilled, this being about ⅛ in. inward from the line where the near side lug will bend outward.

Now, if possible using a precisely-edged vice for the purpose, turn the two lugs to a right angles, thus giving the shape (B), check being made that a good line of sight can be secured through the holes, which incidentally need not be too small.

The pointer is the next item. This is 2¾ in. long and is shaped as (C) and wide enough to allow of drilling a hole for a pivot near the top. The bottom is cut in the form of a "bob" to give weight and with a straight-edge (b) which must be in line with the centre as indicated. Against this the scale is read. In length the pointer should swing just a little clear of the outer curve of the metal.

All is now ready for calibrating. This can be done visually, i.e. by marking out ranges on the ground, then temporarily pivoting the metal stiffly to some upright, at about 5 ft. 6 in., and sighting each range, marking where the vertical (indicated on the upright) strikes the metal. But the best way is to lay the angles out with a protractor from figures given by simple trigonometry. This is a very accurate method. On the assumption of a 5 ft. 6 in. eye-level, which is average, angles of various ranges, reading from the vertical as per the bottom right-hand diagram, are as follows:—

| *Ft.* | *Deg.* | | |
|---|---|---|---|
| 3 | 61.4 | 15 | 20.1 |
| 5 | 47.8 | 20 | 15.4 |
| (5.5 | 45.0) | 25 | 12.4 |
| 7 | 38.2 | 30 | 10.4 |
| 9 | 31.4 | 40 | 7.8 |
| 11 | 26.6 | 50 | 6.3 |
| 12 | 24.6 | 75 | 4.2 |

Calibrating this way it is best to get a quite big protractor and set out the angles first on a sheet of paper, drawing lines to the centre. Then lay the aluminium on this with the pivot hole agreeing with the protractor's centre and mark the metal where the lines meet the curve, completing with scribed lines inward.

Finally comes the fitting of the pointer. The main thing here is that it must *swing freely* and to this end a small model-maker's nut and bolt is the best for the actual pivot, this being but loosely inserted, a small washer going between the pointer and the metal. Any form of riveting is, of course, out of the question.

To use the meter, a firm stand is taken and the foot of the subject, the distance of which is desired, sighted through the two holes. The manner of holding must be such that the pointer swings without restraint. The sight made, the first finger is now pressed against the bob, and locked, thus the figure beside the flat edge is read. This is the distance away of the object.

## KEEP YOUR ALLEN KEYS SAFE

EVER lost your Allen keys at a crucial moment? I have. So on the last occasion I stopped all production to see what could be done about it.

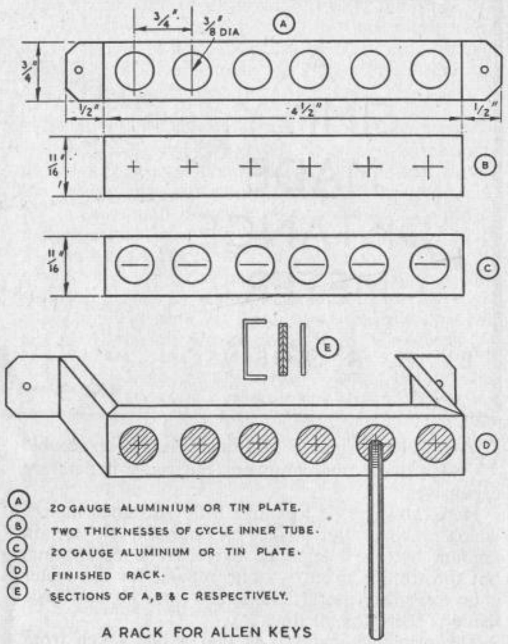
All that is needed are some strips of 20 gauge tin plate, brass or alloy, and a piece of cycle inner tube. Cut the pieces to make the frame (A), and the pressure plate (C). Drill a rivet hole at both ends of each piece, then fasten together temporarily, and proceed to drill the $\frac{3}{8}$ in. holes. The length of the rack is of course decided by the number of keys needing a home.

Separate the pieces, and place a double strip of inner tube between the two, and rivet together. More rivets are then inserted between each of the holes already drilled.

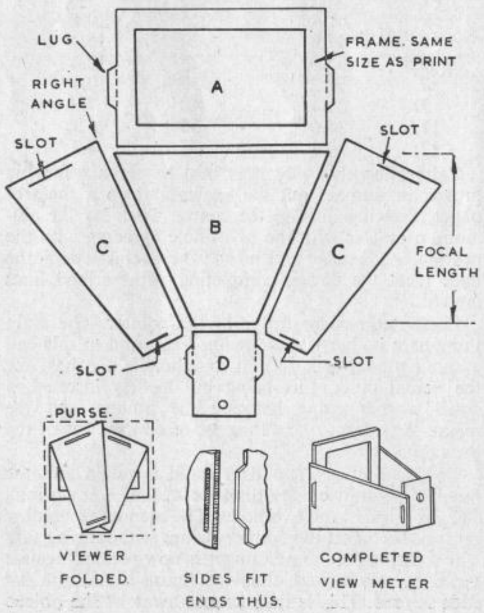
Now take a small sharp wood chisel, or other suitable tool, and cut a cross in the centre of the rubber showing through the holes, making sure the cut goes right through. A small cross about $\frac{3}{16}$ in. across is made for the smallest key (in my case a $\frac{1}{16}$ in.), and progressively bigger for the larger ones.

All that remain to be done is to drill the holes for the fixing screws in the feet, then bend the rack to the shape shown at (D).

The finished rack can be fixed to the edge of a shelf, thereby occupying no valuable space, and it will be found that the keys can be removed or replaced without fear of knocking the rest on the floor.




A RACK FOR ALLEN KEYS




## MAKE A VIEW METER

THE main points about a view-meter are that it must be (1) constructed to suit the focal-length of the lens of your camera, (2) so designed that the eye can be brought tight against the viewing hole (this is very important), (3) collapsible for easy carriage and (4) rigid when in the viewing position.

To satisfy the first condition, the "pin-hole to surround" distance must be the same as the focal-length of the lens, that is if the surround is the same size as your film, $3\frac{1}{4}$ in. x $2\frac{1}{4}$ in., etc. If the surround is smaller, say half-size, then the length of the meter must be half the focal-length, and so on.

The view-meter shown is made of five sections, the surround (A) being the same size as your prints, while (B), the base, is the same as the focal-length. (C) and ($C^1$) are sides and (D) the eye-piece.

These shapes are all cut out of medium thickness card and when brought together as shown they lock solidly by finger pressure from the outside.

The "pin-hole" in the eye-piece section should be made with some care. It need not be too small, but must be cleanly cut. A hole burnt with a red-hot knitting needle is ideal.

Finally, to prevent glare all the parts of the viewer are painted dull black.

Thus we have a viewer that folds flat to go in a pocket or case, and which is readily erected for use.





## A MAN AND HIS MODELS No. 5

# IAN MOORE

### OF THE DERBY CLUB

Model Cars Photo]

[Norman Foster Photo

Left: Bill Moore and the 5 c.c. record holder. This little bit of dynamite was built for Mrs. Moore to race, and, powered by a Dooling motor, it proved itself from its earliest appearance to be a highly successful little car.

Our victim is relegated to the background in this picture, where he is seen preparing the Gardner Record car for a track run at Eaton Bray. This car took the five mile record and was co-winner of the Drysdale Trophy. Seated in front of the "pit" on this occasion are Mrs. Moore and a friend.

THE chronicler and his victim this month have a number of things in common. Both were regular spectators at Donington Park in its exciting infancy, in the days when you could conceal yourself behind a suitably stout tree on the inside of the course, and really *see* how the experts took a corner; each was fired by the *Aeromodeller* announcement of a competition for model cars in 1942, and fell to work with rabid enthusiasm to build his first power model; and since neither of said models proved to be capable of exceeding 20 m.p.h., each regretfully left it to someone else to collect the prizes and the honours!

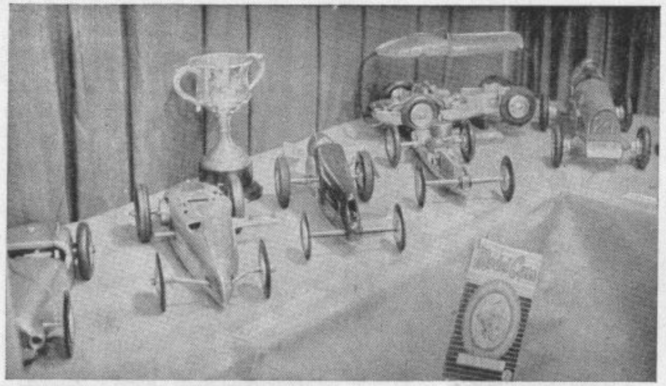
From that point onwards the similarity ceases for Ian William Moore (you take your choice of Christian names, but he's Bill to most of us) ultimately achieved his aim to become a record breaker, whilst your scribe decided that it was less wearing on the nerves to tell other people how to do it!

The aforesaid Donington spectating, in Bill's case, was done at half price, he being nobbut a lad at the time, and his particular hero being Lindsay Eccles, prominent Bugatti conductor of the day, he set about building a clockwork Bug, super-tuning the motor by tearing out the governor. Having been brought before the beak for carrying out running repairs under the lid of his desk, enlightened authority staged a spot of R.T.P. racing in the school hall, young Moore being matched with a couple of like minded confederates with a model "Bloody Mary" and an unbranded special, and encouraged to work it out of their systems.

