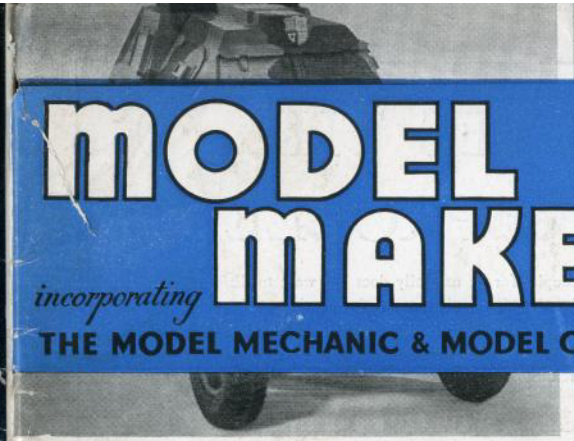

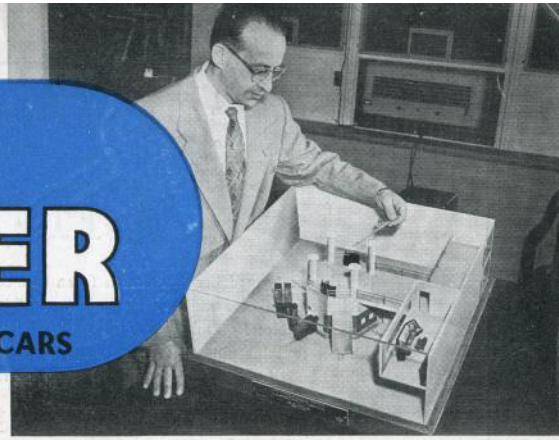

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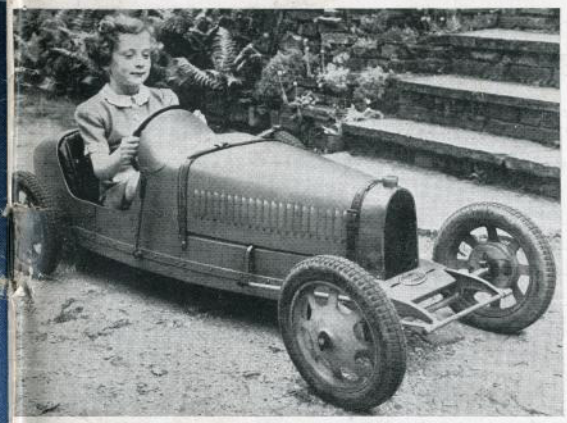

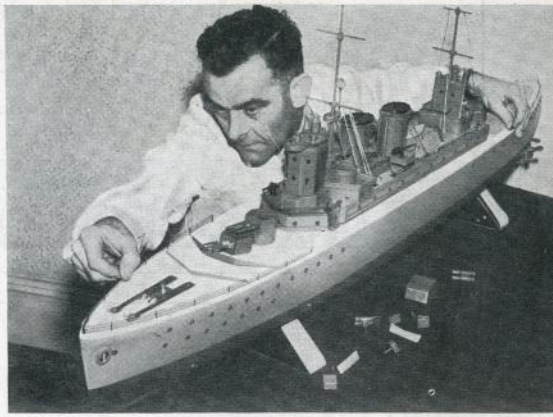

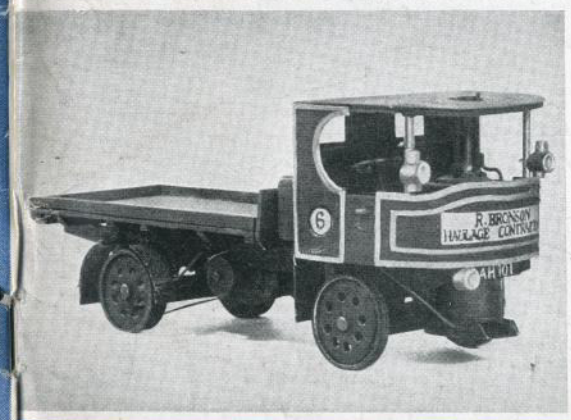

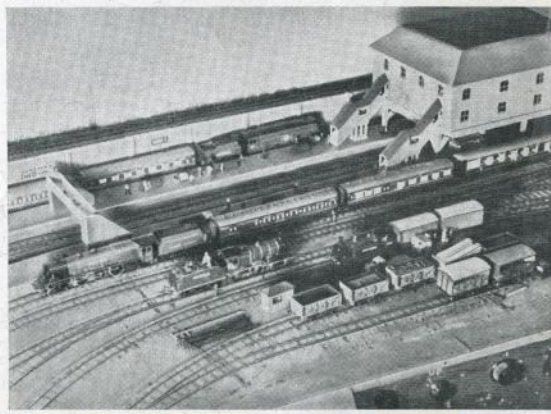

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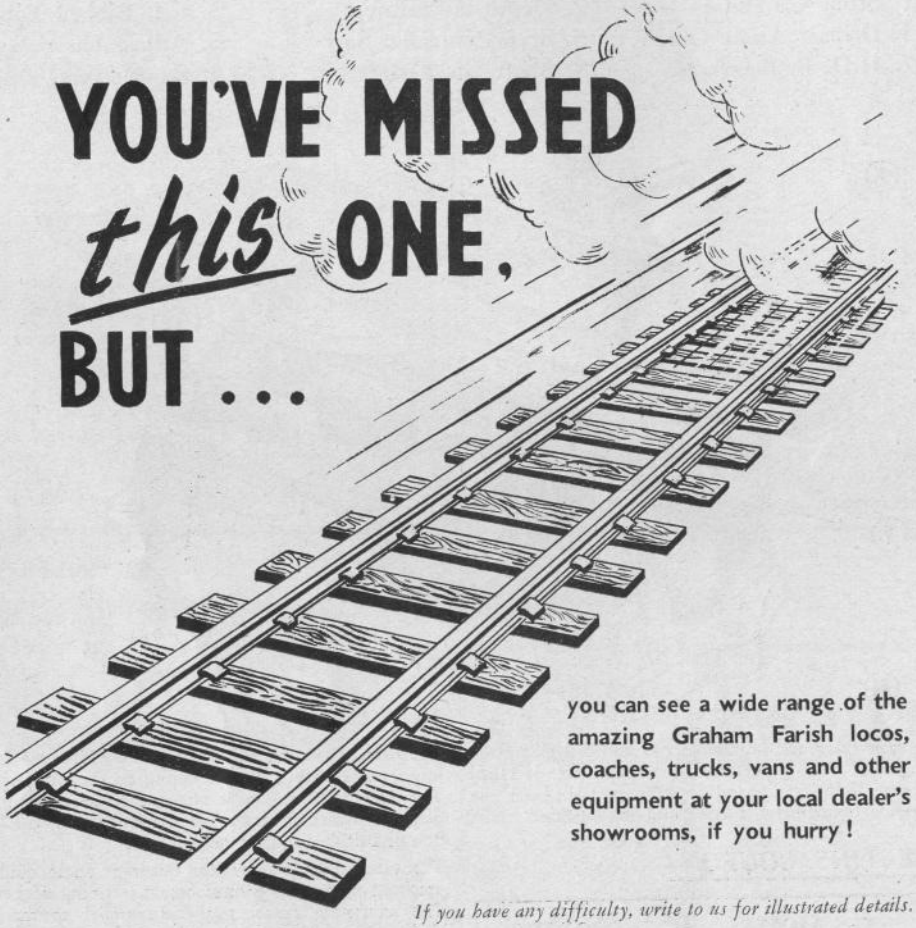

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Contents

VOLUME 2 No. 14 JANUARY 1952

GOOD RESOLUTIONS GALORE!

THE dawn of January 1st finds most of us rather self-consciously slipping a brand-new diary into our pockets, or with an air of rectitude tearing off the protective covering to one of those page-a-day calendars that are the aftermath of Christmas, or the thoughtful offering of some trader who desires to be well remembered the whole year through.

At the same time many of us have made a number of good resolutions—some publicly to a sceptical family, others more privately to an equally sceptical conscience. What sort of resolutions should model makers make—and, of course, keep? There are purely domestic ones, such as not to solder on the dining room table again, to clear up messes promptly and not with much grumbling at the third and final demand, to perform some of those unwelcome domestic tasks that we know are far below the dignity of our beautiful model making tools. . . . These we shall all make—and break—in their dozens.

But there are some resolutions, which, if acted upon while the pioneer spirit is still burning within us, can result in lasting good to our model making. Easiest of all, is to decide that this year membership of the local model club is a "must", or, if already a member, that regular attendance with plenty of give and not too much take will be the aim. It is surprising how many "lone hands" struggle on for years, with a club almost round the corner without realising how much their own troubles may be eased by an exchange of views, or how many less expert enthusiasts are living in the district who would benefit from their longer experience. Club secretaries, in their turn, might profitably make a vow that no model maker shall be a stranger in their midst. Local model dealers will often be the best placed people to round up these strangers and see that they receive a welcoming hand: after that it is up to them to respond, or pursue their lonely way if that is how they like it.

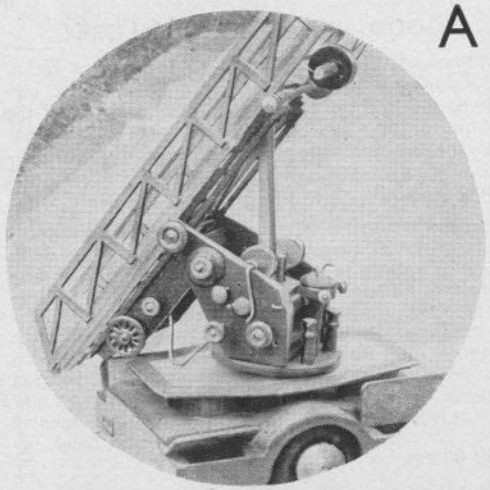
For those unfortunates without a local outlet for their problems there is always their monthly *Model Maker*. Its columns are just as open to air the views of the unknown as the expert. Provided they have something to say, we are glad to provide the opportunity. Again, if they are up against it, our team of expert contributors will always be glad to give a specialised help. Very often it is readers' queries that lead to the development of a new series of practical articles, because until he was told the expert thought "everybody knows that"!

ON THE COVER . . .

Top right : Model of a proposed reactor or "atomic furnace"—a project of North American Aviation Inc. of California. Centre left : The fabulous Baby Bugatti model. Centre right : Builder A. Casebrook with his radio controlled HMS "Stantonbury" (A "News of the World" Photograph). Bottom left : An 0 Gauge lineside model of a Garrett Steam Road Wagon. Bottom right : Another interesting shot of C. Lockwood's 00 layout at Maidstone —now dismantled.

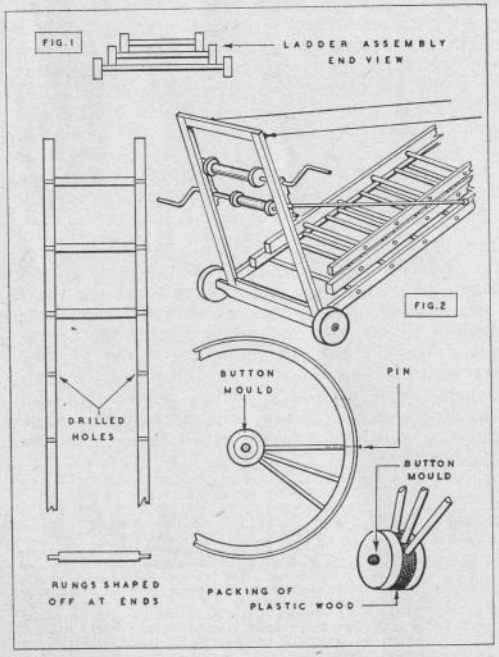
A FLEET OF MINIATURE FIRE ENGINES Pt III

BY VICTOR SUTTON, WHOSE MODELS HAVE BEEN EXHIBITED ALL OVER THE COUNTRY



Detail of the Turntable Ladder illustrated in Part II which appeared in our December issue.

Below : Details of the construction of Escape ladders, gear and wheels.



I ALWAYS consider that the impressive part of my model fire brigade when on show would be the six-escape units and the two turntable-ladders, and this article will deal with this type of appliance only. The builders will send pictures if you apply to them and the rest is easy if you follow these plans. Escapes must be made to mount on the appliance at the correct angle otherwise they are not realistic.

All my escapes have three sections which run inside each other, and I use $\frac{1}{4}$ in. x $\frac{1}{8}$ in. obechi wood with rungs in $\frac{1}{8}$ in. x $\frac{1}{16}$ in. which I cut into suitable lengths and then shape off the ends so that these just fit in leaving the correct flat tread. I fix the two side struts together and then drill through. Next I put the first rungs in position with Croid. The next strip I fit on and tap down with a light hammer. The three sets are made to work smoothly on the rungs. The upright supports at the back are then fitted and a strut of wire added as shown. Guy-ropes run from top at back to the under bearer on the front. Note the wheels at rear and again on the top and foremost ladder.

The winding handles are made from wire and sections of cork or dowel rod. Ladders are held in place with turned over pins, but it is difficult, on models so small to get the ladders to run when operated with thread.

