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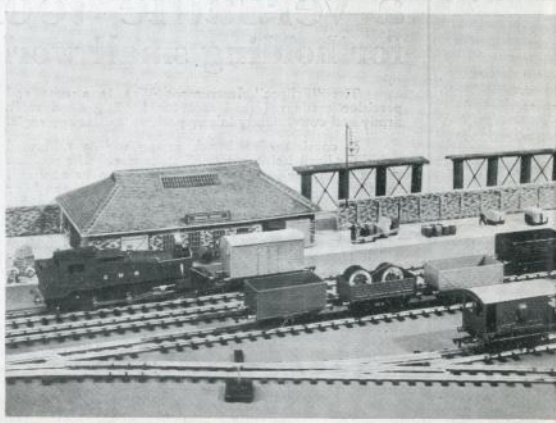

VOLUME 2 NUMBER 15 FEBRUARY 1952

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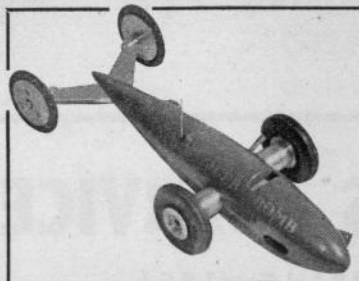

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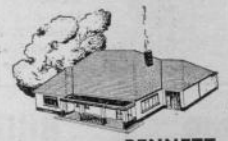

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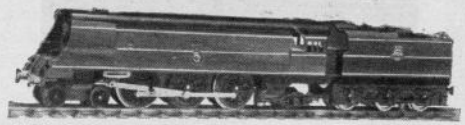

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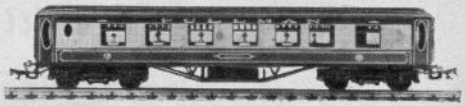

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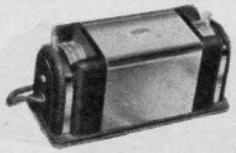

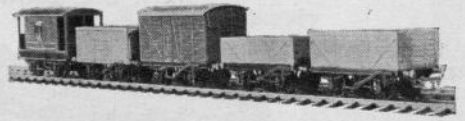

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THE MONTHLY JOURNAL FOR ALL MODEL MAKERS

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Contents

VOLUME 2 No. 15 FEBRUARY 1952

"John Citizen's Own Gauge!"

THE degree to which the first commercial T.T. layout offered to the British public has captured the imagination and fired the enthusiasm of countless numbers who had, perforce, to rest content with armchair operation, makes its rapid development one of the most hoped for pleasures of the future in the model railway movement. It is certain that many manufacturers have already taken the first steps towards production, showing a cheerful optimism that will surely be justified. We have made the best use of our opportunities to discuss the many problems attendant on large scale manufacture with specialists who should know their subject. The one point that arises is whether it should be a popular gauge, vying in time with the redoubtable 00, or a specialist size appealing only to the expert. We feel its future lies in the widest possible popularity—suitable for everyone who wishes to make a start in that size, thereby enabling so many enthusiasts with limited space to enjoy this grand hobby.

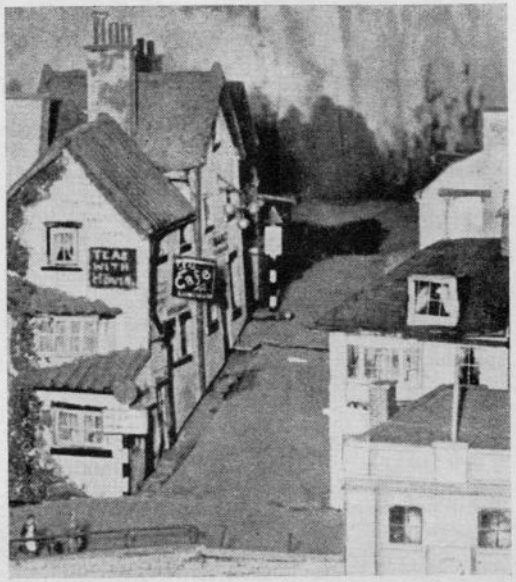
If it is to be popular and capable of efficient mass production then scale must be agreed within working limits that are reasonable rather than watchmaker precision. A little time spent scaling down popular loco prototypes brings us to the inescapable conclusion—with which many more expert than ourselves agree—that 1/9th inch to the foot is the smallest practicable working scale. The B.M.R.S.B. are meeting during this month to discuss the matter: whether they can come to a similar or any other immediate conclusion remains to be seen, but unless another year is to be wasted without practical steps then a scale must be fixed upon. We boldly say that 1/9th in. to the foot is that scale, and shall in future work to it. For the benefit of others making a start we have printed a 1/9th in. scale rule in this issue. Copies of this on white card are available through our offices free of charge to readers sending a stamped addressed label. Get on the T.T. rail now, and keep moving!

Readership Survey

A questionnaire is printed on pages 191/2 of this issue which we trust as many readers as possible will complete and return to us. It will provide all that statistical information so necessary to providing you with just what you want if an appreciable percentage of our readers will complete it. We ask twenty minutes of your time in telling us about your hobby interests: we will repay it in future issues by giving you more of the sort of articles you want. So please help us and help yourselves.

ON THE COVER . . .

Top right: Old world street from the Harbour on Littlemoor and Wishford Model Railway. Centre left: Jack Moor's model of the historic 90 h.p. Renault—an angle that does justice to its period lines. Centre right: "Lady Marion" a model distinguished for both appearance and contest successes. Bottom left: A. E. Bonfield's decorative model of a Burmese Paddy Boat from Modelcraft designs. Bottom right: Graham Farish loco and rolling stock in a scenic setting.

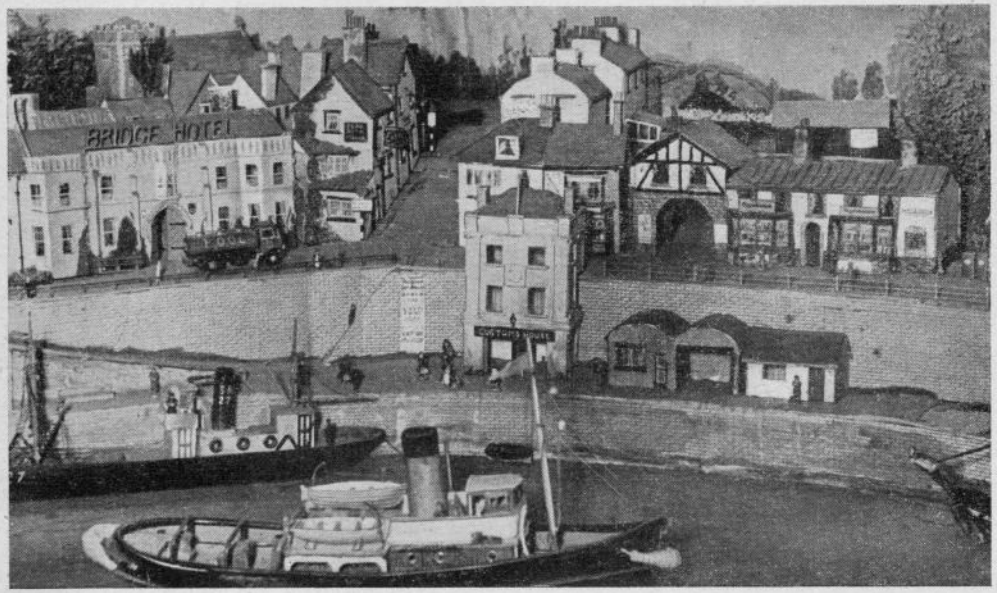


G. H. DEASON VISITS

E. J. MOOR & SON'S

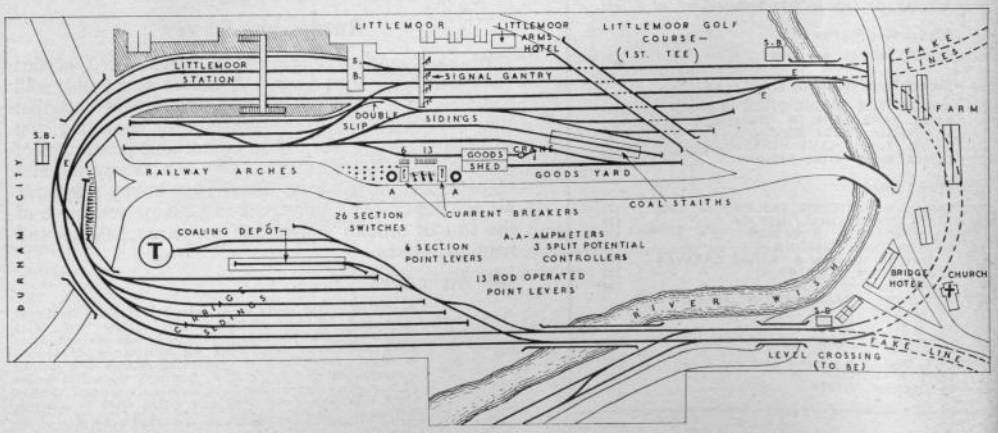
LITTLEMOOR & WISHFORD MODEL RAILWAY

Left : A close-up view of Wishford High Street, and (right) a general picture of Wishford Harbour. On the left is the hotel, with church in the background, whilst on the harbour front can be seen the Customs House, sheds and Harbour Master's office. A drifter is alongside the quay, and the harbour tug is moored in the tideway.



"LITTLEMOOR, change for Sunnyside." You can almost hear the clank of a ghostly Westinghouse pump and feel the bitter little breeze that is apt to bedevil the waiting traveller on station platforms in the North East, so strong is the atmosphere created by the system I am about to describe. Oddly enough, it is situated in a charming corner of Warwickshire, in the attic of E. J. Moor's home at Tanworth in Arden, but no sooner does the visitor's head emerge through the trapdoor that leads to the "railway room" than he is conscious of having climbed from the mellow Midlands to the sterner air of Northumberland and Wearside.

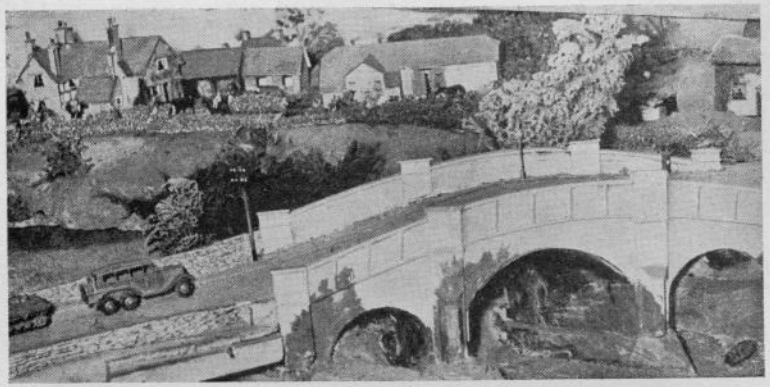
Now I am only too well aware of the dangers I run by thus invading the province of such experts as Major Watkins-Pitchford, P. R. Wickham, A. H. Dadd and Manxman, to name but a few of those who write authoritatively for *Model Maker* on railway matters, but I have described elsewhere in this issue the circumstances which led to my visiting E. J. Moor, the well-known racing motorist, and I can only plead that, although technically out of my element, I can never resist a model railway. Particularly when it has taken seven years to build, and the builder would appear, by any ordinary standards, to have had his time very fully occupied with other and more stirring pursuits. I can only suggest that Jack Moor rarely goes to bed!



The strong flavour of the North Eastern region is, as a matter of fact, in the natural sequence of things, for the builder has strong family and business ties with the south bank of the Tyne, and the Littlemoor and Wishford Railway is a branch of the old North Eastern Railway, as can be seen at a glance. All locomotives and rolling stock are modelled on that company's equipment, and the scenic and geographical features are all based on actual subjects from that fascinating district of moors and colliery headstocks, shipyards and trout streams. Leaving aside the railway interest of this ambitious layout, the scenic side is in itself a considerable work of art, showing an immense amount of thought and study, coupled with an abiding affection for the country it portrays.

The entire layout is in 16.5 mm. gauge, employing outside third rail, this being of nickel and soldered to 00 brass screws. The footage of the track is around three hundred, and although considerable artifice is employed to avoid the impression of a "round in a circle" plot, there is actually a continuous two-track run for the main line route, which circles the room on a waist high timber structure. As will be seen from the plan, the principal station is Littlemoor (need I say that son Nicholas is an active partner in the company?), a busy main line junction from which a local service of steam trains, augmented by a Sentinel rail car serves the at present, unfinished village of Sunnyside. Leaving Littlemoor, the main line passes under a steel girder bridge carrying the main Littlemoor-Wishford road, and is soon in open country. Observant travellers will catch a glimpse of the first tee of the local golf course shortly before entering a long tunnel, which passes under an extensive farm, where the local hunt were meeting on the day of my visit. The main line emerges again just beyond Wishford, a charming little town on the banks of the river Wish, which is navigable at this point. There is a brisk harbour and an excellent hotel, modelled on the Angel at Grantham. The church is also worthy of inspection, and there is some interesting domestic architecture in the pleasant little High Street. Wishford station is presumed to be on the far side of the town from the harbour, and does not appear in the physical scheme of things.

From this point the line runs through open country, crosses over a river bridge near the village of Sunnyside, and soon the extensive carriage sidings and coaling depot herald a return to the industrial area. The line passes close by Durham city, that majestic vista, familiar to travellers on the King's Cross to Newcastle route, being cleverly represented



View of the modern concrete road-bridge spanning the River Wish, with the attractive farmstead on the hill in the background. Note the realism of both architecture, trees and river.

by a painted backcloth as the train approaches Littlemoor station once more.

A study of the plan will show the disposition of sidings, loops, and the numerous geographical features of the line, also the centrally disposed control panel and electrically operated points. Apart from the three-dimensional scenic and architectural work, much effective use is made of painted scenery, the entire layout being surrounded by canvas screening. Most of the features included in the system are modelled from real life subjects, and have their origin in sketches and drawings made, often on the backs of envelopes, whilst the owner was on the spot. In fact only a blameless local reputation saved the "General Manager" from finding himself well and truly "on the spot" when, during the early days of the war he was found sketching the coaling staithes at Blaydon as a pattern for the miniature version on his line near Sunnyside!

The Company actually possesses no fewer than sixteen locomotives, all of North Eastern origin, of which eleven were in commission during my visit, in addition to the Sentinel rail car. All have been built or converted in the Company's works (a bench near Sunnyside!), and those in service are as follows: —

A.4	Sir Nigel Gresley 4498		Pacific	00 Hornby with super detail mods.
V.2	Snapper 4780		Green Arrow class	Hornby mech. built into special frames
B.16	845	2-6-0	Goods	Zenith mech.
Q.6	'Tiny'	0-8-0	Coal traffic	Zenith mech.
J.39	1459	0-6-0	Goods	Hornby 00 mech.
D.49	288	4-4-0	Hunt class (The Percy)	Zenith mech, dummy rotary - cam Lentz valve-gear
J.53	4231 (Humpty)		G.N. Saddle Tank	Hornby 00 mech.
G.5	1762	4-4-0	Reidpath mech.	
N.7	2690		Standard 00	Hornby Tank with condenser pipes & other details added
Y.4		0-4-0	G.E. Tank for working sidings	
J.71		0-6-0	N.E.R. Tank	
"Times"			Sentinel rail car	Romford mech.

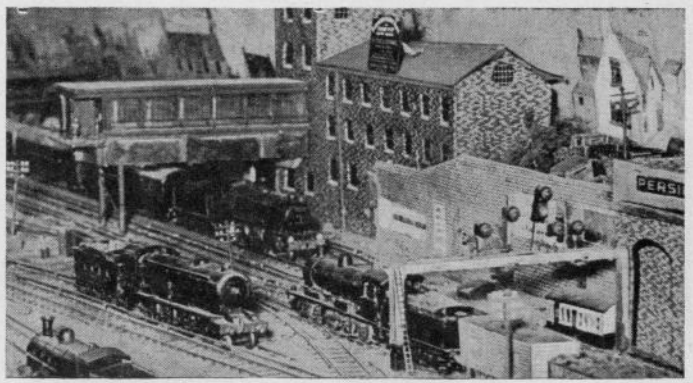
In addition the Company owns eight passenger bogie coaches in standard L.N.E.R. livery, twenty coal trucks, which were mass-produced "by the yard" in the works, using wood block bodies with hand-finished card overlays, fourteen covered goods, four goods brake vans, and ten open trucks for general traffic. A most impressive array of road vehicles, not to mention station staffs, road-farers and other citizenry go to make up this fascinating undertaking, which combines mechanical realism with a high degree of artistic merit.

As previously mentioned, some effort has been made to avoid the appearance of a circular route, and with this in mind dummy lines run "out of the picture" at the tunnel mouths, and the considerable length of the tunnel assists also. In order to have access to the length of line at this point, all the area covered by the farm and by Wishford itself has been made in sections which are easily removable.

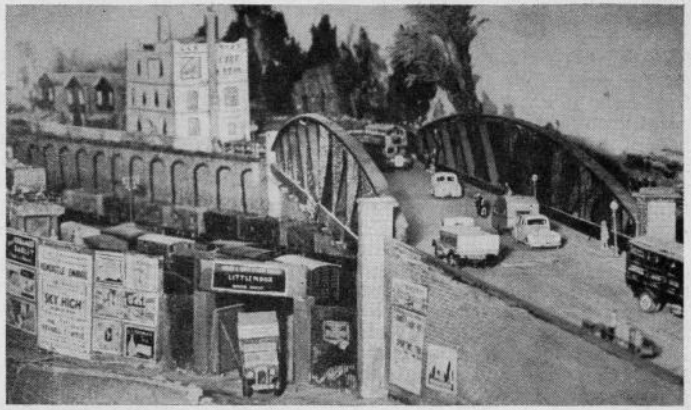
Great attention has been paid to small details, not only on the railway side but in the streets and buildings. My own fairly extensive knowledge of the district enabled me to appreciate the many little local touches, which range from the old playbills for the Newcastle Empire and the hoardings advertising such local amenities as Slaters' Taxis and Lochside Ales, to the uncannily dingy realism of the railway arches in the station approach, down to the odd lengths of rusty corrugated iron sheet in the Goods Yard fence.

Despite the seven years which it has taken to develop the system to this point, like all good model railways the L. & W.R. is far from completion, and apart from running facilities most of the work remains to be done on the Sunnyside section; by which time, doubtless, the locomotive stock will be due for rebuilding and renewal—and so it goes on.

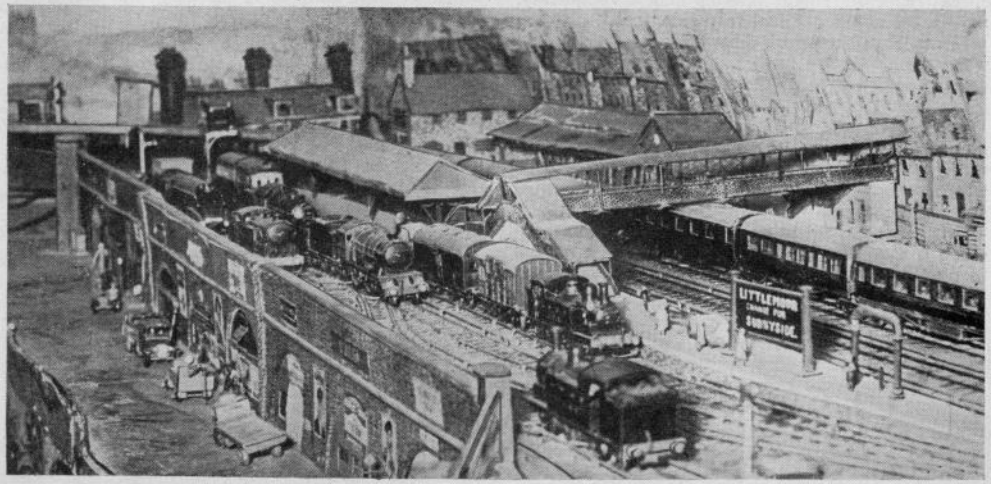
A main-line passenger train, hauled by a "Green Arrow" class loco, leaving Littlemoor, passes under the overhead signal box. Waiting under the signal gantry is a coal train hauled by the 0-8-0 coal traffic locomotive "Tiny".

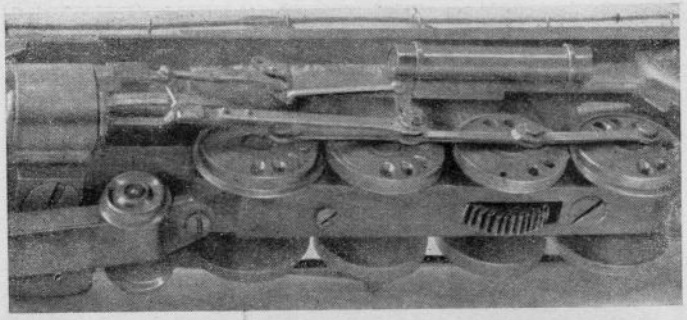


A steel girder bridge carries considerable main road traffic to and from the port of Wishford. The Littlemoor Arms can be seen in the distance, whilst in the left foreground is the entrance to the railway goods station.



Below : A general view of Littlemoor Station, showing the covered passenger foot-bridge, and the railway arches and typical street scene on the left. Two of the Company's tank locos, the Hunt Class "Percy", converted Hornby tank loco and "Sir Nigel Gresley" will be noted, also the Sentinel alongside the platform in the background.





Opportunity Knocks . . .

MANXMAN ON TT

Right : Western Pacific locos in TT gauge constructed by True Model Co. of Putney for Mr. T. J. Barrett from U.S. parts. Left: Enlarged view of mechanism—actually the same size as average 00 in this country.

THE introduction of the 12 mm. gauge affords us with an opportunity—and it is proverbial that opportunity does not knock so often at the door that we can afford to ignore it.

Our opportunity lies in the direction of making a fresh start, of profiting from the mistakes made in the past, and of seeing what we can do to escape from some of the restrictions and limitations imposed upon railway modelling in earlier times. The bane of the railway modeller is the curve. Of necessity a model railway track consists largely of curved sections and the tyranny of the curve has become increasingly overbearing as dwelling space has become precious.

A curved section of track, particularly if it occurs on a main fast line is a constant source of expense to the railway. The lateral thrust on the track imposed by a fast moving heavy train with all the flanges biting on the rails demands particular care in ballasting, super-elevation and other precautions. Moreover, since these strains on the track for any given train increase as the square of the speed, a curve frequently entails braking and, consequently, the use of additional fuel to regain speed.

In model railway work these considerations do not worry us. Stability factors obey third power laws varying as the cube of the mass—and we are dealing in terms of ounces, not tons.

But we do, to some extent, meet on common ground with our professional brethren in the restriction which a curve imposes in the matter of fixed wheelbases and the amount of swing that is permissible in the bogies of locos and rolling stock.

Where we are apt to be a bit inconsistent in modelling is that we strive for the utmost scale realism in our locos and then cheerfully set our models of Pacifics to run on curves that in real practice would hardly be tolerated for 0-4-0 dockside shunters. We are inclined to forget that in 00 gauge a radius of 3 ft. is roughly equivalent to a three chain curve the prototype.

When we trace out on our baseboard a 3 ft. curve we glow with righteousness at having succeeded in easing our track out to a "grand sweeping curve", though it should be pointed out that even a 10 chain curve in main line work would probably call for a continuous check rail, an enforced speed limit, generous super-elevation and carefully graded transitions.

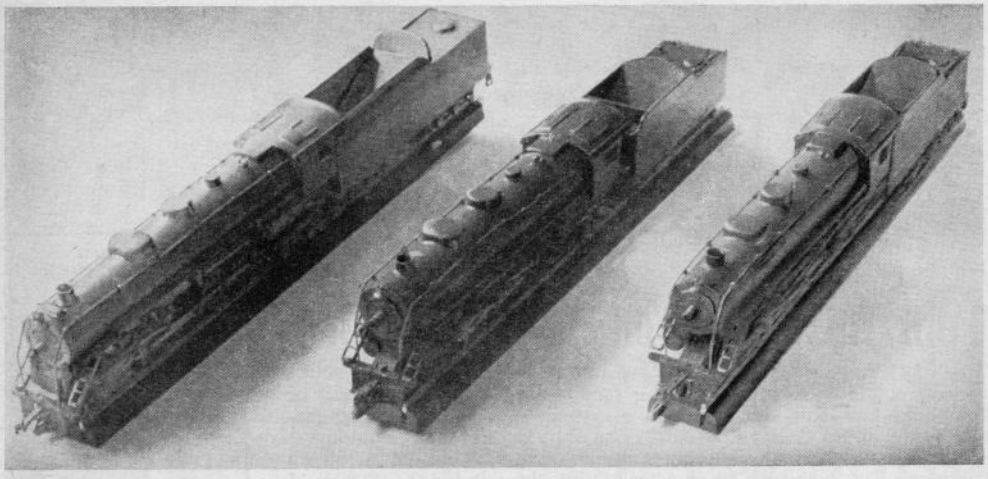
We might point out that we should need a free hand in a full-sized billiards room to use curves of a 10 chain equivalent, when the thought occurs, "Well, if you cannot increase the space at your disposal, why not decrease the gauge?"

And that is the strong case for TT. *Not* that it enables us to use correspondingly sharp curves, because we are now working in a narrower gauge—that will be only to perpetuate all the troubles from which we have suffered in the past—but that it enables us to model and operate more realistically by retaining curves that are gentle relatively to the gauge. In TT gauge our 3 ft. radius now becomes the equivalent of a 5 chain curve—and that is decidedly nearer the mark.

At the time of writing the whole question of the TT modelling scale is about to come up for official discussion by the British Railway Modelling Standards Bureau, and it would, perhaps, be unwise to prophesy too confidently the findings it is likely to make.

But, since a decision on the modelling scale for TT gauge is a matter which vitally affects not only

Model Maker scale rule for TT in 1/9in. to the foot. Free pulls of this rule on white card are available from the publishers.



the manufacturer, but also the home constructor, it might be helpful to give here one or two pointers. We start off at the gauge. We decided that this should be 12 mm. or why are matters which need not concern us here.

Standard gauge is 4 ft. 8½ in. or 1435 mm. and this figure, divided by 12, gives us 119.58 or say, 120. Therefore, the gauge/scale index is 1/120 or 1/10 inch to the foot, and this is the modelling scale that has been adopted in the U.S.A.

But in that fair land their loading gauge is so much greater than ours and they work to a height of 15 ft. 6 in. against our 13 ft. 6 in. In width they allow 10 ft. 9 in. maximum, whereas our outside edge is 9 ft. 6 in. and more usually 8 ft. 6 in. to 7 ft. 10 in.

Now when it comes to modelling, if we try to reproduce a relatively small prototype such as a British Railways wagon or loco to a scale of 1/10 inch to the foot, whilst *still* retaining the internationally agreed upon gauge of 12 mm., we shall come up against some snags. Our 8 ft. 6 in. now becomes .85 in. or 22 mm. and of this our gauge takes up 12 mm. Thus we are left with 10 mm. or 5 mm. on each side of our gauge line. Into this 5 mm. we have to crowd the tread width of the wheel tyre which, for reasons of track holding, cannot be less than about 1.5 mm. Add to this the boss of the wheel (to say nothing of any insulating washers!) of .5 mm. and we are now down to 3 mm. in which to include our axle-guard casting and the overhang of the buffer beam and sole bar. Not much room for robust construction is there? And if our prototype has a total width of 7 ft. 10 in.—well where are you?

So, reluctantly may be, we are forced to the conclusion that the gauge/scale index of 1/10 inch does not allow us enough breathing space and we must agree that if our TT trains are to be made so that they will stand up to reasonable handling and run with reasonable reliability, then they will have to be made to a slightly more generous scale and we shall have to overlook the slightly "narrow gauge" appearance of our trains. After all we have been doing this for a good many years past where 00 is concerned.

The question now arises as to what enlargement of the modelling scale will meet manufacturing requirements and, without going too deeply into the matter here, we can say that everything appears to point to the scale of 1/9 inch to the foot as being a satisfactory compromise. When the matter comes to be reviewed officially, it is possible that a slight modification may be made to this 1/9 inch, but it is difficult to see how the scale finally decided upon can be so divergent from 1/9 inch as to affect the home constructor seriously.