Model cars were eclipsed by petrol powered aircraft for a few years, much experience being gained with an ancient Brown Junior, a Bunch and other engines of assorted capacities, until the *Aeromodeller* competition lured him back to the old game, and the old Brown J. was given the task of propelling the Moore masterpiece, through the medium of a pair of bevels from a discarded gas meter. (We always thought that old gas meters ended their days in provincial hotel bedrooms, but this one met a more glorious end.) Even a set of the much-prized ash tray tyres, however, failed to spell success, and once more Bill Moore became an aeromod, building "solids" and sail planes. The "solids" were quite something, according to an *Aeromodeller* colleague, by the way.

Then back to the four-wheeled fold, this time to make a start on a Mills engined job, about the time that the Derby Model Racing Club was formed in 1947, Bill being a committee man for the aircraft section. Bigger and better racing models soon became the ruling urge, the Mills plot was abandoned, and a magneto fired "Lapwing" from Gerald Smith, formed the centre-piece for the Gardner Record Car which was soon to cause pangs of envy amongst scale minded types. This was a really lovely piece of body-building, as finely finished as craft and patience could make it, and performance went with looks, for it still holds the 5-mile record, although it passed into other hands later. It was, however, a shade too late to be a successful short distance winner, so a Dooling 61 was bought, there being nothing on the British market offering an equivalent degree of poke. The first Moore-Dooling, although looking All-American to the casual observer, was in fact a very creditable home brewed speedster, engine excepted, and achieved some encouraging successes.

(*Continued on page* 56)



A corner of the Exhibition at the Rego Works, Angel Road, Edmonton, showing a collection of ferrocious looking speed models and on the extreme right, what looks like a modified example of our old friend the Galeota !

# EDMONTON EXHIBITION

Edmonton Model Car Club's Exhibition described and photographed for **'Model Maker'** by

**W. S. WARNE**

THE Edmonton Model Car Club held a very successful exhibition opened by the Deputy Mayor in the canteen of Messrs. Rego's at their Angel Road Works, on Saturday, October 28th.

Upwards of 500 people paid admission, and at one time the whole place was jammed tight with visitors.

A very popular exhibit was the Edmonton portable track, and members ran their cars in sessions, the crush to view necessitating repairs to the substantial barrier rail in the intervals. Thanks are due to the Chingford & District Model Engineering Club, Enfield & District M.E.S., the Bethnel Green Men's Institute, and the Malden M.E.S. for their very fine support with models of every description, including operating locos and a fine 15 c.c. 4-cylinder engine running on its correct fuel from a tick-over to close on its full revs. of 8,500.

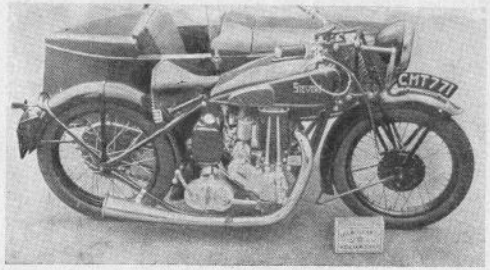
Trade exhibitors included Z.N. Motors, the British Oxygen Co., with welding demonstrations, J.A.P. Motors and wire recording apparatus.

To show model car fans what they are expected to graduate to Jack Leary lent his new Cooper car which was the focus of many envious eyes.

The quality of the exhibits in general was very high and in the normal way it would have been invidious to select one for special mention, but in this case one was so outstanding that everyone was talking about it: this exhibit by G. Wills, of the Chingford & District M.E.C. was a model motorcycle and sidecar. This product of four years' work is a quarter scale model of the builder's own 1935 Stevens machine, the engine is of approx. 7.5 c.c. with gearbox and clutch, and believe you us everything works, the engine controlled by twistgrip ticks over and sounds like the real job, the brakes work, the lights light, forks are sprung, and the steering damper damps.

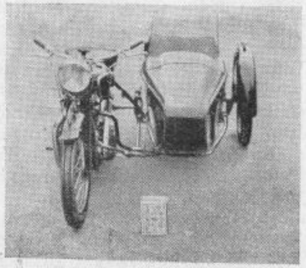
Being of the critical mind that must find an end to this detail perfection somewhere and award only 99.9 marks out of 100, we must report that the ammeter does not read, and the machine is not licenced for the road.

The whole conception of the Exhibition, and the major portion of the work fell on one man, Jack Pickard, the Hon. Sec. of the Edmonton M.C.C., and the Club owes him a lot of thanks; proceeds are to be devoted to the new track. We cannot close this report without mention of Edmonton member, W. Hurn, who drove from Bristol to attend and run his model car.



(Left) A truly remarkable model by G. Wills, the Stevens combination.

(Right) It is well nigh impossible to detect that this working model is not its full sized counterpart.



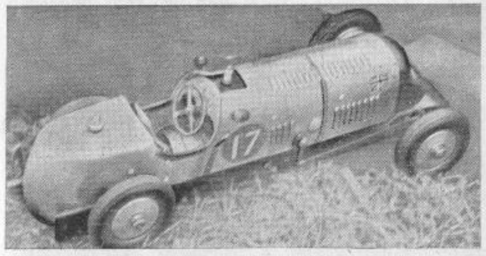




# SURREY M. R. C. C. AT HOME

IN the last issue of *Model Cars* appeared a description written by C. M. Catchpole of the enterprise and hard work which resulted in the Surrey Model Car Racing Club becoming the happy owners of a new home, following their abandonment of the Normandy track. On October 14th the club staged an informal At Home to christen the new concrete, and a cheerful band of car owners bumped gently through the caravan camp and across the sleeper bridge into the wide-open spaces of Chertsey Mead, not forgetting to shut the gates behind them! The 32 laps to the mile circle now has an excellent surface, a very adequate safety fence, and tethering arrangements by courtesy of C. E. and F. N. Smith. Pit tables had not yet materialised, so anyone lucky enough to have a fair-sized lid to the boot of his car made it serve as a useful pit, and soon the stirring howl of racing engines echoed in the nearby elms.

(Above, left) George Thornton takes the long rest to his Talbot ! (Centre) L. Garrod's improvised 'pit' and (Right) F. N. Smith with his 'all home brewed' speed model.

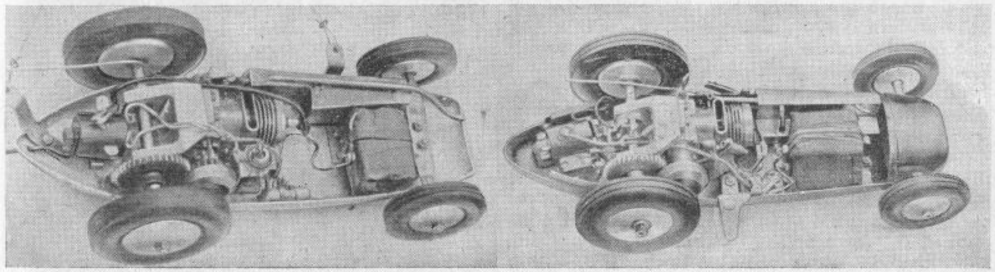


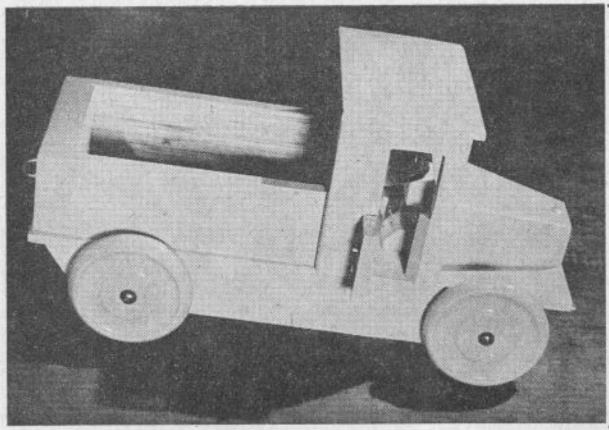
(Above) C. W. J. Child's 1949 Rickard cup winner was out again on the new track.

(Below) Both B.R.M. inspired ! R. W. Flower's and C. M. Catchpole's Dooling Fives, the latter newly converted to 'electrics'.

The meeting was a go-as-you-please affair, no competition being run, but some very satisfactory lap speeds augur well for future events. Models ranged from interesting home-built jobs to fire-eating Doolings, and one met lots of old and new friends during this pleasant afternoon.

The Club is now in full flight again, but new members will be very welcome, so applicants should contact C. M. Catchpole at 26 Rutland Court, Queens Drive, W.1.





# MODEL MAKING MADE EASY

MASS PRODUCTION OF CHRISTMAS GIFTS WITH THE AID OF A SMALL BENCH POWER SAW.

BY WALTER JAMES

Left : One of the lorries made by the author with the aid of the Masco Saw. Below : At work with the Saw — incidently a Mark I, now replaced by the improved Mark II version.

FELLOW hobbyists may find a good use for the sturdy and attractive motor lorry illustrated, with Christmas not so far away.