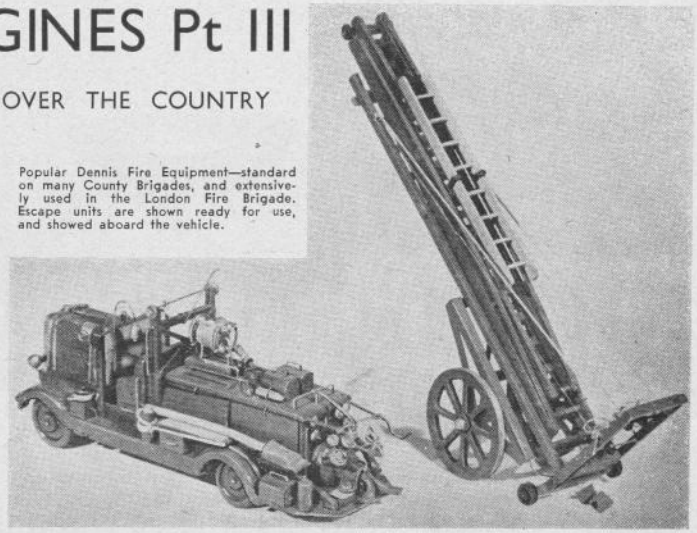
The undercarriage is of a sliding type and shown in sketch, and this I make in $\frac{1}{4}$ in. x $\frac{1}{4}$ in. and other woods. It slips on to the wider or lower ladder and is again held with turned over pins.

The wheels start off with a fretted framework rim. This, when finished has a cardboard rim which keeps it in shape. The hubs I make with $\frac{1}{4}$ in. wood wheels as used on aeroplanes and the spokes are from $\frac{1}{16}$ in. dowel rod which I shape off and fit into the two hubs and then hold with a small pin pushed through from the outer rim. I then fill in with plastic wood. The actual hub cap I build up with flat beads or whatever else I can find to resemble the right shape.

In making the turntable ladder this is built on the type of chassis I explained. The body features are the same and so are the seating arrangements. The one shown is not a pump as well and therefore more easy to build. Incidentally, there are at least 20 types of these. Some are now fully enclosed and carry pumps both mounted on the sides and at the rear. The main difference is in the tool and hose lockers on the sides which are longer and deeper.

A platform, which rotates is also mounted as shown and extends over the rear wheels.

There are several types of mechanism used and these are all different. The ladder should be able to extend at a fair angle and stand rigid. Mine are 4 ft. fully extended. All the parts I make up to represent the real things from scraps of galleon parts, wire dowel, beads and anything which looks as if it is part of the real thing.



Popular Dennis Fire Equipment—standard on many County Brigades, and extensively used in the London Fire Brigade. Escape units are shown ready for use, and showed aboard the vehicle.

The ladders in these turntables I make in the same way as the escape ladder parts but I then cut out the girder work in thin cardboard. This is then glued to the sides of frames and then I add the flat strip-wood to represent the girders. By doing this one gets a better job and the struts do not part as they would if just glued on in the normal way. Although the top rails of the girder work are at equal levels the lower part must be made more shallow to take the depth of ladder. This is shown in small sketch.

The model shown represents the 100-footer and some have four ladder sections and others three. Due to the strain these ladders are still very much retracted when the appliance is fully extended. The 150-footer may have as many as six ladders and fully extended would probably show the ladder 50 per cent still interlocked.

On these engines of mine the T.T. is the longest and probably runs to 14 in., but the ladder carries over the nose of bonnet by at least 2 in. which, in the real thing means that this is the most difficult appliance to drive.

If the balance of the appliance in the model is not quite sound I suggest adding some weights of lead somewhere in the tool lockers.

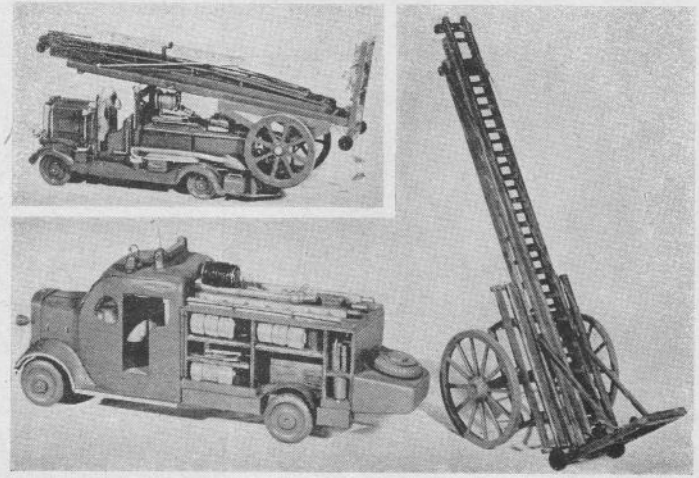
There is also a telephone line which runs up on a drum housed at the side of the operating platform.

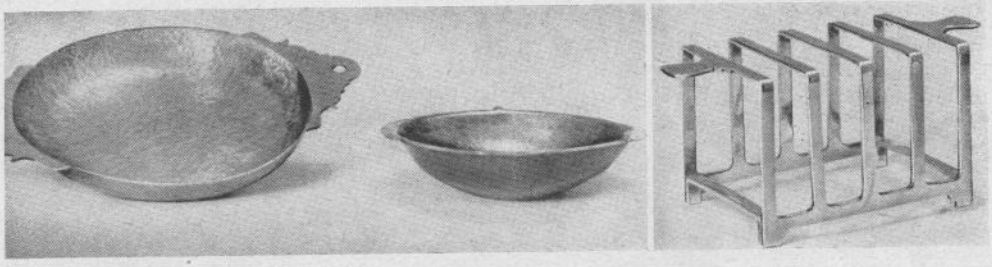
A nozzle is set at the top and a small platform on which the fireman stands.

When not extended the ladder fits down on a structure just behind the driver's seat. On the longer type the fitting is often on the extreme front of chassis. When extended in the upright position the ladder should come level with the base platform.

All ladder sections are mostly aluminium coloured and this seems to have been adopted universally since the war.

All structure work at base would be in red with gold linings. Wheels and other small fittings are in brass which I do in gold. Platforms I line with thin cork and these are edged in red.





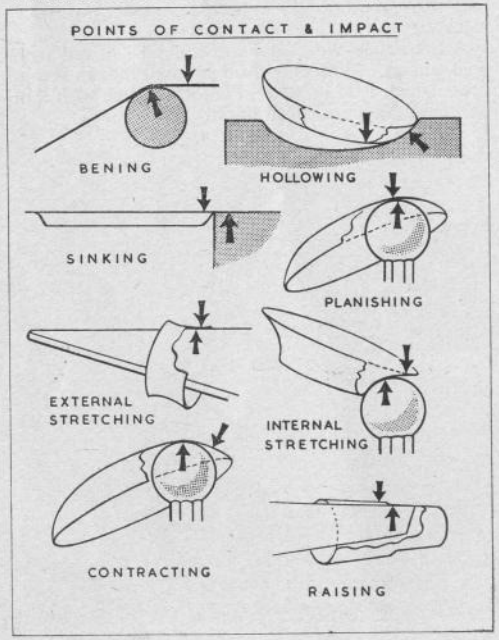
DECORATIVE METALWORK

BY A. SMITH

BEING a member of the mike and sine bar tribe, it is often a pleasant change from the normal round of work to make something where the skill of hand and eye is of greater value than the inherent accuracy of a particular lathe.

These odd pieces of decorative metalwork are fascinating to make and are useful illustrations to the "domestic boss" when explaining to her how valuable the building of a 5 in. gauge loco is in training you to make napkin rings, toast racks, etc.

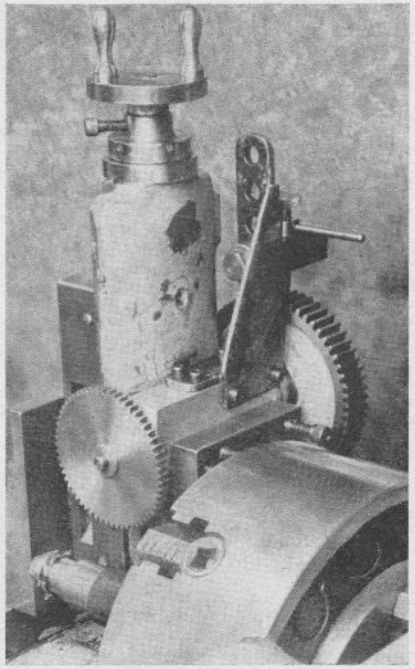
Toast racks, similar to that illustrated, are useful for a beginning as their manufacture is somewhat related to the normal run of model engineering. The overall size of the one shown, excluding the handles, is 3 in. long, 2 in. wide and 2 in. high. The gaps are $\frac{1}{2}$ in. wide. A development was first made and subsequently marked out on an odd piece of copper of 18 gauge, all cutting and filing was completed before folding in the bench vice. Two narrow strips were cut from the waste from the gaps to form the bottom struts and silver soldered in position. Soft solder is not suitable if you intend to have the finished article chrome or silver plated.



The two copper dishes shown in the second photo may be used for sweets or purely in a decorative capacity alongside horse brasses and the like. It is useful before commencing the beating operations to strike concentric circles at $\frac{1}{2}$ in. intervals with a pencil compass to guide the hammer blows. Whilst the deep dish was hollowed completely from the centre to the outside the hollowing of the shallow dish commenced outside the diameter which it was desired to leave as a flat bottom.

Frequent annealings are necessary or splitting of the metal may occur due to hardening.

After the metal has been beaten to the desired shape a final annealing should be given and the surface carefully cleansed using very fine pumice powder, a smooth, scratchless matt surface being the aim. Planishing may now be commenced. Contrary to popular belief, planishing does not consist in covering the surface with dents from the ball-pien of an engineer's hammer, as seen on the countless copper jugs for sale in "Ye Olde Shoppe" windows. A study of the diagram "Points of Contact and Impact", will show that while the forming of the shape is performed with blows offset from the point of contact of the metal and the former planishing is done with blows directly above the point of contact. The hammer face should be flat (actually no hammer face is made perfectly flat or bruising of the material would be the result of every blow), and highly polished. The purpose of planishing is to form an even surface texture to the object, at the same time work hardening the metal thus stiffening the shape. No part of the surface should be missed, the blows starting at the centre and travelling outwards towards the periphery.



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Above left : The Completed Dividing Attachment installed in the 'Model Maker' lathe. Below : Some of the changewheels for the 'Model Maker' lathe.

IT was decided that the set of changewheels for the lathe should consist of two of 20 teeth and one each of 30, 40, 50, 55, 60, 65, 70, 80 and 90 teeth of 20 diametrical pitch. This set will cover all the threads likely to be encountered in model engineering as well as giving a good range of fine feeds.

The Blanks

The first job was to turn the blanks, so all the odd pieces of $\frac{1}{4}$ in. or more m.s. plate were collected. Each blank was roughed out to shape by drilling and sawing, then set up in the 4-jaw chuck and faced both sides until the required thickness of $\frac{1}{4}$ in. was reached and then bored $\frac{9}{16}$ in. dia.

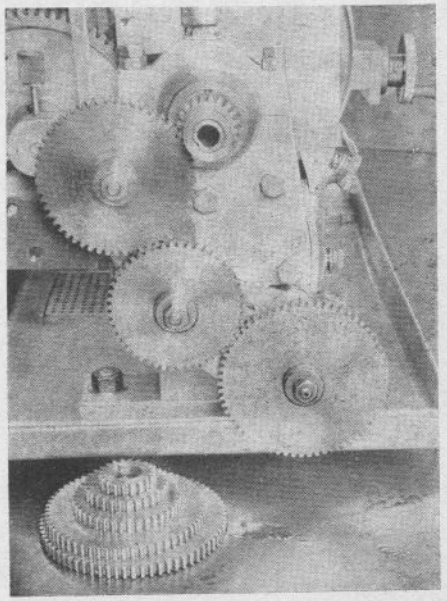
The blanks were then mounted on a mandrel and turned down to their respective diameters.

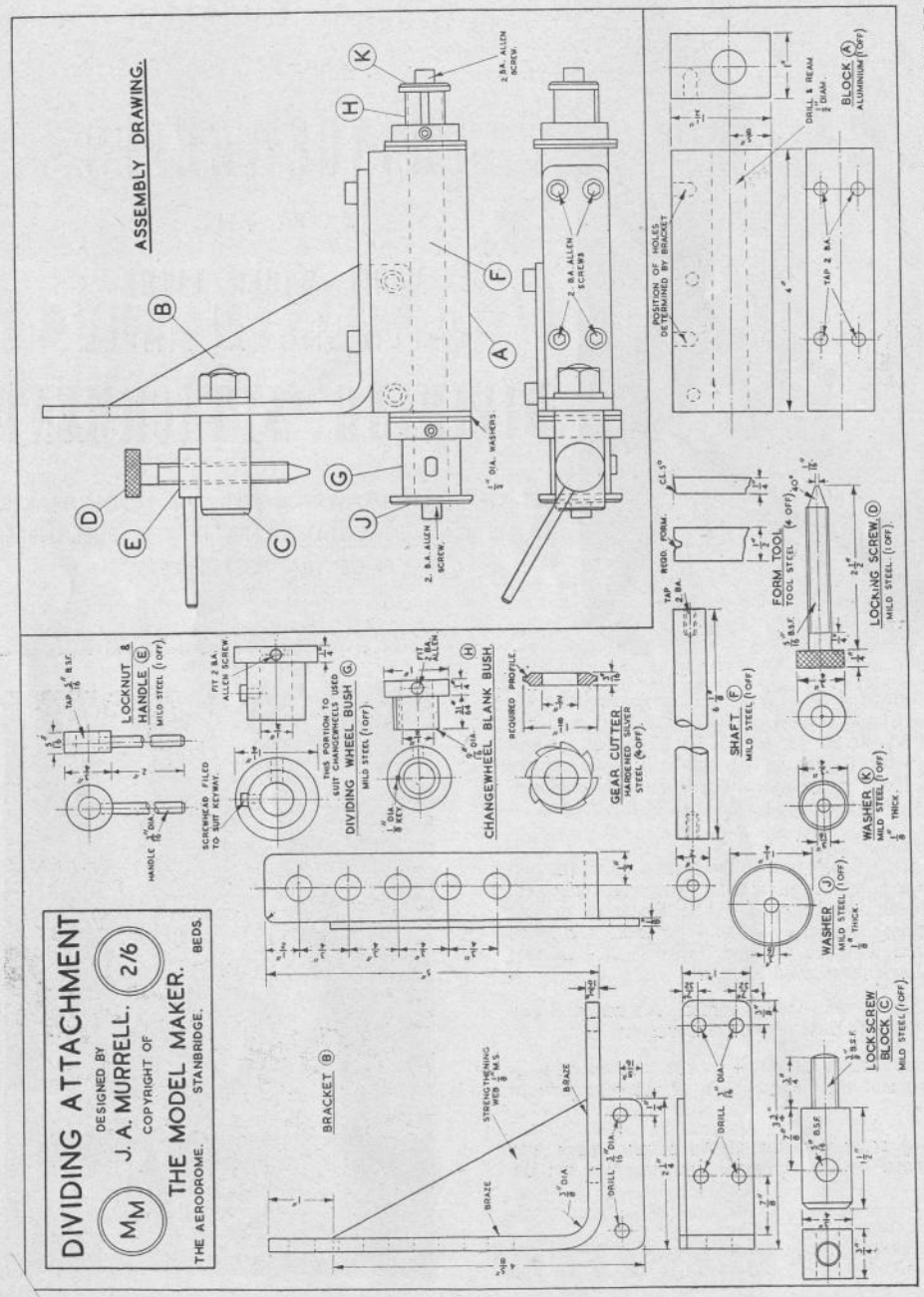
A semi-circular keyway $\frac{1}{8}$ in. dia. was cut in each blank to suit the bronze bush of the changewheel stud.