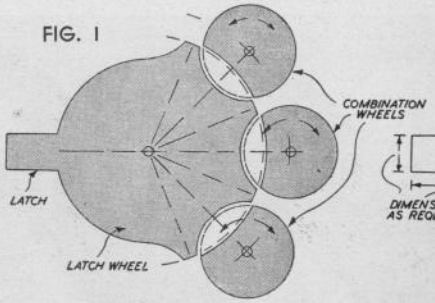
In TT it will probably transpire that locos and rolling stock will, for the most part, be factory made with just a few free lance or home-made models here and there. This will leave the model maker free to lay his track work, wire it up, design and make his station buildings, bridges, signal boxes and other lineside effects.

It is here that the great saving in space possible with TT will become apparent. The wise model maker will sternly resist the temptation to cramp his railway by resorting to sharp curves. Three feet to two feet ten inches should be the order of the day, coupled with a resolve that 2 ft. shall be regarded as the absolute edge.

Modelling in the 1/9 inch scale implies working to 1/108 (as against 1/77 in 00 gauge). It means that in any given area you can now make your railway appear *far* more spacious and in more realistic accord with its surroundings.

Here, surely, opportunity is knocking loud and clear!

FIG. 1



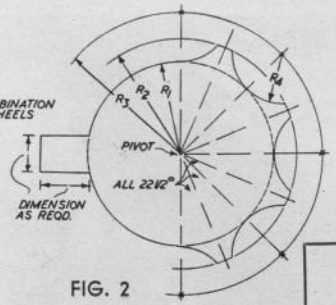
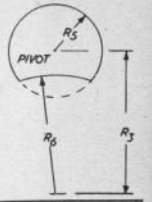


FIG. 2

FIG. 3



MAKE THIS LOCK FOR YOUR WORKSHOP

THIS lock is quite simple to make and just about foolproof in operation. The outer face of the lock shows four dials, each of which is lettered or numbered with ten divisions. Actually one of these dials is a dummy, as far as operating the combination goes. This is the dial which actually turns the latch when the three other dials are in the "release" position. Until these three combination dials are turned to the "release" position it is impossible to turn the latch dial.

The mechanism is detailed in Fig. 1. The latch wheel carries four projections and is normally locked when one or more of the three combination wheels engage these segments. The combination wheels themselves are always engaging except in one particular position only. As set up in Fig. 1, all the combination wheels are in the "release" position and the latch wheel can be turned. If any one of the combination wheels is rotated in either direction it will be seen that this will lock the latch wheel. The second combination wheel applies a double lock and the third wheel a treble lock. If each combination wheel has ten "positions" marked on its dial, this gives a possibility of 10 x 10 x 10 = 1,000 combinations.

The latch is cut integral with the latch wheel. Any type of engagement can be provided. This is not important and the latch can be dimensioned to suit. The layout of the latch wheel is then detailed in Fig. 2. One is required, preferably from material no thinner than $\frac{1}{8}$ in. Metal, of course, is the obvious choice, although this type of lock can be duplicated in wood.

The three combination wheels should be cut from similar material (same thickness) to the layout shown in Fig. 3. A table of suitable dimensions appears at the top of the article. Actual dimensions, of course, are not so important as relative dimensions.

SUGGESTED DIMENSIONS (in.)

R_1	R_2	R_3
1	$1\frac{1}{4}$	$1\frac{1}{2}$
R_4	R_5	R_6
$\frac{1}{2}$	$\frac{19}{32}$	$1\frac{5}{32}$

General dimensions :—

$R_3 = 1.5\ R_1$

$R_2 = \frac{R_1 + R_3}{2}$

$R_4 = R_3 - R_1$

$R_5 = R_4 - d$

$R_6 = R_3 + d$

d = clearance between wheels in 'release' position.

Each of the three combination wheels and the latch wheel should be rigidly mounted on stout spindles, these spindles running in bushes through the face of the door. Dimensions are given in Fig. 4. The spindles protrude through the door and dials are mounted on these, as indicated in Fig 5. To make a really satisfactory lock the outer dials should be mounted on blind holes. The spindles should be locked to the back of the wheels on the inside of the lock and in front of the face so that it is impossible to "force" the lock by breaking off the dials, withdrawing (or knocking out) the spindles and so freeing the latch wheels.

The finished outer appearance of the lock is shown in Fig. 6. Just the four dials marked off with letters or figures, with appropriate index marks on the face. Any desired combination can be set up, simply by adjusting the original setting of the combination dials on their respective spindles. The wheels or the actual locking mechanism are on the inside face, which raises another security point. These could, if necessary, be enclosed by a cover.

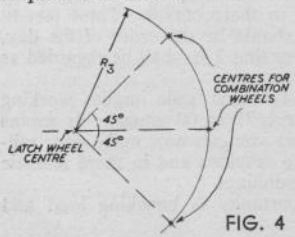
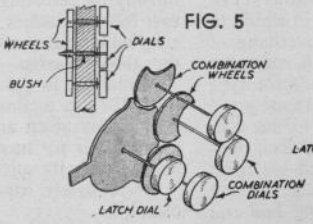
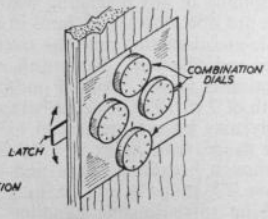


FIG. 4

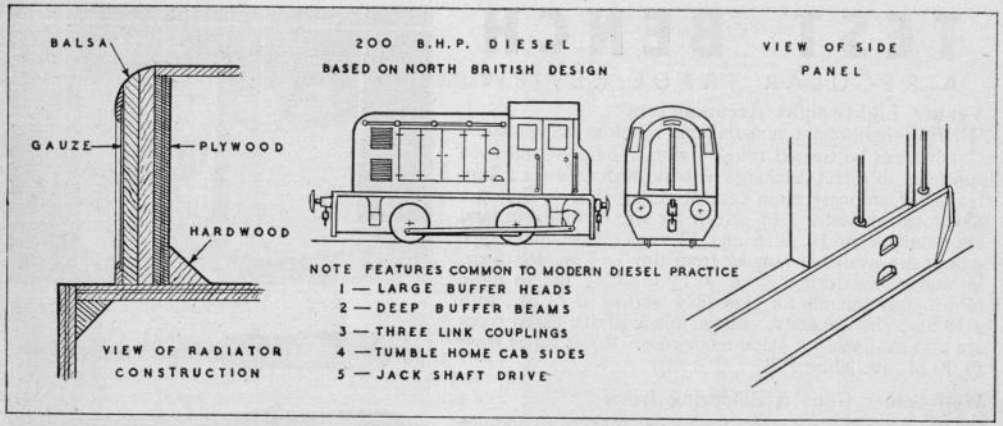
FIG. 5





LETTER ALL DIALS

FIG. 6



A SIMPLY MADE DIESEL PROTOTYPE

A TOPICAL MODEL BY J. H. SCARLETT (CHELMSFORD S.M.E.)

I DO not recognise the prototype Mr. Williamson selected for his "Diesel Electric" Locomotive (*Model Maker*, Dec., 1951), and as I do not think it could be called typical of modern diesel and diesel electric locomotive practice, I am enclosing a sketch of a locomotive I built recently, based on the latest North British 200 b.h.p. diesel shunter. This sketch is not to scale.

I recently acquired a Hornby clockwork mechanism and I decided to build a diesel bodywork on it. There were two "musts" in the building of this loco it *must* cost the minimum possible, and it *must* be built quickly.

The footplating, buffer beams, cab front and back, and two formers for the engine casing were cut from $\frac{1}{8}$ in. plywood and cut to clear the motor where necessary. Buffers and couplings (bought—it's not worth making them) were fitted to the deep buffer beams and all parts were then tacked and glued together, with hardwood blocks in the corners. Doors and cab sides were cut out of $\frac{1}{16}$ in. sheet balsa and $\frac{1}{16}$ in. "Perspex" windows fitted flush with the surface. While the windows were setting, the engine casing was planked with $\frac{1}{16}$ in. sheet balsa to get a good curve over the top. Cab sides and door were then glued in position and a roof of thick card added. The radiator was made out of two thicknesses of $\frac{1}{8}$ in. balsa sheet, and one piece of $\frac{1}{16}$ in., cut out in the centre with silvered gauze sandwiched behind it. (See sketch.) The projection at the bottom of the cab back was then added from $\frac{1}{4}$ in. balsa sheet.

The whole body was then sanded to shape and given a good coat of sanding sealer. So far the job had taken a Saturday afternoon and cost under 2/6.

After tea the body was sanded off again and given another coat of sanding sealer before going out for the evening, and the process was repeated before going to bed. Side panels were scored in the balsa and the whole of the body was given a coat of black paint before breakfast on Sunday morning. As I objected to the appearance of the Hornby wheels, side panels were cut from $\frac{1}{16}$ in. balsa to cover all the "under the footplate" part of the locomotive. (I believe it is compulsory in full-size practice to fit such side plates if the locomotive is to be run in a public thoroughfare.) Footsteps were cut out from these panels (see sketch), and the panels were painted before being fitted. They were fitted after lunch on Sunday, and the buffer beams painted red. Lining and lettering was done before going to bed that night, and I am afraid the handrails are still to be fitted. In case anyone is dubious about using balsa for a locomotive, let me say that this loco has now had two months' hard service pulling a train load of tools round a half-completed layout, and has twice fallen on to the concrete floor without any noticeable damage.

Incidentally, the "train load of tools" is quite a good tip for anyone building a layout. Its advantages are: —

(a) You know where all the tools are;

(b) It tests newly laid track and points, and

(c) It gives you a chance to run something without being accused of wasting time. The make-up of my train was: 1st truck, screwdrivers and screws; 2nd truck, hammer and nails; 3rd and 4th trucks, saws, plane and pencils; 5th and 6th trucks, wheelbrace and drills; 7th truck, cigarettes, matches and ashtray (most essential).

TEST BENCH

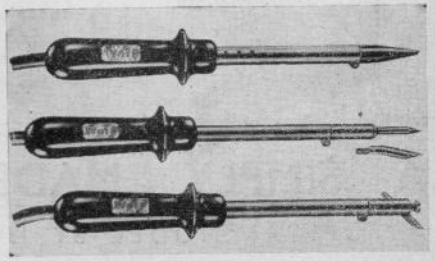
A REGULAR TRADE REVIEW

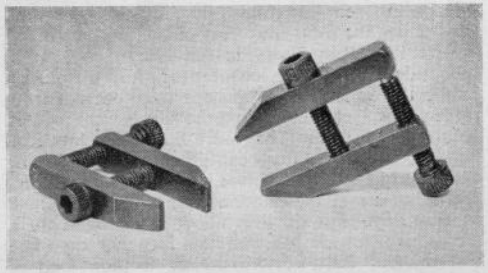
Venner Lightweight Accumulators

THESE lightweight non-spillable alkaline accumulators that can be treated roughly with impunity—and even subjected to direct discharge without mishap, meet a very real need amongst radio control enthusiasts. They are illustrated against a 1 in. screen for size comparison, and are available in 1½, 3, 6 and 12 volts. Five main type groups are available ranging from tiny L/T models ⅝ oz. in weight, measuring $\frac{9}{16}$ in. x 1½ in. x 1⅛ in., to more robust sizes suitable for glow-plug starting at 7½ oz., with a 10 amp./hr. capacity. Larger black plastic cased types are also available for static model use. Prices range from £1/8/2d., including P.T.

Wolf Solder Guns & Soldering Irons

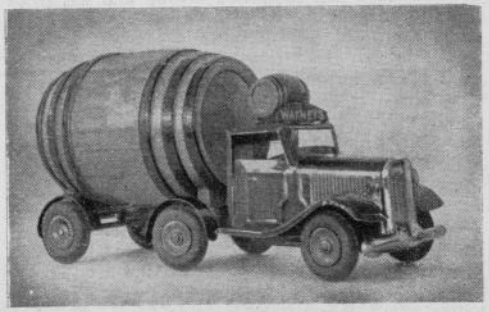
THE increasing necessity for model makers to indulge in soldering work makes these new additions to the Wolf range of particular interest. The exacting demands of the G.P.O. Engineering Department have been their test bed, where they have been used extensively on telephone exchange wiring. They embody the popular straight handle to which a wide variety of copper bits and holders can be attached to meet all needs and tastes. Heating elements are designed to concentrate heat on the working point, which is so vital when using a small bit for delicate work. Their wide range of shaped handle types and the practical soldergun continue to be available. Prices are moderate, ranging from £1/2/6d., while spare elements and bits can be obtained at from 5/6d. and 1/6d. respectively.





Parallel Clamps

JAMES ROGERSON, LTD., have forwarded us a pair of their latest parallel clamps, which sell at the reasonable figure of 5/- per pair. It is indeed a pleasure to handle small accessories like these that are made with true "toolroom" care and precision. Adjustment is exact, one bolt is threaded to each jaw with a clearance fit through the other. Heads are knurled for hand tightening which is usually enough for normal work: but for those desiring a vice-like grip a suitable recess is provided in each head for insertion of the appropriate Allen key. Our clamps have already proved so useful that our only fear is their early departure from our tool kit when others discover their value.



Minic Watney Lorry

APART from its possibilities as a static lineside feature for small railway layouts, where exact attention to scale is not of prime importance this little model of the towering Watney Beerbarrel lorry appeals on its merits as a clockwork toy of character. We have been recently privileged to obtain the full illustrated Minic list—normally available for export customers only—and have been bitten by a new form of collecting mania in the shape of contemporary vehicles. There are simply dozens in the range, so that now our eyes are constantly on the lookout for some local trader who has supplies of a model new to us. Such a collection need not be expensive spread over the period of the search, for the Watney lorry costs only 6/11d., including P.T., whilst others are obtainable in this price region.

Improving the Miniature Railway Layout

H. A. ROBINSON ON MARSHALLING PROBLEMS

IT seems to me that at one time more was heard of train marshalling problems amongst railwayists. Clubs would present them to their members while individual enthusiasts worked them out alone or with a friend "in the evening".

Marshalling problems can be definitely interesting and are both instructive and good practice in railroad operation. They can be adjudged on the number of moves taken to effect some re-arranging of vehicles or on a time basis.

Stock must not be lifted from the track at any time, but a "dead" locomotive propelled by hand can often produce a more realistic motive power for the purpose of marshalling than anything else. Speeds this way can be regulated to a nicety, for in the true marshalling contest derailments due to excessive high speed or careless shunting disqualifies the contestant—from that "round" at least.

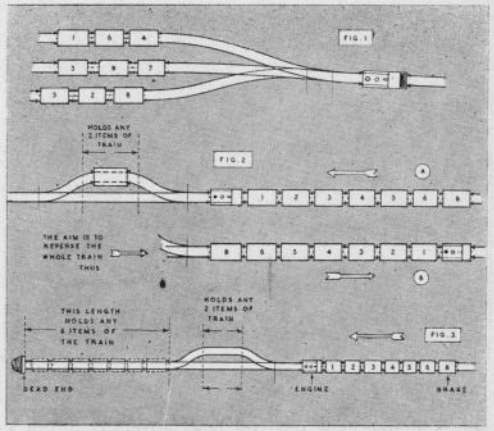
For the working out of problems stock must be used that is capable of perfect backward shunting (a fetish of mine) and simple coupling and uncoupling. To lessen the chances of derailments a section of track with not too severe curves should be used and a little check-railing is good to make doubly sure.

Buffers should be big and, again if preparing special stock, the buffer heads can be improved with larger plates—round or oval—being soldered into positions. Such heads will not be unsightly even if they do not appear on the full-sized vehicle.

With good buffer contacting and not too excessive curvature the ordinary three-link chain is hard to beat in gauge 0 as a coupling medium. In 00, one of the present-day automatic couplers is the best. Chain coupling and uncoupling is most satisfactorily effected with one of the commercial coupling sticks which have a metal crook at the end. With a little practice one can become quite an adept at lifting and placing a diminutive link on an equally diminutive hook.

Switches should work easily and the control levers be within comfortable reach of the person doing the marshalling, for it is better for all the actions to be carried out temporarily by the one operator.

A simple form of problem is to have a two or three-way junction as Fig. 1. An equal number of trucks are placed on the tracks and a set of cards bearing numbers having been shuffled, one is dropped into each vehicle. The aim then is to form a train with the vehicles in correct numerical order as shown by the cards, and this in the smallest number of moves possible. One card can show the letter B, this being for brake van, or an actual brake van can be set amongst the trucks. It must, of course, go in its correct position at the end of the train.

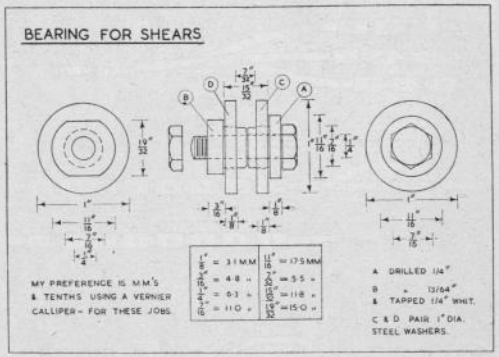


Passenger trains lend themselves to marshalling problems at junctions. Two trains arrive with certain coaches on each marked for the other. The trains therefore have to be broken and re-marshalled —again in the smallest number of moves. Anyone who knows Crewe station will be well up in this breaking and remaking of passenger trains.

These problems and many others like them, are really straightforward shunting exercises, but there is the true poser. In this we generally have an impossible piece of trackwork. This can be either supposed or built up. It is really much better to find or temporarily lay out a section of track that fulfils the conditions than to have to remember throughout that this or that piece of track can only hold so many trucks or that the engine cannot be accommodated on some other piece (when it obviously can), etc.

Fig. 2 shows a problem of the poser type. The set-up is that a train of six trucks and a brake van arrives at (A) and has to be completely reversed as (B)—the only piece of track available being the loop (C). There are snags for the train crew, however, as the loop will only hold two trucks and has a weigh-bridge over which the locomotive must not pass. The complete reversing can be done, but remember the aim is to do it in the least number of moves possible.

A much stiffer problem is given if the extension beyond the loop can only hold *any* six items of the train (as Fig. 3). That is,, the whole of the train bar any one item. In this case there is no weigh-bridge on the loop and the locomotive can run round it. As before the loop or the straight beside it will only hold two vehicles (the engine counting as one).



"Love Me Love My . ."

AN IMPROVED BEARING FOR SHEARS DESIGNED BY J. W. G. BROOKER M.I.Mech.E.

IT is strange how relatives react adversely to one's ownership of a lathe. Drill, files and vice they understand and tolerate, but lathes rarely. "What is it for?", or "What do you do with it?" are questions flung at the poor man. It is good policy at times to turn the tool to please the family and I hope fellow modellers had success at Christmas.

In the New Year there is also an opportunity of doing good where the small lathe again comes into its own. Last spring I found that whilst my garden shears had excellent blades the hinge pin, most inadequate as a bearing for a man's strength, was worn out and loose. There are three faults inherent in shears generally speaking. The bearing is small, loading is concentrated on two points and good lubrication is impossible. Even if your shears are in good trim for the coming season your neighbours may not be so lucky.

So, early this year I set out to make an improved bearing and from April enjoyed five months of hard service without a moment's trouble. Being practically free from friction, cutting too was less tiring—what a pleasant change from the previous year.

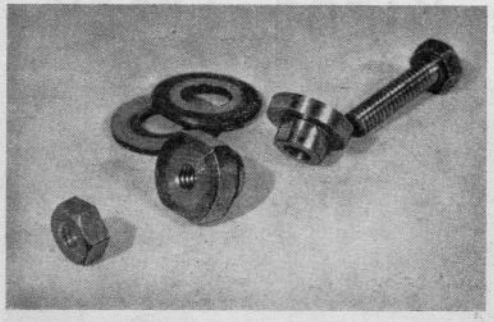
It is helpful to review the requirements of a cutting implement such as shears. The bearing must be the largest possible consistent with the space available, so keeping specific loading to a moderate figure. In emphasising this one visualises the immense pressure exerted by powerful wrists on a $\frac{1}{4}$in. diameter steel pin distant about 12in. from the handles. The peak of the loading comes primarily on two points opposite each other on the pin's circumference, concentrating the wear at these two points. It follows therefore that if the pin be greater in diameter and moreover free to rotate as it works, wear will be greatly reduced and will be distributed equally round the circumference. Such movement is beneficial too from the lubrication point of view. The more the relative movement, also the speed of movement, the better the oil is spread over the surfaces in contact and the less the wear.

The improved bearing has a diameter of $\frac{7}{16}$in. and being free to rotate is a true journal. After five months use, whilst wear is negligible the surfaces are burnished in places round the entire circumference, evidence of heavy shock loading, but well distributed. The new bearing has a projected area almost twice as great as the old pin. It is hardly necessary to explain why lubrication is better.

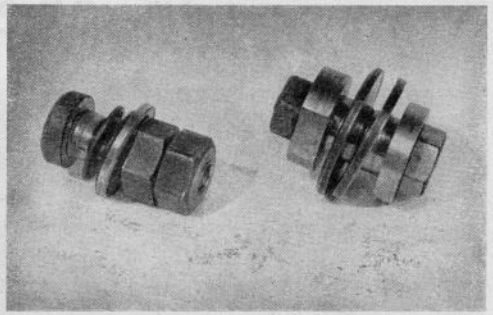
The next point is the ease with which the bearing can be taken apart and reassembled without any possibility of the blades being too tight or too loosely fitting. Adjustability is *non est*. The usual pin fixed on one blade and free to move in the other must be secured with lock nuts or in the last resort hammered like a rivet. This rarely keeps tight for long under the combined influences of torque and surfaces sticky with vegetable deposit. The blades tend to tighten up in use or to get slack through nuts easing off. Very aggravating when time for the job is short.

Contributory to good service are the ends of the bearing. These should be of large diameter to resist end thrust, in other words restrain the blades from splaying apart when cutting tough stuff. In my bearing are a pair of large washers well backed up. One can dispense with the washers relying on the bearing ends for blade support, but this means waste of time and material when turning from larger diameter stock.

The last point to look for is facility for repair and adjustment when at last there has been a trace of end wear amounting in the aggregate to sufficient to allow the blades to splay a little under load. In some shears bearings it is usual to see a substantial spring washer expressly to take up this kind of slack as it occurs so keeping the blades closely in contact. It creates friction which can be felt and is surely open



The parts of the improved bearing taken apart to show special features —note in particular the milled or filed flats on the bearings.



Here the improved bearing is shown on the right compared with a standard bearing on the left. The simple yet significant improvements will be noted.

to criticism. I aimed to eliminate friction as well as wear and yet to keep the blades working without slack. Slight end wear after long service is the worst that can happen and this is easily rectified by skimming a few thousandths of an inch off "A", the half piece with a plain $\frac{1}{4}$in. hole—a few minutes job in the lathe.

The bearing consists of two half-pieces A and B, two washers C and D and one $\frac{1}{4}$in. Whitworth screw and nut. The half-pieces are turned from $\frac{3}{4}$in diameter mild steel rod. The dimensions shown suit my shears, indeed will I believe, suit most garden shears. The usual holes in the two blades must be enlarged to $\frac{7}{16}$in. with a high-speed drill and then both pieces of steel rod turned down to give a working fit in the holes. If drilling these is rather difficult try an ordinary five side taper reamer in a hand brace with plenty of oil. A pronounced chamfer to both half-pieces as drawn is an advantage as it provides a reservoir for oil right in the middle of the bearing also makes assembly easier. When assembling it is important that before screwing up the loose nut the two halves of the bearing be drawn tightly together using a spanner each on the screw itself and the flats. (The flats should be filed or milled to take a $\frac{5}{16}$in. spanner). Following this the loose nut is screwed tight using spanners on the nut and the flats. The tapped half-piece and the loose nut act as a pair of lock nuts, eliminating any possibility of the blades and bearing coming loose in use and of course the blades cannot bind. They remain freely moveable requiring only occasional drops of oil on journal and washers.

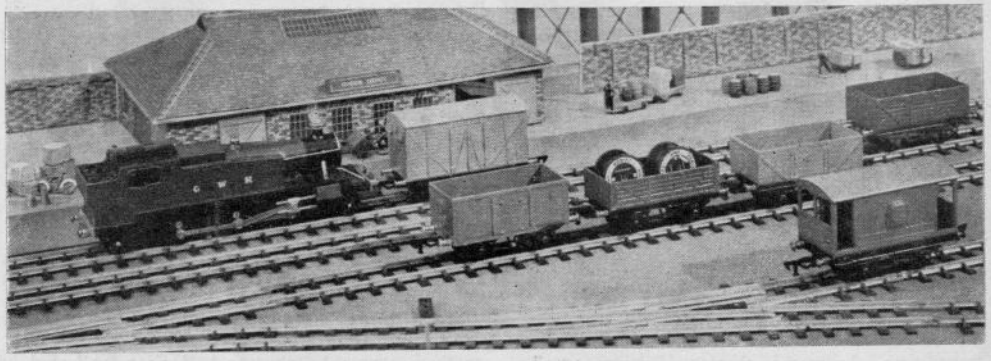
As to the making it is not necessary that the two halves of the bearing be exactly equal in length. It suffices that the lengths added together apart from washers equals the sum of the widths of the two blades plus say, .003in for free play in use. Normally one would make the half piece "A" slightly oversize in length and trim it down to make a good fit together with piece B. Half-piece B is turned to size, drilled $\frac{13}{64}$in., filed or milled with two flats for a spanner and tapped $\frac{1}{4}$in. Whitworth using the flats for a firm grip for the threading. Should one be so unlucky as to get the bearing too tight for the blades when assembled it is simple to take a fraction off one side of one blade with a medium carborundum stone. It pays to take trouble to get the correct fit as once set the shears can be used for months without slackness developing.

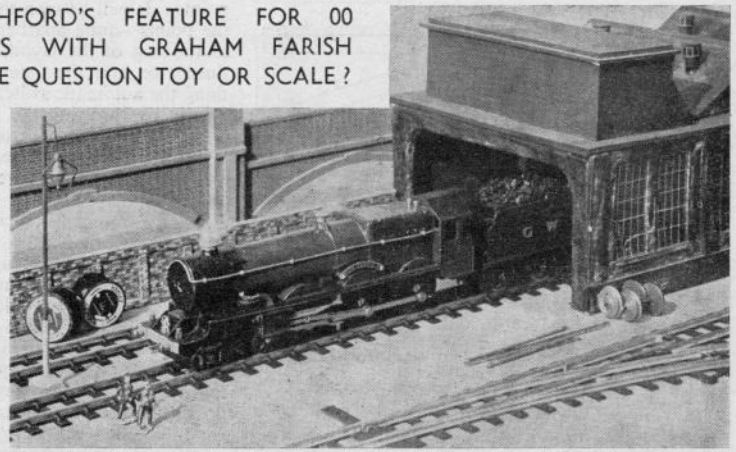
In this matter of shears there are two schools of thought. On the one hand an implement light in weight for easy handling is favoured and this slices with a deliberate stroke like scissors. On the other hand there is the really heavy shears which cuts by impact, by sheer weight of metal moving rapidly akin to a hammer blow. The former should have super sharp blades of light weight. Some little friction at the hinge to restrain the blades is no disadvantage at the slow speed of cutting. The latter is distinguished by the heaviest possible blades with a minimum of friction at the hinge bearing to promote rapid movement. Great momentum (mass, velocity combined) is the essential. Except to the operator in good training this type of shears can be tiring to use not so much from the weight as from the rapidly repeated jars as the blades come to a stop after each cut. There is no question that the heavy type of shears vigorously used is that most in need of a large, well lubricated bearing.

Note: —The author has not been able to trace any shears or like implement with a bearing on the principle described herein. Should any reader come across a similar bearing the Editors would be glad indeed to have particulars.

. . . On the Right Track

R. WATKINS PITCHFORD'S FEATURE FOR 00 ENTHUSIASTS DEALS WITH GRAHAM FARISH AND CONSIDERS THE QUESTION TOY OR SCALE?





Graham Farish "Prairie" Tanker and goods stock. Platform, Goods Depot, goods awaiting handling and all other features can be easily made or are already available as commercial accessories.

Graham Farish "King" ready for the road. Again all the scenic features are available as standard commercial accessories, or can be simply made up from parts and materials on the market.