Some months ago I commenced making for Christmas sale 28 of these lorries in my spare evenings. Two months later I had cut and planed by hand some hundred of the 504 component parts (not counting the wheels which were bought ready turned). I was well and truly bogged down; the never-ending job of gauging, sawing, planing and squaring began to instil the conviction that without some mechanical aid I was going to be a Christmas out.

I decided to invest in a Masco Bench Saw on account of its adjustability, and cut later with its aid the remaining 400 odd parts in a couple of evenings. They could easily have been done in one.

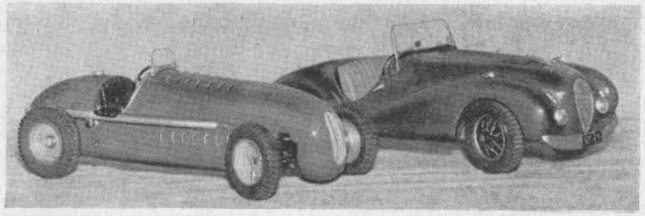
Working by hand in $\frac{3}{8}$ in. wood is not laborious of itself, but with any quantity of work such as I had embarked upon, the time spent in marking gauge lines, squaring across end grain and trueing parts in paris (as with the sides of the carrier and cab in my lorry) is so great that no work involving identical wood shapes should be entertained for a minute without a machine saw.

I did not immediately appreciate some of the many refinements in the handling of my Masco and mention the following elementary points with apologies to all who are not beginners. In sawing side grain it is important to cut in the same direction as that in which the grain approaches the edge. This rule is same as that used to avoid tearing with the plane, and if observed will save cleaning up afterwards by plane. With end grain the cut, even in the softest wood, is far cleaner than a hand saw cut, but any fraying can be removed with a few strokes of the plane on the underside, which should therefore be left until last. I screwed a flat piece of $\frac{1}{2}$ in. deal in position adjacent to the saw's metal table and bored a row of holes to bolt the fence at any distance across its width. This simple addition provided its surface is flush with the metal table, and one edge is correctly aligned so as to enable the fence to be fixed square, allows any reasonable dimensions to be mass produced and enlarges the scope of the machine to whatever is contemplated. Finally an inch scale marked across the wooden table facilitates the setting of the fence.

The new blade which arrived ready sharpened and set, serves me best with a cut of about 1 in. though this can be increased to a maximum of $1\frac{5}{8}$ in. The thickest pieces of my lorries were the bonnets in $3\frac{1}{4}$ in. and these were cut to the maximum depth top and bottom leaving $1\frac{1}{4}$ in. and two true guide cuts to the handsaw—a different proposition!







We don't quite know whether the racing car was developed from the firm's two-seater or vice versa, but there is a strong family resemblance! Both are good looking models and show what "kitchen table" methods can do.

# KITCHEN TABLE CONCOURS

BY S. J. FOOT

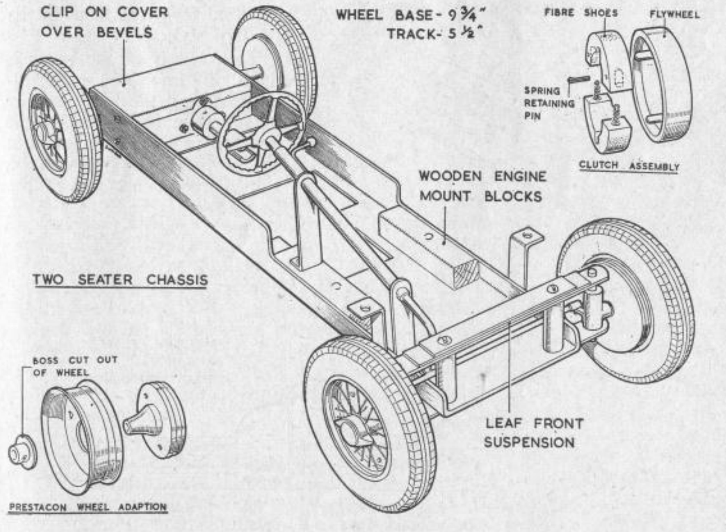
In this first issue of *Model Maker* we welcome to our pages S. J. Foot who hails from Plymouth. On receiving the photographs which appear on this page and overleaf, we liked the look of his two model cars which, we thing readers will agree, are a pair of very attractive little cars. Both models are free-lance but their builder evidently knows what real motors look like, for this pair could easily be passed-off as true scale jobs among those not so well up in car recognition.

The pages of *Model Cars* have often expressed an editorial liking for models that resemble th ereal thing, and we have always seen virtue in the building of such models where the absence of a thirst for speed in the maker enables appearance to be given priority. Scale and semi-scale model cars can, of course, be made to go too slow but, if scale speed is attainbla,e then no loss of face need be suffered in the presence of the high-speed cars. S. J. Foot shows here what can be done with little in the way of facilities which, while not being adequate to produce a record breaker, need not prevent the construction of models that will go, and make a pretty sight while so doing at a speed at which they can be seen. So as long as there are kitchen tables we hope that they will be put to this use and result in hours of model car running that can be enjoyed without a stopwatch.

HERE is a short description of two of my model cars, which although quite simple little jobs may be of some interest.

These models are for the most part kitchen table specials, as I do not possess a workshop, although I have quite a good collection of tools, and a vice with $2\frac{1}{2}$ in. jaws which I clamp on to the table. I did, however, make the clutch units and wheel hub brake drums on a lathe which belongs to a friend.

Both cars are good runners although by no means fast, the best speed so far attained being 28 m.p.h., but I would hasten to add that I am not a speed merchant and prefer model cars which have a fair resemblance to the real thing.




The two-seater is finished in two shades of blue, and the racer is in two shades of green.

Each car is fitted with Ackermann steering gear controlled from the steering wheel and lockable for R.T.P. running. The independent front suspension is of the transverse leaf spring pattern, the spring leaves being made from an old clock spring. The rear wheels are unsprung, the axles running in ballraces which are pressed into flanged cups and bolted direct to the chassis side members. Dummy exposed rear springs are fitted to the racer.

The power units on the two-seater is an E.D.

Photo : Western Morning News Co. Ltd.

The sports two-seater seen at a recent Plymouth exhibition while C. Alford, president of the Plymouth M.C.C. demonstrates his fine coupé in the background.

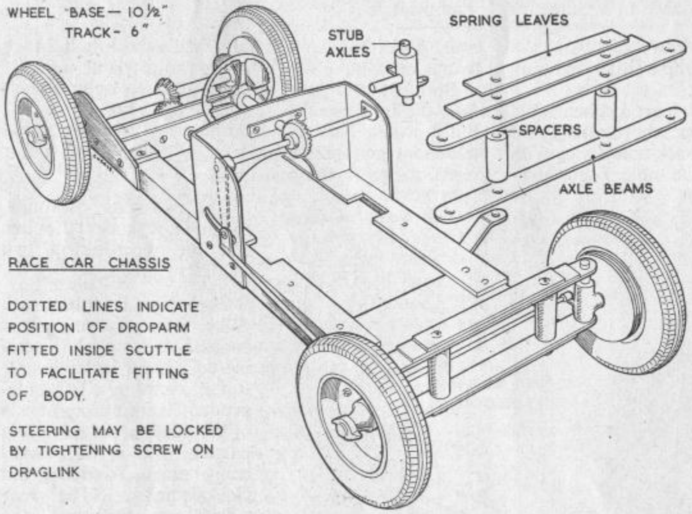
Comp. Special, while that of the racer is an E.D. Mk. 4. Transmission on each car is through two-shoe centrifugal clutches to 2:1 bevel gears driving one wheel only, the other wheel running on ballraces pressed into the hub. Proprietary wheels are used, these being modified by cutting out the original bosses and enlarging the centre holes to fit over the brass hubs, which are turned out in one piece with the brake drums. The wheels are held in position on the hubs by three screws which pass through the wheels and screw into the drums. The wheels on the sports car are spoked with pins. The tyres on the driving wheels are secured to the rims with Bostik, the circumference of the tyres then being grooved and bound with twine, the groove being filled in with Bostik.

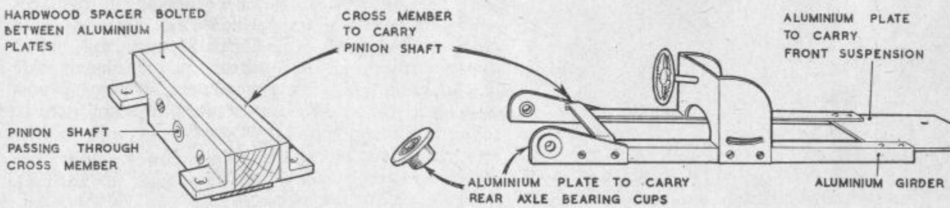
The body on the two-seater is of all wood construction, and that of the racer is of wood and aluminium sheet. The louvres were cut with a fine fretsaw and pressed out before the bodywork and bonnet were bent to shape.

Details on the two-seater include instrument panel, twin windscreen wiper blades, road licence, driving mirror and finger tip gear control, whilst that on the racer include instrument panel, adjustable windscreen, dummy clutch, accelerator and brake pedals, dummy gear lever and twin functional exhaust.

The body on the two-seater can be removed complete from its tray type chassis by the removal of one screw from the front end of the car, the rear end being held in position by a spring clip. To gain access to the engine the bonnet can be lifted from the front in the modern style.