Having completed the eleven blanks, work was commenced on the equipment necessary to cut the teeth.

The Cutters

The cutters needed for this range of wheel are Nos. 2 (55-134 T), 3 (35-54 T), 4 (26-34 T), and





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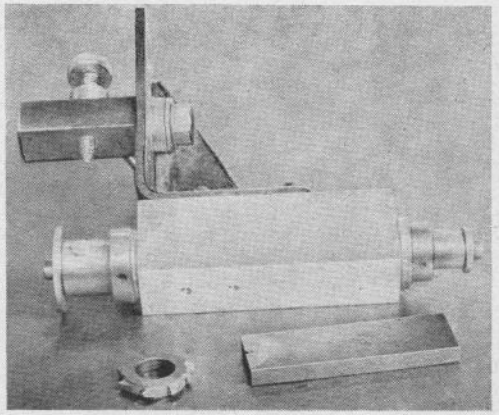


Partially completed dividing attachment for the changewheels. Note hardened steel cutter in foreground.

6 (17-20 T).

In order to machine the correct profile it was decided to make four form tools from some odd pieces of tool steel 1 in. x $\frac{1}{4}$ in. ($\frac{1}{2}$ in. is quite wide enough). At first I thought of borrowing four 20 D.P. changewheels and filing the form tools to suit. However, a friend in a local factory was able to cut one tooth of the correct form in each piece of steel, using a proper gear cutter. One of the resulting form tools can be seen in the photograph.

Now work could commence on the cutters. There was still a piece of silver steel left over from the mandrel of the lathe so this was utilised. It was turned down to $1\frac{1}{8}$ in. dia., bored $\frac{9}{16}$ in. dia., and four pieces parted off $\frac{3}{16}$ in. thick.

Each piece was now mounted on a mandrel and roughed out to shape using a round-nose tool, and then finished to shape with the form tool. The corresponding number was stamped on the cutter as soon as it was removed from the mandrel. Next the teeth of the cutters were filed to shape and backed off, hardened and tempered and were then ready for use (see photograph).

Dividing Attachment

The next job was to devise some method of holding and dividing the blanks.

A search in the scrapbox brought to light a piece of aluminium 1 in. x $1\frac{1}{2}$ in. x 4 in. This was mounted in a 4-jaw chuck, the ends faced and the block drilled and reamed $\frac{1}{2}$ in. dia. as shown in the drawing.

A $\frac{1}{2}$ in. dia. m.s. shaft is turned as shown on the drawing and fitted through the block.

Two bushes were turned as shown, one to suit the changewheels of the lathe in use and the other to suit the blanks. Keys are fitted to suit and the bushes locked to the $\frac{1}{2}$ in. dia. shaft by 2 B.A. Allen screws. Two $\frac{1}{8}$ in. washers are placed between each bush and the aluminium block.

A bracket had to be made to hold the locking screw. This was made from a length of 1 in. x $\frac{3}{16}$ in. m.s. strip bent at right-angles and drilled as shown. A strengthening web is pinned and brazed to the 1 in. strip as shown.

The bracket is fixed to the block by 2 B.A. Allen screws.

The locking screw is turned from a piece of $\frac{3}{4}$ in. dia. m.s. bar, turned to $\frac{5}{16}$ in. dia. and threaded $\frac{5}{16}$ in. dia. B.S.F. A locking nut was made from a piece of $\frac{3}{4}$ in. dia. bar and fitted with a $\frac{5}{16}$ in. dia. handle as shown.

The locking screw is fitted into a piece of $\frac{3}{4}$ in. square bar the end of which is turned to $\frac{3}{8}$ in. dia. and threaded $\frac{3}{8}$ in. dia. B.S.F. This block being clamped to the bracket as shown.

Dividing Attachment in Use

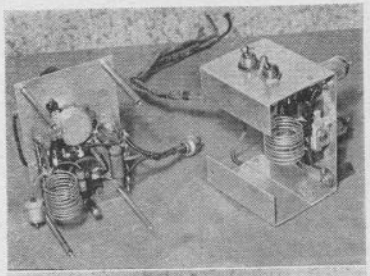
The attachment is held in the toolpost and the topslide is clamped to an angle plate bolted to the cross slide. (The topslide now acting as a vertical slide.)

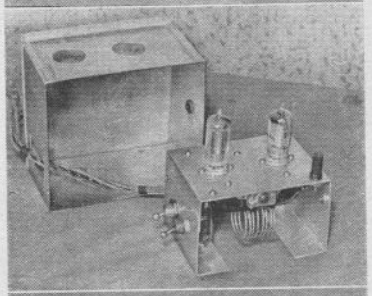
The required cutter is mounted on a mandrel held in the chuck. A blank is fitted on one end of the dividing attachment and a changewheel of the required number of teeth fitted on the other end, these being held fast by 2 B.A. screws and washers. The locking screw is tightened and then the saddle is moved until the block is exactly central over the cutter. The saddle is locked and the required depth of cut is put on by adjusting the vertical slide.

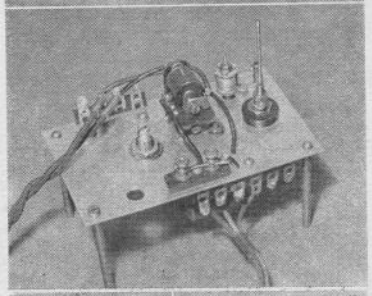
The cutter is run at 200 r.p.m., and the cross slide traversed by automatic feed of .001 in. per rev. A constant stream of cutting oil being directed on the cutter.

All eleven changewheels were cut with the four cutters, number two, of course, having to cut the six largest wheels. Despite this the silver steel cutters have stood up to it very well. All the teeth of the changewheels are perfectly formed and mesh smoothly with each other.

Although this dividing attachment was designed primarily for cutting the changewheels for the *Model Maker* lathe, it can, of course, be used for any other spur wheel cutting.

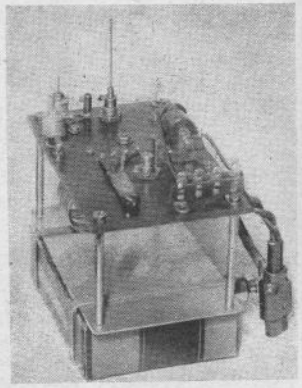






From top to bottom : Under chassis view of receiver and transmitter.

Two valve transmitter using No. 3S4 valves. One valve receiver using gas triode XFG1. Transmitter, side view, showing switches and meter. Two valve transmitter using DL35 valves. On the right : Latest type one valve receiver using XFG1. This receiver complete with batteries weighs 1 lb. 10 ozs.



Constructional Details

IT was my intention to build H.M.S. *Stantonbury* from scratch but owing to the difficulty in obtaining suitable timber for the hull I decided to dismantel H.M.S. *Barrie-Town* and use the same hull with some modifications. Apart from the hull the boat has been completely rebuilt. Following a number of tests on the water I decided to reshape the bows, the purpose of this was to increase the speed.

This reshaping proved a difficult job but was well worth while; not only did it give a better turn of speed but it improved the looks of the boat considerably.

During tests the boat showed a tendency to roll. This was corrected by increasing the weight of keel.

The quarter-deck on the original hull was 1 in. lower than the main deck. To provide accommodation for the steering gear, the quarter-deck was raised to the level of main deck.

The fitting of this new section was not an easy job, but after much carving and sanding, was accomplished. At first I feared the joint would show, but after painting this was not so.

The deck is in the form of a close-fitting lid to give access to the steering gear and rudder position selector. This lid is held in position by one of the after guns, and can be quickly removed.

The deck from the bows to the quarter-deck is in one piece and is of the best quality $\frac{1}{8}$ in. plywood. This is strengthened at 4 in. intervals with $\frac{1}{4}$ in. square spruce.

The deck is puttied and pinned with copper pins at 2 in. intervals. I found this method the best. Many modellers use glue: in my opinion this is a great mistake as should the deck need removing it is impossible to do so without doing severe damage to the hull.

The superstructure is a separate unit. This acts as a lid, covering opening in main deck. This is easily removed, and is held in position by two clips disguised as searchlights.

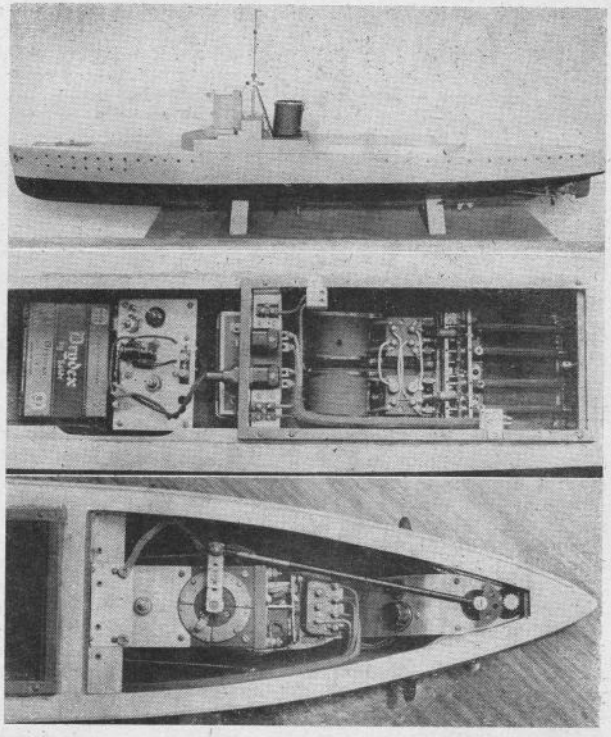
RADIO CONTROL OF H.M.S. "STANTONBURY"

A PRACTICAL APPROACH TO RADIO CONTROL BY A. R. CASEBROOK

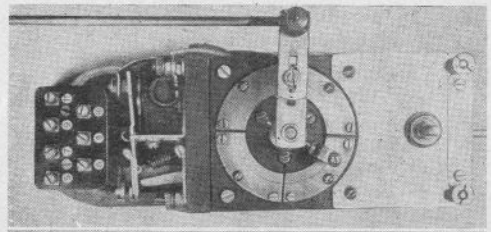
Size of superstructure is 24 in. x $6\frac{1}{2}$ in. x $1\frac{1}{4}$ in., and is made of spruce with plywood deck.

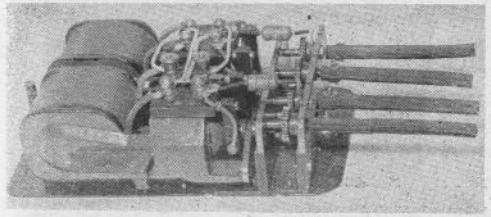
Both masts (foremast being tripod) are of new design, made of brass rod and tube. Both are telescopic to facilitate carrying in a case. Foremast is complete with direction and radar aerials. Funnels are made of zinc, built on beech wood formers. These are of the latest type and are streamlined. Control tower, bridge, and aft control tower, also funnels are made from sheet zinc, brass and aluminium. Main and aft fire control top, searchlights, director towers, capstans, bollards, fairleads, and 4.7 high-angle guns are turned from hard brass and hand finished. Gun turrets are made from beech with guns turned from brass rod. All turrets turn in brass bushes, and in some cases elevate and depress, while blast bags are fitted to all guns.

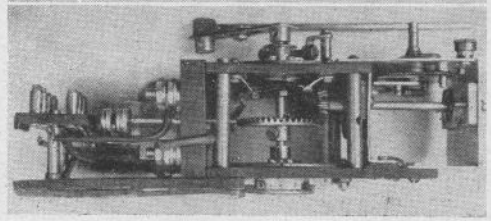
Main armament consists of twelve 6 in. guns housed in turrets of three. Other armament is A.A. guns, multiple pom-poms, also two sets of torpedo tubes are fitted—one to port and one to starboard. After-gun turret when turned operates a switch controlling power from a $4\frac{1}{2}$ volt battery energising main relay. The purpose of this switch is to prevent bat-



From top to bottom : H.M.S. "Stantonbury" in unfinished condition.
Propulsion motors, batteries and radio receiver. Rudder position selector and main relay. Close-up of rudder position selector looking down. Side view of rudder position selector. Below : Close-up of propulsion motors.







tery running down when *radio receiver* is in the *off* position.

All decks are painted and lined black to represent planks, and when finished received two coats of best quality clear varnish. Hull received, after final rubbing down, two coats of waterproof filling, after a rubbing down with wet carborundum paper (fine grade). Two coats of grey undercoat paint were applied, followed by two coats of "Battleship Grey" to waterline level. From this point to within 3 in. of keel, hull is finished black, remainder being red oxide. Inside of hull received one coat of stopping, two coats of waterproof filling and finished signal red.