AMONGST the mechanical hobbies Model Railwaying is unique in the scope it offers.

You may build model yachts, galleons or speed boats, but you rarely build a model sea or river on which to sail them.

But if you model railways, you can have the best of both worlds. You can either lay down a test track of the passenger-carrying variety and conduct scientific experiments in draw bar pull, fuel consumption and flexibility for steam driven models in the larger scales, or you can devote your energies to modelling a large area of countryside into which you fit a railway system consisting — if you wish — entirely of ready-made locos and rolling stock.

In fact the proportion of your railway system which is bought ready made as against that fashioned by your own fair hands, is a matter over which you have complete control. You must, however, concede as an axiom that the more time you spend in building, the less you will have left for operating.

If the "layout" consists merely of a single stretch of track with no points, then the only operating that can be done is either to run the train round and round or else, if the track is of the point to point variety, then to send the train backwards and forwards between terminals.

But as soon as points are introduced then operating possibilities begin to be opened up and we find that the design or plan to which the track is laid out has a very decided effect upon the traffic running made possible.

To begin with there is a limit to what one pair of eyes and hands and one brain can encompass and, in any case, it is not practicable to imitate full-scale practice beyond a certain point. Thus, if we set out to model even a relatively small section of full-sized railway, such as the SR main line between Waterloo and Exeter, we should need a site the length of the main hall at Olympia and even then would have to work to a microscopic scale of about one hundredth of an inch to the foot.

This being manifestly impossible, we have to develop a special "idiom" for the laying down and operating of a miniature railway. Distances have to be foreshortened, long runs have to be simulated by resorting to continuous tracks, and liberties have to be taken in the placing of points and crossings that would not be tolerated in full-sized practice.

The whole art of railway modelling consists in knowing where and how to "make believe", and the man who contrives, within the limitations of the game, to lay down and convincingly operate a miniature railway is, by your leave, no less an artist than he who can build a super detail loco or coach.

There is, therefore, a lot to be said for the man who decides that his pleasure is going to lie in the direction of operating and who accordingly buys his locos, rolling stock and track ready made. Perhaps there was not such a strong case for this twenty or even ten years ago, because, at that time, locomotives were only just beginning to emerge from the "toy" stage and assume some pretensions to scale accuracy —I am speaking, of course, of mass-produced locos in the small gauges.

But that is no longer the case today. The enormous advances in pressure die-casting technique and "thimble" electric motors enable our manufacturers to offer us products which, only a short while ago, would have called for individual hand building at four times the cost we pay today.

The Graham Farish "King" class is a case in point, and the "Prairie" Tank from the same stable runs it a close second. The more streamlined and severe outlines of the "Battle of Britain" class make it perhaps less able to compete with its Western Region contemporaries in handsome looks, but there is no denying that even here a very close attention to detail has been observed both in the loco and its tender.

One hesitates to claim on behalf of these locos and their rolling stock any serious pretensions to being classed as models, because the makers themselves are emphatic to the point of brusqueness that they are toys. But one is tempted to think that their severity in this direction might be mollified if they saw their products working more in realistic and railway-like surroundings.

The fact is that the Graham Farish range is probably the most versatile of any proprietary train set offered on the market, in that while it is suitable as a present for the quite juvenile members of our fraternity, it is also capable of adaptation and development to the needs of the advanced operator.

In the first place it operates on the two-rail system which one expects to find where locos of the "King" class are plying. The Formo flexible track, available as part of the range, whilst it has no claim to representing scale permanent way, is robust and in every respect a thoroughly practical proposition. It is supplied only in straight 36 in. lengths and can be flexed to any radius of curvature within reason. The flexing naturally causes the outer rail on the curve to retract and the inner rail to protrude. Where a reverse curve is being laid the two curves cancel each other out and the ends of the section will lie flush, but on a continuous curve it will probably be necessary to trim off the longer rail to secure a flush join.

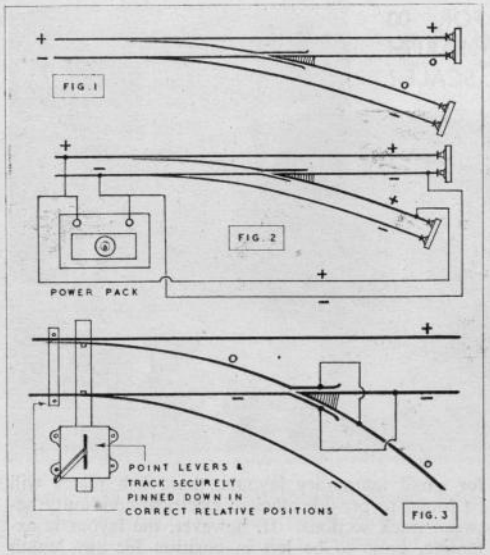
Where gradients are concerned, the flexible track enables a gradual take off to be secured, thus avoiding the sudden gradient change often experienced with rigid track units where an inclined section meets a level section at an angle. With the Formo track it should be arranged that the gradient starts six inches or more from the end of a section—that is to say that the last six inches at least should be level and sprigged down to the baseboard. The Formo track is provided with channel section fish plates and, for small temporary layouts, these fish plates will be found to provide efficient electrical continuity between track sections. If, however, the layout is extensive, or is to be left in position for any length of time, it would be a wise precaution not to trust solely to the fish plates for electrical continuity, but to bond them across with a soldered wire connection. The new Formo points were found to give entirely satisfactory running, but there is a matter here which requires attention when laying. The points as supplied are not wired up in any way. Therefore if a point were used at a dead end, as in Fig. 1, it will be apparent that the two rails marked "O" (as well as the open blade) will be "dead" and a loco run on to either branch would come to a stop. Therefore, in such a formation it would be necessary to wire these rails up. This can be done by taking separate leads to the two rails, as in Fig. 2, or, alternatively, by wiring up the point itself, as in Fig. 3. To do this, short lengths of fine insulated wire (e.g. D.C.C. 28 SWG) can be soldered on to the clips by which the respective rails are clamped to the sleepers on the under side of the point.

It will be seen that this imparts correct polarity to the stock rails—which are insulated from each other by the dead frog nose—and to all subsequent rails joined to them.

But! and it is an important but; observe that in this case the track beyond the point is energised only by the contact between the switch blade and the stock rail which it is touching.

The point lever should, therefore, be positioned and securely fastened down relatively to the track at such a point that the switch blades snap over firmly against their stock rails whichever way the lever is thrown.

It will be seen further that the switch blades form an electrical as well as a mechanical switch and that



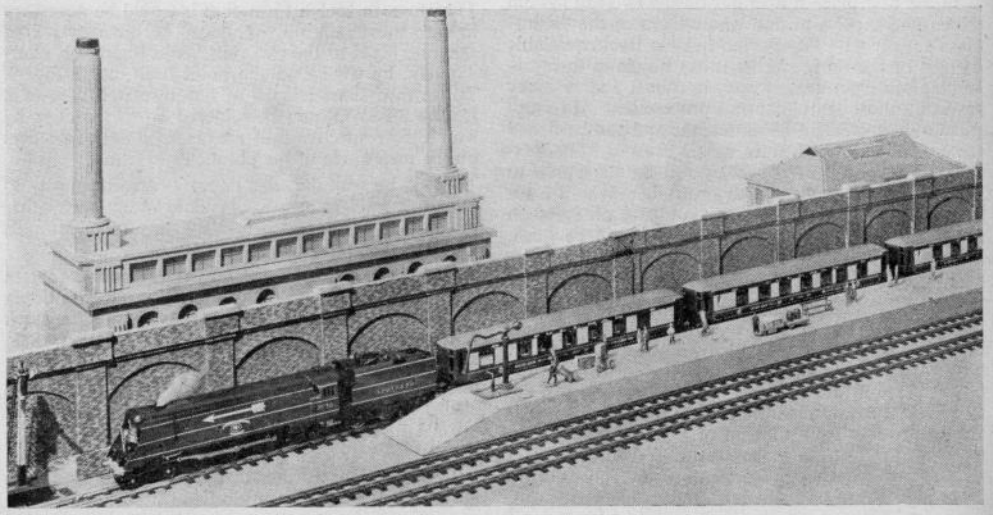
the track connected to whichever blade is "open" (as well as any further points and sidings connected thereto) is made dead. In Fig. 3 the branch line is dead and the main line live. The plus and minus signs in these diagrams are, of course, put in only for differentiation—in practice the polarity is reversed whenever the loco is required to move in the opposite direction. So much then for the track and points. It will be seen that the method of wiring up the points—quite apart from their location relatively to the rest of the layout—will have a profound influence on how the time-table is made up. For one thing the automatic switching out of sections of track merely by throwing the point lever can be used as a means of having a stud of several locos on the layout at the same time, unwanted locos being on sidings which are rendered dead by the points being open.

At the moment of writing no crossing figures among the Formo track components, but right and left hand turnouts are supplied and facing and trailing crossovers can be made up from these respectively. For those who lean towards a scale permanent way, there is nothing to prevent this being used with the Graham Farish locos and rolling stock as they stand. The only precaution needed is to see that the type of rail fixing (i.e. chairs) does not stand up so close to the rail table that it fouls the somewhat deep flanges employed.

Alternatively, of course, these locos can be fitted with scale wheels and most model shops having competent model mechanics on the staff will quote for doing this.

The fact that numerous advanced model railway enthusiasts have had these conversions carried out is a proof that the locos themselves meet exacting requirements in the matter of proportion and detail. Meanwhile, the few views shown here were taken in order to supply some sort of a background and to demonstrate that if building and scenic effects were to be specially designed for the job, the Graham Farish railway is well capable of holding its own in the model world.

The "Fleche d'Or" gets the starter. Once again a Graham Farish loco and Pullman coaches are used to provide a realistic picture of the Continental Departure Platform at Victoria, though Lots Road Power Station has been moved in somewhat !



ANOTHER

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BY J. A. MURRELL

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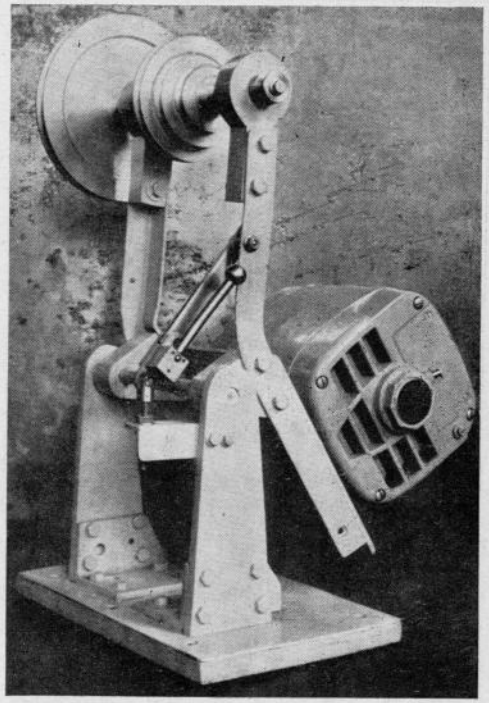


THE countershaft assembly is designed so that it can be used either on a narrow bench or mounted vertically on the wall.

Base Plate

The first requirement is a flat piece of hard wood 7 in. x 11 in. x $\frac{3}{4}$ in., and a flat sheet of $\frac{1}{8}$ in. M.S. plate of the same size.

The side pieces are made from two pieces of 3 in. x $\frac{3}{8}$ in. M.S. $8\frac{1}{2}$ in. long and shaped as shown in the drawing. A $\frac{1}{2}$ in. dia. hole is drilled 1 in. from the top and then four $\frac{1}{4}$ in. dia. holes drilled for the bolts. It is advisable to use one as a jig for drilling the other to ensure that the $\frac{1}{2}$ in. holes are in line. Each side piece is bolted to a piece of 3 in. x 3 in. x $\frac{1}{4}$ in. angle iron $4\frac{1}{2}$ in. long shaped as shown. Four $\frac{1}{4}$ in. dia. holes are drilled in each piece of angle bar for bolting to the base plate.

Place one side in the correct position, drill the four bolt holes and bolt to the base plate with four $\frac{1}{4}$ in. dia. coach bolts. Fit the $\frac{1}{2}$ in. dia. shaft $7\frac{3}{4}$ in. long into the side piece already bolted on and lock with the 2 B.A. Allen screw.

Now slide the second side piece on the end of the $\frac{1}{2}$ in. dia. shaft and mark through the $\frac{1}{4}$ in. dia. holes to the base plate. Drill the bolt holes and assemble as before with four $\frac{1}{4}$ in. dia. coach bolts.

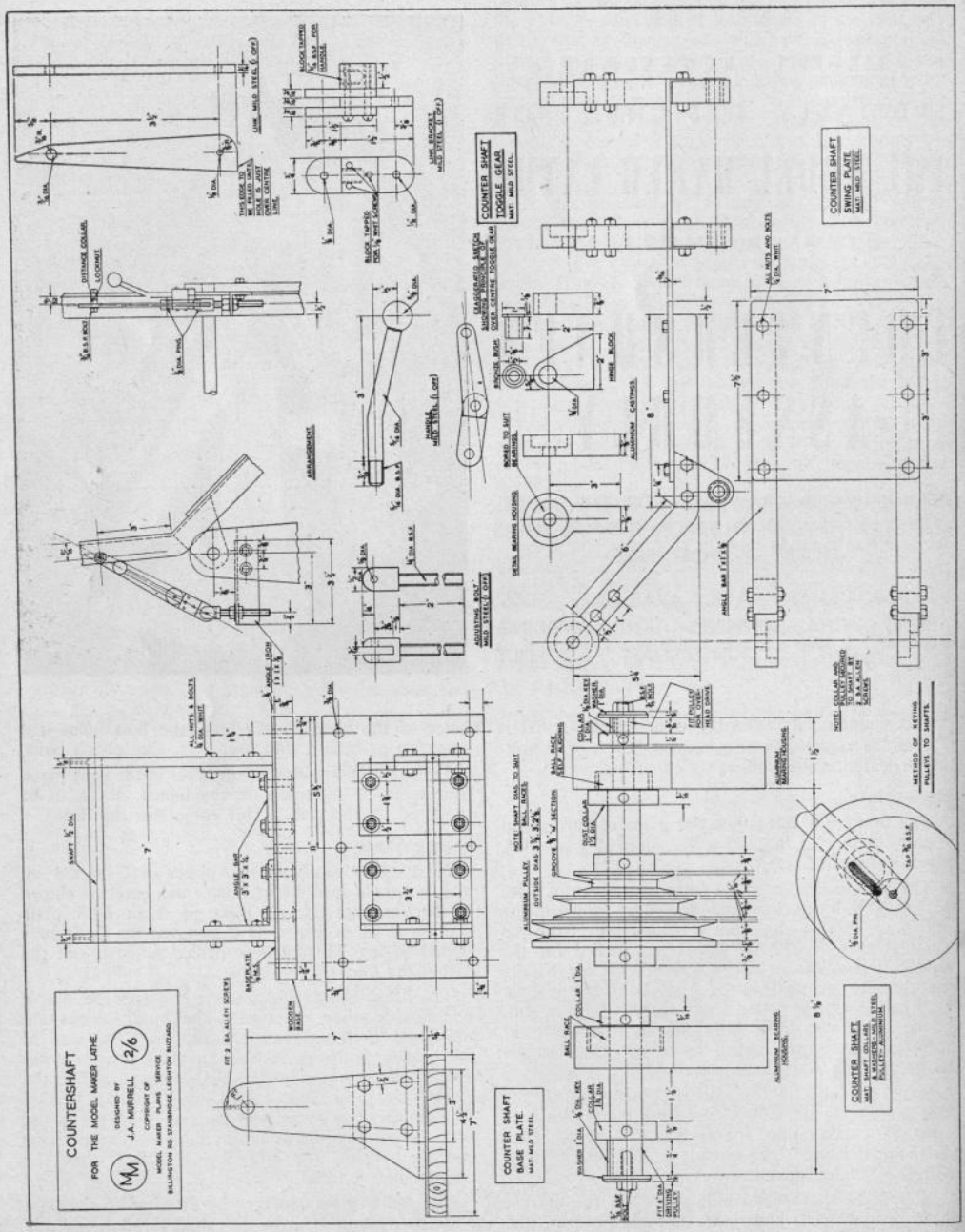
Drill the holding-down bolt holes in the base plate, four is to be mounted on the bench, six is to be mounted on the wall. This completes the base.

Swing Plate

First job is to obtain two pieces of 1 in. x 1 in. x $\frac{1}{8}$ in. angle iron 14 in. long, and bend as shown in the drawing. Now a piece of $\frac{3}{16}$ in. M.S. plate 7 in. x $7\frac{1}{2}$ in. is drilled as shown and the angle bars bolted to it. This plate is drilled later to suit the feet of the motor.

The hinge blocks and bearing housings are simple home-made alloy castings. The hinge blocks are machined to the dimensions shown. The size of the bearing housings depends on the ballraces available. Two brass or bronze bushes are turned to the dimensions given and pressed into the hinge blocks. The hinge blocks can now be bolted to the swing plate as shown, but it is advisable to fit only one bearing housing, the other being drilled when the countershaft is fitted.

The swing plate can now be attached to the base plate by passing the $\frac{1}{2}$ in. dia. shaft through one side



member, then through the hinge blocks, and then through the other side member. The shaft is locked to each side member with a 2 B.A. Allen screw as shown. The swing plate should be a fairly tight fit, not slack or else vibration will be set up when the motor is running.

Countershaft

The diameter of the shaft depends upon the size of the ballraces fitted. It is advisable to fit a self-aligning race at one end as this will save a lot of work when lining up the second bearing housing.

On the left-hand end of the shaft is fitted the driving pulley; this is another home-made casting 6 in. dia., and is keyed to the shaft as shown. This pulley backs up against a steel collar $1\frac{1}{4}$ in. dia. locked to the shaft with a 2 B.A. Allen screw. The shaft passes through the ball race and a second collar is locked to the shaft against the inside face of this ballrace. Next is the cone pulley, a home-made casting turned to the sizes shown, this being locked to the shaft by a 2 B.A. Allen screw at each end. The next collar is an aluminium dust collar $1\frac{3}{4}$ in. dia. The shaft dia. is now reduced to pass through the second ballrace (self-aligning). The end of the shaft is prepared to suit another pulley which can be used for driving the "suds pump" or other attachment.

Toggle Gear

The weight of the motor is sufficient to tension the belt, but if a more rigid structure is desired then the toggle gear can be fitted as shown in the photograph.

This is quite easily constructed and the threaded hinge bolt gives a wide adjustment of belt tension.

The exaggerated sketch shows the principle of the "over centre toggle".

Firstly, a piece of 1 in. x 1 in. x $\frac{1}{8}$ in. angle iron $3\frac{1}{2}$ in. long is drilled as shown and bolted to the right-hand side member of the base plate with two $\frac{5}{16}$ in. dia. B.S.F. bolts.

The adjusting bolt is turned from a piece of $\frac{1}{2}$ in. dia. M.S. to the dimensions given and threaded $\frac{1}{4}$ in. dia. B.S.F. A $\frac{5}{16}$ in. slot is cut in the top portion and a $\frac{1}{8}$ in. dia. hole is drilled at right angles to it as shown. Two $\frac{1}{4}$ in. B.S.F. nuts and washers complete the bolt which is fitted to the angle bracket as shown in the arrangement drawing.

Next the link bracket which is built up from three pieces of $\frac{3}{4}$ in. x $\frac{5}{16}$ in. M.S. strip $1\frac{1}{2}$ in. long and a block $\frac{3}{4}$ in. x $\frac{3}{4}$ in. x $\frac{1}{2}$ in. The three pieces are filed to the shape shown and fitted together with three $\frac{1}{8}$ in. dia. Whit. bolts which pass through them and screw into the block. The block is drilled and tapped $\frac{5}{16}$ in. dia. B.S.F. for the handle.

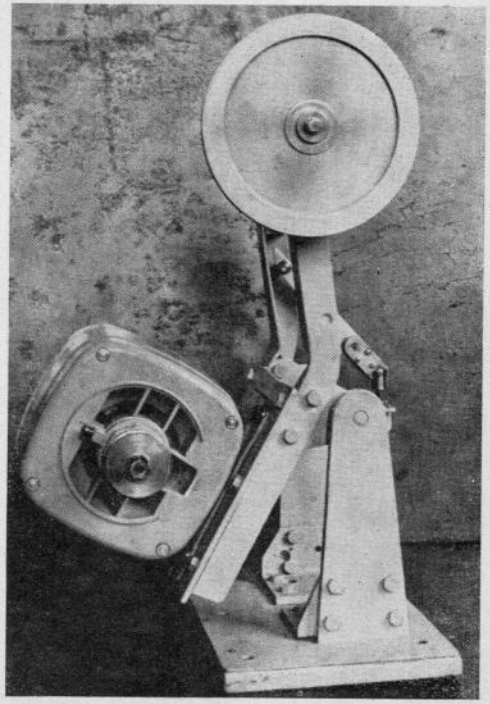
The link is cut from $\frac{3}{4}$ in. x $\frac{3}{16}$ in. M.S. strip to the shape shown. It is drilled $\frac{5}{16}$ in. dia. at the top and $\frac{1}{8}$ in. dia. at the bottom. It is advisable to drill the $\frac{1}{8}$ in. hole a shade more than $\frac{33}{64}$ in. from the bottom so as to leave a little to be filed off. It will be seen that the link is cut to shape to finish $\frac{33}{64}$ in. above the top hole. This extra length and shape prevents the swing plate from coming too far forward, the top of the link coming up against the inside of the angle bar.

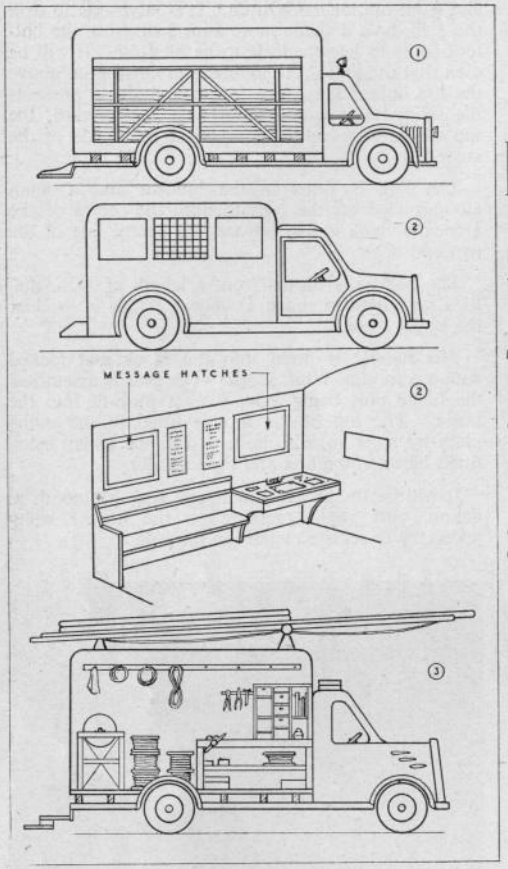
The link is fitted in the bracket and a small amount filed off the bottom until the centre of the $\frac{1}{8}$ in. dia. hole is just beyond the centre line of the two end holes.

The handle is turned from a length of $\frac{3}{4}$ in. dia M.S. and bent to shape as shown. This is to clear the swing plate.

The handle is fitted into the block and locked with a $\frac{1}{8}$ in. dia. Whit. screw. The gear is assembled the hinge pins being $\frac{1}{8}$ in. dia., a push-fit into the holes. The top of the link is fitted to the swing plate by a $\frac{5}{16}$ in. dia. bolt, a distance collar being fitted between the link and the lock nut.

It will be found that this toggle gear is smooth in action, only slight pressure on the handle being necessary to release or tension the belt.





A FLEET OF MINIATURE FIRE ENGINES Pt. IV

BY VICTOR SUTTON

IN THE FINAL PART SOME OF THE ANCILLARY VEHICLES ARE DESCRIBED

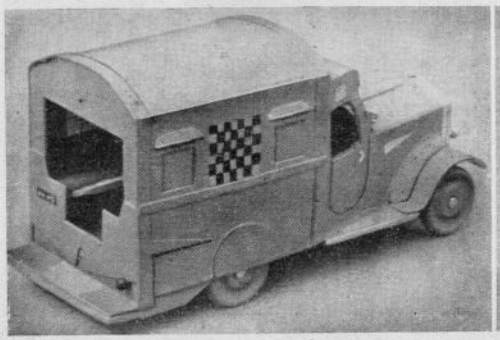
THE addition to my range of the Kitchen, Canteen, Mobile repair Unit, Telephone repair lorry, communications car and other vehicles which are not essentially fire appliances was prompted by my desire to have the whole series complete and doing this part I have enjoyed every bit as much as making the machines for a major fire scene.

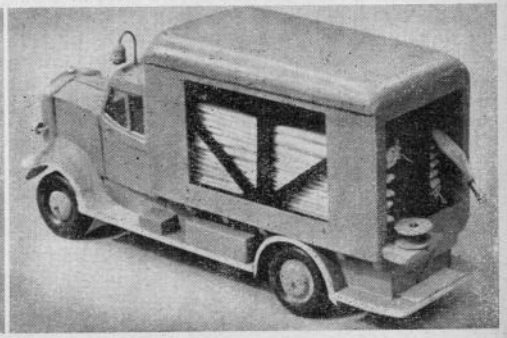
Shown in the picture is the Hose-laying lorry commonly used during the blitz. In this four tracks of packed hose are housed in specially constructed iron frameworks and mounted on a chassis of the ordinary type. As you will see this can be made from cardboard and the hoses made from folded $\frac{1}{4}$ in. fawn or white tape. The body is realistic with its cross member to hold the floor. The sides are made from $\frac{1}{16}$ in. sheet and roof several layers of smooth obechi. Ribbed bindings I put on with thin cardboard. Steps and tool boxes are all added to improve the general usefulness of the vehicle. A similar type was used for the mobile repair shop.

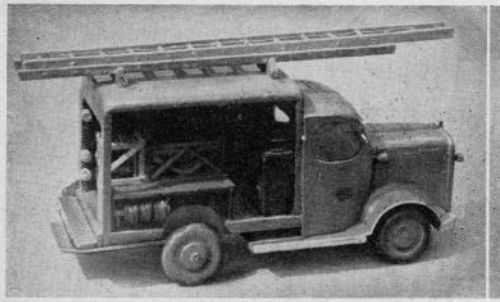
In the case of the kitchen (not to be confused with the canteen—this is smaller) I made the whole of the coachwork in plywood with the carrier for refuse and the coal bunker attached at back. This is made easy

Communications car—sometimes referred to as Fire Control Car—which is in effect a mobile headquarters of great value at large fires.

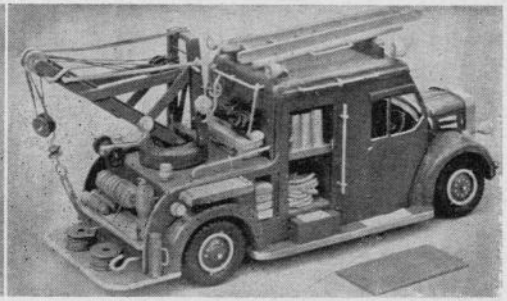
The hose laying lorry with side panel removed to show contents. These lengths of hose are all connected and laying can be done at 5/6 m.p.h.







Telephone cable repair van—a product of the blitz that proved of great value in maintaining vital communications.



Heavy breakdown tender, reminiscent of a normal garage towing lorry, but actually capable of lifting most objects of all shapes and sizes.

to lift off and does mean better display at all exhibitions. Cabin is of the flat type similar to what we see on Foden vehicles and now adopted by many haulage firms.

I was fortunate in having a fully detailed picture of the interior in this case and all fittings I made in $\frac{1}{16}$ in. obechi wood including the large cooking range which backs on to the driving cabin. Sink, lights, cupboards and dresser were all glued and pinned to save them breaking apart. Dowel rod, galleon parts and a rake over of my oddments box plus a good examination of the household needlework box found me all the bits I wanted.

The mobile workshop is again made up by copying all the sections and making them with thin wood. In this case a six-wheel chassis is used with doors at back and flaps top and bottom to extend the workshop. In this case the whole of the interior takes out and makes an interesting exhibit at any show. Bits of wire and dowel rods are the best things to use for this lay-out.