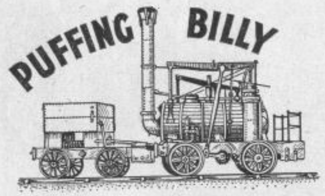
The chassis of the racer is made of ½ in. x ½ in. angle aluminium, and the body can be taken off in one piece by the removal of two screws, but access to the engine can be gained by the removal of the bonnet.



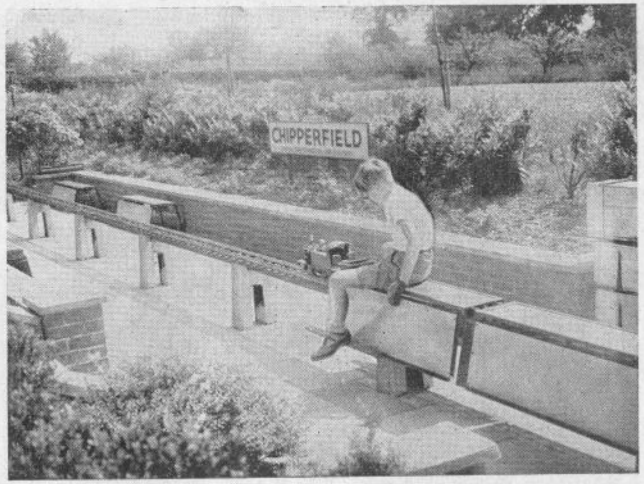








# VISITS A CLUB TRACK




Chipperfield Station on the Watford Society's track. Note the elegant valanced flat-cars, and Puffing Billy's carrying cases on right!

## The Watford Society's Track at Chipperfield

A FEW weeks ago I was invited by the Editor to join him in a visit to the Watford Society's track at Chipperfield, just outside King's Langley. Arriving there on a bright sunny morning I saw a couple of the local club's men driving around the track and as they passed through the charming little "station" (the signboard said "Chipperfield change for Bovingdone and Flaunden") I was struck by the speed at which they were travelling, and said to myself, "Some pretty dangerous driving going on here". I was to discover later that speeds which may be dangerous on one track can be quite safe on a better track, and the Watford Society's railway certainly proved to be a "better" one!

## The Permanent Way

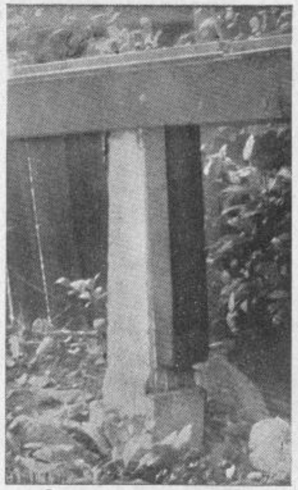
I have seen a good many tracks in the last few years, but this one was certainly an eye-opener, in fact it seemed almost incredible that it could be an outdoor track, it showed so little evidence of having had to withstand the effects of the weather for the two years during which it has been in service. The railway itself, which is laid to the usual 2½ in., 3½ in. and 5 in. gauge 3-rail combination, just like those at Malden and Chingford, is supported on pre-cast concrete two-legged posts. These posts are bridged with lengths of 2 in. steel angle to which wooden sleepers are screwed, and the rails—which are lengths of 1 in. x ¼ in. B.M.S. bar, simply rest on these sleepers, being held down by hooks which secure the rail-assembly by means of the tie-rods and spacers.

## The Line

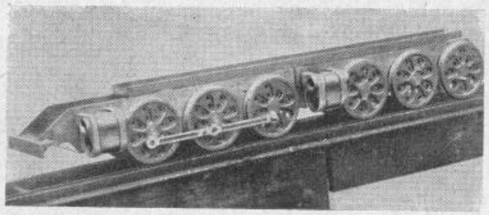
The total length of this continuous track is about 1/7th of a mile, and its shape is that of a rectangle with rounded corners. The curves at the corners are very easy, having a radius of about 80 ft. I was pleased to find that the line is not quite level, because in my experience perfectly level tracks are rather monotonous for the driver—and the engine. The up-grade at Chipperfield is not too severe, being just sufficient to make the run interesting without giving the engine too much to do. As the line is built on a piece of land which slopes slightly away from the station, the upper half of the track runs through a cutting. The whole job is beautifully laid out, the site is planted with trees and flowering shrubs. The station is neatly laid out, being paved with stone flags, and surrounded with brickwork and a nicely laid-out garden. As the portion of the line which runs through the cutting could be dangerous for anyone walking there, neat printed notices appear on boards at appropriate positions here and there about the track, giving an added air of realism. An excellent signalling system has been installed, using automatic three-light signals. The track has been divided up into sections, and each section is controlled by its own signal. This system is by no means ornamental, in fact it is absolutely essential for safety when there are several trains on the track.

## The "Sidings"

At a higher level than the station a fenced-off area has been arranged for servicing and steam-raising. A number of short length of track are mounted on posts so that drivers may attend to their engines and get ready for the track. Current at 12 volts is available for the blower, and when the engine is in steam, it has to be carried down a flight of steps to get to the track. The only adverse criticism I could make concerns these "sidings": one feels that it would have been so easy to have arranged for this steam-raising ground to have been on the same level as the track, and a turn-table, such as they have at Malden and Chingford, could have been installed. A stroll



Combined concrete and wooden post which supports Puffing Billy's own garden track at Southgate.



Part of the chassis of Puffing Billy's new completely articulated 2-6-6-4 engine.

## Rolling Stock

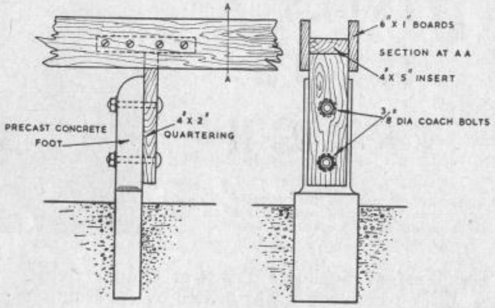
One very important point has received more attention on this line than on any others that I have visited—the rolling stock. I usually take my own "train" with me. It consists of a driving truck fitted with brakes, and a 5 ft. long passenger truck. At Chipperfield, however, they were doubtful about giving permission to use this train, and when I discovered that they have a small fleet of extremely well-made sprung bogie trucks, fitted with safety valances and provided with eight-wheel brakes, I was more than willing to take advantage of this somewhat unusual facility.

## A "Safety-First" Line

Perhaps I should apologise for using superlatives again, but after my first circuit of the track on the driver's seat I was as much amazed by the condition of the track as I had been impressed by its appearance at the beginning of my visit. The road is as smooth as a billiards table, there are no bad joints, and in fact it appears to be without irregularities of any kind. Now I knew why the "home" drivers had been indulging in such apparently unsafe speeds earlier in the day. Furthermore as I continued to circle the track I realised that the signal lights left the driver in no doubt as to the state of the road ahead. If the light was amber you kept your eyes open for the next light, if that was red you stopped. If however the light ahead was green, there was nothing to worry about, and the track was perfect, so, let's see what the engine would do with a clear road and no bumps.

## The Back-Garden Track Again

Whilst we are still on the subject of outdoor tracks, I have taken a photograph of a portion of my own home line, and the picture reproduced shows the method of supporting the track. The rails are prefabricated in 5 ft. sections, using steel angle and bar sections, and the assembly is carried on 6 in. x 1 in. boards, arranged 4 in. apart with 4 in. x 2 in. wooden spacing blocks between them. These boards are supported at a height of about 2 ft. above the ground on posts which are a combination of concrete and wood, arranged at intervals of 6 ft. The main posts are precast concrete footings which may be purchased at very reasonable prices from most ironmongers of builders' suppliers. The boards on which the rails are carried do not rest on the top ends of these posts, because I found it rather difficult to get the tops absolutely level, and so I devised the method shown in the sketch. It will be seen that a short length of quartering (4 in. x 2 in.) is bolted in position with a couple of coach bolts, passed through the holes already cast in the concrete posts as purchased. The track supports rest on top of the projecting wooden posts thus formed. It is easy to get the tops of these short wooden sections level before the boltholes are drilled, and furthermore it is a simple matter to bolt or screw the track boards to these wooden extensions. For the levelling process, a string was stretched from end to end of the track, and set with a spirit level. The short wooden extension posts were then temporarily held to the concrete posts with carpenter's "C" cramps so that their tops touched the string, and the positions of the bolt holes were marked through the existing holes in the concrete posts.




COMBINED CONCRETE & WOOD TRACK POST.

## Work in the Workshop

Recently my figures for locomotive production have fallen off considerably, I'm afraid. During the last three months or so there have been so many distractions—exhibitions, trials, drivers' tests, and so on, that my time in the workshop has been severely curtailed. Furthermore, such time as I have been able to devote to my favourite occupation, has been put





to very profitable use in that I have been busy making equipment so that I may be able to work more quickly when I *do* start.