Overall dimensions: Length, 5 ft. 1 in.; Beam, 8½ in.; Depth (inside), 5½ in. Hull carved from a solid piece of selected yellow pine, with a wall thickness of ⅜ in.

Rudder Control

Rudder control is by motor-operated position selector. On reception of a signal a small relay-on receiver operates. This in turn closes main relay selector. This switches power to motor turning spindle and contact arm.

Attached to spindle is an adjustable arm to which is attached the telescopic rudder movement arm.

Arc of rudder movement can be varied by adjusting spindle arm (photo of selector shows this clearly).

Fitted to rudder spindle is a ½ in. brass gear. This is in mesh with a 1½ in. gear (unwanted part cut away) attached to telescopic arm. This method gives a smooth, positive action. The reason for using the above method was to increase the arc of rudder movement.

The rudder is made from sheet copper, fitted with a $\frac{3}{16}$ in. dia. shaft in brass bearings.

Rudder movement is as follows: —

(1) Ahead with boat motors *Off*.
(2) To Port with motors *On*.
(3) Ahead with motors *On* at full speed.
(4) To Starboard with motors *On*.

Experimental Work

Another type of transmitter and receiver is now being tested, these will use miniature valves No. 3.S4. The transmitter is a two vale push-pull type which requires only one coil; feed-back is achieved by a cross connection of the grids and anodes through small condenser. Size of complete transmitter is 4 in. x 3 in. x 2½ in. deep. This is housed in a separate metal box 5½ in. x 4½ in. x 3 in. This is fitted in a wood aluminium lined case. Case is 17 in. x 9½ in. x 5 in. and is made with two compartments, the top housing transmitter, the lower H.T. and L.T. batteries. H.T. supply 90 volt, L.T. 1.5 volt. Complete unit can be quickly removed for service, being held in position by two quick-release bolts.

Particular attention has been given to the layout of components and finished units, in my opinion nothing is more annoying than having to partly dismantle units before service.

An eight section steel copper-coated rod aerial is used on transmitter. This is mounted on insulated brackets on side of case. When not in use aerial is folded and carried inside case.

On switching on to the stand-by position the valve filaments are switched on, the H.T. positive is also switched on, this being operated to transmit signal.

Receiver is a one-valve, size of panel being 4½ in. x 2½ in. aluminium, this being mounted on rubber shock mountings.

With this type of receiver it is important that a very sensitive relay is used, and that it will operate on under 1 milliampere. H.T. supply is 45 to 67½ volt, L.T. 1.5 volt.

Transmitter now in use is a two-valve tuned anode tuned grid circuit of simple design, using two low drain battery Pentodes No. D.L. 35. When transmitter is in operation an unmodulated R.F. signal is transmitted.

In the design and construction of receiver and transmitter, one rule has been adhered to, this being *simplicity* with the best results. In the course of experiments (which were many) I found this policy well worth while.

For experimental work and tests make a point of using the lowest power possible. I am fortunate in having a friend holding an amateur transmitting licence. He gave me valuable assistance in this matter. Construction of an absorption wave meter and a field strength meter will be started in the near future.

In fairness to the G.P.O. (and others concerned) make a point of checking your frequency.

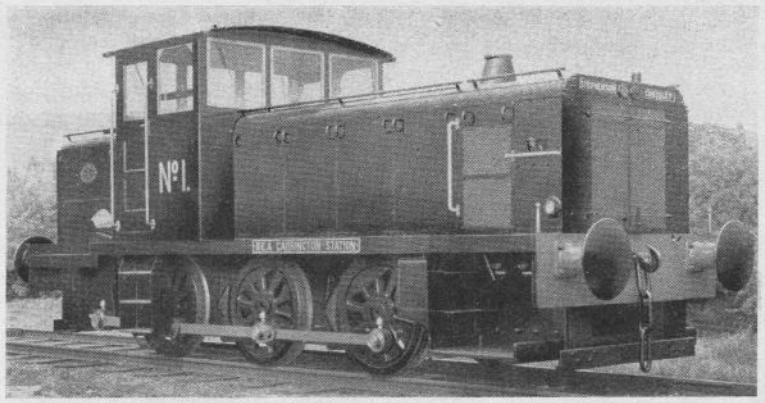
To facilitate the easy reading of current and to adjust receiver for signal strength, I have fitted in the anode circuit a jack and plug. With this method there is no need to remove receiver from boat. In the near future, a small M/A meter will be fitted in a convenient position in the boat.

I found that it is important to keep the meter and phone leads as short as possible when reading current and adjusting for signal. When making final adjustment for maximum operating position it is wise to keep transmitter on the same level as boat. I was troubled for some time for this reason when adjusting with boat on table and transmitter at ground level.

I made many experiments to find the best type of aerial for receiver. These were: —

$\frac{1}{16}$ in. copper rod mounted near forward mast.
Copper silk covered wire mounted on the rail stanchions.
Wire mounted between masts and down to jack-staff.

The latter was my final choice, being copper silk covered wire from an old radio coil, suspended from small insulators.



STEPHENSON CROSSLEY

DIESEL SHUNTER

Illustrations are by courtesy of the builders, Messrs. Robert Stephenson & Hawthorns Ltd. Data on the prototype reproduced from "Crossley Chronicles" No. 153, published by Messrs. Crossley Bros. Ltd., who supplied the motive power for the locomotive.

THE sentimentalist amongst railway modellers—and who indeed can have much to do with locomotives without being in some part a sentimentalist?—will welcome this little diesel shunter that carries on the great heritage of the *Rocket* through 135 years of railway history.

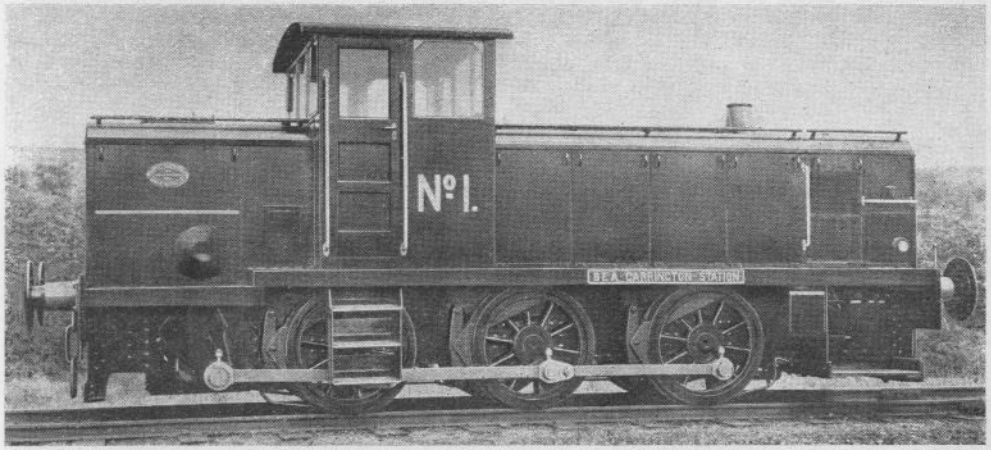
We offer it as a particularly suitable prototype for those very many adherents of the fast growing TT gauge who have been wondering what they can build within their new scale that will not tax unaccustomed skill in this small size, yet look attractive on completion. With the limited range of power units that can be squeezed into the available space the square lines of this locomotive should prove a blessing.

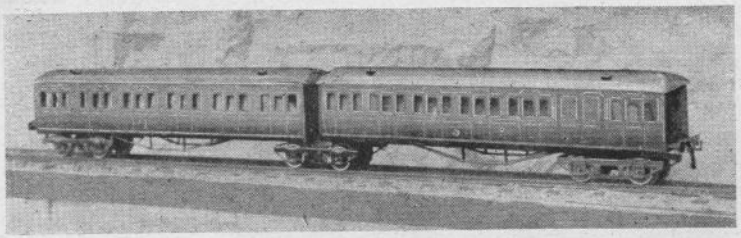
The illustrations should serve to provide a wealth of detail for modellers. Wheels, axle boxes, springs, etc., are designed in accordance with normal steam locomotive practice as used on heavy industrial units, and as such should provide no unusual difficulties in matching up from the small commercial parts available, or complete fabrication at home would introduce no problems not already covered in existing model literature.

Cab is totally enclosed, with drop windows at the sides. End windows are fixed and equipped with hand-operated windscreen wipers. Head and tail lamps, incidentally, reverse automatically in accordance with the direction in which the locomotive is travelling—a piece of electrical wiring that should appeal to those who like remote control trick effects that are in accordance with full-size practice.

Some of the principal dimensions are: —

Gauge	4 ft. 8½ in.	(1437 mm.)
Wheelbase	10 ft. 6½ in.	(3205 mm.)
Wheels—diameter	3 ft. 8 in.	(1120 mm.)
Overall length	27 ft. 5 in.	(8370 mm.)
Maximum width	8 ft. 6 in.	(2593 mm.)
Height	11 ft. 3 in.	(3430 mm.)





★ Improving the Miniature Railway Layout

★ *Continued from November issue*

H. A. ROBINSON PU TS THE CASE FOR ARTICULATED UNITS

ARTICULATED train units have much to recommend them to the model railway operator. They are economical in space without having to reduce coach lengths, run nicely and solidly, adapt themselves well to curves of all kinds, and by virtue of their extremely close-coupling look very realistic.

The "articulating" is effected by carrying two vehicles on three bogies only, the centre one supporting the inner ends of both.

In England the L.N.E.R. was, and still is, the sponsor of articulated units. It began (many years ago now) by mounting the ends of only two vehicles on a single bogey—"twin coaches" they were often called. But these "twins" soon developed into "triplets" and then four and even five coaches were strung together.

Now many of the East Region (L.N.E.R. section) suburban trains are made up of vehicles thus connected, so that eight of ten-coach trains are carried on ten or twelve bogies in place of the sixteen or twenty that would be necessary if normally-wheeled stock was used.

From the miniature train operator's point of view, the marked saving of space that comes from the close-coupling of a model articulated unit is very worth while. The method also by which the vehicles are linked together makes the whole train at once stiff but pliable—indeed more like a snake than anything else, which is just what is required for good running.

In preparing commercial model stock for articulation, the buffers, couplings and bogies of the ends that are to adjoin are removed. Two of the vehicles are now placed on the smallest curve over which they will have to work, their inner ends resting temporarily on one of the loose bogies. This is to give, from the end-angle produced, the minimum distance they can be set apart. For taking the measurement the inside corners must be almost, but not quite touching, and it is the distance between the pivoting points that is required as shown in Fig. 2. These points it will be seen are practically at the coach ends.

If several coaches are being joined together both bogies will have to come from the inner units, also the buffers and couplings from both ends. Preparation of the bogey which will have to support the two ends is carried out by soldering a strip of thin but stiff metal longitudinally on top of the frame as (A) Fig. 3. This may have to be cut to avoid the wheel tops, but it must be left as broad as possible and it should extend to about over the axles at each extremity. This strip acts at once as coupler, spacer and support for the coach ends, and at points near its outer edges holes are drilled and the adjoining vehicles connected by simple bolt joints.

Each bolt (B) however, is soldered to the strip (A) so that the coach-to-coach pull is transmitted through a rigid pivot. The bolt passes through a hole in the coach floor and the final arrangement must be loose enough to give a universal action—without which derailment would take place. The set-up of the swivelling points depends on the make of the bogey in question. A spacing piece (C) may be necessary to give wheel clearance and this should be soldered to either the coach floor or under strip unless the spacer itself is circular in shape.

The joint is completed by putting a light spring (b) on the bolt, the lower threads of which are filed away to give a short distance of smooth shank. Over the spring comes a washer and nut which should not be too loose fitting. If there is any suggestion of looseness fit a second and locking nut.

This way of assembling the joint is most convenient with commercial metal vehicles where the roof is easily removed and replaced. With other types of construction it may be found more convenient to turn the bolt down (Fig. 4). Here a shorter bolt will probably have to be used and care must be taken to see that the spring does not foul the axles. In both methods of fitting, the bolt can be made secure by a thin nut being run on immediately after it is passed through either the strip (A) for the upward way or coach floor for the downward. This saves soldering, and the nut can act as a spacer if surrounded by a washer of the same thickness to give transverse support—that is a washer with a sufficiently big centre opening for the nut to lie inside it. If no spacer is required then the bolt will perforce have to be soldered.

For good running the points of swivelling should never be outside the wheelbase of the bogey and for this purpose fairly long wheelbase bogies are best for articulating purposes. The pivot can be directly above an axle (in which case the bolt will have to be inside the coach) but it must never come outside the critical position. It should be noted that the swivelling points are as near the end of each vehicle as is convenient for the introduction of the spring and turning the nut, but that the distance apart of the points is conditioned as shown by the angle taken by the coach ends on the smallest curve of the system.

The nearness of the swivelling points to the coach ends makes for good "track hugging" and precise back shunting.

The gap between the coaches is small and if suburban stock is being copied there is no need for any gangway connection as surburban train sets are invariably non-corridor, but supplied with plenty of side doors for the quick entraining and detraining of passengers. However, if a set is made to represent one of the main line units a concertina gangway connection should be fitted.