The communications car is a neat little affair with red and white chequer board panel each side. The interior has two small desks, near the reporting windows which are shown lockers for maps and plans and seats for messengers attached to the Incident post which it represents.

Still in use with many brigades is the light towing van illustrated earlier. One can see these about quite a bit and most of these are Austins. Somewhat square in front design mine is made with cardboard on a shorter and narrower base than I use for fire-engines. Seats are fitted each side and also lockers. Seats are covered in passe-partout and I fitted smart curtains at the back from some old khaki field dressing. Some of these vans have beaded strips running up the side and over. These I make with strips of cardboard glued on. Ladders are specially made and of a heavy type for rescue work.

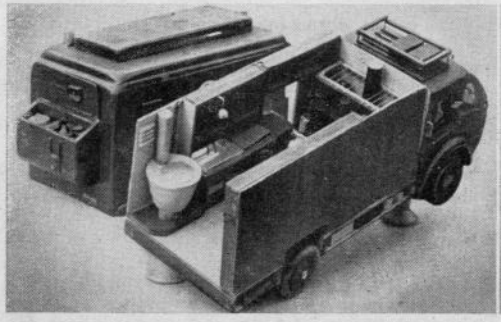
Great interest is always shown in the canteen. This is built on the same base as the communications car. The plate rack is in the half-round part over the driver's seat. Beneath this is the range of cookers, boilers and other tea-making regalia. Dresser, draining board and sink are in line on one side with serving hatch on the nearest side to road.

During the blitz the need was felt for a telephone

(*Continued overleaf*)

Mobile Kitchen with top removed to show interior. These vehicles could supply complete hot meals to as many as 250 at a loading.

The Mobile Kitchen ready for duty. Meals could be cooked in transit and the vehicle arrive ready to dish up.



cable repair service and the vehicle shown was the answer to many of our greatest problems. A small vehicle as shown was adapted and fitted with wire winding gear, ladders, tools, benches and lockers. Note the extra steps fitted so that cable can be run out as the vehicle moves forward. A very wide rear window is fitted behind the driver. More than once the van proved the greatest asset a brigade had.

Space does not allow me to explain the Salvage Corps Tenders, Petrol Bowsers, Tank Tenders and several other vehicles, but they are all fully detailed and were most essential to all fire brigades.

Shown in the picture is perhaps one of the most used vehicles in the London Fire Brigade. It is the heavy breakdown Tender. It is equipped with every modern type of gadget for all those accidents to which it is called. A list of the calls it serves would make an interesting article on its own. Fitted with a very heavy crane for lifting vehicles it resembles a fire-engine in many ways. The spacious cabin holds six fully-equipped firemen. Slings, ropes, poles, levers, hooks, chains, axes and jacks are all carried. Packed away in open fixtures you will notice wood planks specially carried for jacking operations. So much gear is carried that racks on the roof are also utilised. Wheeled lifting tackle is also carried. The lay-out of the machine (and the photograph illustrates this point splendidly) shows the clean cut lines and the adaptability to which it can be put. Note the special steps on which the crew work and the large hooks for haulage.

Looking back over my collection I always feel that other model-makers would, if they only tried, find something in their district they could make and which would break away from the normal model we see so often. Since Christmas I have shown in 19 Exhibitions and Cinema Foyers and I know how many people do get interested in something different. Why not try one of those road Giants with something like 34 wheels? What about some of the unorthodox tree carrying vehicles? I can find at least 12 different types of these. A book I have given me each month by a Garage owner is "Commercial Vehicles" and from this you can get the list of manufacturers. Why not start this winter with one or two vehicles?

BATTERY ELECTRIC VEHICLES (*Continued from page* 159)

should not be supposed for that reason that the models can be put together without due care and attention. Each part needs to be carefully made and fitted and due care given to the finish of the model if the clean and neat appearance of the prototypes is to be preserved.

Actually, the difference between the two models is confined to the bodywork, and even here the same basic construction is employed for both. In either case the chassis is the same. The basis is the $\frac{3}{16}$ in. floor, grooved on the underside to take the axles which are held in place by little retaining pieces. On top goes the $\frac{5}{16}$ in. floor block, shaped at the rear edge to the body contour. Wheels may be any suitable commercial ones and the method of fixing to the axle will depend on the type used. A one-piece front mudguard fixes over the front of the chassis, and a card upper floor, scored for planking, goes on top of the block. This carries the driver's seat at the front. The rear mudguards, steering wheel and controls complete the chassis assembly.

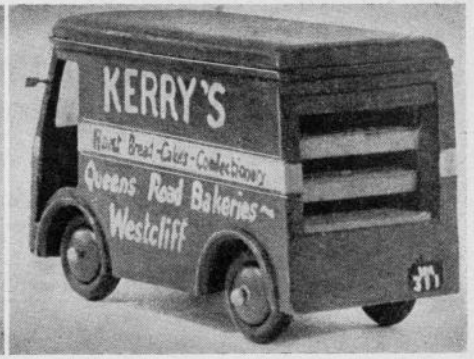
Although the bodies differ in some respects, general construction is similar. Two card sides are first cut (in the baker's van, they have shaped inner sides glued on the reverse). Each van front consists of a layer of perspex $\frac{1}{16}$ in. thick and a card mask. Cut the perspex first, heat it and carefully bend to the required shape. The back of the *lower* part (below the windscreen) of this is then painted white (this is to show through the apertures in the mask which form the lamps). The Bristol board mask is then cut; the *back* of it painted the colour of the body together with the edges of the screen frames; and cemented in front of the perspex. The back of the perspex can then be painted body colour, *except*, of course, the screen openings. Tiny licence discs, windscreen wiper, and mirror complete the front, but fixing the latter is best delayed until after assembling the body or they may get knocked off. The back of the milk van is similarly made, except that there is no need for the white paint on the back of the perspex. The back of the baker's van is plain card with a dummy "roller-shutter".

In each case, assembly of the body is begun by mounting sides and back on to the chassis. In the case of the milk van, the front is also fitted at this stage. For the baker's van, the next operation is to mount the bread trays on their runners within the body. The laminated roof; curved in the case of the milk van; rounded on the edges in the case of the baker's van; is then added, followed, in the baker's van, by the front.

A method of modelling the trays of milk bottles which, though simple, is quite convincing is given on the drawing.

The colour scheme in which either model is painted is largely a matter of taste. Milk vans, however, are usually white or cream. In any case, it is better to use *matt oil* paints followed by a suitable varnish (such as the special "semi-gloss" varnish made by Rocket Precision Ltd.), rather than glossy paints, which tend to make a small model look as if it had been dipped in treacle! This method of painting also allows lettering to be put in with water paint (such as poster or showcard colour) by a mapping pen, *after* the body colour is *dead hard* and *before* varnishing.

G. N. Slater has a plastic seated figure (No. M.O. 31) which, with a little adaptation, will serve admirably as a "driver" for either of these vehicles.



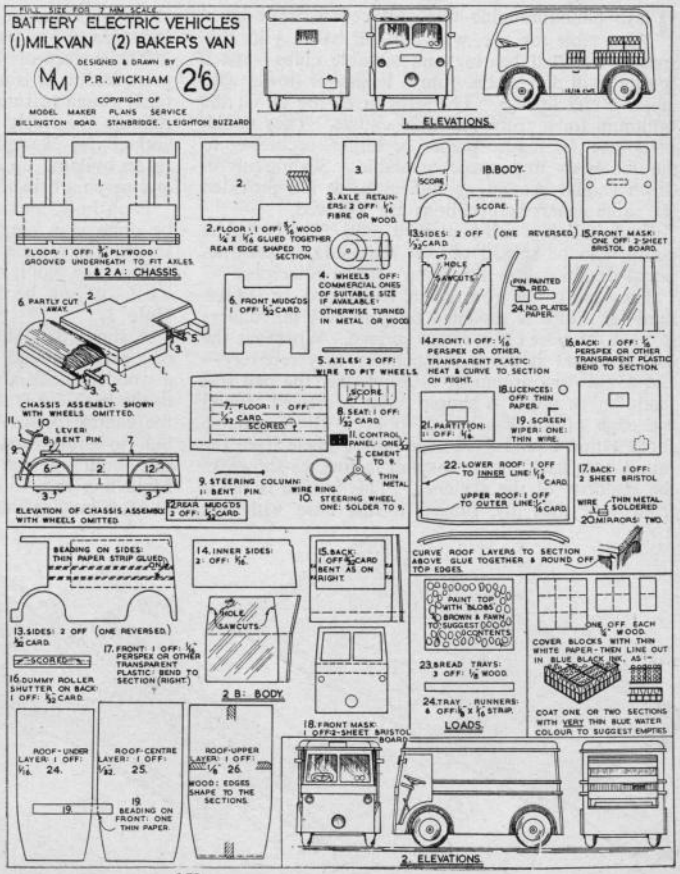
BATTERY ELECTRIC VEHICLES

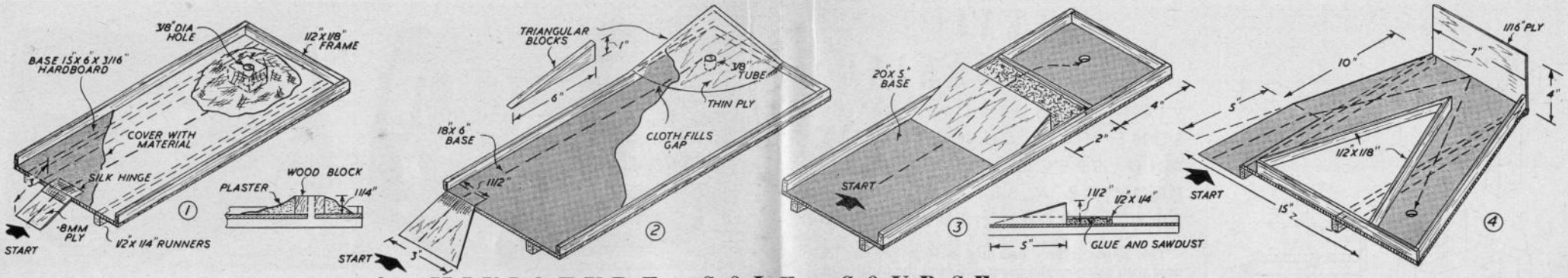
P. R. WICKHAM OFFERS TWO EXAMPLES FOR 7/MM. LAYOUT DECORATION

Fullsize drawings can be obtained from Model Maker Plans Service, price 2/6, post free.

THE battery-electric vehicle, though we usually think of it as something rather new, actually came into being experimentally, as long ago as the 1880's. Early specimens were, naturally, in effect merely horse vehicles without shafts fitted with motors. The modern battery-electric is a neat attractive and highly convenient vehicle, available in many different forms to suit the needs of various trades. Two examples are provided for in the drawing; a baker's van and a milk-van, both trades making extensive use of these vehicles; but anyone desiring to model another type of battery-electric van could readily do so by adapting the designs to suit.

A word of warning may be in order here. These vehicles look very simple, especially when compared with the Garrett steam wagon which formed the subject of the previous drawing in this series, but it (*Continued on page* 158)





RON WARRING OFFERS A MINIATURE GOLF COURSE FOR DINING ROOM OR CLUBHOUSE

THIS miniature nine-hole golf course is designed for table top use, with the golf ball a $\frac{1}{4}$ in. diameter steel ball bearing and suitable clubs—just a 'putter' will do—made from a length of dowel with suitable end fittings. The sizes given are about the optimum for a truly 'sporting' course. They could, of course, be made smaller or larger, according to the materials and space available. Scaling up or down should present no difficulties at all, provided the same general proportions are followed.

Each hole is a self-contained unit. The complete course can be spread out, as required. Constructional details follow the same general principles.

The base is cut from $\frac{3}{16}$ in. hardboard, or similar material. This is mounted on $\frac{1}{2}$ in. x $\frac{1}{4}$ in. runners to hold the base clear of the surface. Whenever the ball is 'holed' it drops through for easy recovery—and avoids any argument as to whether the ball was really 'in' or not! A simple frame is erected around the edge of the baseboard to keep all reasonable shots within bounds. A start can be made from the raised base itself, or up a small incline, as shown in the majority of the sketches. This incline is made from very thin ply, hinged to the base with silk strips cemented in place, so that it can be folded up for storage.

The surface of the course should be covered with green cloth or similar material, preferably with a fairly rough texture. This will prevent the steel ball running too freely, as it would over a plain painted surface, for example. A cloth covering, too, is useful in building up the required surface in holes two and seven where the hole itself is on an incline.

Each hole, incidentally, is designed so that it can be done in a single stroke. Simple overall rules should apply, such as losing two strokes and starting again if the ball is driven off the board. The 'course' itself will now be described hole by hole.

Hole 1.

A simple straight putt, although the cup is on top of a raised mound. This mound is made by glueing a wooden block about one and a half inches square to the base. A $\frac{3}{4}$ in. diameter hole is drilled through the centre of this block and the base to allow the ball to drop right through. Sloping surfaces are then built up with plaster, or any similar material. Modelling clay will do in an emergency.

After hinging the ply incline for the start in place, cover the surface of the base, etc., with cloth, well glued in place. It may be found preferable, depending on the material used, to glue the cloth covering in place before adding the $\frac{1}{2}$ in. x $\frac{1}{8}$ in. frame.

Hole 2.

Another fairly straightforward hole, with the cup this time mounted on an incline. The surface of this incline is formed from very thin ply glued in place. An additional hazard can be provided by tapering the starting incline, as shown.

Hole 3.

An inclined ramp is provided so that a driven ball can be lifted over the sand-pit. The latter is filled with glue and sawdust to give a rough, uneven surface. The ramp itself is made from thin ply, suitably mounted.

Hole 4.

In this the starting incline is cut in the base, as shown. The edge of the base so bent down must be chamfered to rest flush with the table top. This is a 'blind' hole which requires that the ball should be deflected off the end board into the 'fairway'. The angled slope and lack of one side frame makes it easier to drive the ball off the course and so incur a penalty.

Hole 5.

A double deflection shot is necessary for a hole in one. The hazards are simply wooden blocks glued in place, after laying the cloth covering. These can be suitably 'decorated', if desired.

Hole 6.

The banked-up portions of the two traps can be omitted, if desired, but the loss of direction imposed by striking one is usually penalty enough. Locate the wedge shaped hazard as given by the dimensions. The 'traps' are roughly half way along the base.

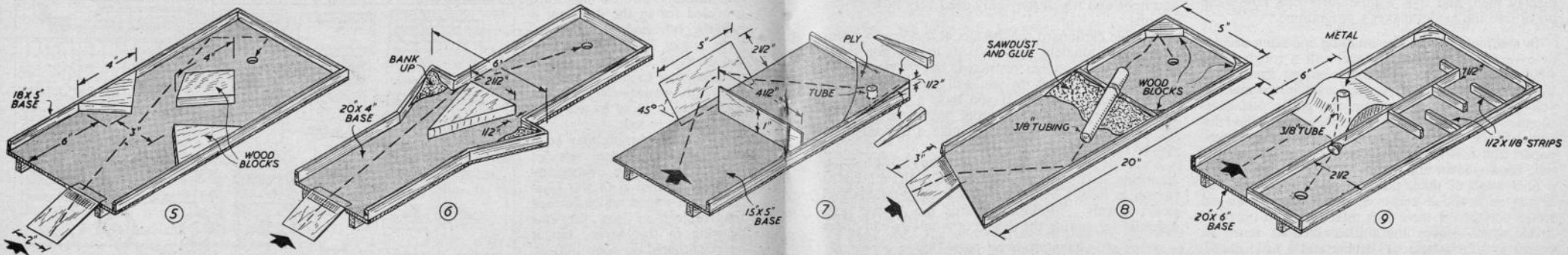
Hole 7.

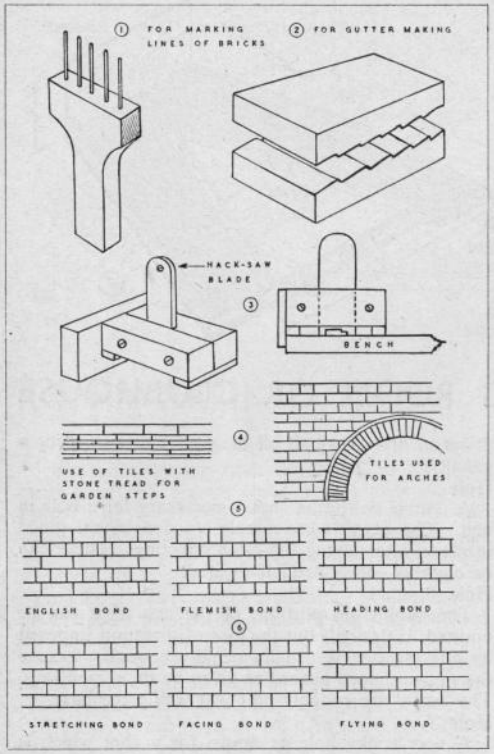
A very tricky hole as drawn for a shot which is very nearly successful can roll back off the last incline and off the base. If the course is at all fast running it might be advisable to fit a side strip to the end opposite the hole. The 'banking' can be thin ply or even metal, screwed to the base. The ply covering of the final incline should be well done.

Hole 8.

As laid out two direct shots, at least, would be

(*Continued on page* 172)





SCENIC MODEL MAKING

VICTOR SUTTON GIVES SOME HINTS ON MATERIALS AND SPECIAL TOOLS TO PROVIDE A BETTER FINISH FOR MODEL BUILDINGS

WHEN one gets into scenic model making one realises that you cannot just find everything you want without using your own powers of observation You will find the most likely material in the most unlikely place. I find great pleasure in wandering round a good class art shop. Here you can, by asking, see all types of paper as used by artists and display men, and it is a little surprising how these do fit into the model maker's programme.

In making a fairly large building one often decides to cover the cardboard surface with a rough paper which one may be intending to cover again as a roughcast or shingle dash effort. As in the real job you get a better effect when the paper surface is rough. For this I use a paper used in school for pastel work. It is sometimes known as "sugar" paper, and it is made by Rowneys in shades of dull red, brown, fawn and a dull yellow. It is ideal for a final wash of thick poster shade. Paint is quick drying on it and it makes a perfect base for an old world cottage. I have also used this with oil paint finish which leaves the darker sections (such as beams and facia boards) definite and a little raised.

This paper is very firm and old cartons can be used with safety as the paper will bind the cardboard corners together. I use a little "Tapwata" paste for this as it is very cheap and can be kept quite a time. Mix a little as you want it. Keep the packet in a tin as mice are very fond of it.

The better class hand-made drawing papers are also very good and you want the ones sold for charcoal drawing. Here again you have the rough surface.

Where I have wanted an old world village with houses of all types I have made good use of what is known as Art Cover paper. This costs about 5d. a sheet and you can get the following colours: buff, orange, light grey, Wedgwood, yellow, royal blue, russet and green. Without too much painting this gives you a variety of papers without having to mix all these shades.

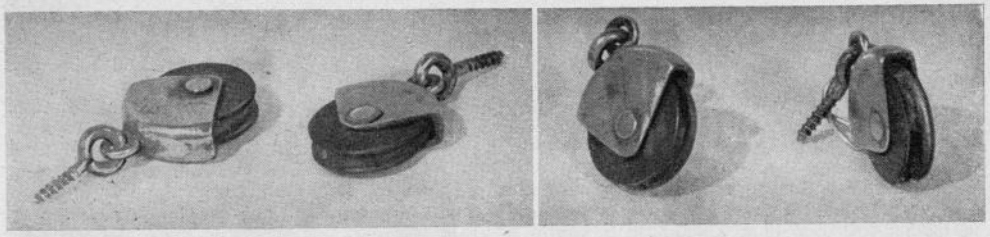
The ordinary drawing papers are not good for usual model work as the surface is too shiny and therefore inclined to be greasy. Cartridge paper is very good and here again you have a stiffness with roughness. You need School of Art quality.

I have always found some useful bits and pieces by using a wallpaper catalogue obtained from my local wallpaper dealer when he has finished with it. Many of the oatmeal and neutral interior papers are ideal for exterior work on small buildings and can even be used in making bridges over streams. By picking the types you may find the scenic effects you need and which may only need very little touching up.

Suitable cardboard for the model maker is a problem. Unfortunately, these boards are all now quite expensive and supplies restricted, but by visiting the best equipped art shops you will probably be able to get what you want. If you have a large scheme in hand I suggest that you order one dozen and wait for delivery. Most shops will take a deposit on a special order.

Some of the boards I have used at Whatman sketching and fashion plate boards, Bristol board (which is mostly very glossy), Pasteless boards and ticket boards. Mounting boards are thicker and splendid for getting the design of windows and doors

(*Continued on page* 166)



PULLEYS FOR BRAINE STEERING GEAR

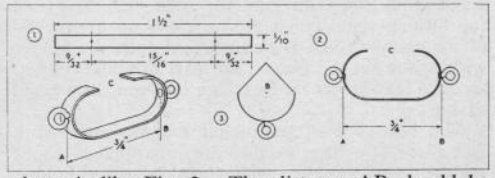
BY H. A. COX (LYMINGTON M.Y.C.)

MOST of the writers of directions on making fittings for model sailing yachts allude to these necessary articles as easy enough for the skilled metal worker, and leave it much like that. But provided that one can silver solder adequately, which is not really difficult, their making does necessitate some care and patience. The following is a description of the making of such pulleys suitable for an M Class boat.

Let the pulleys be about $\frac{7}{16}$ in. across, and the sheaves $\frac{5}{16}$ in. Take two bits of sheet brass or nickel silver about 26 gauge (.018 in.) measuring $\frac{7}{8}$ in. x $\frac{1}{2}$ in., and another small strip slightly thicker, say $\frac{1}{32}$ in. measuring $1\frac{1}{2}$ in. x 1/10 in. full. Centre pop this last strip as Fig. 1, and drill .03 in. holes. If you have no such fine drill make one out of a needle, grinding the eye end to two flat tapering surfaces on an oilstone, holding the needle in a pin chuck. Then grind the two cutting faces, not forgetting to slope off behind the cutting edges. Next, bend up two small loops out of $\frac{1}{32}$ in. wire. They will not enter the .03 in. holes in the strip, so open out the holes very slightly till the tails of the loops are a tight push fit. Push each tail through a hole, turn upside down and hold the eye in a small vice so that the sides of the eye are parallel to the sides of the strip. File off the tail nearly down to the level of the strip, and give a few taps with a light ball-peined hammer to rivet it; hit lightly or you spoil the eye. Similarly with the other .03 in. hole.

Now place the strip, with the eyes uppermost on a sheet of asbestos, on a firebrick and silver solder them in. The handiest sort of solder is $\frac{1}{32}$ in. "Easy-flo" wire, or thin strip about $\frac{3}{32}$ in. wide. Don't use too much solder or you will fill the eyes up, much to your annoyance. If you do, file the solder flat up to the ring, centre pop and drill the solder out, using a *fine* rat-tail file—lots of small watchmaker files are very useful for such jobs. Also file away the lumps which, if you have done your soldering properly, will have been formed on the underside of the strip.

Now bend the ends of the strip (eyes outward) round the shank of a $\frac{3}{8}$ in. drill, so that the resulting



shape is like Fig. 2. The distance AB should be about $\frac{3}{4}$ in., exact measurements do not matter. The object of leaving an open space at C will be obvious shortly. The two pieces of $\frac{7}{8}$ in. x $\frac{1}{2}$ in. are now placed one on each side of the bent-up strip, and held in position by a small clamp made of two little strips of $\frac{1}{16}$ in. or $\frac{3}{32}$ in. iron (the dirtier the better, as you don't want the solder to stick to it) with a couple of 8 B.A. screws and nuts through the overlapping ends. Again don't put these small 8 B.A. bolts too close to the sides—the solder may stick. Don't make the clamp too heavy or you waste heat.

The gadget is now to be silver soldered all round the outside edges. Go gently with the solder again, as you don't want large fillets inside. Direct the flame, which should be small—a blowlamp is much too fierce—on to the flat sides and the clamp, and don't use too much heat or you may fuse the whole thing.

By far the most satisfactory type of flame for these small jobs is obtained with a small gas torch, which needs no bellows, and which gives a hot roaring little flame. (*Such as the "Target" at* 2/6*d.*—ED.)

The surplus sheet metal all round is now removed. The fitting can be quite safely held in the vice if a bit of scrap metal is pushed through the open side. Be careful to keep the safe edge of the file towards the eyes. Clean up the ends carefully. You will find you need a good assortment of tiny files of all shapes.

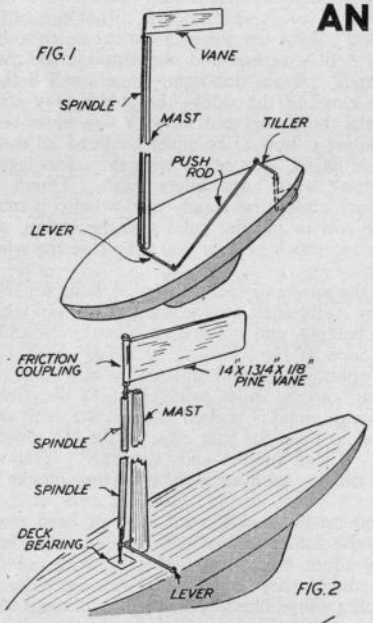
Now fill up the middle with a bit of hard wood, and saw the fitting in two with one of those baby hacksaws about 6 in. long and $\frac{1}{4}$ in. wide. Indispensable things they are! File away the sides till they reach a shape like Fig. 3, keeping the gap filled all the time with wood as the sides are too thin to be worked otherwise. Drill a hole at B (slightly above the centre of the semi-circle to give plenty of clearance for the line passing over the sheave) with a No. 52 drill for the $\frac{1}{16}$ in. spindle. Clean away all burrs from the inside with files of one kind or another, or if you have too big a fillet inside you

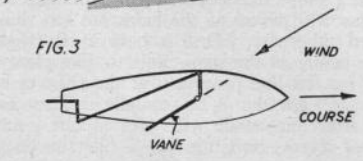
may have to use a little chisel made from a coarse steel knitting needle. Round off the inside of the eyes at the sides of the cavity to prevent wear on the running line.

The sheaves must now be prepared. I made mine out of ebonite, as there is no corrosion on it from sea water. If you haven't any ebonite rod, saw off a bit from some sheet—round it up more or less, hold in the 3-jaw, and turn an inch or so to $\frac{5}{16}$ in. diameter. Drill at the centre with a No. 50 drill held in the tailstock. With a round-nose tool with a small point (one with some top rake such as is used for turning steel) cut a groove close up to the end of the ebonite rod. If necessary, deepen the groove with a wee rat tail file. Then part to about .08 in., so as to leave a decent clearance between sheave and casing.

The best type of parting-off tool for such work is a piece of a thin hacksaw blade ground to shape and held vertically in a split slotted or milled holder.

Rub the little sheaves on a fine flat file to remove any burrs on the ebonite, and fit the $\frac{1}{16}$ in. spindles. It is best to put a slight head on one end of the spindle before inserting it in the casing. To do this take two bits of steel $\frac{1}{4}$ in. square and 2 in. long, and clean up the sides and edges square and sharp. Hold them side by side and level in a small machine vice, and drill a No. 53 or 54 hole fairly down between them. The 16 g. wire can then be held firmly in this drilled slot in the vice with an end projecting. File the end level (wire cutters never leave it so!) and lightly rivet a tiny head on the wire end. Remove from vice, put the sheave in place and insert the spindle. Cut a $\frac{1}{16}$ in. slot in a bit of tin about .015 in. thick and push it in between the side of the sheave and the casing, and on the side of the sheave opposite to the head already riveted on the spindle. Cut off the surplus wire, and file flat again leaving only a *small* projection, and rivet round the edge of the flat with a small ballpeined hammer. Do not direct any blows straight on the spindle or you will bend it and the sheave will jam. Pull out the bits of tin, and you should have your pulley—at least I had today when I made six of them.