## New Engines

In spite of all this, however, two engines are in process of production, and a third in process of being thought about—a very important process in my case, for I devote some time to the "considering" stage before I finally decide on a new engine. The two engines which are already well under way are firstly a three-cylinder-abreast Pacific type which is being built around my own special minimum-piping arrangement of cylinders, which has been successfully tried out on No. 4 the "Flying Dutchman". I am still making experiments with valve gears for this cylinder arrangement, as the two-to-one conjugated gear for driving the middle valve-spindle appears to have several inherent disadvantages when used in $\frac{3}{4}$ in. scale, particularly when associated with the type of outside gear fitted to the "Dutchman". I have devised an easily-made gear of a simple type which can be fitted inside the frames, and during the next few months I hope to carry out this alteration.

The other engine is an innovation, a completely articulated 2-6-6-4 monster (in my usual $3\frac{1}{2}$ in. gauge) which I hope to use as a testing ground for several unusual fittings and ideas—in fact the whole engine as visualised simply bristles with experimental gadgets, and you can see a picture of the chassis as it is at present. The near-side forward coupling rods have been made and fitted: they are made up from light-alloy castings which can be machined and finished in a very short time—an important factor when you have four sets of them to make! Several of my friends have objected strongly to these rods, but as I have pointed out to them, I have a full-sized precedent to support my experiment: the L.N.E.R. fitted two of their 3-cylinder 2-8-0 heavy goods engines with forged light-alloy coupling and connecting rods in 1930 and they have been in service ever since. Th efour cylinders are fitted with piston valves; I don't like piston valves in this small scale, but it's about time one of my engines tried them out. I've not been very satisfied with the two or three piston-valve engines with which I have had anything to do, as they have all developed a pronounced blow up the chimney after a period of service.

The boiler will be 33 in. long, the tapered barrel being 24 in. long: the grate area is about 35 sq. in., flues will be $\frac{5}{8}$ in. o.d., and superheater flues $\frac{7}{8}$ in. o.d. A front-end regulator will be usde. I rather fancy that this engine will improve on the actual tractive effort of the Garratt: it will have the same cylinder capacity and boiler pressure, but will not suffer from the disadvantages which undoubtedly arise from the Garratt's long steam pipes, although "Gemini" successfully handled a train weighing officially over a ton at the South London Club's Locomotive Trials recently.

I am looking forward with pleasure to entering this new engine in next year's South London Trials, if I can finish it in time. Competitive trials in the small loco world are a very welcome innovation as far as I am concerned. The time is long past when model engineers were satisfied, and even thrilled if their small engine were capable of continuous running, without regard to their efficiency—or lack of it! So much work has been done in the past 20 or 30 years in the small locomotive field, and so much information published or otherwise made known amongst the clubs and societies, that the possibility of failure amongst newcomers to this branch of model engineering has become very remote. It is a very different matter, however, to submit one's work in the form of an engine—and one's ability as a driver—to the severe test of a public trial, when something more than the mere ability to run is demanded of an engine. I am fully aware of the inadequacy of the present form of test used by the one or two clubs who have had the enterprise to devise a formula which will give them a comparative performance figure. It must be remembered however that they are pioneers, and that their main object up to date has been to "give 'em all a chance"—an object, indeed in which they have been singularly successful, as an examination of the results will show.

Entrance to the cutting after leaving Chipperfield Station. The sign board means what it says, for safety first is the watchword on this track!

## A MAN & HIS MODELS (*continued from page* 47)

In 1948 our central figure became the Hon. Sec. of the Derby M.R.C. and M.C.A. delegate to boot (no pun intended), and was largely instrumental in hatching the Association's Constitution, a most impressive piece of documental work.

Toiling for his daily crust with Rolls Royce Ltd., didn't leave a deal of time for all these "acting and unpaid" activities, and a change of department at the end of 1949 put paid to development of the "ten" and to the Hon.-sec.-ship a little later, but time was found to build a very potent 5 c.c. car for Mrs. Moore to operate in her own right. Followers of racing will know how well this little Dooling powered "five" has gone this season, collecting honours in profusion in its class, and setting an all-time high at Cleethorpes at 96.25 m.p.h.

A leading light of the Dooling Enthusiasts' Club, he is a bland and persuasive arguer of the case for speed at all costs, but is perfectly tolerant of other people's viewpoints, and turns out a scale job with the best. A flat dweller, his facilities for working at home are severely limited, he doesn't own a lathe, and all machining work is done by courtesy of fellow club-mates. No great handicap to judge by results!

## AN INEXPENSIVE 'FIVE' (*continued from page* 17)

the next layer was glued on. The process was repeated until a thickness of about $\frac{1}{16}$ in. was achieved, the glue and shellac then allowed to set hard, after which it was found that the body shell could be sandpapered to remove rough spots, etc. The body was removed from the former, trimmed, and the edges bound by means of aluminium strip held in place by $\frac{1}{32}$ in. rivets. Several coats of filler were applied and well rubbed down. The tail was strengthened with balsa, which was also used for the head fairing and instrument panel. The latter had a facing of thin gauge aluminium screwed on over instrument dials marked out in white paper covered with transparent tape, holes being drilled to coincide with the dial faces. The steering wheel was the inevitable curtain ring with thin brass spokes soldered in. A racing screen was fitted, and rear view mirrors are under construction.

The body is held in place by bonnet straps made in the aforementioned long suffering wife's sewing machine, the buckles having been scrounged from old watch straps.

A normal type of piano tank was fitted, being made from thin brass sheet and the holding lugs slotted to allow for lateral adjustment. A fuel cut off was purchased and mounted in a dural carrier, but it was found that the piano wire actuating arm tended to spring back. This was cured by making a spring-loaded slotted arm which operated when the actuating arm came to the rear. This arm can be moved over from the cockpit to release the piano wire and reset the cut off (see sketch).

The bracket carrying the socket for the battery plug is fitted in the tail, the prongs of the push stick completing the circuit. This plug socket bracket fits into a slot in the balsa tail block and prevents the body moving when strapped on.

On its recent first outing speed was just under 65 m.p.h. on standard fuel, and it is hoped to improve this by juggling with gear ratios, fuel and settings.

Total cost is estimated at about £7 which includes wheels, etc., in stock.

I hope that this article will be some encouragement to those who are keen to build a model racing car, but have so far been deterred by the apparent high cost of doing so. In conclusion I would like to point out that my every day job is in no way connected with engineering, and my workshop is very primitive, consisting of the already mentioned ancient Drummond round bed lathe, an equally ancient drilling machine of unknown make, and the usual assortment of odd files, etc.; also to pay due tribute to helpful hints from friendly club mates.

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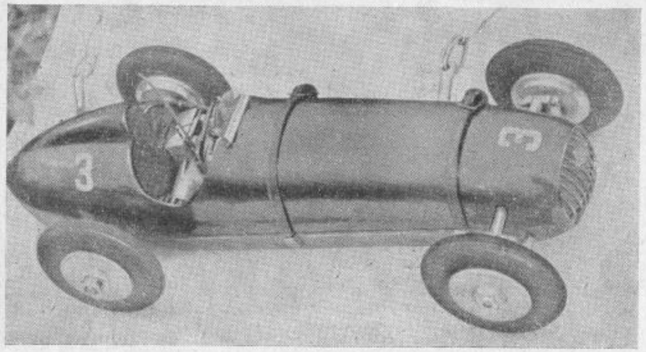
The car is finished in black with a blue diamond radiator badge, all dural parts being polished. Main dimensions are:—

| | |
|---|---|
| Overall length | 15 in. |
| Front track | 5½ in. |
| Rear track | 5¼ in. |
| Wheel base | 9¾ in. |
| All-up weight | 3 lb. 1 oz. |




The lines of the L. J. Mills model are clean and convincing and the appearance has in no way suffered from the laminated paper body construction, which is both tough and well surfaced.





# QUERY SERVICE

READERS ARE INVITED TO SUBMIT THEIR QUERIES FOR OUR ATTENTION

### No. 702.—Rust Troubles

**A.K. (King's Lynne, Norfolk)**

*Q.*—I have found recently that there is a tendency for steel tools and parts to rust after I have handled them. What is the cause of this, and how can it be avoided.

*A.*—Your question seems really to be a medical one, as it is probable that the perspiration from your hands has undergone some change. We advise you to see your doctor. It may help matters if you rub into your hands one of the special preparations, such as "Rosalex", before starting work. Alternatively, you might try rubbing olive oil well into the skin before handling objects likely to be rusted. Do not use machine oil for this purpose, as it is liable to cause certain skin troubles if used persistently.

### No. 703.—Annealing Aluminium

**T.P. (Norwich, Norfolk)**

*Q.*—I wish to anneal some small sheets of aluminium preparatory to pressing operations. In trying to bring them to red heat I find that there is a danger of the metal melting at the edges. How can I make the metal red hot—which I understand is necessary for complete softening—without melting taking place?

*A.*—Certain grades of aluminium will melt before reaching red heat, and, in any case, red heat is not necessary for softening purposes. We presume that you are heating the plates over an open fire or gas-ring, in which case you can follow an old dodge which will indicate that the metal has been heated sufficiently. Before heating, rub the plates over with ordinary, coarse, household soap, and then place them over the fire or flame; when the film of soap begins to blacken it is a sign that the metal is heated enough for annealing purposes.

The temperature can be controlled to a greater extent, and the metal heated more uniformally, if it is placed in a shallow tray of sand which is then placed over the flame.