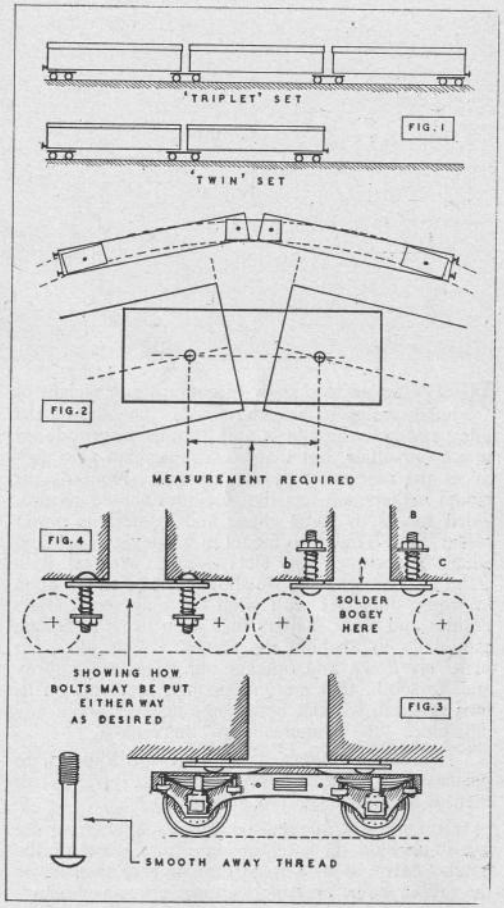
One of the L.N.E.R. main line units was a restaurant "triplet". Of the three vehicles strung together the middle was the kitchen and the two outer the restaurant cars. The set was fully gangway conected, and incidentally it has seen service in the Eastern Region's crack train, "The Flying Scotsman". Indeed, articulation and fast running go well together. Sleeping car sets are invariably "twins", and are also gangway connected.

In the early days of articulation the Great Western Railway followed sharply on the L.N.E.R. and ran full corridor trains made up of one twin set and two triplet sets. Thus it will be seen that main line models should be gangway connected. The "gangwaying" has the advantage, too, of camouflaging the bogey plate (A) and lack of couplings.

With the coach ends so near together no trouble is experienced with the concertina connections even on reverse curves of the most exacting kind.

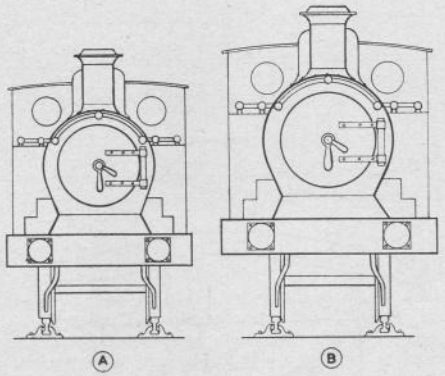
Full-sized articulated stock scores on the marked advantages of lightening the load and reducing construction cost—for the deduction of getting on for half the bogies is something worth thinking about. But articulated stock has never become quite as poular as it at first seemed it might, this being due to the fact that if a defect developed in one vehicle the whole set must be taken out of service—also a train of coaches will be cluttering up the carriage repair depot when only one requires attention.

The consideration of a whole set being out of service if one becomes faulty applies also, of course, to model railway operation, but as model railway stock has seldom to be withdrawn from service due to defects, this consideration does not really come into the miniature picture.



It should be noted that model articulated units lend themselves particularly well to train lighting on non-electric lines. Batteries can be carried in a windowless brake or windowless section of a composite and the whole train permanently wired, the leads being hung in slight loops between the coach ends—thus giving latitude on curves and also being in accordance with full-size practice.

One final word: be rather careful how articulated sets are handled for it is simple to strain the pivoting points. The best way to lift is with the hand fully extended and completely covering adjoining coach ends, which then are raised together.



MANXMAN DESCRIBES

MAKING A "UNIVERSAL POINT" IN TT

On the right : A 2ft. 10in. radius 'universal' point in TT made up from Peco 'Minilay' tied sleeper strip and special section N.S. rail. Such a point will pass flanges made to differing standards. This example also demonstrates that in TT gauge you can keep down to reasonably small radius curves and yet secure an easy turnout of "main line" traffic type.

WHEN we go to a show of conjuring or sleight of hand, we go to be entertained. The show's the thing and how the effects and illusions are produced is not our affair, but that of the magician who produces the rabbit out of the top hat. Similarly, as model makers, we feel that facilities should be provided for us by some vague and mysterious power called "The Trade" to model in whatever gauge and whatever scale we may elect to use. We feel, with some justification, that we should not be called upon to worry ourselves with what we may term Trade Politics and other matters that seem to us to belong essentially to "behind the scenes". Our job is to plan, lay down and operate our miniature railway and, forsooth, that presents enough problems on its own account, without bothering ourselves about any difficulties "the Manufacturers" may have.

"The manufacturers are, surely, anxious to do business. We are certainly anxious to buy. What, then, is the difficulty?" we say.

When we talk about "the manufacturers" we are apt to include them all in some airy wave of the hand. After all it is up to the conjuror to produce the rabbit, be he an American, a German, or one of our own kith and kin.

But we are sometimes rather apt to overlook one or two important points. Although generalisations are notoriously dangerous, I think it would be fair comment to say that the American approaches railway modelling — as he does most things — on the grand scale; the German knows model railway making (as we understand it) not at all, and relies almost entirely upon factory produced—and superb! toys; while the Briton is so ardent and so passionate in his quest for meticulous detail in his modelling that he would cheerfully go to the stake rather than include in his railway a component that is 1/10th of a millimetre over or under scale.

We in Britain, for reasons which are well known to us all, are hard put to it to manufacture anything at all for home consumption. To the German manufacturer a meticulous adherence to the finer points of scale-gauge ratio is a secondary consideration. To him a miniature railway is primarily a "toy" and it is to be made with all the ingenuity and thoroughness at his command so that it operates with infallible reliability.

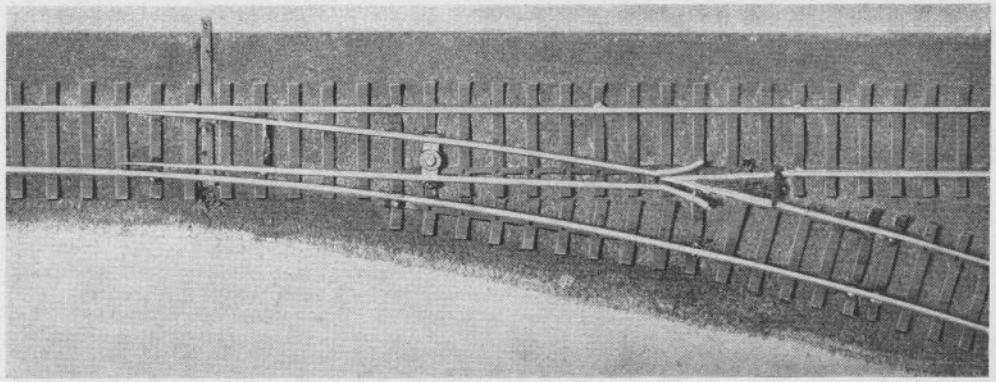
Owing to currency restrictions we see but little of the products of our Transatlantic cousins, but from the few samples that trickle through, we are not surprised to find that they manufacture their locos and rolling stock to a scale that is proportionate to their loading gauge.

Just to refresh our minds in this matter, I have asked the Editor to reproduce for us the two drawings which appeared in Feb., 1951, *Model Maker*.

The left-hand sketch shows a loco in approximately correct scale-gauge proportion, such as the 3½ mm. to the 1 ft. modelling scale and the 16.5 mm. track gauge which we know in England as HO

The loco on the right still runs on the same track gauge of 16.5 mm., but it is modelled to a scale of 4 mm. to the foot, and we call this combination 00 gauge. To meticulous eyes this loco looks "too broad in the beam" relatively to its gauge and we only tolerate it on our model railways in deference to certain constructional technicalities. But in America the loading gauge is much bigger than it is in this country and the 4 mm. to the foot scale is just about right for a 16.5 mm. gauge and, in fact, by way of being thoroughly cussed, they call this combination HO! Likewise, in South Africa, we get a very similar effect, but this time by reducing the gauge from 4 ft. 8½ in. to 3 ft. 6 in., so that when our model engineering trade was recently entrusted with making a representative selection of South African locos and rolling stock for the Tercentenary Exhibition, they were quite at home with 4 mm. models on 16.5 mm. track, which gave about the correct ratio. And that brings us straight to the point with TT.

The situation as at the time of writing is that we



have, enjoying a widespread and richly deserved popularity, a proprietary set of equipment of German origin running on 12 mm. track and modelled to a scale of 1/125th.

We have—or we should have if we were allowed to see them—an American system supported by at least two prominent manufacturers in U.S.A. in which the gauge is still 12 mm., but the modelling scale is 1/120th or 1/10th in. to the foot (or 2.5 mm. to the foot as nearly as makes no odds).

And, finally, we have as yet no British manufacturer who has released a proprietary train set in this TT, but we have numerous manufacturers who are beginning to supply component parts and we have evidence on all sides that TT has caught the imagination of our British model makers and that many of them are wondering whether they are likely to go far wrong if they decide on one in preference to the other of the two popular modelling scales.

Let us look at this problem calmly and see if it as formidable as at first sight it appears.

A railway that is incorrect in the matter of modelling scale may look wrong, or it may give trouble by derailments at points—or both.

The looks may be a matter of degree, or even of opinion, but a railway that purports to be a working model and cannot be run or demonstrated for fear of derailment is a poor thing at best.

Therefore, while we may agree to excuse slight discrepancies in appearance, we cannot extend a similar indulgence to the running and so the matter of point design must claim our prior attention.

Of course, if we are running proprietary locos and stock over track and points made by the same firm, the problem does not arise, because the points are designed and made to suit the wheels that pass through them. But if we wish to make up track of our own or, conversely, to run on our proprietary track home-made coaches and wagons fitted with "scale" wheels, then we must watch our step.

It will perhaps be of comfort to modellers in TT to know that the British Railway Modelling Standards Bureau is taking energetic action in the matter of drawing up for this gauge a set of recommended standards which will include those for the leading dimensions of wheels and points.

When these figures are available there will be some reference or datum line to which manufacturers and modellers alike can work.

Meanwhile, so far as point construction is concerned, it will be seen from the illustration that a reasonably neat job can be made up on the principle of the old tin-plate point, where the whole blade assembly moves on a pivot. An isolated frog is necessary for two-rail work. This was filed down to the required angle from brass sheet of correct thickness to match the rail height.

It will be seen that flanges of any thickness within reason can pass through such a point, but it would perhaps be preferable to allow even greater flange ways at toe and heel than I have done, because a coarse flanged metal wheel might short between the stock rail and the open point blade. The whole blade assembly is soldered together on metal strips and, therefore, picks up its polarity from which ever rail it touches when the point is closed.

The point tie-rod is, of course, of insulating material—in this instance a Peco tie-rod drilled to suit the blade assembly.

Check rails could be added for effect if required, but they are not essential to running.

It will be evident that such a point as this will take a train of mixed wheel standards. That is to say that the coaches can be fitted with wheels of tread width and flange thickness different from those of the loco wheels.

In this diminutive gauge points of this type are not so glaringly impossible as they might be in, say, Gauge 0, and during this transition stage, while we are waiting for agreed upon standards to be promulgated, such point construction may well help to solve our difficulties.

MODEL MAKER CONTESTS . . . . . .

"MODEL OF THE YEAR" Photographic CONTEST

We are happy to announce the result of this contest as under: —

First (£5/5/-): A. W. Bennett of Farleigh, Nr. Maidstone, Kent. Entry in Section VI. Workshop interior.

Second (£3/3/-): C. W. Morley of London, S.W.1. Entry in Section III. "Addy Beauclerk" Lifeboat.

Third (£1/1/-): L. C. Mason of Winchmore Hill, N.21. Entry in Section V. Miniature changewheel set-up.

Consolation Prizes (10/6 each) to Norman Dyer, Kenton (Section I., Passenger carrying locomotive); R. Freeman, Clevedon, Somerset (Section II, Table-top model launch pictures); and L. B. Gilbert, Market Harborough, Leics. (Section IV, Semi-scale Austin, 750 c.c.).

For 1952 it is not proposed to hold a separate Photographic Contest, but to include all pictures published in the year's issues (excluding staff photographs) which will be judged on photographic excellence and originality in approach, for similar prizes at the end of the year.

Pictures without articles will continue to be as acceptable as ever, though in many cases where interest warrants, we may commission readers to write-up their models.

"Model Maker" Model Railway Layout Trophy

Rules were last published in December issue. Last date of entry has been extended to February 28th. Readers desiring further particulars are invited to write to the Editors.

"Model Maker" Model Yacht Trophy

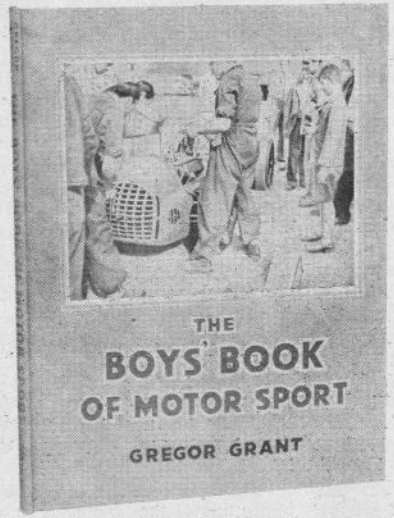
To be organised in 1952 by the Midland District Committee of the Model Yachting Association. Date and venue to be announced on publication of National Programme. A contest for those who have not previously taken part in National status events. Detailed rules will be announced.

M.G.M.-"Model Maker" Contest (Offenhauser)

In order to make equitable arrangements for all would-be entrants, we shall be glad if readers who have not been able to find local theatres organising regional contests to advise us.

A venue for the finals will be announced shortly. First prize, it will be remembered, is One Week's Holiday in the Isle of Man during T.T. Racing. Winner will be flown there and back by British European Airways.

BOOK REVIEW . . .



THE BOYS' BOOK OF MOTOR SPORT, by Gregor Grant. (G. T. Foulis & Co. Ltd.), 21/-.

"TIME I was a little ol' boy" as they say in the Eastern Counties, motor-minded youth wasn't well catered for in the matter of literature. In fact, if you except the sort of book with crude and inaccurate pictures which dealt in Speed Demons Defying Death, and foreign villians pouring vitriol in their rivals' petrol tanks, it wasn't catered for at all.