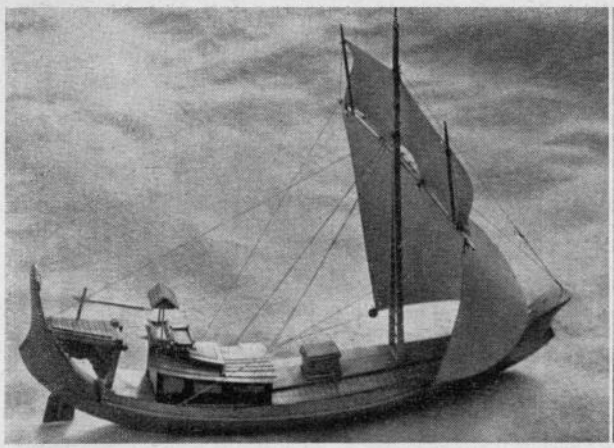
AN EARLY VANE STEERING GEAR

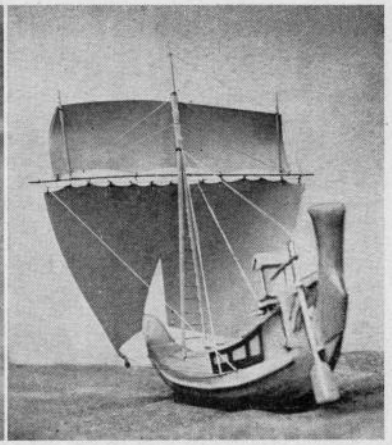
ONE of the first successful vane steering gears to be used in this country was that developed by H. H. Tregoning in the early 1920's, details of which are given in the accompanying sketches. The vane itself was large in proportion to the size of the boat and was of the masthead type.

Overall details are shown in Fig. 1. Vane movement was transmitted, viz., a rigid vertical spindle mounted immediately in front of the mast. This spindle was either of brass wire throughout or wood with metal end fittings. A form of friction clamp at the upper end permitted the vane position to be adjusted independent of spindle rotation.

The lower end of the spindle terminated in a horizontal lever arm which projected to the port side and roughly at right angles to the longitudinal axis of centre line of the hull. The tiller was similarly offset, but to the opposite (starboard) side. Connecting tiller and lever was a rigid push rod—Fig. 2.

Action was then like any other vane gear. Initially the vane would be lined up with the vane roughly parallel to the wind direction so that any deviation from the required course would then introduce corrective rudder action—Fig. 3. Undoubtedly a fair measure of success was achieved, but in the light of modern knowledge of vane gears some of the obvious failings of the system are now clearly apparent. The masthead vane never did, in fact, achieve any degree of popularity and one of the main requirements of the successful vane was overlooked in this early example—that of using a light, balanced feather. It is, however, a good example of an experimental trend thirty years ago.





A Burmese Paddy boat

BY A. E. BONFIELD

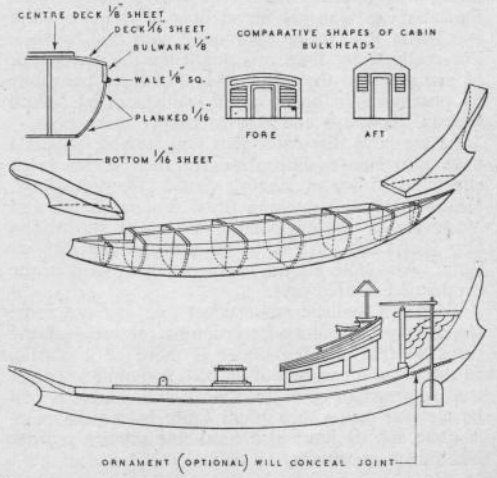
THE model Burmese paddy boat here described was the result of a gentle hint from my wife that the mantle-piece was hardly the place for a model loco. and that a model aeroplane looked rather out of its element on the side-board. So, taking the hint and ignoring the insult, I looked around for something that was decorative and at the same time not too far removed from model-making. The paddy boat fitted neatly into this niche as though made for it, for whilst it is unquestionably a model boat, its curving lines and ornament make it an attractive dining-room decoration. And so we were both pleased; myself with the model and my wife with her "object d'art".

The model was based on a "Modelcraft" plan, but the construction was entirely different. A sheet of $\frac{1}{4}$ in. balsa was cut to the outline of the hull and along the length of this "keel-plate" were cemented several bulkheads (made in two halves) their shape conforming to the section of the hull at each point. The hull was then planked with $\frac{1}{16}$ in. balsa, three planks being used on each side. It is best to keep these planks as long as possible to preserve the sweeping curve of the hull.

The bulkheads are recessed to take the $\frac{1}{8}$ in. thick bulwarks so that they present a flush finish with the planks on the outer side. The wales, $\frac{1}{8}$ in. square and sanded half-round section are cemented along the junction of the bulwarks and planking.

The deck is $\frac{1}{16}$ in. sheet and is level with the top of the bulwarks. The centre deck, running aft to the cabin is $\frac{1}{8}$ in. thick. The planking of the outer decks is laid (or marked) from port to starboard, while that of the centre deck runs fore and aft.

The bow and stern blocks were, of course, shaped from the solid, most of it being done with medium sand-paper, owing to the concave surfaces. Unusual care was taken in forming these shapes as it is im-



portant to the appearance of the finished job that their lines are a continuation of the hull proper.

The four cabin walls were $\frac{1}{8}$ in. sheet with the doors and windows outlined by overlays of $\frac{1}{32}$ in. sheet. The cabin top shape is more difficult to describe than to make. Viewed from the front and rear it is convex, but from the side is slightly concave.

There was little to worry about, however, for narrow planking of $\frac{1}{32}$ in. sheet curved neatly into place with no trouble. These planks were laid from the outside working inwards with the last plank forming a "capping strip" up the centre.

The small cabin-top deck is made from $\frac{1}{8}$ in. sheet covered with $\frac{1}{32}$ in. planks running port to starboard but stopping short of the edges, leaving a narrow "surround".

The helmsman's seat is in the form of two shallow trays with ornately carved edges, situated on top at the after end of the cabin. Above the seat and supported on the slender poles is a shelter in the form of a small thatched roof. This was made by binding two pieces of $\frac{1}{16}$ in. sheet with a light coloured carpet thread, the two pieces then being cemented to a small roof-shaped block.

The hatch is simply a block of balsa resting on a piece of $\frac{1}{4}$ in. sheet with bevelled edges, while the top is $\frac{1}{16}$ in. thick cut to over-lap the block by $\frac{1}{16}$ in. all round, the edges being nicked in the form of small v's. This is surmounted by another piece $\frac{1}{16}$ in. sheet cut slightly smaller than the block.

The wing-shaped sides of the stern-shelter were cut from $\frac{1}{16}$ in. sheet, and each consists of three "wings" cemented together, each being smaller than the one beneath it.

The mast was made from $\frac{1}{4}$ in. square and was split up the centre about two-thirds of its length. Before splitting it was found best to whip the mast with thread to prevent the split from travelling too far. The legs of the mast were pulled apart and pinned either side of a small block previously cemented to the centre deck. The rungs were then cut to length and fitted into place.

The mainsail is bent to a jack-line and not lashed directly to the yard as is usual in model galleons. The topsail is unusual in that there is no corresponding top yard. Instead, the sail is supported either side by a pole pinned to the mainsail yard.

The colour of the model is uniform all over, the balsa being left natural with three coats of banana oil. This blends well with the sail parchment, and the rigging is effective though unobtrusive if a light coloured carpet thread is used. The resulting dignified tone is in keeping with the classic lines of the hull.

SCENIC MODEL MAKING (*Continued from page* 162)

to stand out in realistic fashion. These boards also cut well with a razor blade. One can also get a good bevelled edge as it will not tear.

Readers will find all these papers and cards useful when getting their own versions of brick effects. In this direction I have also found that I could use to great advantage the followings pens: mapping (fine lines), lithographic, manuscript and poster. With the latter one can get broad lines of definite width and better than trying your hand with thin brushes. For really wider lines one might try the scroll type of pen and also the script. Most of these pens may be purchased in boxes of 36, well assorted. Both Messrs. Rowneys and Reeves supply these pens.

As we have discussed pens and suitable papers I have also shown illustrations of the various brick effects as follows: English Bond, Flemish Bond, Heading Bond, Stretching Bond, Facing Bond, and Yorkshire or Flying Bond. A smaller illustration also shows sets of tiles to use with garden step effects. Also note the tile arrangement as used in the production of archways.

To get a realistic stone effect one can use some stone coloured paint after running off some of the turps so that the remainder is more of a plastic. In this stage it can be put on with a spatula. To get true representation of brickwork the markings can be cleaned out with a blunt knife before the paint is quite set. I have also used fine pumice powder well mixed in ordinary oil paint.

For bricks I have given the model a coat of the colour intended for the mortar and when dry painted the brick colour over it. This is I find easier than doing it the reverse way. You can allow the paint to set and then scratch down to make the joints. Use a pointed instrument as illustrated.

Nails with their heads filed off, sharpened to dull points and spaced at the correct distances apart, will supply an instrument which can be drawn along a straight-edge, producing several courses of bricks at once. The vertical joints which do not require so much skill can be added afterwards.

Gutters are so often a nightmare. In the little sketch I have shown a small device which will help the model maker to cut up plenty of these in record time and get them all the right shape.

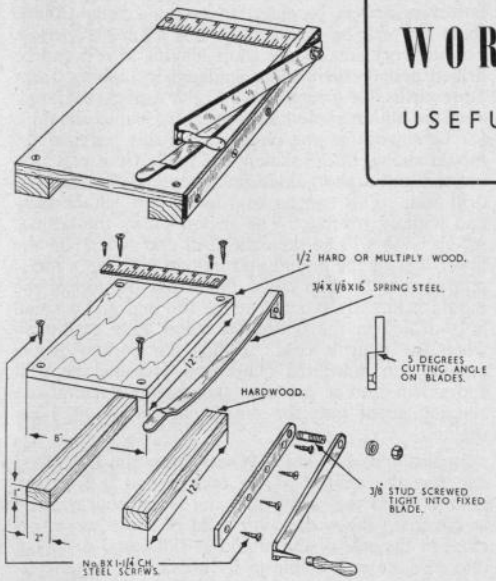
Take the temper from a hacksaw blade, file out the section of the required moulding and re-temper the steel. Clamp it between two pieces of hard wood by means of screws (allowing it to project sufficiently) and screw on to one end of these a piece of wood projecting below the blade and at right-angles to it. This piece acts as a guide.

Pin a piece of stripwood on to a bench or a piece of wood, judging the distance from the edge by the position of the blade in relation to the guide. If this template is drawn along the wood a perfect moulding will result.

This device can be used for producing all kinds of moulding.

WORKSHOP WRINKLES

USEFUL TIPS BY S. E. CAPPS



A SHEET METAL TRIMMER

GENERALLY most trimming of thin metal sheet is done by the modeller with snips, but unless this useful tool is kept in first class condition it becomes difficult to use with the result that work is spoilt by uneven and bad cutting. To have a tool at hand to cut straight and true metal sheet for lengths up to about 10 in. the writer built the trimmer shown in the sketches. This particular tool is kept for this work leaving the snips for odd jobs for which they are more suitable. Generally the type of trimmer shown is used mostly for cutting paper, cardboard, and especially photographic prints and mounts. This one, however, is made somewhat stronger in order that metals such as brass, copper, zinc, aluminium and some plastics up to $\frac{1}{32}$ in. thick can be cut without trouble. The construction is straightforward, requires no special skill and follows the usual design of this type of trimmer in most points with the exception of the cutting blade handle which is set at right angles to the blade. It has been found that pressure on the cutting blade thus applied tends to prevent the blades opening apart in use which is quite troublesome with some trimmers with the handle in line with the blade. The dimensions of the one made are marked on the sketch.

The Table

This is hard or multi-ply wood and a piece flat and true should be cut and squared up on its edges. This is then mounted on two hardwood side bearers by screws. A section of steel rule is screwed to the top as shown and acts as a stop against which the material to be cut is placed.

The Blades

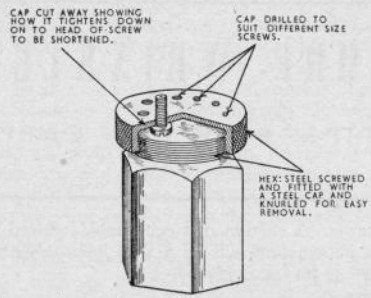
The cutting blades on the trimmer the writer made were made from two old mill saw files. The bottom blade was annealed and drilled to take fixing screws and a further hole drilled and tapped to hold the hinge stud. The top blade is annealed on one end and drilled clearance for the stud, and on the other end the tag is heated and bent round at a right angle outwards from the cutting edges. Both blades are slightly hollow ground on the cutting sides and the edges are ground at 5 deg. cutting angle. The bottom blade is mounted to the side bearer with its edge flush with the table top and is fixed in this position with good steel screws countersunk flush with the side. The countersinking is important because if a head protrudes above the side the top blade will open as it passes over it with the result that the material will bend down over the bottom blade edge and jam both blades. The hinge stud is screwed tightly into the bottom blade and the top blade mounted on it and secured at a tight working fit with a spring washer and nut. A comfortable handle should be fitted to the tag end. A standard small tool handle is most suitable or one can be made.

The Work Clamp

The clamp shown in the sketch is in the opinion of the writer absolutely necessary as it will hold the work rigid while cutting. The clamp shown is made from spring steel strip bent as shown and fixed to the hinge end of the side bearer with a good screw. Note that the clamp is given a slow curve upwards so that when fixed the work can be just passed under it at the rule end. On pressing down the curve straightens and applies an even pressure on the work and holds it securely while cutting. This tool is well worth the making as sheet metal and similar materials within its capacity can be quickly and truly cut without distorted edges as is often the case when snips are used.

SHORTENING SMALL SCREWS

SMALL screws can be obtained in many sizes and lengths—almost all the lengths that could be required, but now and again a few of a certain length are wanted just when they are not available. On such an occasion the usual way out of the diffi-

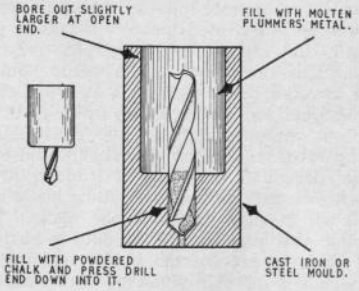


culty is to shorten some longer screws to suit. Now cutting and redressing the ends of very small screws is in itself a tiresome job with the ever present risk of the thread or head being damaged. To make this job easier the author made the simple jig shown in the sketch. The body of the jig is made from hexagon steel rod one end of which is screwcut and fitted with a blind cap. This cap is knurled on its outside to make removal easy. The top of the cap is drilled and tapped to take the various screws generally used. To use the jig the screw to be shortened is screwed through its respective hole from the inside of the cap and the base tightened up against the screw head. The jig is now held in the vice by the body on two of its flats and the screw cut and its end trued up without any slipping or damage to either thread or head. Backing the screw out through its hole will straighten the end thread where it has been cut much more accurately than can be done with a file. Cheese head, countersunk, round head and even grub screws can be cut in this jig without damage. Slotting of small screw heads can also be done by inserting the screws from the outside and tightening the body up to lock them in place. The author considers the jig a useful and welcome help in the workshop.

A USE FOR BROKEN DRILLS

THERE are few if any modellers who never break a drill. The author is definitely not among these few and at one time had so many broken drills that it seemed a waste to throw them away if they could be made useful. Accordingly they were sorted out. The shank ends that had any fluting left on them can always be reground and used for some purpose or other until the fluting is gone. Even then the shanks being tool steel can always be put to some use. The parts with no shank are a different matter as owing to their shape are very difficult to hold in a chuck and very few run true even if this is managed. If, however, one is prepared to go to a little trouble these too can be made useful for a further period. For the very small sizes short lengths of rod can be drilled and the drill piece soldered in making a few more drills for rough work. For using the larger ones the author prefers to convert these into end mills for light work in the chuck. For this purpose the mould shown in the sketch was made from cast iron or steel and a short thick holder moulded round the drill end. This can be held in the S/C chuck truly and without trouble. The sketch shows the general set-up. As will be seen the drill end is held in the lower half of the mould and molten plumber's metal poured into the top half. Note that the top of the mould is slightly tapered at the top end and a small hole drilled in the bottom to allow easy extraction when the pour is cold. Filling the bottom of the mould with powdered chalk and pressing the drill end down into it prevents the molten metal from running down into the fluted portion required for use.

In order to prevent the heat from the hot metal affecting the temper of the cutting end it is advisable to stand the mould in water when pouring, and to cover up the water with a lid of some sort fitted close to the side of the mould as hot metal dropping into cold water is liable to fly about and be dangerous. The author made the one mould serve for about a dozen different drill sizes by boring the bottom to fit the smallest drill to be so used first and enlarged this to suit the sizes up to the largest. The cutting faces of the drill end should, of course, be ground to suit the work to be done bute it should be stressed that although these improvised end mills will do all but the heaviest work encountered in modelling they should not be overworked by trying to take too coarse a cut as the holder is soft metal and its grip on the drill end is liable to loosen.



CONTRIBUTORS are welcome! You need not have a famous name, you need not have a fully equipped workshop—just as long as you have something of interest to our readers we shall be pleased to hear from you. Good photographs are our lifeblood, but your diagrams can be mere sketches—we will re-draw them for publication. Not more than 1200 words for a first article. We will acknowledge all articles submitted—and be pleased to give advice on likely articles, even if not suitable as at first submitted.

MODEL YACHT CLUB NOTES

BY "COMMODORE"

THE inauguration of this feature in our January issue has met with a favourable reception. Only the fact that at this time of year outdoor activity is necessarily limited by the anticipated weather makes it difficult for clubs to provide interesting write-ups. However, we look to all secretaries to let us have reports—even if they must for the moment be confined to details of winter fitting-out efforts.

Model Yacht Association

Final dates for the National (British) Open Championships will not be confirmed until after our press date this month. Following venues have, however, been agreed as follows:

"A" Class	Gosport, Hants
10-Raters	Fleetwood, Lancs
"M" Class	Birmingham
36-in. Class	Clapham, London
6 metre	Dennistoun, Glasgow
12 metre	Paisley

Thus we have a nice distribution of events, with one each in north, south, midlands and London areas, and two events of particular interest to Scottish enthusiasts taking place over the border. We hope that *Model Maker* will be able to cover the four events in England, and invite Scottish yachtsmen-photographers to get in touch with us with a view to covering these more distant events on our behalf. We would mention that such work would not go unrewarded and might well enable our correspondents to attend the meetings at no charge—or even make a small profit on the visit!

For the benefit of M.Y.A. correspondents we give names and addresses of Hon. General Secretary: L. Mole, 35 Strode Road, Damew Road, Forest Gate, London, E.7, and Hon. Racing Secretary: M. Fairbrother, 1221 Pershore Road, Stirchley, Birmingham 30.

North Eastern Section ?

We understand the M.Y.A. would favourably regard the formation of a Northern Eastern Section of England, and would give every assistance in promoting such a group. The Northern District Committee have also expressed their willingness to assist. A North Eastern Section would provide opportunities for clubs such as Scarborough, Hull, Bradford, etc., and foster the sport on the N.E. Coast and Yorkshire districts. Interested parties are invited to get in touch with John S. Reeves, Chairman and Hon. Secretary of the Doncaster M.Y. and P.B.A., who lives at 21 Boswell Road, Bessacarr, Doncaster. This invitation is extended to both Model Yacht and Power Boat enthusiasts.

Doncaster M.Y. & P.B.A.

The Club are happy to announce that they have now signed an agreement with the N.C.B. for the use of National Coal Lake, Woodlands, Nr. Doncaster, and members will already have had their first "Practice Races" there on Sunday, January 6th. It is hoped that a formal opening will be arranged a little later in the year.

This club are 36 in. specialists and have evolved a very fine costing and time schedule for their construction. A club sharpie design of hull has proved very promising, and this can be built—working evenings only—in a fortnight of spare time at a cost for wood, bits and pieces and down proofing (ticking) for sails at an all-in cost of £4/0/0. Experience has shown that further instruction is desirable in making the sails to really professional standards, and their plea is now to *Model Maker* to provide an article or two from an authoritative source on sailmaking tips and wrinkles. We will see what we can do.

Arrangements are in hand for the Northern District 36 in. class Championship, which it is hoped may be televised. The setting of their new water is such that viewers would be indeed entranced by white sails on the water against a sylvan skyline.

Paignton Model Yacht Club

Commodore Pinsent is still plugging away at the Paignton Council to get something done about a permanent all-the-year-round water for the club. A further approach to the Council again drew a blank, in spite of the club's offer to take out appropriate insurance against any accident arising out of their use of the lake. The local press has now taken the matter up on their behalf, *Model Maker's* January article on the subject circulated to councillors, and a new approach is being made with the assistance of influential local supporters.

Meanwhile, enthusiasts are getting what use they can out of their winter facilities with regular racing. Fortunately weather in Devon is inclined to be more temperate than elsewhere so there has been no need to break the ice. The Commodore's *Trixie* won the Boxing Day Sweepstake for 10-raters, from *Dolores I* and *Dolores II* sailed by A. and F. Austin respectively; and again trounced *Dolores II* in the 10-Rater Points Cup on Saturday, December 29th, with L. Chenowith's *Melody* in third place. This was *Trixie's* third off the reel, for she had a clear six-points lead over *Melody* and eight over *Dolores II* in the earlier heats for this cup.

We shall watch the Paignton Club's efforts to get full local support with interest, for only by continual pressure can progress be made. It is no question of coming against "vested interests" but rather that other old-stager of local affairs "do nothing and you can't be wrong!"

DISPLACEMENT HULL DESIGN

AN ARTICLE TO EASE WINTER DESIGN PROBLEMS BY A. M. COLBRIDGE

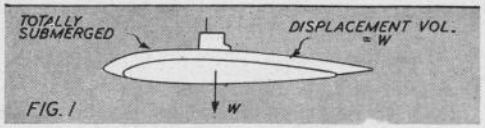


FIG. 1

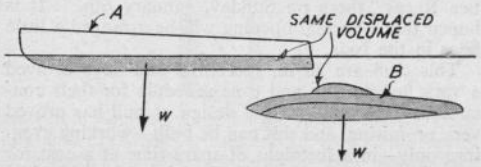
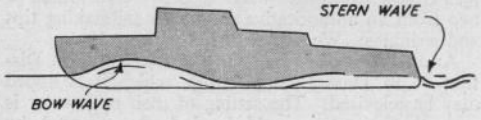


FIG. 2

FIG. 3



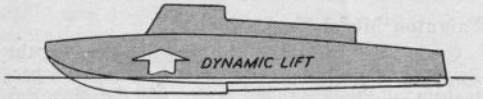


FIG. 4

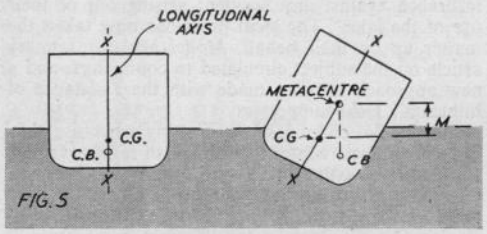


FIG. 5

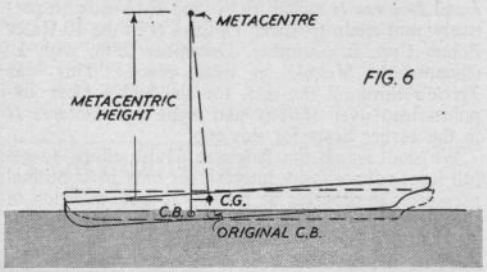


FIG. 6

A DISPLACEMENT hull, as its name implies, supports the whole weight of the vessel by the displacement of an equivalent weight of water. In an extreme case, such as that of a submarine completely submerged and stationary, neither rising nor sinking, the weight of water equivalent to the total displaced volume equals the weight of the vessel (Fig. 1). Resistance to motion is, however, high since the complete hull has to be driven through the fluid (water), and the fact that the whole hull has to be completely watertight offers further practical disadvantages.

The submarine is not, perhaps, a good example to illustrate this particular point for it has a variable weight. The point remains, however, that for a fixed weight vessel total submergence is not desirable on account of the high water resistance, ignoring other factors. A better solution is to employ a much larger hull volume which is only partially submerged (Fig. 2). Of the two vessels A and B, both have the same total weight and both displace the same amount of water. For the same applied power, however, vessel A will travel faster; or, alternatively, to travel at the same speed, vessel A will require a motor of considerably less power.

Now there is a very simple rule which can be applied to model hull design to give the basic proportions of any hull. The submerged volume of the hull should be at least one-third of the total hull volume. In the case of a hull which is of the non-displacement type at normal operating speed, such as a hull designed to plane or "lift" this is a safe working figure for minimum hull size. With normal displacement hulls it is generally an advantage to work somewhat above this minimum, provided this does not upset stability (see later).

If a displacement hull lies too deep in the water it will inherently be a slow speed boat, and any attempts to drive it faster will require excessive power. Quite apart from the possibility of torque troubles resulting from high power, it will not be a good sea boat, but tend to make very heavy going.

The displacement hull is also known as a wave-making hull. If the hull is propelled through calm water the water in the first instance will be parted by the bows and then form a series of waves along the length of the boat, broadening out and forming the major part of the wake (Fig. 3). The remainder of the wave is composed of waves originated by the stern and displaced water from the propeller. A large, broad wave generally means high drag or resistance.

There is a theoretical optimum performance of any displacement hull which occurs when the bow wave at its highest point at any one instance corresponds to the stern wave being at its lowest point.

Under such conditions wave resistance is a minimum. The relationship between the bow wave and the stern wave is dependent on the speed and length of the hull and at only one speed are the (theoretical) ideal disposition of the respective waves achieved. This is when the speed in knots divided by the square root of the length (in feet) is equal to one. Possibly a simpler way to express this equation is that for minimum wave resistance the speed of the hull in knots should be equal to the square root of the length (in feet).

This holds good for most full-size displacement hulls and could possibly be used as a guide for model design, although the relationship between model and full-size performance is a complex one. As in aeronautics, it is virtually impossible to obtain scale performance with a model. Model tests are, of course, used to a considerable extent in determining full-size boat data, but there are many limitations. It is impossible to obtain any simple, direct relationship between the two. In general, however, for estimating resistance of hulls of similar form, provided the factor speed/sq.rt. of length is the same for both model and full-size hull the wave and spray pattern will be identical.

This would appear to indicate that the optimum speeds for model displacement hulls are extremely low (Table I), and that to obtain reasonably high speed with model displacement hulls would call for a considerable expenditure of power. Quite possibly this would introduce over-riding instability factors.

However, these figures are determined with respect to wave making resistance and at low speeds wave resistance is of secondary importance. The bulk of the resistance comes from the friction of the water around the submerged hull form. Hence a "clean" underwater body, preferably polished, is particularly advantageous.

In full-size practice where the "optimum factor" (speed/sq.rt. length) exceeds about 2.0 the normal displacement type hull is abandoned in favour of a hull which will "plane" or develop a proportion of dynamic lift reducing the displaced volume required, and thus the water resistance. Any flat underwater hull surface at an angle to the direction of motion will develop a reaction or "lift" due to fluid pressure. To be of use, however, the speed of the hull must be such that this reaction is powerful enough to have an appreciable effect. At very low speeds, for example, the planing force developed may be quite negligible and unless there is the power available to attain a suitable minimum speed a hull form of this type offers no immediate advantages. Unless dictated by scale or semi-scale calls, therefore, the low speed model boat is probably as efficient as it need be with a straightforward displacement hull.

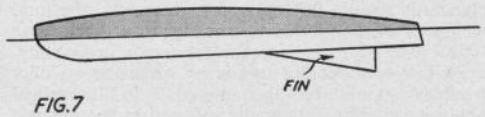
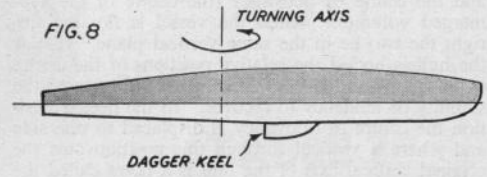


FIG. 7

FIG. 8



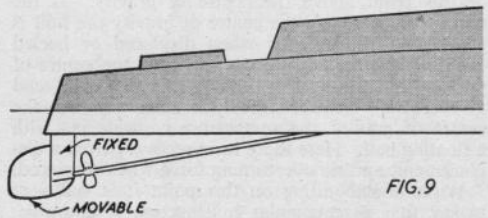


FIG. 9

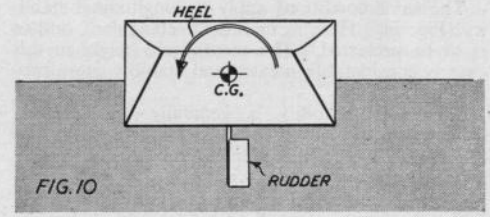


FIG. 10

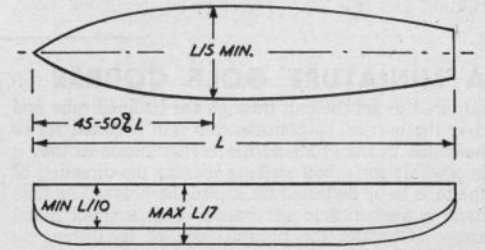


FIG. 11

Stability is largely a matter of correct hull proportioning together with balance and trim. As a general rule, with model displacement hulls it is necessary to increase the beam beyond full-size standards mainly because, proportionately, the total weight of the completed boat is higher. At the same time beam width is a significant factor in stability.