### No. 771.—Caulking and Fullering

**O.M. (Hornsey, Middx.)**

*Q.*—I intend to make a vertical boiler of steel plate $\frac{1}{8}$ in. thick, with riveted seams. In a book which I have on the subject it is stated that the seams should be *caulked* or *fullered* after riveting, but I am uncertain just what this process may be. Can you help me, please?

*A.*—Caulking and fullering are really two different processes, although closely resembling each other. Both terms describe processes for sealing the seams against leakage of steam under pressure, by hammering the overlapping edges of the seams with a specially shaped punch, known as a caulking-tool, or a fullering tool as the case may be.

Although the processes are essentially similar, *fullering* is likely to give the best results, so this process only will be described.

A fullering-tool can be made from a cold chisel of about $\frac{1}{2}$ in. in width. The cutting edge should be ground off flat, at a right angle to one face, so as to present a thickness equal to that of the metal plate to be fullered. A fairly heavy hammer is the only other tool required.

As has been stated, fullering consists of hammering-up the overlapping edges of the plates, so as to thicken them and seal any possible leakage which may occur between the rivets. In order to do this, the fullering tool is presented to the *edge* of the plate, and several smart blows are struck on the end of the tool. Please note that the plate is not hammered on its top surface, but only along the edge. This will tend to compress the plate endways, so that a thickening-up will occur, thus causing the top plate to press tightly on to the one beneath. If this is repeated two or three times a considerable thickening will occur, and a very tight seal will be made.

### No. 785.—Workshop Drawings

**"Young Mac" (Glasgow)**

*Q.*—Although I am only fifteen years old I am very keen on model making, and have recently had a small lathe given to me. I have previously been interested mostly in aeromodelling, and I found that I could build quite easily from the plans supplied. Now that I wish to go in more for the engineering side of modelling, I find that the plans are different from those I have been used to, because while it was always possible to see exactly what a model aeroplane would look like from the drawings, it seems to me that many engineering plans do not look a bit like the finished job. Why is this, and could not engineering drawings be shown in the same way? Can you recommend a simple book that will help me to understand the matter?

*A.*—Plans for model aeroplanes follow certain rules of their own, although they do conform to certain general principles of machine drawing. They can, however, be made extremely simple, because they show mostly flat surfaces, such as wing outlines and fuselage sides. In addition, model 'plane construction follows set rules, so that many things need not be shown, because certain of them are always done in the same way, and it is taken for granted that these ways are familiar to the builder. On the other hand, engineering drawings must show so many things of different shapes and forms, and must often show them in the third dimension, that is, in *thickness* as well as in shape, that certain rules, or *conventions* as they are called must be observed.

A very good book which will enable the beginner to understand the methods and conventions of machine drawing is the following: *Technical Drawing for Trade Students, by Raymond Forbes, published by B. T. Batsford Ltd., 15 North Audley Street, W.1, at 6/-.*

## "LADY BETTY" — (*Continued from page 28*)

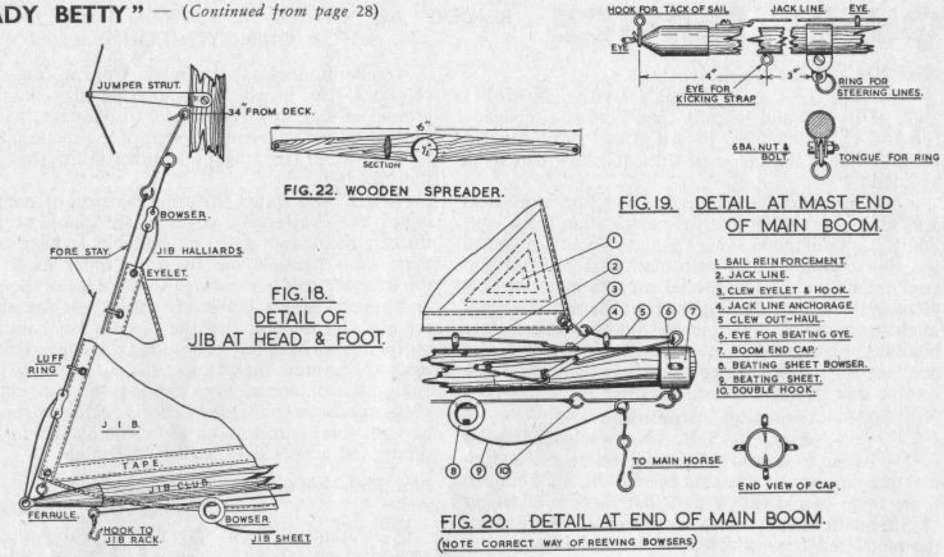



FIG. 18. DETAIL OF JIB AT HEAD & FOOT.

FIG. 22. WOODEN SPREADER.

FIG. 19. DETAIL AT MAST END OF MAIN BOOM.

FIG. 20. DETAIL AT END OF MAIN BOOM. (NOTE CORRECT WAY OF REEVING BOWSERS)

tapered to fit into the ferrule. At the inboard end is a $\frac{1}{4}$ in. length of $\frac{1}{4}$ in. inside diameter tube drilled to take a screw-eye at top and bottom. There is also another screw eye fitted to the side of the club for the jib outhaul.

This outhaul consists of a cord passing through the top eye with a hook on the end to engage with an eyelet let into the clew of the sail. This is adjusted by means of a flat bowser. The other end of the line being reeved through the side eye.

Fig. 18 shows the method of reeving the tack and forestay.

MAIN-BOOM END. Figs. 19 and 20.—The illustrations show the complete assembly at the inner and outer ends of the main boom.

A collar of $\frac{1}{4}$ in. diameter brass is required to which is fitted four eyes. The upper and lower ones are silver soldered to the collar, but the side ones are screwed through into the boom to hold the collar in position. These side eyes are for the beating gye. The upper eye has the clew outhaul reeved through it, and the lower one is for the eyed hook for the beating sheet and steering line jack stay.

SHROUD PLATES. Fig 21.—A pair of these plates will be required and they are screwed to the sides of the hull and gunwale 1 in. abaft the mast.

They are made from a piece of 24 gauge brass sheet with the top bent over to form a lip at right angles to the sides for securing to the gunwale. When fitting these plates or gunwale eyes the mahogany covering board must be cut away to allow them to fit down on to the deck.

Shroud plates are screwed to the hull sides with No. 1 x $\frac{3}{8}$ in. countersunk screws to make a flush fitting.

NOTES ON FITTINGS.—The fittings illustrated in this article comprise a full equipment for a small racing yacht.

Some constructors may wish to simplify the work upon these items, and there is no reason why certain omissions or modifications should not be carried out.

WIRE SHROUDS, STAYS & TURNBUCKLES.—These may safely be replaced by good quality silk fishing line of about 10 lb. breaking strain adjusted by means of flat bowsers.

JUMPER STRUT & STAY.—There is really no need for this on a boat as small as our 36 in. model, it is merely an added refinement.

If the fitting is discarded a back-stay from masthead to transom adjusted by means of a flat bowser must be fitted in its place to take the strain of the pull of the main sail.

SPREADER.—This is an essential fitting but need not be of metal if the constructor feels that the form in which it is drawn is beyond his capabilities.

The alternative is one of wood (Fig. 22), and there is a certain saving in weight if the wooden spreader is adopted which is all to the good.

A piece of $\frac{1}{8}$ in. mahogany 6 in. long x $\frac{1}{2}$ in. wide will be required. A $\frac{1}{2}$ in. hole is drilled off centre leaving $\frac{3}{32}$ in. of wood in front which means that the hole breaks through the after side. This is quite usual with wooden spreaders. Drill the ends for the stays and reinforce by pressing in two small sail eyelets. Now curve all sharp edges to form an oval section and varnish. Drill all holes before shaping.

To attach to the mast bind tightly with white carpet thread and varnish over the binding.





# TEST BENCH

## A REGULAR TRADE REVIEW

### A New Self-Blowing Gas Torch

Joining small pieces of metal by means of hard or soft soldering is such an essential part of model making that we always particularly welcome any appliance which may aid these processes—especially when it may be purchased for 2/6.

The Target Fine Flame Gas Blowpipe proved on test to be a most handy little tool, as where connected with gas tubing to the supply, it provided a fierce and concentrated flame of extreme fineness. On the small steel parts which we silver soldered together, we were able to apply the heat exactly where wanted, without subjecting them to the inferno usually associated with the larger torches. The blowpipe also supplied the answer when soft soldering long seams in tin plate.

The flame is adjustable for soft or fierce heat, and in the latter condition we were able to melt some small copper rivets—in accord with the maker's claims.

Made by The Target Manufacturing Company, of Woolaston, Wellingboro', Northants, the torch is the best half crown's worth for the model maker that we have seen for a long time.

### Stone Casting for the Model Maker

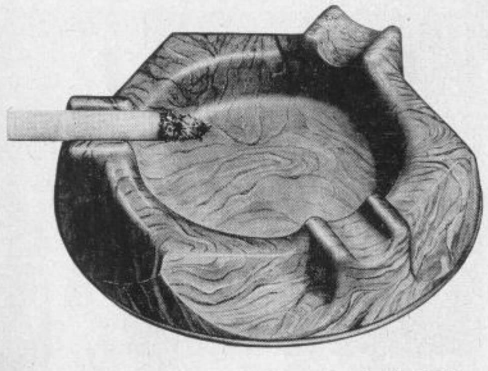
The present century is remarkable for the fact that the engineer and industrialist has been presented with a whole world of new materials and processes—plastics, for instance—which have revolutionised production methods. Unfortunately the amateur craftsman and model maker have not been able to avail themselves of these new discoveries to any great extent, principally because they usually entailed large and specialised plant, and a great deal of expert knowledge of the subject.