How nice, by comparison, to be a modern youngster. I have just read *The Boys' Book of Motor Sport* from cover to cover and thoroughly enjoyed it. How much more would I have treasured it in those far-off days! It deals with practically every phase of motor racing in 160 pages of text and pictures, and it does so in an eminently sensible way. Never does the reader feel the vague irritation of being talked down to. Unlike those anonymous scribes of my formative years who wisely avoided technicalities, Gregor Grant takes his young reader firmly by the hand and introduces him to iso-octanes and heptanes, cam contours and overlaps, and the mysteries of the International Formula. And my bet is that his readers will lap it up and come back for more.

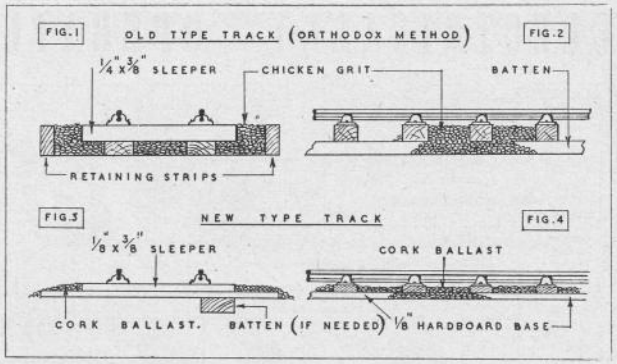
There is a definite pattern in the book, which shows not only how the machines function and why, but where and how the various branches of the sport are organised, and how best to appreciate and enjoy them. There are some excellent cutaway drawings, and a lively chapter on motor racing personalities. The book is both authoritative and atractive to read, and the illustration on the dust-jacket admirably sets the tone for the contents. Yes, as a youngster I should have revelled in it, though I certainly should not have had the guinea it costs today!

G H.D.

★ The Kessex Railways

PT. V : E. L. KILLICK PAUSES TO CONSIDER ERRORS MADE AND RECTIFIED ON THE LINE

★ *Continued from November issue*



I HAVE decided to devote the whole of this month's article to an analysis of some of the errors we have made to date, and how we propose to rectify them. All these faults apply to the indoor portable section, and not to the outdoor line. As no description of this section has yet been given it may seem rather like putting the "cart before the horse", but as it is more likely that most people will be building for indoors rather than outdoors during the winter months I feel that what we have learned from experience to date may well be more useful to others at the present stage.

The first, and I feel most important item is the method of track construction and ballasting.

At present the track is of conventional construction, i.e. battens on which the sleepers are nailed and the whole section nailed to the main baseboard, being then covered with chicken grit to the top of the sleepers (Figs. 1 and 2).

The first fault we found with this method was that the grit had to be held in position with batten along each side of the track, and this did not look good. Being loose, the ballast was easily displaced, and often got between point blades and other moving parts.

When moving the layout (and part has to be moved each time the layout is used) we had to tip the whole of the grit into a sheet and bag it up, then re-lay it again before use.

If any small item, such as a nut or bolt was dropped or came off any rolling stock it was often impossible to find it.

Finally, as it took about 1½ cwts. of grit to cover all the track there was an average of approx. ¼ cwt. per section. On the station section, which had more ballast than the other sections it meant about one-third cwt. The result of this weight was a sagging of the middle station unit, and during the week the layout was at the Tonbridge Exhibition it developed such a dip that it looked like the "Big Dipper".

To overcome these troubles we are now intending rebuilding the track as follows: —

Track bases will be of hardboard 3½ in. wide x ⅛ in. thick, similar to those now so widely used in 00 track construction. Sleepers are to be ⅛ in. thick and will be glued to the track base together with cork ballast. Battens will not generally be used, but when it is necessary to strengthen with battens they will be fixed *under* the track base (Figs. 3 & 4).

Another error we made was only electrically bonding a certain number of rail joints, and depending on good conductivity of fishplates at the remainder. Although quite a number of unbonded joints gave no trouble at first, voltage drop became noticeable later, full voltage being restored as soon as bonding was completed.

In the case of portable layouts where a number of main baseboards have to be undone and refixed I would stress the importance of seeing that *no* movement can take place at the joints. It is so very easy for small movements to cause a break in the track, the inevitable result being derailments.

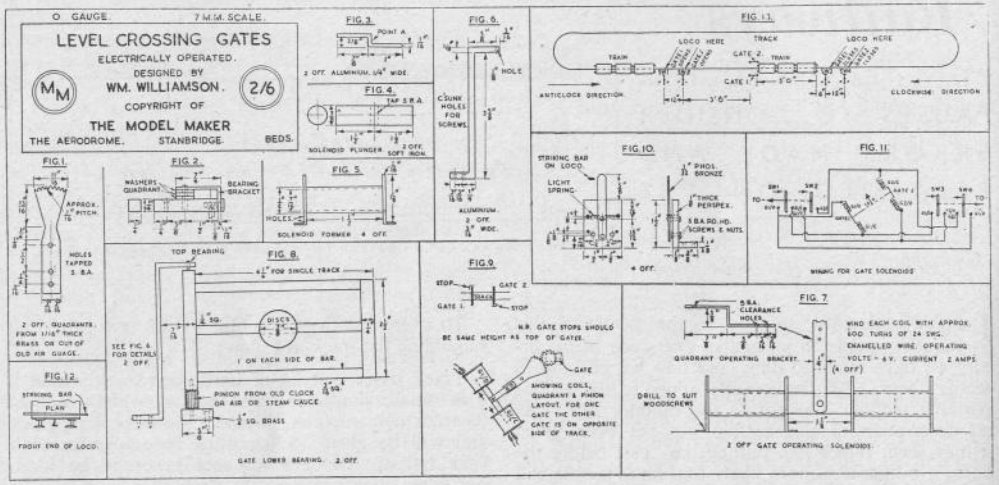
One other thing we have decided to alter is the third rail, from centre to outside. This is possibly something of a personal opinion rather than a rule to be laid down. We did, however, find that at point work there was a tendency to short circuit, or for collectors to fail to span the gaps with the resulting need of a push by hand to restart!

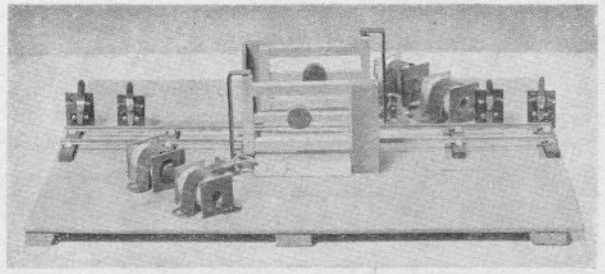
During the Tonbridge Model Railway Club Exhibition this layout was in almost constant use from 2 p.m. to 9 p.m. on each of the four days the exhibition was open, and although one could hardly say it was trouble-free it did give a remarkably small amount of worry considering the fact that there had been no time to give it a thorough test previously, or to make any alterations.

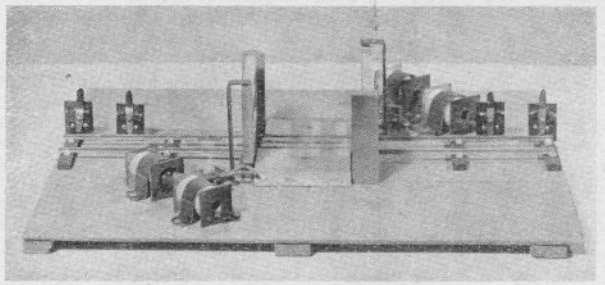
Next month will give a full description of the layout of this part of the Kessex Railways, and a second extract from the report of the visit to Kessex.

ELECTRICALLY OPERATED LEVEL CROSSING GATES

ANOTHER 0 GAUGE ARTICLE BY WM. WILLIAMSON







Illustrations show test "mock-up" of the gates, shut and open. In practice the electrical operating gear would be located out of sight under the baseboard, or otherwise concealed.

LEVEL crossing gates, whilst not essential, certainly add to the appearance of a model railway layout, but should they have to be manually operated this procedure becomes somewhat tiresome and in addition, the operator may forget to open the gates to rail traffic and thus cause a "smash-up". The unit described in this article is operated automatically by means of a striking bar fixed across the front end of the loco frame just behind the buffers (shown in Fig. 12). This bar operates four switches set in suitable positions, two on each side of the level crossing. Two gates only are used as this reduces the amount of equipment required by half, as would be needed in the case of four each only covering half the width of the crossing.

Before giving the constructional details a description of their operation and the calculations required to fix the switch positions will no doubt be helpful as it will give the reader a better idea of what the function of the different parts entails. The actual operation is as follows: First we will suppose that the train is travelling in an anti-clockwise direction and approaching the level crossing with the gates closed against it. On reaching the position of the first switch, the bar on the loco pushes the switch lever over to the right, making contact with the left-hand contact (see Fig. 11). This energizes the operating coil G1/0 which opens Gate 1. After the bar has passed over the switch lever the switch is returned to its central (off) position which cuts the current off coil G1/0. A short distance further on the bar operates Switch 2; the first operation is repeated with the exception that G2/0 coil on the opposite side of the track is energized, Gate 2 opens and the current is again switched off. The train then passes over the crossing and when all the rolling stock is *clear* of the crossing the loco has reached Switch 3. This is operated and Gate 1 closes, followed, a second or two later, by Gate 2 operated in turn by coils G1/c and G2/c respectively.

Now should the train be run in a clockwise direction the order of opening and closing will be Gate 1 open followed by Gate 2, Gate 2 closes followed by Gate 1.

Our next step is to find out what the correct distances of the switches from each side of the level crossing should be. These are determined by two factors: (a) the maximum length and speed of any train to run over the crossing, and (b) the time taken to open or close both gates. In the first place it is advisable to fit the crossing in a straight section of the track. Take factor (a) next. Suppose the maximum length of the train is say 3 ft., and it is to travel at a scale speed equal to 15 m.p.h. which is approximately 6 in. per second. It will take six seconds for the full length of the train to pass a given point. Taking factor (b) into consideration: on test it takes three seconds for both gates to open (or close), therefore we proceed as follows. The positions of switches 3 and 4 should be calculated first. It is supposed that the train has passed over the crossing, when the end of the rear coach is just clear of Gate 2 (see Fig. 13), the striking bar on the loco is approximately 3 ft. from Gate 2 therefore for safety No. 3 switch should be placed 3 ft. 6 in. from Gate 2, and as it takes, say, $1\frac{1}{2}$ seconds for Gate 1 to close, the train will have travelled a further 9 in. by this time, so if No. 4 switch is fixed 12 in. ahead of No. 3, this position will be quite satisfactory. These two distances, i.e. 4 ft. 6 in. and 3 ft. 6 in. must also apply on the other side of the crossing, that is the approach side with the train running in an anti-clockwise direction, because if the train runs in a clockwise direction it will require the same timing for closing the gates as in the first instance. So switch 1 is placed 4 ft. 6 in. from Gate 1 and switch 2, 12 in, nearer.

We are now covered for correct operation in both directions *after* the crossing. Now to check what happens when the train is approaching the crossing from either direction. When the loco is 4 ft. 6 in. from the gates, the first one is opened and at 3 ft. 6 in. the second opens, therefore the time factor is on the good side on approaching the crossing.

After reading to this point, the reader may like to build this unit. He can be assured that it is not at all difficult to make up. The only component which may have to be purchased is the wire for the four coils. Otherwise the remainder can be found in the model maker's box of odds and ends. A list of parts, etc., required is included in this article.

Having obtained the necessary equipment a start can be made by making up the four formers for the solenoid coils shown in Fig. 5. The eight ends are cut from $\frac{1}{16}$ in. thickness brass or copper. Next make the four tubes from $\frac{1}{32}$ in. thickness brass. These should be $1\frac{3}{8}$ in. long and $\frac{7}{16}$ in. bore. Drill $\frac{1}{2}$ in. hole in each of the end pieces and solder the tubes in position taking care to clear any rough edges which will damage the wire when the coils are being wound. Drill two small holes at one end of each former for the start and finish of the winding A short piece of insulating sleeving should be pushed through each hole to protect the enamel on the wire, otherwise the coil may be short circuited. Wind on about 600 turns of 24 s.w.g. enamel covered copper wire on each former after insulating the brass tube with a layer or two of Empire tape or similar insulating material. It would be advisable to put on a layer of waxed paper after each two layers of wire.

The soft iron plungers should be cut and drilled and tapped as Fig. 4. Try these to see that they slide in and out freely. It will be as well to try out the solenoids at this stage. Apply about 9 volts D.C. to each coil in turn with the plunger entered in the tube about $\frac{3}{4}$ in., when the plunger should be drawn sharply into it. The current consumed by each coil will be approx. 2 amps at 9 volts.

After the completion of this test, if satisfactory, the windings should be taped carefully.

The next job is to obtain two pinion wheels from an old clock mechanism. These should have about 12 teeth. Then cut from a piece of $\frac{1}{16}$ in. brass two quadrants as shown in Fig. 1. Cut approx. 12 teeth in these to the same pitch as those of the pinion wheels. Should the reader be unable to obtain suitable pinions from clock mechanisms he will in all probability obtain both pinions and quadrants from scrap air or steam pressure gauges at any engineering shop.

Fig. 2 shows the type of bearing to carry the quadrant. This is made from $\frac{1}{4}$ in. sq. brass and is drilled to suit the spindle on which the quadrant pivots. The arm which operates it is shown in Figs 3, 7 and 9. This is made from $\frac{1}{16}$ in. aluminium or brass if desired.

Having completed this equipment, mount the two pairs of coils, plungers and quadrants on a piece of board and try them out so as to ascertain the correct spacing, etc., similiar to Fig. 7.

(*Continued on page* 94)

. . . On the Right Track

THERE have been many attempts to simulate ballast on miniature permanent way and a greater or less success has attended each.