At low to moderate speeds no particular stability troubles should be encountered. In theoretical analysis stability is basically referred to metacentric height, which is defined in Fig. 5. The two significant points are the centre of gravity of the vessel and the centre of buoyancy (the centre of the submerged volume). When the vessel is floating upright the two lie in the same vertical plane. If now the hull is heeled the relative positions of the centre of buoyancy and the centre of gravity determine the stability or tendency to recover. In the heeled position the centre of buoyancy is displaced to one side and where a vertical through this position cuts the original vertical axis of the hull is a point called the metacentre. The metacentric height is the distance of this point above the centre of gravity. If the metacentre is above the centre of gravity the hull is stable and will recover when displaced or heeled over. If the metacentre comes below the centre of gravity the arrangement is unstable and will tend to overturn. Neutral stability is achieved when the centre of gravity and metacentre coincide, as with a floating ball. Here there is no recovery from a displacement, and no overturning force when displaced.

Without elaborating on this point it is sufficient to say that a rectangular hull section is desirable, with the bilges rounded off, rather than a semi-circular or similar cross section. It is also an advantage, too, to get the centre of gravity low.

The same conditions apply to longitudinal stability (Fig. 6). Here again the "rectangular" outline is to be preferred. The metacentric height in this case is considerably greater and stability more pronounced.

Directional stability is generally quite simply achieved by providing sufficient fin area under the hull (Fig. 7). In many cases even this is not necessary and a simple rudder will suffice. It is possible, however, to make a boat too directionally stable so that it is slow to respond to rudder. In such cases "dagger keel" fin area can be used forward of the turning axis (Fig. 8). This type of treatment, however, is generally more effective with planing hulls and is a common feature of high-speed hydroplane hulls.

Rearward fin area forward of the rudder usually gives better control on displacement hulls and is generally to be recommended (Fig. 9). Any tendency to be over-stable directionally could then be offset with dagger keels. Both dagger keels and low-slung rudder have an undesirable effect in turning, however, in tending to heel the vessel outwards (Fig. 10). The greater the distance the centre of gravity is above the water line the more pronounced this effect, hence the desirability of keeping the centre of gravity as low as possible.

To conclude, Table II summarises data on hull sizes suitable for different total weights, applicable to simple displacement hulls of the simplified outline of Fig. 11. This is a purely general purpose hull for low speed work and requiring only moderate power.

TABLE I

Length of Hull (ft.)	Optimum Speed Knots	m.p.h.
1	1	1.15
1.5	1.225	1.41
2	1.414	1.63
2.5	1.58	1.52
3	1.732	2.0
3.5	1.87	2.16
4	2.0	2.3
5	2.24	2.62
10	3.16	3.64
15	3.87	4.45
20	4.47	5.15
30	5.48	6.3
50	7.07	8.15
100	10.0	11.5
250	15.8	18.2

TABLE II

Length (in.)	Beam (in.)	C/A Depth (in.)	Max. Displacement (ozs.)*
15	4	2	8
20	4½	2½	16
24	5½	3	30
30	6½	4	48
36	7½	4½	100
40	8	5	150
44	9	5½	200
48	10	6	260

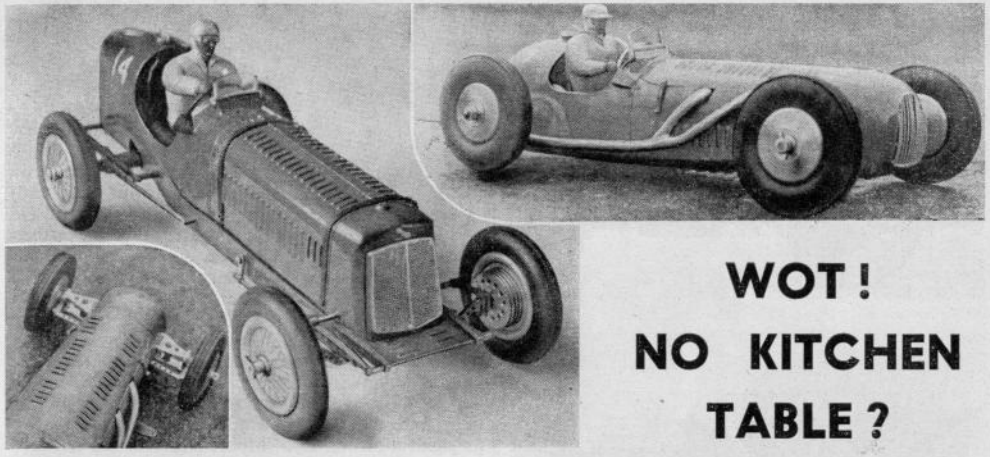
* Approximate. This will vary with hull section.

A MINIATURE GOLF COURSE (*Continued from page* 161)

required to get the ball through the inclined tube and over the barrier, so considerable skill is called for to hole this in one. Shape the corner block so that it is possible for a ball striking it from the direction of the tube to be deflected back into the hole. The tube itself is anchored to the barrier with a small metal strap. Chamfer the bottom edge of the tubing so that it lies flush with the surface.

Hole 9.

The final hole provides a short cut to home—provided you can hole out on the top of the metal ramp. If not, then you will have to negotiate the maze at a cost of several strokes. Avoid any sharp bends in the ⅜ in. diameter tubing and line up the bottom end directly with the hole. An expert should be able to manage this course in a par figure of 12.



WOT! NO KITCHEN TABLE?

D. ROBSON'S ATTRACTIVE H.W.M. AND E.R.A. MODELS DISCUSSED

AT the fourth Annual Meteor Club Open meeting in December last the Concours judge, Reg. Parnell, awarded second prize to a model B type E.R.A. which had attracted our attention by reason of its realism and excellent finish earlier in the afternoon, and we lost no time in having a chat with its builder, D. Robson of the Meteor M.R.C.C., and taking a photograph of this attractive model. Side by side with the E.R.A. in the pit was another handsome model, the first we had seen based on the Walton-built H.W.M. which has made a name for itself throughout the 1951 season. Apart from their attractive appearance, both models were unusual in having well-modelled drivers in their cockpits, who really looked as if they were part of their cars.

Particularly in view of the high standard of the modelling we were most interested to learn from Mr. Robson that, far from being a "kitchen table" worker, the only bench he had used in producing the E.R.A. and H.W.M. was a child's high chair. On this rather unpromising foundation he screwed a small portable vice, and when any energetic filing or similar activity was necessary, he called in the assistance of his wife, who manfully held the back of the chair to steady it! This struck us as being model making of the most determined type, and well worthy of placing on record. The standard of workmanship, however, does not reflect such improvisation, and it is plain that the builder is no newcomer to metal-working. The bodywork of both cars is first-class, and shows considerable panel-beating skill. Both have aluminium shells, hand beaten over wooden formers, and the louvres in both cases were cut by means of a specially formed punch. Those in the E.R.A. bonnet are particularly clean and well defined.

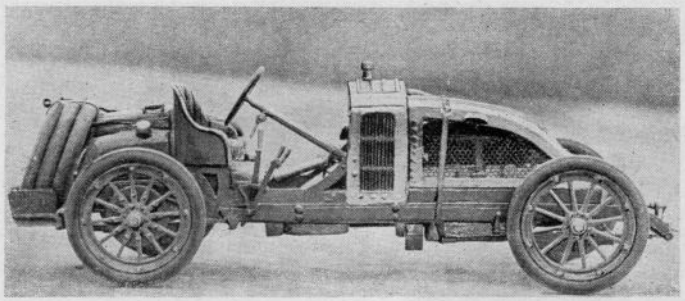
The E.R.A. is fitted with a 5 c.c. Frog engine, and has the conventional transmission lay-out employing 1066 rear-axle-gear-box and air-cored tyres and wheels. The wheel-discs have been neatly marked to represent wire spoking, which looks quite effective. The backs of the brake-drums are drilled, and the front axle has full Ackerman steering, lockable for track running, and a working track-rod and drag-link. Working half-elliptic leaf-springs are fitted at front and rear, and the cockpit is fully detailed. Long radius arms are fitted to the rear axle. This neat model is a real credit to its builder, and it was unfortunate that a sheared pin in the transmission during practice prevented it running in the competition.

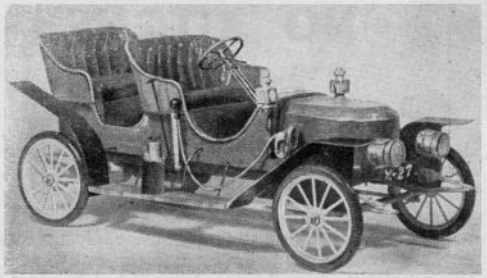
The H.W.M. is a 10 c.c. model and is an early two-seater version. A Conqueror engine is the power unit in this case, driving through spur-gears on the rear axle. The chassis is tubular, stiffened by a flat under-tray, and well executed independent front suspension is of parallel transverse swinging arm pattern, with coil springs and divided track-rods. Z.N. air cored wheels are used at front and rear. The engine cover is detachable for access to the fuel tank and auxiliaries, being held in place with clips and coil springs. Once again, despite the use of a direct spur drive with a fairly large horizontal engine, the instrument panel is included, also steering wheel and dummy driver, and details include a two-branch exhaust system.

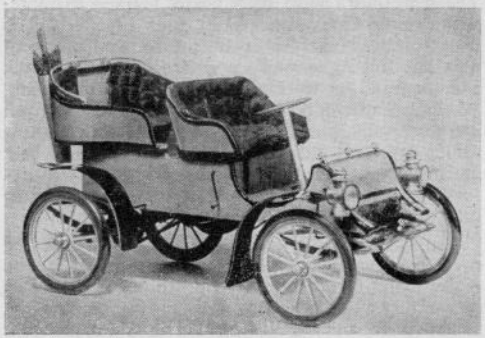
Whilst models of this calibre are being made we feel that there need be no fear of the scale type of racing model fading from the picture, and we hope that there may continue to be special competitions to encourage the enterprising builders of such machines.

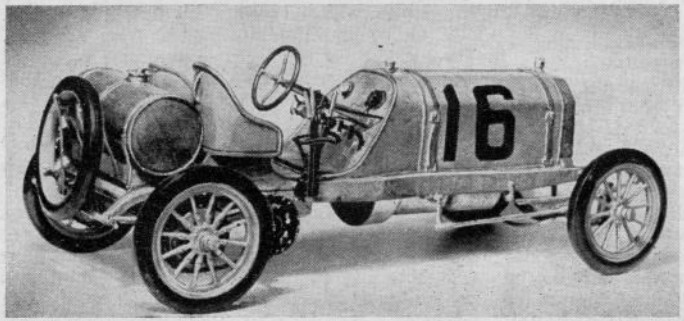
THREE DIMENSIONAL HISTORY

G. H. DEASON VISITS E. J. MOOR'S VINTAGE STABLE & RELIVES SOME STIRRING EVENTS









THE "cause of the bother" arrived one morning a few weeks ago in an Enormous Box. (A few inches more in any direction and the Post Office would have said "No"!). Before going further, however, some explanation is necessary. Those readers whose memory goes back to the September issue will remember that one day last summer at Silverstone I was crammed forcibly into that remarkable miniature racing car, the Wasp "Grub", and let loose to amuse myself on a temporarily disused part of the circuit. On returning the machine to its rightful owner, E. J. Moor, talk over the tea cups came round to model making, and it transpired that that versatile builder-driver of sprint machinery was interested in the series of "Old Timer" car kits from America which had been described in *Model Maker* from time to time. Now it happened that friend Kovelevsky, presiding genius of the firm producing these fascinating kits, had very kindly sent me a number of the latest samples, so in due course I passed over a couple to Jack Moor for his "production line", saying that I'd like a picture of the historic Locomobile, Old Number Sixteen, when the job was complete.

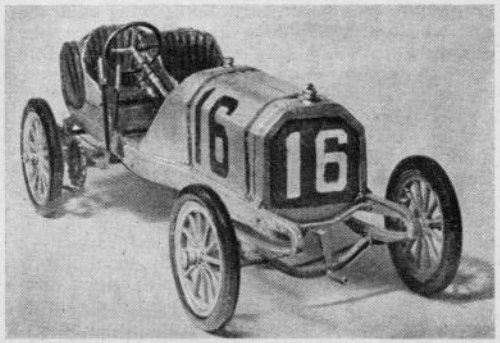
From time to time during the autumn reports of progress with this and other models came along, so when I saw the postmark on the Enormous Box I thought "Ah! The Locomobile". Wrong again! When I had reached a much smaller box and, standing knee deep in paper packing, had delved within, great was my excitement to find nestling in the ultimate wrappings an entirely delightful small model which was unmistakably a very early racing Renault, and equally unmistakably was not one of the "Old Timer" series. More digging produced the accompanying letter, which explained that having built several of the Scranton kits in the orthodox manner, the writer felt the urge to make something of European origin, and what did I think of the result? It was, he explained, the outcome of three weeks on the sick list, and employed only the road wheels, hub caps, steering wheel and axle casing of the original kit of the Stutz.

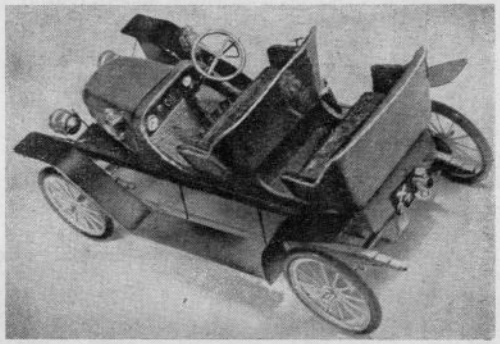
Left, top to bottom : The 90 h.p. Renault, the Stanley Steamer, 1903 Ford and the Vanderbilt Cup winning Locomobile, from E. J. Moor's collection.

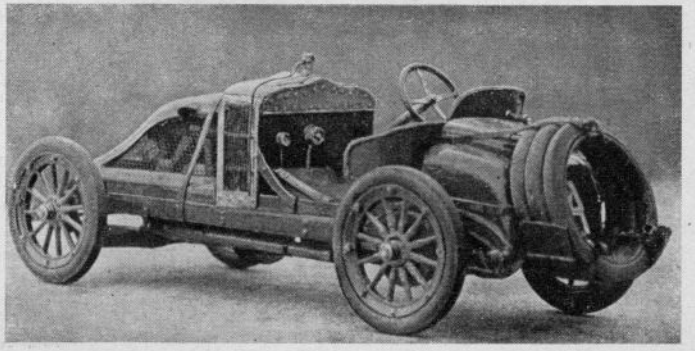
The subject was the 90 h.p. car which, driven by the redoubtable Szisz, won the French Grand Prix of 1906 on the long Le Mans circuit at the remarkable speed of 65.8 m.p.h. over a distance of some 750 miles. An altogether delectable motor car, but not one about which much data is available nowadays, I felt, so I made haste to consult that eminent authority, Kent Karslake, in the pages of his "The French Grand Prix, 1906 to 1914". Sure enough, there was the car, illustrated and described. In three of the four pictures it was shown with wire wheels. The fourth, taken during the race, showed it fitted with wooden spoked artillery wheels with detachable rims, and the text explained that a last minute change to these new fangled fittings had probably been responsible for a Renault victory, for in blistering heat the entire field suffered frightful tyre trouble, remedied in most cases by cutting the offending covers away with knives and fitting and inflating the replacement on fixed wheels! Szisz and his detachable rims must have been a much envied man during those two far-off days.

Having steeped myself thoroughly in the story of the cars and the race, a close study of the model revealed the fact that its builder had undoubtedly taken considerable trouble to get his details right, and moreover it seemed that he must have had access to even more information than is visible and available in Kent Karslake's excellent book. This turned out later to be the truth, for in fact several bound volumes of *The Automotor Journal* of those years had been called upon for reference, and I had the opportunity myself to study contemporary pictures of the Renaults in the race.

To revert to the model, this has a $\frac{1}{16}$ in. plywood frame with card capping for the channel sections on the lines of the original "Old Timer" kits, and the familiar build-up of the leaf springs and shackles, as described for my Stutz Bearcat. All the visible underworks such as sump, clutch housing, propeller shaft, axle casing and exhaust system are included, and the front axle is very well done, all the external steering connections and even the screw-down grease cups for the king pins being fitted.







Right, top to bottom : Further views of the Locomobile, Stanley and Renault. Note the engine detail visible through the Renault's bonnet grille.

The standard plastic moulded wheels are modified by the addition of the correct number of detachable rim lugs and nuts, and the three spare rims strapped to the rear of the car are also fitted with these lugs.

The Renaults of those days, as for many years afterwards, were fitted with radiators behind the engines and sloping "alligator" bonnets. To produce this latter characteristic feature a plasticine mould was made, cut away $\frac{1}{16}$ in. under final size all round and papier mache laid over the mould. As a matter of interest the paper used for this was orange wrapping paper, two colours being used, red and white, which made it much easier to ensure that one application was evenly distributed before another was begun. Very small pieces were used, and this, combined with the thin paper, resulted in close and accurate moulding. After drying and removing from the mould, the side openings were cut away carefully with a razor blade. Some trouble was experienced in finding a suitable gauze for the bonnet sides, as the engine details are plainly visible through these in the original car, and it was planned to fit a detailed dummy to the model. Finally a successful solution was provided by the builder's wife, in the shape of buckram, which, when blackened with Indian ink, was just right and showed the engine off very realistically.

The radiator was made by cutting a block roughly to size, the side grilles being formed by cutting a rectangular opening in card and stretching thread, which was first dipped in "Mendit", across the opening. The card was then trimmed to size and stuck on the block. The honeycomb is copper gauze, and the rest of the radiator card, the whole being painted with banana oil.

The engine, a mammoth side-valve four-cylinder unit with cylinders in pairs and T-heads, is skilfully represented in balsa, even down to the essential "plumbing", magneto and throttle control rod, all of which can be glimpsed through the mesh of the bonnet.

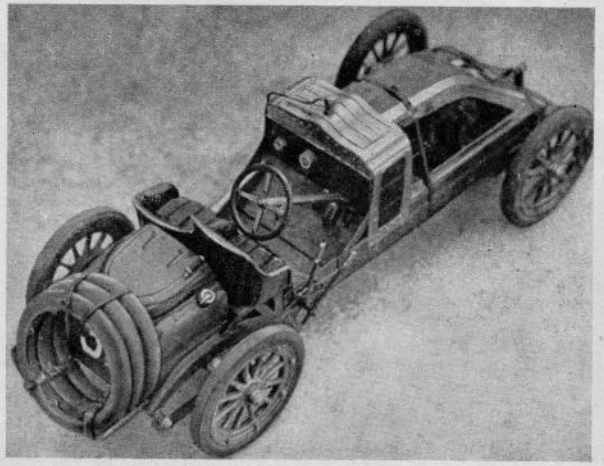
The familiar bucket seats, that for the mechanic lower than the driver's, are made of card with carved wood upholstery and brass wire beading, and the period dashboard and floorboards are fitted with instruments and pedals. Particularly nice touches are the Bowden cable control under the steering column, the pivoted air-pump before the mechanic's seat, and the hand-grip thoughtfully provided for that worthy's safety through the *chicanes*. A nicely shaped tail covers the petrol tank, and an additional filler cap protruding from the seat pedestal was presumably for an oil tank. Straps are of parcel tape, cut to width and stained.

In those days the familiar blue had not been adopted as the national French racing colour, and the Renaults appeared at Le Mans resplendent in bright red with brass trimmings, in which they looked most imposing, to judge from the model. Each team carried a distinguishing number, the individual members carrying a letter following the numeral, the Szisz Renault being 3A.

Undoubtedly the practice of modelling historic cars such as this is a fascinating facet of the hobby, and the field of choice is enormous. E. J. Moor is at present producing drawings of the famous Wolseley Beetle, a most individualistic car, which carried the British colours in the series of Gordon Bennett races, and his ensuing model may well be the first ever made of this most interesting prototype.

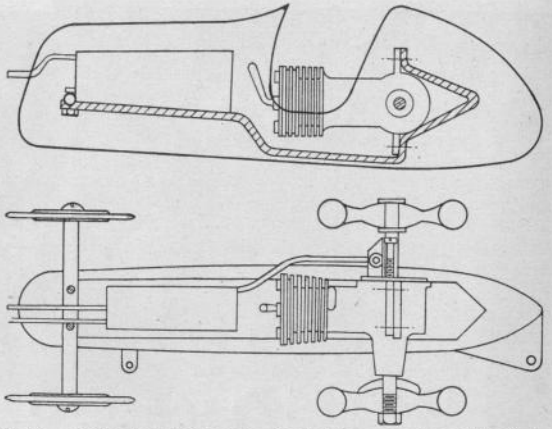
The little Renault model was to be returned before Christmas, so this, coupled with a long-standing invitation to inspect the builder's model railway layout and a desire to see the rest of the "Old Timer" collection led to a visit to Jack Moor's Warwickshire home before the Christmas break, loaded with camera equipment and, of course, the Renault. Much of the visit was given over to model railway matters, as described on page 138, but much *much* more could have been spent on the subject of automobiles, great and small, had time permitted! I confess that this little jaunt was something in the nature of a private Christmas treat for me, since my host's name has been prominent in British motoring events throughout the entire period in which they have been my own primary interest, and that is well over a quarter of a century! A specialist in sprint motoring, he has always built the cars he drives, and

(*Continued on page* 188)



An excellent impression of the old Renault, showing the "period" dashboard and controls, and the well simulated detachable rims.

SIMPLIFICATION IN MODEL RACE CAR DESIGN



NOT so long ago the man who wanted to break into the model car racing game by building his own model, even though his aims and ambitions were very modest so far as performance was concerned, was faced with a fairly complex project. Almost everyone thought in terms of full-sized motor car construction, and it is instructive to glance back through old copies of the model making journals which dealt with car topics to see the sort of thing that was considered a reasonable design on which to make a start.

In the first place a proper "Chassis" was felt to be an essential. Then again, the engine had to be in the correct "under-bonnet" position, generally involving a long transmission line with various steady-bearings, universal joints and what-have-you. In addition to a centrifugal clutch, there was that back axle-cum-gearbox. Nobody liked to admit defeat by letting his bevel gears appear in public, unenclosed by a fancy casing, although the beginner was usually let off with plain bearings for his first model, and the purist clung passionately to his Ackerman steering, although I seem to recall that Jim Cruickshank demonstrated with cunning little diagrams that this geometry wasn't exactly ideal for whistling round a cable track.

And now look how things have changed. I'm not going to embroil myself in any arguments as to whether the changes are for better or worse, but one thing is certain. The beginner is faced with an easier task when he sets out to construct his first model, for the answer today has become, as near as makes no matter, an irreducible minimum. Most tyros have a fancy for the under 2.5 c.c. engine as a suitable starting size, and it is now not only feasible but positively fashionable to clap a roadwheel on to the mainshaft in place of the flywheel, fasten the engine down to a flat base, couple it up to a tinplate fuel tank resembling a box of Swan Vesta matches on edge, hook a free running wheel on each of the three remaining corners and push-start the result with a long stick! Bodywork to taste is carved expeditiously from a few bits of balsa scrap left over from your aeromodelling days, sanded down and given a lick of paint and a coat of fuel-proofer, and you have a racing model which will stand comparison with at least 50 per cent of 2.5s usually to be found at the average club meeting. Easy, isn't it!

Actually, of course, it isn't as easy as all that, at anyrate if you want to do 80 m.p.h., but nevertheless those simple components do represent the basic requirements for a practical runner. The first thing to remember, however, about this type of construction, is the fact that size and scale will be limited strictly by wheel diameter, which in turn is limited by the gear the engine will pull. This is fairly critical, and will vary with the characteristics of the engine used. The long-stroke compression-ignition motor of normal type will happily pull a gear in the region of $8\frac{1}{2}$ in. per revolution, whereas the short-stroke motor with racing port design will be happier with a gear of $6\frac{1}{2}$ in., or a wheel diameter of about 2 in. Where really high speeds are concerned, many other factors, such as engine tuning, fuels and weight distribution come into play, which from the beginner's standpoint do not concern this article.

To demonstrate the degree to which simplification can be carried, whilst still obtaining practical results, however, here are some details of a highly successful little model recently sent in from Sweden. The car was designed and built by Arne Lundberg, using a 1 c.c. E.D. Bee engine, and holds the Swedish 1 c.c. record in the Racer Octan Club of Stockholm. The base is of $\frac{1}{8}$ in. dural, $\frac{3}{4}$ in. wide, and it will be seen in the side elevation drawing how it has been formed after annealing, to fulfil the part of a base and one-piece engine mount, on which the E.D. Bee can be bolted without any carving away of lugs or other modification. The upsweep to the front also eliminates the need for a pillar or other packing up of the front axle. Do the front wheels strike any chord of recognition? They should do, since they started life as typewriter rubbers, the circular kind with metal disc centres, and the rear wheels are ex-tea trolley. Altogether a masterly piece of successful improvisation. The bodywork is entirely of balsa, of the usual narrow wind-defeating form, and to judge from a photograph, the car looks very presentable. Principal dimensions are: Wheelbase, 110 mm.; Track 65 mm.; O/all length 185 mm.; Width of body, 30 mm.; Wheels, front, 45 mm.; rear, 50 mm.; Speed 55 k.p.h. (34 m.p.h. approx.).

"SIMPLE SIMON"

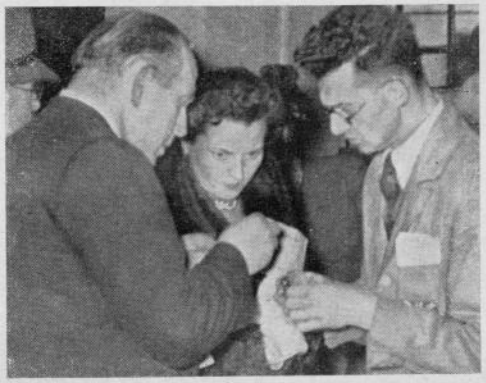
METEOR OPEN MEETING

MODEL MAKER REPORTS THIS ANNUAL "CLASSIC"

Extreme left and below : Reg and Mrs. Parnell with F. G. Buck examine A. F. Snelling's 2.5 c.c. streamlined record breaking model whilst judging the Concours, and inspect a miniature sparking-plug. Left : John Parker gallops away with his 5 c.c. car.

JUST how, when and why any annual fixture comes to be regarded as a "classic" is difficult to define, but it would seem that the Meteor M.R.C.C.'s regular winter affair is establishing an excellent claim to that overworked description. There is something about it which ensures support from all four corners of the country, the entry is invariably large and well mixed, and the organisation has that stamp of cheerful efficiency which spells plenty of enthusiastic helpers in the background.

There are, no doubt, other factors which make this fixture different from the usual run. The ban on foreign engines in the 10 c.c. class is partly a safety measure in view of the indoor track and the temporary nature of the fencing, but is also in part inspired by the policy pursued by the Club since its inception, of encouraging the use of British, and where possible, home-built components. Of the fifteen entries in this class seven had home brewed engines, and the fastest run of the day, put in by F. G. Buck, was accomplished with a Rowell "Sabre" with Rowell engine at 109.22 m.p.h. In this class D. M. Eaves of the Blackpool Club had the misfortune to have a bridle wire break on his Conquest car, which clouted the retaining wall and bent itself in no uncertain fashion, happily without further havoc to the surroundings. This calamity so touched the heart of the class winner, Gerry Buck, that he insisted on handing over his prize to the bereaved owner. Harry Howlett, who came second at 90 m.p.h., made a similar selfless gesture, and passed his guerdon to J. Riding of Bolton, whose car remained in one piece, thus letting A. Nash into the prize list in third place.