This state of affairs now seems to be ending, and one or two moulding technique, especially suitable for the home mechanic, have recently appeared. Some of the most interesting of these are the Stone Casting Compounds, marketed by the Karlena Art Stone Company, of 55 Deansgate Arcade, Manchester 3. All of them are in the form of a fine powder, sold in four grades suited to certain purposes.

Known as Karlenite No. 1 (Plastic Marble) this grade is suitable for such items as Cigarette Boxes, Candlesticks, Fruit Bowls, etc., and must be mixed with a special petrifying liquid, also supplied by the manufacturers.

Karlenite is also available in other grades, suitable for such varied purposes as Ash Trays, Sculptured Panels, Fireplaces, Bird Baths, Sundials, Statuettes, and Model Building Bricks.

Although the model maker will readily perceive various applications to his own work, the scope of



Karlenite is much increased by a Synthetic Rubber Mould Solution supplied by this firm. This is a rather viscous liquid which has the property of setting into a solid, rubber-like mass when heated. It is possible, therefore, to obtain flexible moulds for repetition casting, by pouring the solution over any pattern to be reproduced.

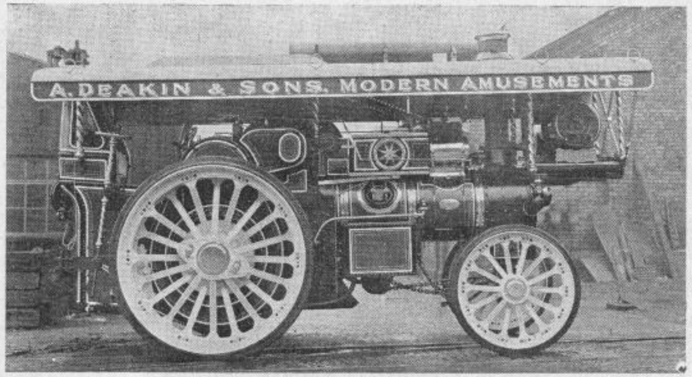
Karlenite Stone Casting Compounds cast with a high finish, and may be stained to any desired colour, with special pigments which can be supplied. Marble effects can also be obtained. It seems that these features make it extremely suitable for architectural modelling, and for reproducing "to the life" the many model parts—such as stone or brick pumping engine bases, stone flooring, walls, etc.—which have, for want of a suitable method, hitherto been more or less simulated in wood or metal.

### Model Making Knife Has Renewable Blades

Knives used in wood carving, model ship building, model aero work, and wooden pattern making for casting purposes require to be kept extremely sharp if best results are to be had, and this constant application of the oilstone to shin blades quickly destroys their shape and eventually, makes them useless. In the "Ragg" re-blade knife this difficulty is overcome in an extremely simple and ingenious way. The blade is held in a detachable slide, within a handle, in such a manner as to allow it to be quickly removed and replaced. When inserted for use, the blade is held rigidly, yet it may be detached by a simple sliding movement. This same movement, in reverse direction withdraws the blade into the handle, so that the tool has all the convenience of a pocket knife. A simple lock prevents accidental opening.

This particular system lends itself readily to the use of pressings, so that this ingenious knife may be sold at a very reasonable price complete with three blades of differing shapes. As is to be expected, in view of the fact that the manufacturers hail from Sheffield, the blades are of extremely good quality steel. Manufactured by J. & W. Ragg Ltd., 95 Eldon Street, Sheffield.

# BOOK REVIEW




The last showman's engine ever to be built by any firm: The Fowler Lion, rightly christened "Supreme". Reproduced from "Traction Engines Worth Modelling" by courtesy of the publishers.

**Traction Engines Worth Modelling: By W. J. Hughes.**

*Percival Marshall and Co. Ltd.; size* $9\frac{1}{2}$ *in. by* 6 *in.,* 160 *pages with* 57 *half-tone illustrations and numerous line drawings; Cloth bound with coloured jacket. Price* 12/6.

It is a well observed fact that certain types of machinery exercise a curious fascination over the minds of engineers and laymen alike, and it is true that the steam engine in all its forms possesses this attraction to the greatest degree.

The truth of these observations is nowhere more evident than in the modelling world, where the steam locomotive and, to a lesser degree, the traction engine, undoubtedly attract an extraordinary amount of attention. In spite of its secondary position, the traction engine as a subject for modelling has a combination of attractive features which are probably unique, and Mr. Hughes's book should help considerably in raising the popularity of the model traction engine to heights which, if not equalling those of the model locomotive, may well be not far below.

The author is well aware of these virtues, which do, indeed, form the subject of the first chapter. At the same time, his obvious love of the model traction engine has not dulled him to the difficulties which the inexperienced builder may encounter. He has, in fact, taken special care to select those parts—such as wheels—most likely to be troublesome, and has given suggestions and detailed instructions for their simplification.

This careful presentation of modelling methods, coupled with a most detailed description of every part of the full-sized engines, occupy the main body of the book, and it is evident from this detailed treatment that the author has little sympathy for the modeller who, through ignorance or carelessness, allows foolish errors to mar his work. The scarcity of authentic information may have excused such errors in the past; Mr. Hughes's book now leaves little in doubt.

This strictly functional matter is enlivened by observations, interesting sidelights, and anecdotes, which should ensure that the book will be enjoyed by all lovers of mechanisms, even though traction engines may not happen to be their special interest.

The book is well produced and illustrated, with a particularly attractive dust-jacket designed by the author himself.

**Hand Tools For Wood And Metal Work: By R. Harries.**

*G. Bell and Sons Ltd.; Size* $7\frac{1}{2}$ *in. by* 5 *in.;* 96 *pages with* 157 *line drawings; Stiff cover in colour. Price* 5/-.

An attempt to cover, in a volume of this size and price, the whole field of choice, use, and maintenance of hand tools for both wood and metal, sets, of course, an impossible task, yet Mr. Harries has succeeded in producing a most handy little volume of particular interest to the beginner and to the hobbyist. This has been achieved by keeping strictly to the subject, with irrelevant matter completely cut. This is a good type of handling for such a book, as it would, in any event, be bought for instruction rather than entertainment.

While the experienced mechanic may find nothing new within its covers, he will certainly find nothing that is not first rate advice to the newcomer. Perhaps this comment should be qualified by saying that while the experienced metal worker may find nothing new about metal-working tools, he is quite likely to learn something about wood-working tools; and for the wood-worker, vice versa. Each is quite often shamefully ignorant of the craft of the other.

In keeping with the simple tone of the volume, the illustrations and written explanations are exceedingly clear and concise, and the avoidance of technical terms should make the book particularly suitable as a Christmas present for the youngster who is keen on making things.

A book to be recommended for the soundness of the information it contains.





# DOPE & CASTOR

By JERRY CANN

HAVING barely laid down my overworked Waterman (advt.!) from saying farewell to *Model Cars*, I'm back again, saying "Hallo, folks" to old and new readers of *Model Maker*. It's nice to know that there will be several thousands more readers who will now have the opportunity to turn over hurriedly when they come to this page! Perhaps I'd better explain to those of you who haven't so far been registered customers at the Cannery that this space is reserved for general droolings on model racing car matters, its personalities and its innumerable bits of gossip and scraps of rumour. If it's accurate information or abstruse technicalities you're after, I advise you strongly to give it a miss. If you want a nice bit of club gossip, or to know how many pieces of old so-and-so's crankcase were picked up after he'd retired with a faulty glo-plug, you might do worse than string along!

We might start by talking of taking coals to Newcastle. Or rather, Alfa Romeos to Italy! The August-September issue of *Modellismo*, which Italian scholars will guess deals with model making around those parts, spread itself generously on the Alfa 158, being not unnaturally proud of their native product. We were gratified to note, however, that the four-view drawing of the car was by Harold Pratley from the pages of *Model Cars*, and the illustrations none other than of our old pal Cyril Field's model. We were extremely charmed, also, by the description of Cyril as "l'appassionato inglese"! On the opposite page were three excellent pictures of H. C. Baigent's Maserati. It's nice to know that in a country that so appreciates fine motor cars, our models of them are held in such high esteem.

The two types who figure at the head of the page this month are those hard-working Surrey club members Ed. Bryant and Harry Brookman, to whom reference was made recently by Cyril Catchpole in his description of the club's new track near Weybridge. I gather from all concerned that, but for the energy skill and devotion to duty of these two enthusiasts, the Surrey track would still be an imaginary line running round Chertsey Mead! May their efforts be crowned with success, and hordes of new members flock to the Surrey banner.

Before these words appear, the Model Car Association Delegates' meeting will have been held, at the York Hotel, Derby, and to judge by the vast agenda, even those hardy mortals who delight in twelve hour sessions will be finding the seats a bit hard and their jaw muscles wilting under the strain.