An unballasted track can never look convincing, but against this we must set the fact that some types of ballast that may look well are undesirable from a mechanical or from an electrical point of view.

One modeller of my acquaintance screened, washed and then pulverised the cinders from his domestic boiler. He then screened the powder again so as to remove any big lumps and mixed the siftings into a flour and water paste consistency. This was then spread on to the track bed between and around the sleepers (before laying the rails of course), tamped down and left to dry.

The rails were then laid and the track wired up. Viewed as ballast his effort was as nearly perfect as one is likely to get, but when he came to run his trains he was puzzled by a mysterious loss of power in the locos. On a section of test track (unballasted) they behaved normally and developed a healthy and gratifying draw-bar pull, but when put on his layout, they became, as he said, "anaemic" and would only run with any power near the point at which the track was fed from the power pack. Exploring with a voltmeter he found signs of a serious voltage drop as he got farther away from the power leads, and this led him to go carefully over all fishplate and bonding joints.

In fact he went to a lot of trouble before it dawned on him that his tightly packed coke was acting as a partial conductor and offering a definite, albeit high resistance, short circuit through which precious current was trickling to waste. But apart from calamities of this sort, any kind of gritty ballast is liable to become shaken adrift and leave minute particles to be sucked up by whirling armatures into the delicate bearings with abrasive—and costly—results.

If ballast is to be granular—and there is no denying the realism that can be imparted by this type—then it should at least be of non-abrasive and non-conductive material. Even so it will need to be set firm in a good binding material and the operation of laying it is apt to be both messy and tedious. Meanwhile, returning to the trial section of track which we were making up together in our last chat in this series, what is wrong with having the ballast in solid form and roughening the surface to suit local requirements?

In full-sized practice ballast varies considerably both as to "grain" and material, depending upon the locality and the type of traffic.

Permanent way must have a certain amount of spring and give. Any attempt to anchor it down rigidly for fast main line work would be disastrous as the early pioneers found to their cost. On the other hand, a dockside line can be embedded flush in granite sets, but here speeds of 5 m.p.h. will be the order of the day. Besides affording spring and give, permanent way ballast must give adequate drainage facilities. The trackway must be allowed to "breathe" right down into the bed or else water will collect. As to colour, this will depend not only on the material used, but also upon the amount of weathering that has occurred since the track was laid. Also in station approaches, or other places where there is habitually heavy braking, the steel dust will settle down and go rusty, giving the ballast a purple tinge.

All this is to mean that since prototype ballast can vary within wide limits both as to texture and as to colour, so we may enjoy the same latitude in the appearance of the ballast we apply to our model tracks, provided that, as in all railway modelling, we observe the rules of probability and do not have shining white ballast of a coarse grain in a coal yard and fine black ballast flush with the rail table in what is mean to represent a stretch of open main line track.

So, with these reflections in mind, we will proceed with our section of track in which, as you may remember, we had laid our sleepers in the slots of our cork "ballast unit" and fixed them in position by means of a strip of drybond duly warmed up with a smoothing iron.

The first job to be tackled—assuming that we are making what is to represent a section of single road track—is that of chamfering down the edges of the cork to represent the bed banks. This is best done by taking a small flat file and rubbing it lightly to and fro along the cork edge until the required contour is secured.

A little care is required here, because cork is, after all, only the soft bark of a tree and it will roughen up more readily in some places than in others. What we want to secure is an edge that feathers down to the baseboard, and what we want to avoid is tearing lumps out of the edge by rough treatment.

If we are making a double or multiple road track we shall, of course, chamfer down only one edge of

R. WATKINS-PITCHFORD'S REGULAR FEATURE FOR 00 ENTHUSIASTS ON : THAT BALLAST!

the ballast unit, since the other, when placed cheek by jowl with a second unit, will automatically give us the correct 6-ft. way between adjacent roads.

Having now secured the necessary bank we can tackle the remainder of the track bed, and this is best done by employing a stiff steel brush of the sort used to "bring up" suede shoes. A file carding, if you have one in your workshop, serves admirably.

According to the pressure and the number of applications applied, the surface of the cork can be worked up to any degree of roughness, but some attempt should be made to treat the whole of the visible surface and not leave any "holidays" of untouched cork.

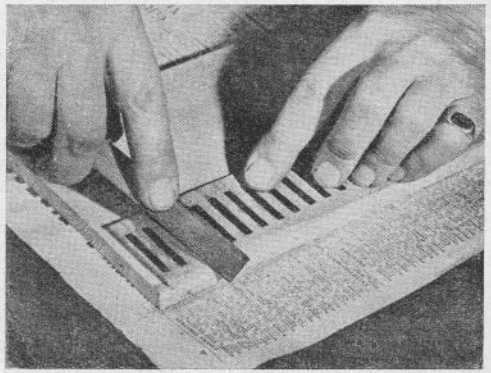
This filing and scratching of the cork is apt to make a bit of a mess and it is best done over a spread of newspaper. This also enables the cork dust to be collected up and stored away for a very useful application, of which more anon.

And now, with our edges chamfered and our surface roughened, we come to the important matter of colouring. For colouring our track bed the best medium is a solution of Indian ink in methylated spirits. This should be dabbed on either with a pad of cloth or a small stiff brush stencil fashion. The great thing is to avoid pouring it on, or letting it lie in pools. As to the strength of the solution, this will depend upon the shade to which you wish to tone. A fifty-fifty solution of black ink will give you a very dark ballast of the colour usually found around loco sheds and in terminal bays at stations where locos (or electric motor coach units) habitually stand.

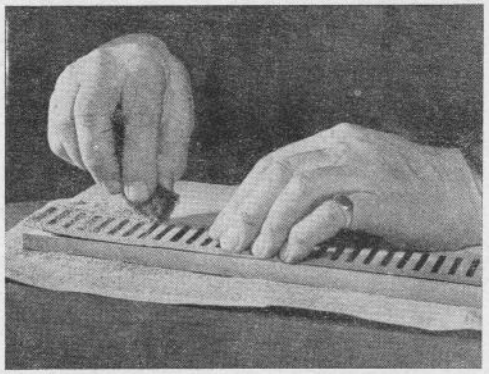
When the solution first goes on you may fear you have overdone the blackness, but you will find that as the dye soaks into the cork and dries out, the colouring will go up several shades. Another thing is that after your layout has been standing for some time dust will inevitably settle into the roughened cork surface and bring up the general tone to the region of a grey that looks pretty near the real thing.

If you mix one part of ink with two, or even three parts of meths., you will have a lighter solution, and you can then vary the tones by going over with a second coating between the rails, while leaving the banks a lighter hue—as indeed they usually are. For finishing touches, a solution of brown ink may likewise be made up and judiciously washed over to give the familiar weathered rusty appearance to those parts requiring it.

An important point to notice is that the use of this ballast unit has not raised the actual track table above baseboard level by more than the thickness of a piece of paper.

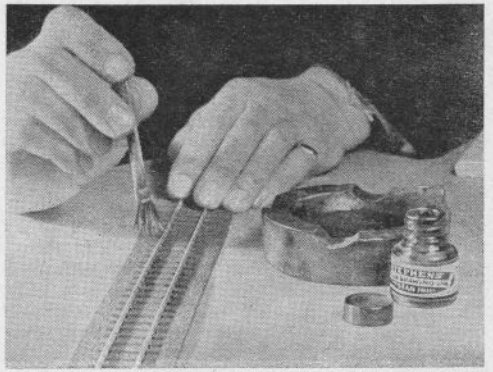


Chamfering down the edge of the Ballast Unit to give the effect of a raised bed. Move the file laterally and with light pressure.



Roughening the track bed surface to get ballast effect. Use a stiff wire brush or file carding. Any degree of roughness may be simulated according to 'locality' of track.

Stippling on the colouring solution to represent weathered grey ballast. Give one coat before rails are laid and then touch up as shown to get final effect.



In other words, the sleepers in their slots are lying practically on the baseboard. The ballast comes up to about the level of the sleeper top, as it should, but it does not cause the whole trackway to run along a permanent embankment, as is the case with many fabricated track units commercially supplied with train sets. This sort of elevated railway becomes particularly tiresome in stations when platform level has to be increased to 1 in. or so, instead of the $\frac{1}{16}$ in. indicated by the 4 mm. scale. Or, in terms of easy reference, your platform level has to be increased to the extent where it comes above the head of a man standing on the baseboard, instead of being slightly over waist high. A station with platforms 6 ft. high look all wrong even to an unpractised eye.

The use of scale track properly ballasted and with the rail table at correct height above baseboard level is worthwhile from every point of view.

To some it may appear an infinitude of pains taken over an unimportant matter. Actually the whole thing takes far less time to do than it does to describe, and the reward of patience in tracklaying is very sweet.

ELECTRICALLY OPERATED LEVEL CROSSING GATES (*Cont from page* 91)

The next procedure is to construct the two gates which are made from $\frac{1}{4}$ in. and $\frac{3}{16}$ in. square wood, or if so desired they may be cut out from a piece of $\frac{1}{4}$ in. plywood. Details are shown in Fig. 8. To fit the pinions, drill the main post with a drill slightly smaller than the pinion pins and then tap the pinion gently in, taking care not to split the wood. Fit a $\frac{1}{16}$ in. pin in the top of each post and then make the lower bearings as shown, and finally the support brackets (shown in Fig. 6) from $\frac{1}{8}$ in. thickness aluminium.

The gate assembly may be tried out by screwing it in position meshed to the quadrant on the temporary board as stated above. If carefully constructed the units will operate quite well.

Paint the gates white, the four discs red and the bearing and brackets black, taking care to keep the bearing points clear of paint.

The unit is now ready to fit in position on the track. The exact position is easily determined by trial. When fixed, gate stops should be fitted in their correct positions. Fig. 9 shows the idea of suitable stops.

It should be mentioned here, that should the reader have room, and desires to fit the two solenoids under the baseboard of the track this can easily be done by lengthening point A (Figs. 3 and 7) of the quadrant operating brackets, and cutting two slots in the baseboard to allow them to swing. The crossing over the rails should be levelled with sleeper wood.

To complete the crossing unit, the four two-way switches should be made as follows: Cut four pieces of black or any coloured "Perspex", each being $1\frac{1}{2}$ in. x 1 in. x $\frac{1}{8}$ in.; also four pieces 1 in. x $\frac{3}{8}$ in. x $\frac{1}{8}$ in. Cement together as shown in Fig. 10, using "Perspex" cement. Allow to set, and drill the holes for four 5 B.A. roundhead screws as shown in sketch. The stop pins should be $\frac{1}{16}$ in. dia. The switch contact strip is cut from $\frac{1}{32}$ in. phosphor bronze $\frac{1}{4}$ in. wide, and is packed off with 5 B.A. washers so that it makes light but good contact with the three studs. Make two light springs each identical in length. Fit two $\frac{1}{16}$ in. pins to secure the springs to the panel and solder the other ends by soldering firmly to the phosphor bronze arms. When correctly set the arm should return to its central position after being pulled over to either stop. Drill the "Perspex" feet to take suitable wood screws for fixing beside the track.

Regarding the striking bar which is fitted to the loco, this may be bolted in position by two 8 B.A. brass roundheaded bolts. One point regarding its projection over each side of the loco: the bar should be clear of the level crossing gates or any platform, etc., on the track. The switches may be fitted quite easily to suit any length of projection.

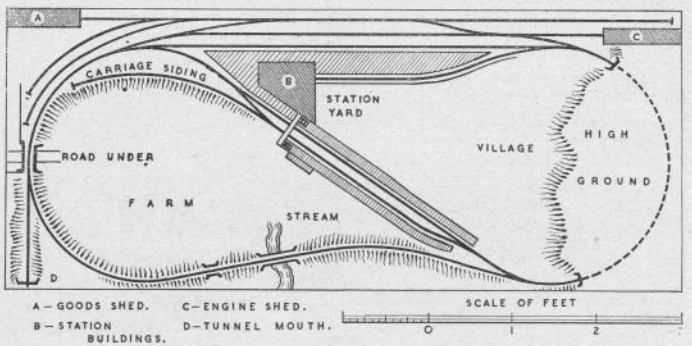
Finally we come to the wiring. This is shown in Fig. 11. All connections should be soldered and run as far as possible underneath the baseboard. Use no smaller than 20 s.w.g. insulated single strand wire as this will reduce voltage drop. A dry battery will run this unit as the gate operating solenoids only take current for approx. three seconds for each operation; also the coils should have direct current supply, not AC, as they will not work as efficiently on this type of current.

In conclusion, the writer has not come across electrically operated level crossings up to now, but no doubt this method will in time even be improved upon and it is hoped that this innovation will start the ball rolling.

List of parts required: —

$\frac{3}{16}$ in. and $\frac{1}{4}$ in. sq. wood or $\frac{1}{4}$ in. thick plywood for gates; $\frac{1}{16}$ in. thick wood for gate stops; 2 pinions from old clock or pressure gauge; 2 quadrants (make) or obtain from pressure gauge; $\frac{1}{4}$ in. sq. brass for gate and quadrant bearings; $\frac{1}{16}$ in. thick brass for coil former ends; $\frac{1}{32}$ in. thick brass for coil former tubes; $\frac{1}{8}$ in. thick aluminium for gate top bearings; $\frac{1}{16}$ in. thick aluminium for quadrant operating straps; $\frac{1}{32}$ in. thick phosphor bronze for two-way switch arms; $\frac{3}{16}$ in. thick black or other coloured "Perspex" for switch mounts; $\frac{3}{8}$ dia. round soft iron for solenoids; fine spring steel wire for switches; 24 s.w.g. enamelled copper wire for coils; 5 B.A. bolts, nuts and washers (brass); sundry wood screws, etc.; 20 s.w.g. insulated wire for connecting up.