Best supported classes were the 5 and 2.5s, each with 22 runners. The latter class was largely an Oliver-E.D.-Elfin affair, with Alec Snelling a strong favourite, but Liverpool history repeated itself, and the spatted streamliner was defeated by a narrow margin by Mrs. Catchpole's special Oliver engined car, "Bottoms Up", with a grand run at 80.5 m.p.h. The 5 c.c. class was divided into British and Open, and developed into an all-E.T.A. and all-Dooling affair. In the British category B. Winterburn, of Guiseley, narrowly beat C. E. Craig of the home club, and Jack Cook, who had brought all his cars from Sunderland to make sure of having the right one this time, took first and second places with the right one and the wrong one respectively, in the Open class. Following the fives, a specially arranged "Needle match" was run off between Joe Shelton's and Jim Dean's outwardly similar Borden Specials, which resulted in a handsome win for the former, owing to some injudicious tap-twiddling by the latter. Neither car had recorded an official run, and the fastest match run was below the speed of Jack Cook's winning effort.

The 1.5 c.c. class was, unfortunately, poorly supported, and those cars which did come to the line misbehaved, so no runs were recorded.

As usual, a strong representation of scale types was to be found among all classes, and the club had, as usual, invited a well-known motoring personality to judge the Concours d'Elegance. This year Reg Parnell had accepted the invitation, and appeared to find plenty to interest him during the afternoon's racing. Competition in the Concours was very keen, and when the entries were lined up in the centre of the track it took some deliberation to find the winner, who eventually proved to be Ted Armstrong of the Sunderland Club with his really handsome little Connaught sports two-seater with its convincing bodywork of all-wooden construction, which was described in these pages some time ago. A well-deserved second prize went to D. Robson's B. Type E.R.A., which is illustrated and described elsewhere in this issue. Other entries worthy of particular note were the Howlett Alfa Romeo, probably one of the most spick-and-span racing models in existence, and J. R. Parker's two entries, the 10 c.c. Freelance G.P. car with modified Conqueror engine and his very neat 5 c.c. B.R.M.

In the pit area during the day there was always a busy throng visiting the "works" Oliver encampment, scene of much discussion and good advice to owners, and the new and attractive Oliver-Howlett Mercedes body castings were on view.

Prizes, of which the lion's share went to the North this year, were presented by Reg. Parnell.

RESULTS

2.5 c.c. Class.

Mrs. J. Catch-pole	Surrey	Oliver Tiger Special	80.50 m.p.h.
A. F. Snelling	Edmonton	Oliver Streamline Special	78.53 m.p.h.
E. Armstrong	Sunderland	E.D. Special	72.58 m.p.h.

Best Average—J. Dean, Oliver Tiger, 58.44 m.p.h.

5 c.c. Class (British).

B. Winterburn	Guiseley	E.T.A. own car	81.81 m.p.h.
C. E. Craig	Meteor	E.T.A. own car	81.59 m.p.h.
C. E. Craig	Meteor	E.T.A. stream-liner	80.71 m.p.h.
R. Salmon	Blackpool	E.T.A. own car	77.65 m.p.h.

5 c.c. Class (Open).

J. C. Cook	Sunderland	Dooling Sp.	91.74 m.p.h.
J. C. Cook	Sunderland	Dooling Sp.	83.87 m.p.h.

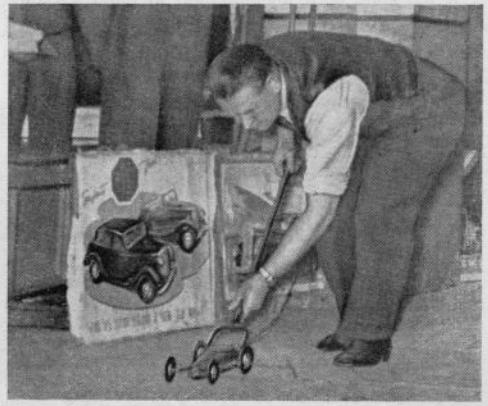
Best Average—
W. B. Edmonson, Own car and engine, 72.11 m.p.h.

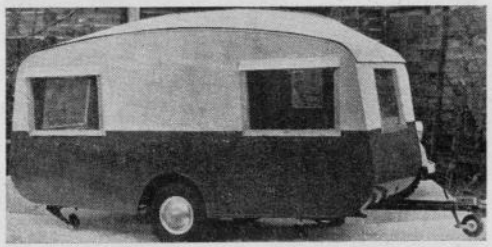
10 c.c. Class (British only).

F. G. Buck	Meteor	Rowell Sabre	109.22 m.p.h.
H. S. Howlett	Meteor	Mercedes (own eng.)	90.00 m.p.h.
J. Riding	Bolton	Rowell Sabre	87.04 m.p.h.
A. Nash	Derby	Own car and engine	81.37 m.p.h.

Best Average—D. James, Rowell Pacemaker, 77.98 m.p.h.

Above : Harry Howlett at work on the Mercedes, with D. Robson's stable alongside. Below : Jack Cook, winner of the Open 5 c.c. class, all set to go. Note the motoring posters which lined the track.

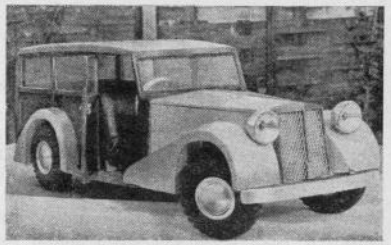




STATION WAGON & TRAILER CARAVAN

AN AMBITIOUS MODEL PROJECT FOR RADIO CONTROL

BY A. MARSHALL



RADIO-control for car models is a fascinating subject, providing as it does such a vastly increased scope to the hobby.

So far, however, all too few model builders have converted their theories into practice, to judge from the scarcity of material on the subject which has so far reached this office.

Readers will remember the delightful little radio-controlled Buick built by Trevor Owen, which we described some months ago, which was a masterpiece of the art of fitting a lot into a little. The result was certainly a fine feat of designing skill and clever workmanship, but it has to be admitted that anyone wishing to emulate this piece of model-making is setting himself a stiff handicap by reason of the very limited accommodation available for the installation of both radio equipment and propulsion motor, to say nothing of the attendant batteries. We have always felt that for the beginner in this branch of modelling the larger type of model is far more suitable, and in fact the larger model has an appeal of its own, apart from increased accommodation for the "works". The station wagon and trailer caravan described by its builder, A. Marshall, of West Worthing, Sussex, falls into this category, and forms a very handsome and unusual model. Ample room is available in the "estate car" type body, and if you run out of space in the car, there's still the van!

Station Wagon

It has long been my ambition to build a radio-controlled car or lorry with a reasonable resemblance to the real thing, and as I have recently acquired an ML 7 lathe and ½ in. drill with the appropriate tools for my workroom I have taken the opportunity to carry out my ambition.

The type and size of vehicle was governed by the available accumulators, and the only small ones obtainable were of 2 volt 7 amps, size 4⅛ in. x 3 in. x 1⅛ in. As twelve of them were necessary, the bulk and size was considerable, and the largest size tyres were bought, 5 in. dia. by 1½ in., and after several attempts, a reasonably proportioned vehicle was designed.

The total weight was estimated, and it could be seen that a fairly heavy construction was necessary, also one which would leave space for the main drive and steering motors, with all the necessary gearing. The new Ford type of front springing and rear springing seemed to lend itself best to this, as there was room between the sliding members to mount the motors in a low position, and leave room beneath the bonnet for a rotary actuator and battery for the radio-control as contemplated. This type of springing and steering was made up of steel sliding members on brass rods with coil springs and fixed to a dural frame; the two motors were fixed to this with the gearing both for drive and steering, the whole forming one unit. The channel sections chassis was then made up, with a sheet of dural to strengthen it, and a box section over the rear axle. This rear axle was fixed to a pair of semi-elliptic springs 9 in. long, with brass shackles fore and aft. The axle was turned from the solid from dural bar, and enclosed the reduction bevel drive and bevel differential gearing, also six ballraces all of which run in oil. The drive is a flexible shaft from the front unit, a universal coupling was found too bulky to be enclosed by the channel section, in the driving compartment. Over the motors is another sheet of dural, and the relay and actuator have been fitted to this, together with the switch for the steering motors, which is driven from the batteries and worked both by the radio relay and through the steering wheel. Another switch works the headlamps and this passes through the steering rod to a lever mounted in the appropriate position. The gear lever is fastened to the steering column, but is only for show.

The body was made with oak framing, grooved out for the 2 mm. ply panels and ⅛ in. perspex windows. This was screwed and glued together, and is very firm. The doors are swung and have locks, while the tailboard and frame above also open, with proper fastenings. The front wings were carved from 5 in. x 3 in. deal, and several attempts were necessary before success was obtained; these front wings form one unit with bonnet, radiator, headlamps, and bumpers, and can be removed as a whole. The paintwork is French grey and polished body, black underneath.

The seat is of the bench type, and covered with leatherette, and a carpet has been fitted, the dashboard is not yet complete, as the clock faces have to be made, but two glove compartments have been fitted and the covering inside matches the seats.

Sizes		*Scale ⅛th full-size*	
Wheelbase	19 in.	Weight with all up	— 45 lb.
Track	9 in.	Length	29 in.
Tyre		Width	12 in.
Size	5 in. x 1½ in.	Speed approx.	8 m.p.h.
Weight dry	25 lb.		

Consumption 1¾ amps @ 2 x Volts.

Caravan

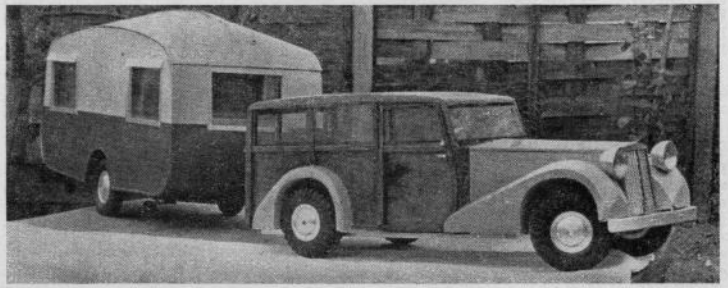
Sizes—28 in. x 12½ in. x 15 in. from road to roof, wheels 4½ in. dia.

The caravan was completed in a few weeks of spare time, and is proportioned to the car, which tows it at a slightly reduced speed.

The sides were made up from ¼ in. ply with dural channel for window frames with perspex glazing, this channel section was being used for the chassis frame with a ¼ in. ply floor over. Semi-elliptic springing mounted on shackles is used, and the wheels (like those on the car) were turned from bar dural, and are each fitted with two ballraces to a dropped axle. Four screw jacks are fitted, one to each corner and a spring ball connection fits on to the ball towing bar on the car. The whole roof lifts off so the interior can be seen; this has been fitted out like the real thing, and has a two berth bed-cum-couch which slides out, a wardrobe, a cupboard for the wash basin, which was turned from the solid, and a gas cooker, with a cupboard over. This compartment can be shut off by the wardrobe door which serves a dual purpose, the rear compartment has two single berths upholstered to match the couch, in green leatherette, and a centre cupboard with drop table and two shelves above. The doors are fitted with bolts and the cupboards with catches. The whole floor is carpeted. The paintwork is green and cream, with black underneath.

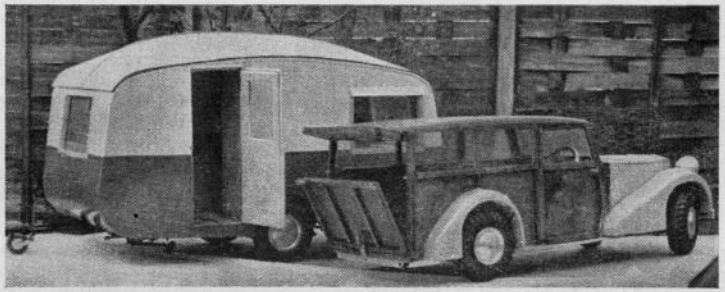
Radio Control

The radio control is presenting some difficulty, as four controls are necessary, two for steering and two for start, slow, fast, and reverse; these latter will be worked by an actuator. A modulated four channel transmitter is in course of construction, while a receiver with four valves and four relays has been practically completed, but a lot of work is still necessary before they are working.



Above : The handsome trailer caravan which is 29 inches long and is completely equipped with interior fittings.

Left : Some idea of the size of the models can be gained from comparison with the table on which they are standing.



Above : The station wagon, although of simple construction, is most realistic. Note the use of wood for the wings.

Right : Ease of access is provided to the body, the rear being equipped with drop-down tail-board and upward hinging rear window. The roof of the caravan lifts off in one piece.

★ SKODA COMP. 2 STR. Pt. II BY D. J. LAIDLAW-DICKSON

READERS who have persevered with the production of their papier mache mould for the Skoda will by now have realised how much work is entailed in putting a really smooth finish to the body. We continued for no less than ten coats of stopper, with wet-and-dry rubbings between coats not so much because we were determined on a good finish as because of jeers from our professional modelmaker who constantly drove us on with encouraging remarks such as: "You're not going to leave it like that are you?" Only his fortunate absence with 'flu enabled us to complete what seemed an unending labour.

The thickness of each body will depend to some extent on the number of coats of original newspaper applied and the amount of filler subsequently added. The next step is to make up the two wooden pieces, one at each end of the body. These can be carved from balsa if ease of working is essential but a better job will be obtained if lime or some other carvable wood of more solid nature is employed for with the addition of side pieces these ensure a strong rigid body. The drawing gives appropriate templates to cut out these pieces, plus a side elevation of the car. However, as the mould is, to some extent a variable, it is as well to check sizes against it and adjust accordingly. In our case we found it necessary to increase width in each instance by half an inch to match up.

Using plan and side elevations an accurate shape is carved with chisel, gouges and that old friend the heavy wood rasp. Make up several templates from the actual body so that curves blend in without a bump. This seems an obvious precaution but is necessary advice that will save another long bout of matching in the curves. To be quite sure the front would stay firmly in place we rebated half an inch all round to give a good overlap for the papier mache mould, and then, in addition to glueing firmly with aero glue as used in boat building, pinned it all round at quarter inch intervals with short brass nails. These are invisible when the paint has been added but give an additional sense of security, and prevent the body starting after rough treatment.

When shaped pieces for front and rear have been added—that at the rear can be carved to fit inside the papier mache—there remains the question of strengthening side pieces. Now as wheel arches have to be cut out to conform with the design these pieces cannot continue in uninterrupted length to be ultimately dovetailed into front and rear portions. Those who would like strength beyond scale appearance can of course do just that — omitting the wheel arches altogether. However, the prototype is a pleasant looking car and well deserves the best scale treatment possible. To give some degree of connection throughout we added false strips of mudguard made out of thin aero-ply that passed behind the moulding and connected up with the carved portions of front and rear.

If these have been made of wood harder and heavier than balsa it is a good idea to hollow them out somewhat to lighten. This particularly applies to the front portion—at the rear it is not so important as a little weight does not come amiss in helping to hold down the driving wheels.

There are a number of ways in which the ornamental radiator grille can be copied. We choose the very simple one of cutting the requisite number of flat strips from Juneero metal, filing them to the correct curved shape and inserting them in slots cut in the carved wood front. Plywood could be used, though it is not easy to give it a metallic effect, or bright tinplate folded to double thickness might provide the nearest to the real thing.

In cutting out the wheel arches—a matter best left until the framing has been fixed—a cardboard template makes matters very easy. Mark them with a pencil and then cut out with a sharp razor blade, erring on the waste side. They can then be cleaned up with glasspaper. This cutting away will remove the uneven bottom of the mould and generally clean up the shape, but may also reveal certain defects of adhesion between paper layers.

Should this be so a binding of cellulose tape, which will later be sprayed over and completely concealed will make a sound smart finish.

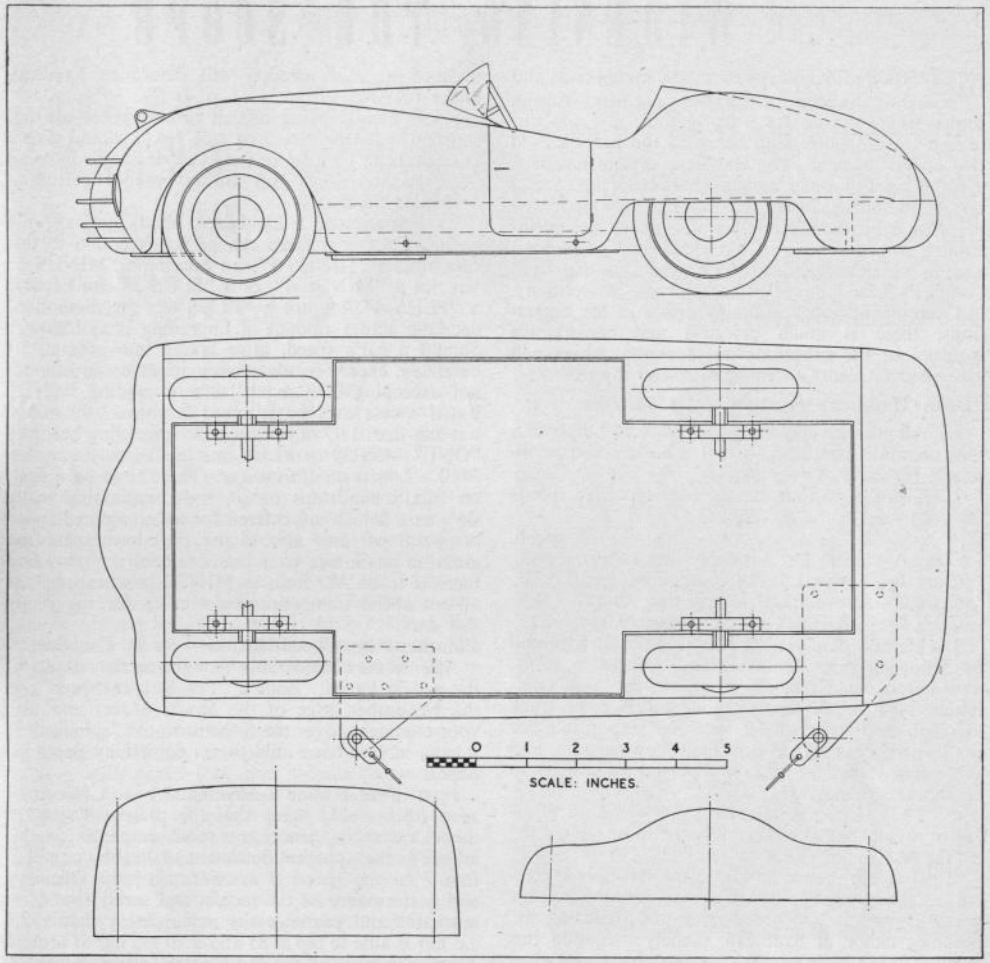
The complete body shell should now have two or three more coats of filler, and several sprayed undercoats. Brush finishing will also produce a good effect if one of the proprietary paints such as Brushing Belco is used.

Next step is to cut out the base on which engine, transmission and wheels is to be mounted. A good stout piece of multi-ply is the best for this. Failing a piece of suitable thickness two pieces of $\frac{3}{16}$ in. ply can be glued together under pressure and pinned and clenched with panel pins. This part of the work has necessarily been left until now when the exact dimensions of the body shell enable an accurate job to be made of it.

The cockpit can now be safely cut out. For added strength a balsa seat squab is recommended plus a plywood dashboard fitting.

Apart from details such as headlamps, steering wheel, and so on, there remains only the "works" to be added, which colleague Geoffrey Deason will deal with in a further instalment. One last word on detail: Czech registration numbers comprise one letter only with five figures following, as for example, P-30049 indicating Prague registration.

★ *Continued from December issue.*



Further Notes on Plaster of Paris Moulding

We are indebted to Mr. Eric G. Mutch, M.P.S., for some useful notes on plaster of Paris. First, on the price variation between builders' merchants and chemists he comments: "Plaster of Paris is prepared by carefully roasting natural gypsum. If in the process it is heated above 200 deg., or if it is not kept, after preparation, in a dry place protected from moisture it deteriorates. This deterioration is indicated either by too rapid or very slow setting, the set mass being more or less weakened and friable according to the degree of deterioration. (It may pay therefore, to use the best quality!)"

On usage of the plaster he adds: "The correct proportions to use are $1\frac{1}{2}$ to 2 parts of water to one part plaster of Paris. The speed of setting, however, can be varied by the use of the following: Restrainers — alcohol, citric acid, dextrin, acacia (gum arabic) glue; Accelerators—common salt, alum. If a 5 per cent solution of dextrin is used to make the paste, instead of plain water, this will give the operator a little more time to do any moulding or smoothing."

Other readers have reported sundry uses of plaster of Paris for moulding such things as tyre treads, small repetition parts and the like.

. . . WIDENING THE SCOPE

METHODS of handicapping model racing cars, and widening the scope of the hobby are two favourite topics wherever the fraternity gather, and for this reason we are publishing herewith the proposals of two of our readers. The Handicap system has been evolved by Jim Dean, newly-appointed Hon. Secretary of the Surrey M.R.C.C., and has been approved in general by the Committee for use in the forthcoming season in Surrey Club Meetings. The second and more elaborate set of proposals comes from L.A.C. B. Luckham, at present serving in Germany, but despite the apparent complication of his suggestions, there is much practical and constructive material in the proposals put forward, which will give readers plenty to think over and discuss.

"Dean Handicap System"—*By Jim Dean*

1. All cars irrespective of capacity to be given a plus or minus handicap so that a basic speed is obtained for each of four classes.

2. There to be four classes and respective speeds for each class to be as follows:—

	m.p.h.
Class A—Up to but not exceeding 1.5 c.c.	45
Class B—Above 1.5, not exceeding 2.5 c.c.	70
Class C—Above 2.5, not exceeding 5.0 c.c.	85
Class D—Above 5.0, not exceeding 10.0 c.c.	112

3. Method of assessing handicap to be governed by following rules or conditions, whichever apply, and a designated official of car owners, club committee, such as the competition secretary, or track marshal, or the scrutineer shall be responsible for car owners' compliance with the following rules, and said official shall be the only person authorised to determine a handicap.

4. The car owner must be a fully paid-up member of a club that is either affiliated to or recognised by the M.C.A. of Great Britain.

5. If a car being handicapped has already recorded official speeds in club events, then the average speed of such last recorded runs, not exceeding six, becomes factor of handicap, namely:—Should this average speed be in excess of class basic speed, then the said excess becomes the "MINUS" handicap to the nearest mile, i.e., .049=0 but .50=1.0. Conversely if average speed is below the class basic speed then the handicap is PLUS to the nearest mile of difference.

6. The decision of the handicapping official to be final, and further he must have the authority to decide whether rule No. 5 shall be applied or whether rule No. 7 or rule No. 8 would be more applicable.

7. If the car to be handicapped is new and therefore rule No. 5 cannot apply, then automatically, subject to the handicapping official's approval, the handicap becomes "PLUS 5" in all four classes until after first meeting at which official timing was recorded, and then the highest (not average) speed attained at said meeting will determine handicap under rule No. 9.

8. If handicapping official or committee are not satisfied that rule No. 5 or rule No. 7 would give a fair handicap then he or they can decide to have an observed and timed run during practice period to determine handicap.

9. Variation to a handicap: handicaps can only be *upgraded,* and there can be no exception to this rule, thus a "MINUS 5" can become a "MINUS 6" but not a "MINUS 4", or a "PLUS 5" can become a "PLUS 4" but not a "PLUS 6"; the method of deciding actual amount of upgrading is as follows: Should a car's speed, after taking into account its handicap, exceed its class basic speed by an amount not exceeding 0.99 m.p.h. then ungrading is NIL, but if excess over basic speed is above 0.99 m.p.h. but less than 1.99 m.p.h. then the upgrading becomes "ONE" MINUS or PLUS one less as case may be.

10. *Limits on Handicaps*: There is to be a limit on PLUS handicaps of 10, thus eliminating really slow cars (which are catered for by nominated speed competitions) and also giving the slower cars too great an advantage over really fast cars:—However there is to be *NO* limit to MINUS handicap, as the all-out speed competitions do cater for the really fast cars.

Comment on Classification— *By B. Luckham*

After some considerable thought on the subject of the article by Mr. Boddy, "I'm Sick of Speed", in the November issue of the *Model Maker* and also your comments over the months on the "spindizzies" I have at last been able to get something down on paper.

First of all I want to say that I am in favour of speed, but would agree that the present system of model car racing places too much emphasis on this aspect to the apparent detriment of healthy competition. To me speed is a measure of the efficiency and performance of the motor, and surely it is a remarkable and praiseworthy achievement that a 2.5 c.c. car is able to lap at 85 and a 10 c.c. car at around 130 m.p.h. and still the limit is nowhere within reach yet.

Your contributor states that speed is uninteresting to the spectator and then goes on to make what I think is an unfair comparison. Surely it must be quite dull to stand by the track at Montlhery and watch the new streamline Cooper or an Austin A 40 or even an XK 120 lapping hour after hour to capture some small, often obscure, class record. After all we have as yet nothing which can be compared to Grand Prix racing. It is necessary to keep spectator interest, but do not let the interests of the hobbyist himself be forgotten.

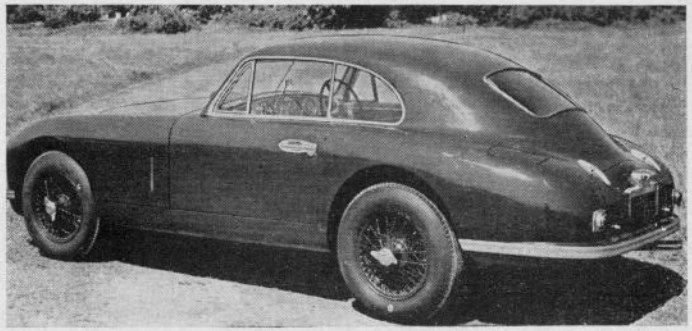
It is also said that speed models have no resemblance to the full-size cars but if the remarkable vehi-

(*Continued on page* 189)

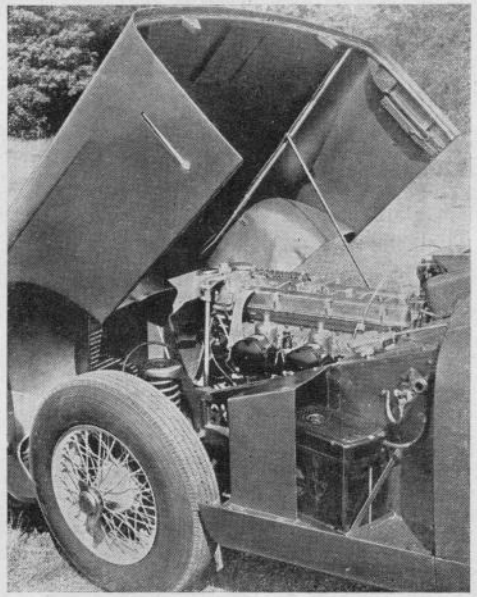
PROTOTYPE PARADE No. 35

THE D.B.2 ASTON MARTIN SALOON

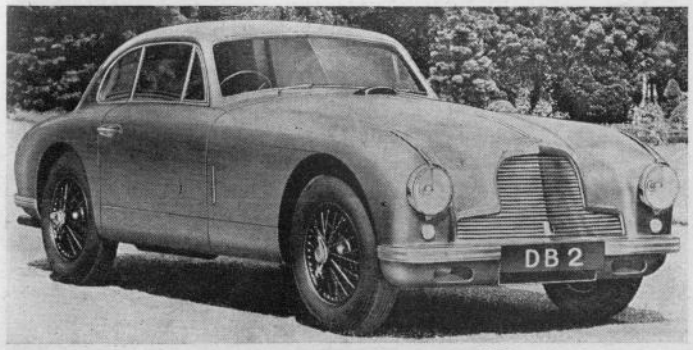
BY G. H. DEASON



IN choosing the first closed car to figure in Prototype Parade since it first appeared in October, 1946, it is pleasant to feel that one has been able to pick not only a British car, but one of this country's really great motor-cars of the post-war period. The Aston Martin D.B.2 is a thoroughbred in the best sense of the word, for not only have Aston Martins carved a very definite niche for themselves in sports-car racing over the years, but Le Mans has been the scene of their greatest efforts, and the D.B.2's immediate progenitors were in fact built for the 24-hours' classic in 1949, in which one of the three cars entered, driven by Jones and Haines, finished 7th. This was in fact a four cylinder two litre car, the single six-cylinder model being forced to retire due to loss of coolant.