The questions under discussion range far and wide; amongst other items the Hooton M.C.C. demand to know the definition of a body. This might be disposed of by a nicely worded enquiry to Miss Dorothy Sayers. Had the question asked for a definition of what wasn't one, the answer should come promptly; about 70 per cent of the containers one sees wrapped around speed models these days!

The Pioneer Club wish to explore the possibility of a number of clubs getting together to build a full-sized rail track. This seems a very sound suggestion, and may lead to interesting developments. No single club at present has the shekels required, but a joint effort might get things moving next season.

The Birmingham club have put up a lovely hare by the suggestion that model cars should be designed to run, and run in all competitions and record attempts, with all wheels on the track! I can imagine the mystification amongst innocent motor-minded folk, who have striven after this desirable state of affairs for years, they having the quaint old-fashioned idea that four-wheeled vehicles are faster and safer that way. How far have we wandered from the paths of rectitude!

Another model car racing demonstration is due to be staged at an early date at the premises of Messrs. Hubert Dee, the Ford folk in Croydon, where, you will remember a band of London enthusiasts put on an excellent show some time ago. W. S. Warne is a moving spirit in this scheme, which is, I hear, to tie up with the launching of the new Ford models announced at the Motor Show.
performance.

This seems about the time to be wishing new and old customers a very Merry Christmas, and lots of good racing in 1951. The winter is fully occupied for most of us with a building programme that always seems a bit behindhand, plus the usual sprinkling of indoor meetings, which more than fill the limited leisure left to us these days. Here's hoping for lots of sunshine and success when we emerge out of doors again.

# SCRAP-BOX by "Tailstock"

### Cosmopolitan

" . . value of π shall be four . . "

OF all the classifications, scientific or otherwise, into which mankind has from time to time been divided, it seems to me that regardless of colour, language or the shape of our craniums, there exist two types of people; namely, those that make things and those that don't. The distinction may at first sight seem an insignificant one, but looked at more closely it may be seen to be a very fundamental thing. It may well be that more community of interests and more common understanding may exist between, say, a trained negro engineer and an English colleague than may be felt by either towards a compatriot who does not know one end of a hammer from the other.

Certainly in scientific fields this mutual interest overides all considerations, and speakers at any scientific conference—be they from China, Uruguay, or Edinburgh—are all accorded equal rights and attention. Violent nationalistic feelings seem to find little room in the scientific or engineering mind. The absurdities, to say nothing of the dangers, to which an opposite viewpoint can lead is exceedingly well shown by an American State Legislature of the early 19th century, who came very near to passing the law that "as decimal points were un-American, the value of π in this State shall be 4!

Nearer home, community of interest can be seen in operation in any model-making circles; in fact, the above paragraphs were inspired by a letter to me from a new member of a well-known southern club. On his first visit he was drawn into a friendly discussion between four other members; respectively, a doctor, a chauffeur, a teacher, and a prison warder—whilst he, himself, is a milk roundsman. I doubt if the atmosphere would have been materially changed if the party had included also a Hottentot, a bull-fighter, and a deep-sea diver.

### Acclamation

" . . take strange turns . . "

Although the motives behind our model making activities may be many and varied, I would say that the desire for praise and acclamation is the least powerful of any. One has only to think of the countless numbers of ingenious and well-made gadgets that grace, unnoticed, the home workshops of our land, to realise that it is not Fate but Choice that makes so many of our roses to blush unseen.

While this truth is beyond dispute, it is not natural, nor even desirable, that we should be free from all vanities where our work is concerned; for a thing in which we have no pride can be of little value to us. I doubt if there is anyone who would not take pleasure in a little acclamation of his skill. Such vanities can, indeed, take strange turns, and I am acquainted with one quite modest modeller whose particular joy is to hold his finished models up to a mirror, and to bask as it were, in their reflected glory. I have, by the way, tried this myself, and it does seem to present them in a new aspect. In the reflected image they seem to be more remote from personal association, and may, therefore, be viewed with a more objective eye. Try it!

Even the great ones of the world have not been free from simple vanities, and it is said that Archimedes himself, on discovering the reason why some things floated, rushed straight from his bath into the crowded street, crying, "Eureka! I have it!"

I like also the story of Friese-Green, the British cinematograph pioneer who discovered—even before Edison—the secret of projecting "moving pictures". It is said that in the flush of his first success he, like Archimedes before him, also ran excitedly into the street, but, finding none but a solitary London policeman of the 1890's, dragged the bewildered bobby into his workshop, and amazed him with a screen picture of Hyde Park Corner in full, if somewhat jerky, animation. All engineers, particularly model ones, will understand better than most the feelings of Archimedes and of Greene, and will pardon an exuberance which, if understandable in a Greek, is usually considered to be not part of the British character. And that's a lie, anyway.

" . . not part of British character . . "

### Unusual Applications

All model makers who possess a junk-box—and who doesn't?—will be struck at some time or another by the strange uses to which some things may be put, differing entirely from these for which they were originally intended. As a case in point, we may mention the use of old ballrace rings as precision-ground parallels, or ball and roller bearings as accurate plug gauges.

Most activities can show similar applications, though few, perhaps, so strange as that contained in a recent African report on the mysterious popularity of a certain brand of hair-cream among a remote native population. Eaten upon slices of bread it had proved a welcome addition to a somewhat monotonous diet.



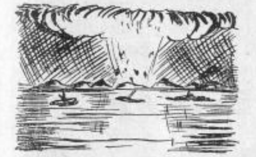


" . . monotonous diet . . "

While making enquiries lately into some matters of aeronautical history, I did, indeed, meet with a strange example of ingenuity in the sphere of road transport—the use of large kites for hauling carriages along the roads. Some very full particulars, together with photostatic copies of some old prints were kindly supplied to me by Mr. P. L. Sumner, B.Sc., A.F.R.Ae.S., A.M.I.Mech.E., Keeper of the Aeronautical Collections at the Science Museum at South Kensington, London.

Although the idea was originally put forward as a serious means of road locomotion, the practical difficulties were too great for universal application, but as a sport it had quite a vogue among the wealthy owners of carriages about the middle of the last century. One interesting old print shows several open carriages, complete with bonneted and top-hatted occupants and liveried footmen, being propelled over an undulating landscape under the pull of some singularly small and inefficient-looking kites. With true artistic license, the carriages have been shown to be proceeding towards all points of the compass, with the kites obligingly tugging in the right direction. If this does indeed depict the facts, then we have here another lost secret, because all the kites appear to be flying at the same height.

### Natural Power Supplies



" . . splitting atoms for our benefit . . "

It has often appeared to me that many inventions and discoveries have come a little too soon, so that men have, as it were, been side-tracked into new fields of research before the old ones have been fully exploited. Many competent judges consider that this did, in fact, happen to the steam engine when the internal combustion engine put in an appearance. There can be little doubt, really, that had the same amount of brains, money and research as has been given to the petrol engine been directed towards the steam plant, we should today have steam-driven motor-cars of equal efficiency, and, possibly, of even better characteristics.

What has happened to steam has, maybe, also happened to other things, so that many natural sources of power have been neglected. In one aspect it does seem that men have at last begun to realise some of the potentialities, and the vast hydro-electric schemes which have been developed in the Americas, in Switzerland, and, at the present moment in Scotland, show what can be done.

It is, of course, fashionable at the moment to visualise future power developments as lying only along "atomic" lines—as if the old sun hadn't been splitting atoms for our benefit since the world began, and presenting us with the results in the form of ready-made power. Probably the mechanical difficulties of using direct solar heat are too great to be practicable, yet there are other possibilities. Among these, the likelihood of harnessing the tides for generating electric power seems to be the most favourable; in fact, several workable schemes have from time to time been proposed. Certainly the available power is enormous—incalculable if taken over the whole area of the globe. When looked at in smaller perspective, taking our docks and harbours, it seems possible that the enormous power which lifts the *Queen Mary* several feet in a few hours could be used for our benefit.

It is generally accepted among engineers that the difficulties of using tidal power are by no means insuperable. The problems are entirely mechanical ones, and once overcome, not another pound of coal need ever be burned to turn the great generators that spin unceasingly in the service of mankind. Perhaps it is time we settled down to a little less atom-splitting and a little more solid engineering.

" . . not another pound . . "

## IMPROVING THE MINIATURE RAILWAY LAYOUT

(*Continued from page* 38)

The dummies can be useful too from purely a scenic angle as an unwanted engine standing half out from one, apparently stopped by an adverse signal (where it can stay all the time), fits well in with the general picture and helps to give the true railway-like view all modellers should try to attain.

Tunnel mouths are particularly simple to construct, plywood or card and some stone paper being all that is needed. An entrance which has to stand alone has two side wings which can be used in one of three ways as shown in Fig. 5. Turned forward they can be employed as approach cutting retaining walls (a), taken back, as walls against the slope of the hill, or they may be hidden altogether as (c). Complete firmness is given by small angle down to the baseboard, and in (b) and (c) a light crossbar can be run between the top edges of the wings.

From the middle panel of the three the tunnel arch is taken out, and this can be one of several shapes. The complete circles for some reason looks well on a small line, but the more usual arch or flat "girder top" finish can be employed if desired. It is all a matter of taste.

Finally tunnels are useful for the storing of stock if the line has to be left for any space of time, as here it is comparatively shielded from dust and damp and other perhaps too sharp changes in the room's atmospheric condition.

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