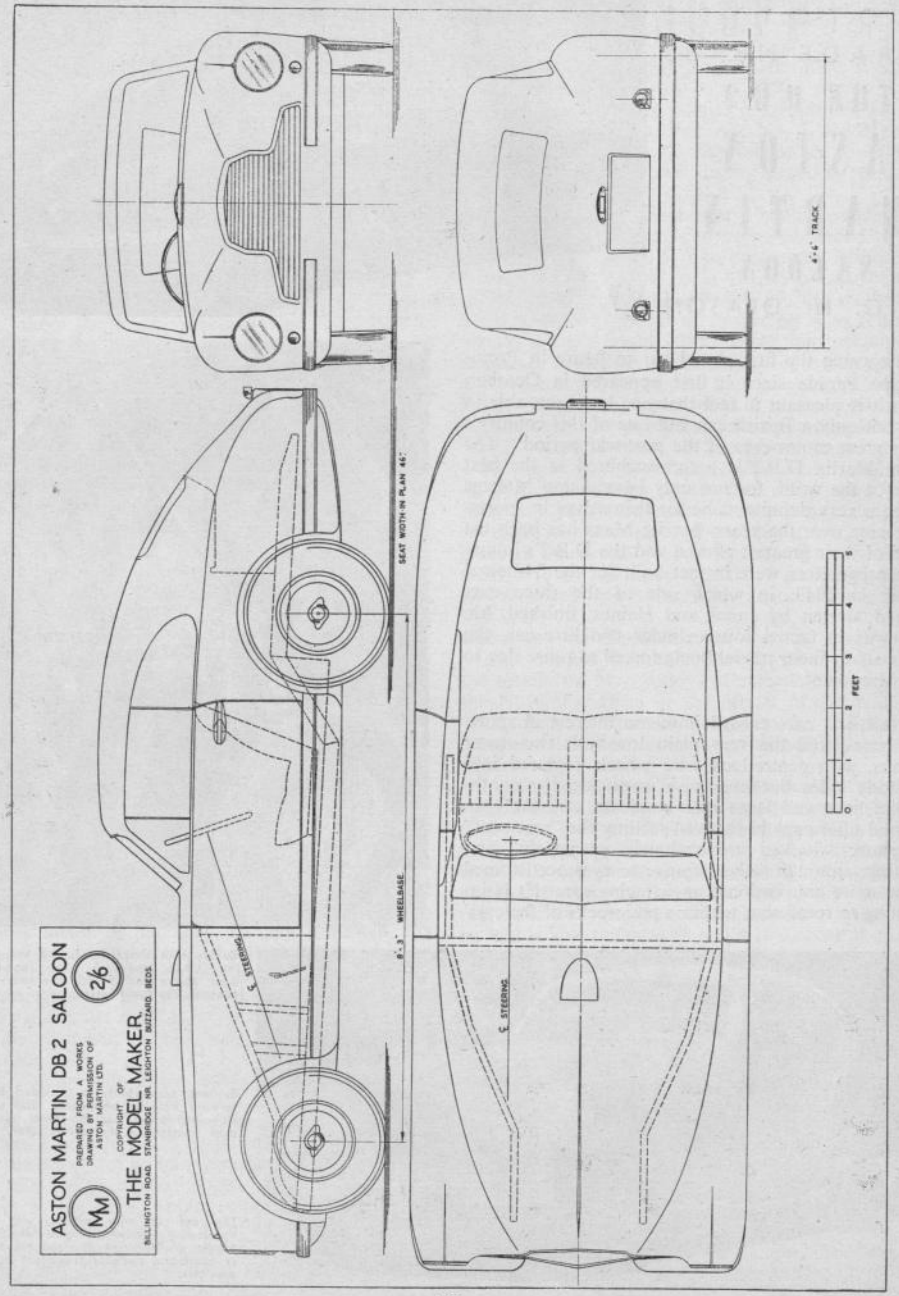
These new cars caused immense interest in sporting circles, and the very plain low-built two-seater saloons, with centre-lock wire wheels recessed into the body sides but otherwise un-enclosed, smooth-flowing lines and large rear windows, and the twin external filler caps in the roof feeding the "rear-seat" fuel tanks, looked tremendously purposeful and pleasing, although rather strange to eyes accustomed to the more conventional open racing car. (It is interesting to recall that within a few weeks of the cars'

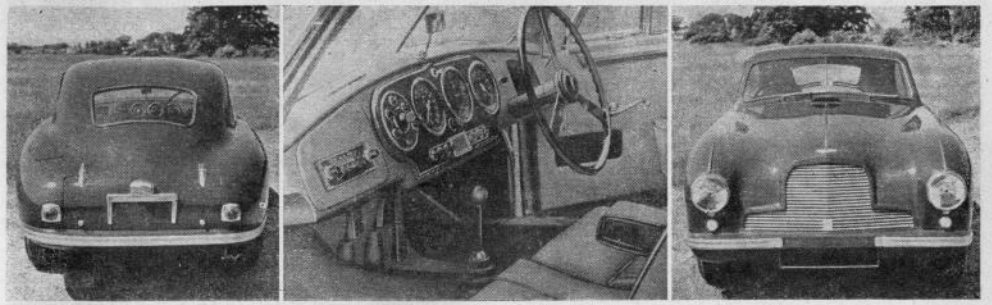


Beauty with simplicity is the keynote of the D.B.2's bodywork. The flush-fitting door above and behind the rear wheel conceals the fuel-filler-cap.

Extreme accessibility is provided by the forward hinging bodywork. The suspension coil-spring can be seen, also the neat housing of the accumulator.

The use of wire wheels with semi-enveloping bodywork give the Aston Martin a distinctive air, and the severely handsome radiator treatment accentuates this.





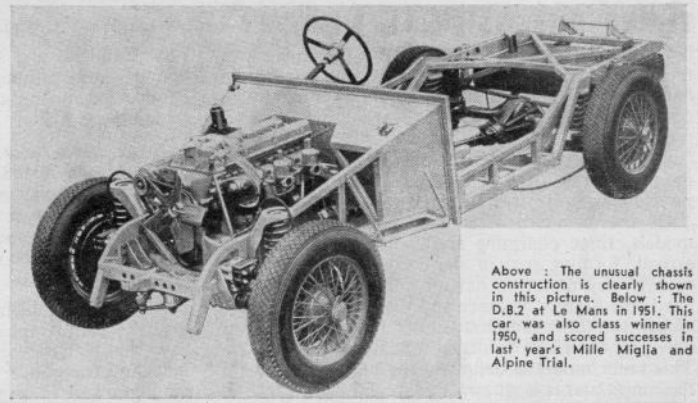
Front and rear impressions of the D.B.2, and a view of the driving compartment, which shows the neat instrument panel, gear lever, pistol type hand-brake and the hinged central arm rest.

first appearance, model car racing folk at an Eaton Bray meeting saw a model of this body, built by Alec Snelling as a sister model to his successful 10 c.c. Healey saloon).

The six-cylinder car proved itself by a grand run in the Belgian 24-hour race at Spa, driven by Leslie Johnson and Charles Brackenbury, when it finished second in the 4 litre class, and in 1950 George Abbecassis and Lance Macklin won their class at Le Mans at 87.26 m.p.h., and tied for 1st place in the Biennial Cup. By now the production versions were in train, in time to be exhibited at Earls Court. Two models of the new car were shown, a fixed-head saloon and a drophead coupe, and the D.B.2, as it was by now designated, had the six-cylinder engine with twin overhead camshafts, and a capacity of 2,580 c.c. The saloon bore strong traces of its Le Mans ancestry, but a certain amount of cleaning up resulted in even smoother lines and considerably more refinement in detail to appeal to the private owner. For the competition driver the Vantage engine was available, which offered 123 b.h.p., some 15 above the standard job.

At Le Mans in 1951 five DB2s started and five finished, in 3rd, 5th, 7th, 10th and 13th places, also taking 1st, 2nd and 3rd places and the lap record in the 3 litre class. In the Mille Miglia the sole DB2 entry won the Over 2 litre Vetture Veloci class, and won its class in the Alpine Trial, losing no marks.

Motoring of this calibre plainly calls for something quite out of the ordinary, so let us take a look at the D.B.2 in detail. The frame is of modern conception, being of square section tube, with robust cruciform bracing, the permanent scuttle arch forming part of a triangular forward bracing, as will be



Above : The unusual chassis construction is clearly shown in this picture. Below : The D.B.2 at Le Mans in 1951. This car was also class winner in 1950, and scored successes in last year's Mille Miglia and Alpine Trial.

seen in the chassis illustrated. Suspension is very supple, large coil-springs being used all round, damped by hydraulic shock absorbers. The front suspension is independent, employing trailing links incorporating an anti-roll torsion bar, and the links themselves are carried on needle-roller bearings in oil-baths. At the rear the axle is located by parallel radius-arm linkage and a panhard-type anti-sway bar. Brakes are hydraulic, and operate in 12 in. drums. Beneath the front bumper just below the headlamps will be seen the inlet-vents for cooling to the brakes. Transmission is through an open propeller-shaft to the hypoid-bevel final drive, and a worm and roller steering box is used. Dunlop centre-lock road-wheels carry 600 by 16 special Dunlop road-speed tyres.

A large flat petrol tank is mounted just below the frame members at the rear, which carries 19 gallons with a built-in reserve, and twin electric fuel-pumps supply the engine. The petrol filler flap (near side), is opened from inside the car. The radiator filler is concealed beneath the forward-hinging engine cover on the production cars, Le Mans models having a small quick-opening hatch for this purpose.

As already stated, the engine is a six-cylinder twin-o.h.c. unit with detachable head. Twin S.U. carburettors with large air filters and the distributor are fitted on the near side, and cooling is assisted by water-pump thermostat and a five-bladed fan.

The bodywork of the saloon, although severe in line, is luxury-equipped as to its interior, which carries three on the bench type seat, with a large luggage space behind. Controls are the central short gear lever, pistol type hand-brake and 17-inch three-spoked steering wheel of pleasantly austere appearance. The circular matched instruments are flanked by a similar circular electrical panel, the instruments comprising speedometer, rev.-counter, clock, petrol and oil capacity gauges, oil-pressure, and water temperature gauges and ammeter. Bodywork is in aluminium alloy on a lightweight steel tube frame.

Maximum speed is 110 to approx. 130 m.p.h., according to the axle fitted, there being a choice of eight final drive ratios.

Principal dimensions are: Wheel base, 8 ft. 3 in.; Track, 4 ft. 6 in.; O/all length, 13 ft. 6½ in.; O/all width, 5 ft. 5 in.; O/all height, 4 ft. 5½ in.; Ground clearance, 8½ in.

In response to many requests we have re-introduced the Prototype Parade series with accompanying scale outline drawing, and hope to continue the series wherever possible. We are indebted to Aston Martin Ltd., for their help in this instance.

THREE DIMENSIONAL HISTORY

(*Continued from page* 176)

how well he does this is proved by his winning of the "*Autosport*" Championship for non-series built half-litre cars during the 1951 season by a handsome margin; a feat, one would think, which would leave precious little time for other interests. Quite apart from a variety of model making activities, however, the presence of a potent 1100 c.c. racer in the garage proves how wrong is this idea!

Of the standard American series of historical models, three charming specimens met the eye on arrival, forming part of the decoration of a lounge with a very motoring flavour. These are the 1903 Ford, the Stanley Steamer and the Locomobile racer which won the Vanderbilt Cup of 1908, and has gone down in American "vintage" annals as Old No. 16. This latter model is definitely the most elaborate of the range, and is most atractive, both historically and in appearance. Generally similar in appearance to its contemporary European road racers, the Locomobile was a four cylinder job of 1100 cu. ins. with final chain drive, which makes an interesting model feature. Some intricate work has also gone into the manual controls fitted to the steering column below the wheel, and in the gear and brake levers. The side chains are realistically represented by string, artistically titivated with a fine paint brush to give the effect of links and rollers. Finished in grey with black numbers this is a most businesslike contrast to the two touring cars, the early Ford being painted maroon and black, and the Stanley a handsome scheme of dark green and yellow. Nicholas Moor, enthusiastic follower in his father's footsteps, is working on a 1903 Cadillac, and yet another early two-seater is taking shape, although its final identity has yet to be decided upon, and drastic modifications from standard are likely.

Apart from these, I was shown a half-finished model of the 30/98 Vauxhall which is a familiar sight at racing venues, towing the various "Wasps" by trailer. This project, carved from the solid in brass, and fitted with wire wheels about 1 in. in diameter, should be a handsome table ornament on completion.

It may be of interest to model makers who like to make photographic records of their work but believe that elaborate equipment is necessary, to know that the Locomobile, Ford and Stanley Steamer were photographed in a garage with no special lighting apparatus. The models were placed on a small sheet of white card, and illuminated by one 100 watt lamp in the bench light and the heavy shadows lightened by an ordinary garage hand-lamp, waved adroitly by Nicholas to get rid of unwanted highlights. The pictures were taken with my faithful Agiflex, on Super XX film, using an exposure of 2 secs. at F/11. The Renault, on the other hand, defied all attempts to photograph it satisfactorily in artificial light, and was eventually taken outdoors in rather dull daylight, the reason being that models such as these, whilst being most effective and satisfying to the eye, cannot be expected to show to their best advantage under the eagle eye of a camera lens and brilliant studio lighting.

WIDENING THE SCOPE

(*Continued from page* 184)

cles run on Bonneville Salt Flats by the S.C.T.A. can be called cars, particularly the Lakester class, then A. F. Snelling and all the other speed men need have no worries about realism or being unorthodox! Another often-heard criticism is that there is a lack of craftsmanship in construction, but it must be obvious that it is not merely a case of buying a Dooling and slipping it into any old tin can and breaking a record.

I suggest that the business of record breaking should be divorced from normal competitions and should be made the subject of special record and speed trials, and that these should be kept to a certain maximum each year. Further in order to improve actual speed competition itself I suggest that record breaking be further divided into more classes and groups, to discourage the present concentration on unrealistic miniature land speed record breaking. Absolute flat-out performance would be replaced by reliability, and realism to full-size practice. It would give a greater opportunity to the average chap who cannot afford expensive equipment but who is just as keen. The hobby will kill itself if the present deadendedness continues, as I believe is already happening in the United States. My suggestions are as follows:—

There shall be the following capacity classes.

0 — .5 c.c.
.5 — 1 c.c.
1 — 1.5 c.c.
1.5 — 2.5 c.c.
2.5 — 5 c.c.
5 — 10 c.c.

In addition the cars shall be divided into certain types.

Unlimited class. To include such models as teardrops, Cooper record, Dooling Arrow, McCoy Invader, Railton Mobil Special, Gardner MG, Borden Specials, Snelling streamline, etc.

Grand Prix class. To include all past and present Grand Prix formula cars, Indianapolis cars, 500 cars and midget speedway.

Sports car class. To include all open cars such as XK 120, 4½ Bentley, MG and DB III.

Closed car class. To include the family saloon, etc., Austin 7, Porsche, DB II, Rolls, Cadillac, closed V 12 Ferrari and all the veterans.

The unlimited class is self explanatory and should satisfy the out and out speed merchant. The Grand Prix class cars must conform to certain rules to ensure reasonable scale appearance. Full-section tyres, windscreen, steering wheel, seats, driver, outside exhaust pipe should all be included where applicable. Wire wheels optional. Concealed engine. Sports cars are reasonably self explanatory but there may be borderline cases with the next type. I suggest that XK 120 coupe be included in sports class whilst closed V 12 Ferrari be in closed car class. Aston Martin DB II should be in closed car class. Certain defining rules will be necessary, concealed engine, all main external details to be incorporated, seats, driver, steering wheel, windscreen and dashboard to be included. Closed cars, same remarks as sports regarding borderline cases; must include seats, steering wheel, one occupant, dashboard and scale wheels. (NB. Sports cars must have wire wheels if applicable). The veterans are included in closed cars as this will obviously be a fluid classification. In the last three types it would probably be desirable to allocate the capacities to certain divisions within the types to prevent the possible anomalies of .5 c.c. Grand Prix Mercedes and 10 c.c. Coopers.

The following restrictions are therefore suggested:

.5 c.c.—1.5 c.c.—500 c.c. racers, midget speedway, sports and closed cars up to 1100 c.c.

1.5 c.c.—5 c.c.—Racing cars up to 2,000 c.c. unsupercharged, sports and closed cars up to 2.5 litres.

2.5 c.c.—10 c.c.—All past, present and future Formula A cars, all sports and closed cars over 2.5 litres.

This would bring modelling into line with full-size work. In the unlimited class it would not matter.

To further broaden the record limits the distances should be increased in order to improve reliability of the engines. The following distances for record purposes are therefore suggested.

¼ mile, 1 mile, 5 miles	Standing and flying.	10 miles, 25 miles, 50 miles, 100 miles, 250 miles, 500 miles	Flying only.

As in full size, also with models it is suggested that records be set for certain times, the following are therefore suggested.

¼ hour, 1 hour, 3 hours	6 hours, 12 hours, 24 hours	All with flying start.

Certain distances and times seem unnecessary such as the present half mile, and half hour records, as they are unlikely to be very different from the other records preceding and following them. It is also considered unnecessary to have standing start records over the longer distances as they are very unlikely to be very different from the flying start records.

The above recommendations are likely to raise a considerable storm of opposition but I think that we should look ahead in the development of model car. At the moment the main concentration of effort is on short sprint records but in attempts on longer distances slightly less maximum power would be required but there would be an obvious need for an engine which would operate for very long continuous periods. Pit work and refuelling would very definitely be required which would add to the realism and interest.

DOPE & CASTOR

By JERRY CANN

LATEST secretarial change is that of the Surrey Club, whose new Hon. Secretary and Treasurer is Jim Dean, of 3 Glenavon Gardens, London Road, Slough, Bucks. His proposals for a new handicapping scheme to come into force at the Club's meetings this season have been provisionally approved by the committee, and are set out elsewhere in this issue. The scheme certainly doesn't favour the faster competitors, but should put fresh heart into the not-so-speedy, and as the originator points out, the "tigers" are well catered for in the scratch events.

Harry Pickersgill, Hon. Secretary of the Guiseley M.E. club, has sent particulars of that enterprising group's track and activities. The track is situated about ten miles north-west of Leeds, and is best approached from the Commercial Hotel, Guiseley, on the Leeds-Guiseley Road. Moor Lane is the place to make for, via the Green, and the track will be found on the left-hand side at the top of the hill. There is ample accommodation for both models and full-sized car parking, and any non-members are welcome to use the track at the week-ends, when a very keen crowd gathers on Saturdays and Sundays all the year round. Yorkshire lone-hands please note!

The Eight Model Car Club, which operates its rail track at St. John's Hall, Friern Barnet Lane, Whetstone, N.20, are holding meetings from 3 p.m. to 9 p.m. on the following Saturdays: February 23rd, March 29th, April 26th and May 31st. The Hon. Secretary is H. E. Miller, of 55 Edward Road, New Barnet, Herts, and interested folk will be welcomed at the meetings. This track is of special design, incidentally, and will not accommodate the "round rail" type of car.

Speaking of rail tracks of the latter type, interest seems to be growing rapidly in this direction, and a number of clubs are discussing plans for home tracks. The material position, particularly as regards tube for rail, may not be too easy, but it can be found, and if any club is in difficulties in this respect, I may be able to help them to a source of supply. This is limited, so I can't guarantee everybody a look-in.

The Stoke Open Day, as reported in this issue, was a great success, and everybody was pleased to see Reg. Parnell and his wife present and taking a keen interest in every branch of the racing. The Sunderland boys were down in force on the Saturday, and spent a busy afternoon practising. Their efforts were rewarded with Jack Cook's win in the Open 5 c.c. class, and Ted Armstrong cleaned up the Concours and snatched third place in the 2.5 c.c. affair.

The Derby Club have had the misfortune to lose the use of their track, due to the ground being scheduled for road-widening at some future date. This is a sad blow, after so much hard work and enthusiasm has gone into the work, but said enthusiasm is in no way dimmed, and there are hopes of a revival in the future. Meanwhile the title of the Club is to be changed to the Derby Model Car and Power Boat Club. Present Hon. Secretary is P. J. L. Bliss, 1 Lime Grove, Chaddesden, Derby.

Model car folk anywhere in (or for that matter out) of the London area should make a note of the date of the Edmonton Club's Annual Dinner, which is an "Open" event for all capacities. It takes place at the Angel Hotel, Edmonton, on Saturday, February 16th, and tickets, price 15/-, are obtainable from E. J. Pickard, 53 Fairfield Road, Edmonton, N.18. An even more hilarious "do" is expected this year than of yore, and I can't say fairer than that. In passing, the Club's Annual Christmas Draw raised over £55, thus getting them out of the "red" and clearing the cost of track building, etc., in addition to putting £25 into the prize fund. They would like to thank all those who contributed to this happy state of affairs.

Club secretaries who have studied LAC Luckham's imaginative suggestions on page 189 for pepping up model car racing will no doubt by now have sent out for a large-sized bottle of aspirins, just in case they happen to come into force next season. In point of fact there is a good deal of sound sense in his proposals, which, if adopted, would add considerably to the interest of the game, quite apart from bringing it more into line with the full-sized stuff, which is presumably what most of us are after. Or is it?

The principle drawback to the rather grandiose schemes put forward lies in the cumbersome machinery which would be required to make them work; in fact my own private view is that the said bottle of aspirins will be required for those luckless officials who have the job of applying even Jim Dean's much simpler handicapping scheme. The idea of more and more classes and sub-divisions of classes isn't likely to appeal to organisers of Open Meetings, particularly as they would have the task of "scrutineering" the mixed entries, and as for additional distances for records, the present-day King-Pins of the game won't welcome these either I feel, whilst they can keep on top by merely doing a flying quarter-mile faster than the next man. Nevertheless, several of friend Luckham's ideas have been pet ones of my own for a long time. For instance, I'm with him every time on the question of limiting the various classes to appropriate prototypes. I too would like to see the end of 10 c.c. Coopers and 0.5 Ferraris ,and I'm not alone in this matter.

As this month's tail-piece, Ken Procter tells me he has totted up the Sunderland "Happy Family's" mileage to Open Meetings in 1951, and if we include the M.C.A. meets at Derby (the talking kind) this reaches the rather staggering total of 4,420. Net results of these journeyings, 37 per cent. of the "Graded" and 45 per cent. of the "Placed" awards.

MODEL MAKER
incorporating
THE MODEL MECHANIC & MODEL CARS

Readers' Survey

CUT ALONG THIS DOTTED LINE WHICH WILL NOT THEN MUTILATE YOUR COPY

This questionnaire covers all aspects of "Model Maker". Many readers will therefore find some questions not applicable to their own interests, when they should be scored through. The General Section will enable us to assess reader interest in the various departments of the magazine. Your co-operation in completing the form as fully as possible will be greatly appreciated, and will not only assist us in providing more exactly what the majority desire, but also help in answering the many trade enquiries that we receive.

General

1 Where do you buy your Model Maker ?
- (a) Model Shop ☐
- (b) Newsagent ☐
- (c) Subscription ☐

2 How many people read your copy each month ? ☐

3 List these sections in order of interest to you
- Boats (other than sailing) ☐
- Cars ☐
- Railways ☐
- Architecture ☐
- Engineering ☐
- Photography ☐
- Yachts ☐
- Trade Reports ☐
- Club Reports ☐

4 What new sections would you like to see ?

.....

5 Do you like full size plans of models, etc., to be available as a service ? ☐

Boats

6 List in order of interest to you
- Constructional ☐
- Descriptive ☐
- Radio Control ☐
- Scale, working ☐
- Scale, non-working ☐
- Power Boats ☐
- Engines ☐
- Theoretical ☐
- Unorthodox ☐
- Electric powered ☐
- Steam powered ☐
- I.C.E. ☐

Cars

7 List in order of interest to you Powered models :
- (a) I.C.E. ☐
- (b) Other power plants ☐
- Non-working models ☐
- Speed models ☐
- Historic scale ☐
- Cable racing ☐
- Rail racing ☐
- Home constructed engines ☐
- Prototype articles ☐
- Prototype plans ☐
- Commercial vehicles ☐
- Passenger carrying models ☐
- Contest models ☐

Railways

8 What gauge(s) interest you ?
- TT ☐
- 000 ☐
- 00 ☐
- 0 ☐
- Larger than 0 ☐
- "Live Steam" ☐
- Have you a layout ? ☐
- Basement ? ☐
- Attic ? ☐
- Portable ? ☐
- Do you build your own locos ☐
- Rolling stock ☐
- Track ☐
- From Kits ☐
- Buy readymade ☐
- "All your own work?" ☐
- Is your layout signalled ☐
- Scenic ☐
- Are points manually controlled ☐
- Mechanically controlled ☐
- Approximate foot run of layout ☐
- Do you stick to one proprietary supplier for all parts ☐
- Or buy from a number of makers ☐
- List in order of interest to you
- Descriptions of other people's layouts ☐
- Instructional articles ☐
- Constructional "step-by step" articles ☐
- Prototypes ☐
- Lineside features ☐
- Trade reviews ☐

Architecture

9 List in order of interest to you
- Detailed models ☐
- Cardboard models ☐
- General constructional ☐
- Descriptive ☐
- Dioramas ☐
- Historic ☐

MODEL MAKER

Engineering

10 List in order of interest to you

- Workshop accessories ☐
- Hints and Tips ☐
- Lathe operation ☐
- Constructional ☐
- Maintenance ☐
- Descriptive ☐

Photography

11 List in order of interest to you

- Hints and Tips ☐
- Gadgets ☐
- How to make articles ☐
- Technical ☐
- Competitions ☐

Yachts

12 List in order of interest to you

- Constructional ☐
- Theoretical ☐
- Contest reports ☐
- Accessories ☐
- Historical ☐
- Club reports ☐

Trade Reports

13 List in order of interest to you

- Test Bench ☐
- Individual reports ☐
- Book reviews ☐
- Engine tests ☐

Club Reports

14 List in order of interest to you

- Engineering clubs ☐
- Railway clubs ☐
- Yacht clubs ☐
- Car clubs ☐

Readers' Modelling Habits

15 Do you buy your modelling requirements—

- Locally ☐
- By post ☐

16 Name & address of usual supplier

.....

.....

.....

17 Do you belong to a club ☐
If so, name of club(s)

.....

18 If a "lone hand" do you meet other modellers

Regularly ☐ Sometimes ☐
Seldom ☐ Never ☐

19 Have you a workshop of your own ☐
if so, have you a lathe or power operated tools ☐
if not, are you a "kitchen table" modeller ☐
Have you occasional access to a workshop ☐

20 If you travel in connection with your hobby is it by

Car ☐ Motorcycle ☐
Bicycle ☐ Public transport ☐

21 Does your family co-operate with you in your modelling (e.g. father/son combined efforts, etc.) ☐

22 What is your normal occupation

Executive ☐ Clerical ☐
Scholastic ☐ Civil servant ☐
Professional ☐ Retired ☐
Manual ☐ Still at school/college ☐

23 Age Group. Are you —

Under 21 ☐ Under 30 ☐
Under 40 ☐ Over 40 ☐

24 How many years a model maker ☐

25 Any hobbies other than model making, if so, what

.....

26 Do you regularly read any other modelling magazines besides Model Maker, if so, what

.....

We should appreciate the widest possible response to this survey. Readers are invited to complete their names and addresses, and those so doing will receive a more complete personal report than can be published in the magazine.

Those who would prefer to remain anonymous are equally urged to submit their forms. It will help us in judging regional trends if they will, however, insert their town and county in the space below.

A 1½d. stamp should be affixed and the form sent in an unsealed envelope. Those who desire to elaborate their replies with a personal letter must seal their envelopes and affix a 2½d. stamp.

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ADDRESS.....

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