WE WELCOME THIS INVASION OF WHAT HAS ALWAYS BEEN CONSIDERED MALE TERRITORY BY MISS E. R. WALTER



HUSH, TREAD SOFTLY or FOOLS RUSH IN

MY casual announcement that I was going to "build a layout of my own", seemed to cause great consternation among members of the opposite sex. They had "never known of a woman building a complete layout". Oh yes, she helped with scenic effects, she built lineside huts and buildings, and they had known of women who helped with the painting of rolling stock. There were even cases where the husband had been known to let the wife "take control" for short periods, under his watchful eye, of course.

"Why," said I, "should not a woman build a complete layout?" After all, women are noted for being neater with their fingers than men, and—whisper it softly—at least not *less* intelligent. Still the only reason the men could give against my doing it was the fact that they had never known of a layout built by a woman. Well, here is one who at least is going to "have a go".

I have been a model railway enthusiast now for about 18 months ,and the layout I propose building promises to be the most exciting project I have ever embarked upon. It is to be a complete working layout in 00 gauge together with scenic effects.

I am lucky in having a very capable adviser, but the actual construction is to be my own unaided work. I am not, unfortunately, capable of designing the actual layout. I can make suggestions as to where I would like sidings, and where I would like the track to be higher, etc., but invariably there is some technical reason for not having it so. However, I am very satisfied with the plan prepared for me, and can let my imagination run riot when it comes to the scenic effects.

My main baseboard is to be 8 ft. x 3 ft. 4 in., constructed of hardboard over thin wood, the whole to be portable, and able to be supported on a table. The whole will be as light as possible, as befits a layout belonging to one of the "weaker sex".

I have, over the past year, had moderate experience of track construction, and have mastered the art of soldering and of making up points, and have also made one not unsuccessful attempt at coach building. Locos I have not yet attempted, but I am hoping when I do to construct from sheet brass, *not* from a ready-to-assemble kit. Whether or not I can successfully accomplish this remains to be seen, but succeed or fail, I intend trying. Goods wagons and vans could be made from kits, but again I would prefer to build up my own if possible.

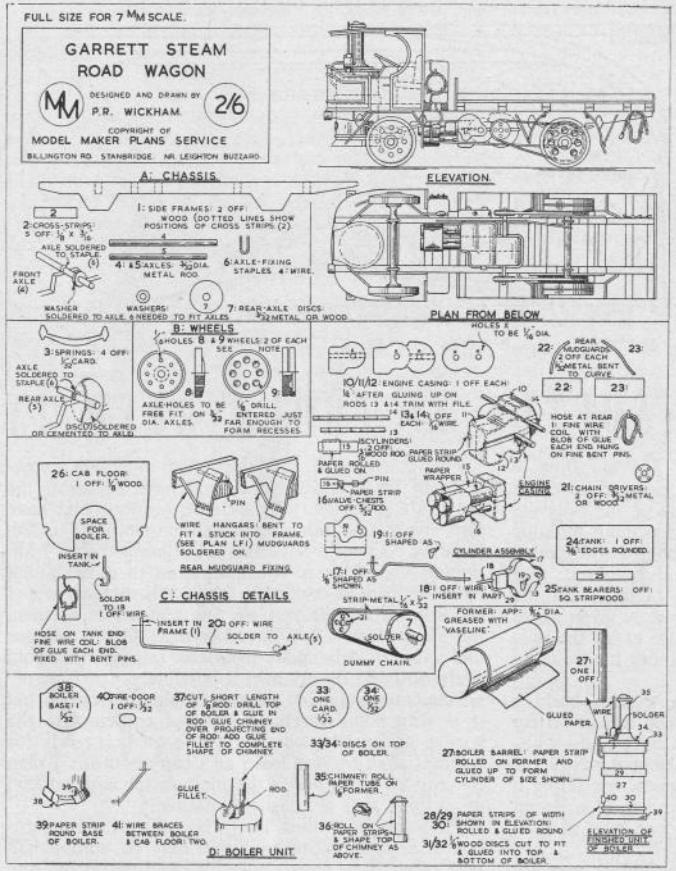
The construction of the track holds no terrors, but it is with some foreboding that I contemplate the wiring, and until such time as the track is ready for wiring I shall try and learn all I can about it. I plan to keep all wires under the main baseboard, so that at all times they are easily accessible.

Platforms will most likely be built of thin hardboard, as also station buildings may be, although it may prove more satisfactory for buildings to be from kits. This can be decided at a later date.

The method of building up hills, etc., has not yet been considered, the essential thing at the moment being to get the track constructed, wired, and tried, and to also get something ready to run on it, and what is even more important, to ensure that it does in fact work. The frills can follow later.

In spite of the doubts and forebodings in the minds of the menfolk, one has offered to supply my baseboards, another has some sheet brass which he has placed at my disposal, and a third thinks coach parts might be an appropriate Christmas gift, so I feel that on the whole I have their blessings on my venture.

Incidentally, I feel that I am doing a great service to relations and friends by starting a layout, for just think, never again—or at least, not for some considerable time to come—need they ask me "what would you like for Christmas—or birthday". Something for my railway will always be appreciated.



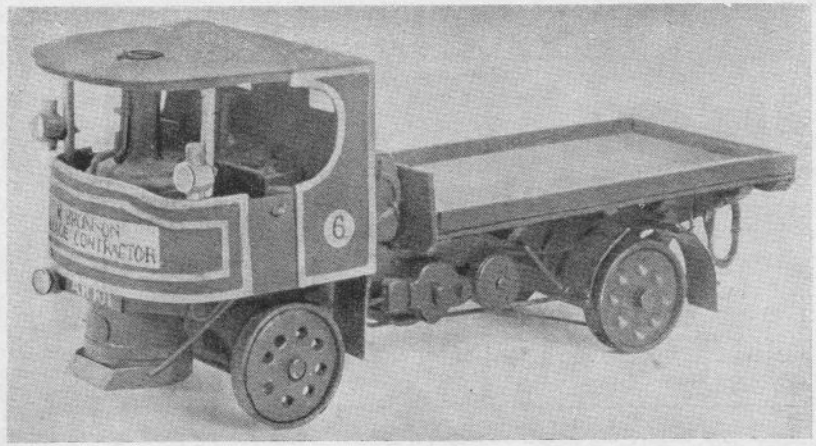
GARRETT STEAM ROAD WAGON

BY P. R. WICKHAM

AN O GAUGE LINESIDE FEATURE

FULL-SIZE WORKING DRAWING FOR 7 MM. SCALE CAN BE OBTAINED FROM THE PUBLISHERS, PRICE 2/6d. POST FREE.

NEXT MONTH P. R. WICKHAM WILL DESCRIBE THE MAKING OF A TYPICAL MILK FLOAT, WITH ALTERNATIVE BODY FOR A BAKER'S VAN IN THE SAME SCALE.



THERE is, perhaps, a natural antipathy towards road transport on the part of the railway enthusiast. Yet road vehicles are an essential part of the everyday scene, and no model railway can present a convincing "scenic picture" without them. So far, most kits and plans for road vehicles have been intended for the 4 mm. worker. The idea still lingers, I fear, that 7 mm. is not a "scenic" scale; a fallacy I would be willing to refute at length on a more suitable occasion. But the purpose of these articles is to introduce drawings of two very different types of road vehicle which *are* to 7 mm. scale, the advantage this gives in respect of detail inclusion will be obvious from the photographs and drawings. In fact, either design suitably mounted on a pedestal base would make a very attractive little show-piece even for those who do not own a 7 mm. model railway.

First then, the Garrett steam road wagon; which *being* steam propelled should need no commendation to the railway modeller. Alas, these fine old veterans have been largely pushed off the roads by penal taxation. The modern all-enclosed steamer may satisfy this "streamlined" age, but there is no satisfaction in it to the modeller; it might just as well be a diesel for all its looks tell. But here is the Garrett, breathing the very atmosphere of steam, and well worth all the trouble which you, I am sure, are going to devote to its construction. For, with over 100 separate parts, this model calls for the same care and patience you would devote to, for instance, a piece of rolling-stock. It will amply repay such care by adding distinction and "life" to any scene in which it appears. The order of assembly suggested by the lettered sections and numbered parts should be carefully followed to avoid confusion.

First then, the chassis; a quite straightforward assembly of two $\frac{1}{8}$ in. wood side frames joined by cross strips. The assembly is then inverted and the $\frac{3}{32}$ in. metal axles fixed to it with the little wire staples (6) and held in place (after carefully lining-up) with solder. A little washer is then soldered to the front axle $\frac{1}{16}$ in. from either end, and a larger disc (7) to each end of the rear axle.

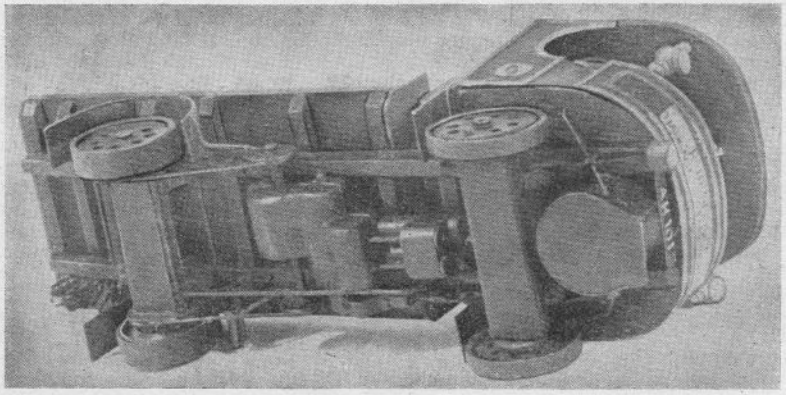
If a lathe is available, the wheels can be readily turned from wood, metal or plastic. Failing this, quite convincing wheels can be made by filing to shape and drilling slices of $\frac{3}{4}$ in. dowelling, and glueing on tyres made from paper strip. The wheels are free to revolve on the axles and are retained in place by further washers soldered to the axle ends.

We now come to the more interesting job of detailing the chassis. First, cut the three $\frac{1}{4}$ in. layers of the engine casing and assemble them on the $\frac{1}{16}$ in. rods 13 and 14. When set, trim off the edges until the whole looks like a single casting, adding paper strip to represent the meeting flanges at the two halves of the actual casing as shown in the sketch.

Cylinders are made from $\frac{3}{16}$ in. dowelling, with glued paper wrapped on, followed by the valve chests which have pins inserted in them, and two tiny collars of paper strip glued on where shown. These pins are inserted in the engine casing so the valve chests lie side by side, and the cylinders glued on top, the whole then being surrounded by a paper wrapper as shown in the sketch. The finished unit can then be inserted into the space between the chassis frames and glued in position where shown in the plan. The little piece (17) is shaped and fitted outside the frame, one end over rod 13, and the two wire braces (18 and 20) fitted.

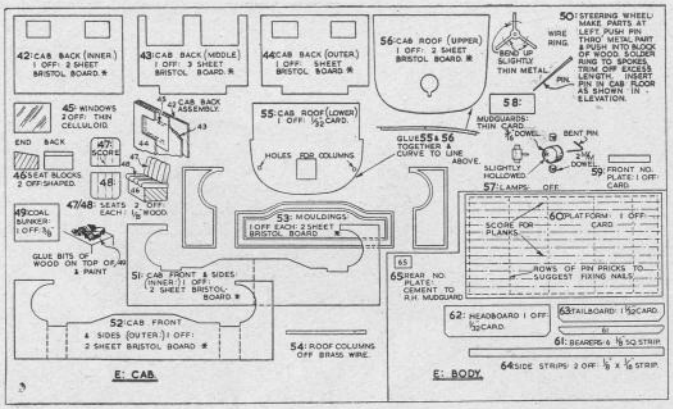
The discs (21) fit on rod 14 and dummy chains (actually $\frac{1}{16}$ x $\frac{1}{32}$ in. strip metal) link them with the discs (7) on the rear axle. Rear mudguards and their braces can now be added, followed by the tank (24) at the front and the tiny hoses. Check with the plan for the correct location of all chassis parts.

The fitting of the cab floor completes the chassis assembly and we can turn to the boiler. The main casing is rolled and glued from paper on to a $\frac{3}{16}$ in. dia. former. It should be made slightly longer than required and finally trimmed to length when set before sliding it off the former. Paper strips of various width are now rolled on (28, 29, 30) where shown in the elevation. Top and bottom are then fitted as shown. The chimney is made in the same way as the boiler, and glued in place over a stub of $\frac{1}{8}$ in. dowelling in the boiler top with a substantial



Top right : The Garrett Steam Road Wagon very slightly under full-size, which gives some idea of the detail that can be incorporated.

On the left : Underside view of the Steam Wagon, showing further detail. What a pity that these refinements can be enjoyed only when handling the model ! But the purist will certainly approve !



add coal bunker, seats, and steering wheel. The combined front and sides is made by cutting the two layers (51 and 52), curving to shape and glueing together. Careful cutting is needed for the mouldings (53) which are now glued in place. The finished assembly can then be glued to floor and back, and held with a rubber band until set. Wire roof columns are then fitted followed (after the cab interior has been painted) by the two layer shaped roof. Tiny lamps (57) fixed to roof columns, number plate and front mudguards complete the cab assembly.

The platform body is of $\frac{1}{16}$ in. card, or plywood, scored for planking, with head and tail boards and sides added. It rests on six $\frac{1}{8}$ in. square bearers glued across the frames.

My own models have cab, body sides, head and tailboard: matt dark brown, lined and lettered in gold. Lamps and roof columns are also gold, platform surface, "weathered wood"; everything else, matt black. Other colour schemes could be used, of course, for cab, but they should be drab. And there is your little "steamer" lacking only that peculiar smell, compounded of hot metal, oil, and smoke, which would make it quite complete!

fillet of glue to give the correct base shape. Steam pipes and fire-door complete the boiler unit, which is then mounted, with ring (29) resting on the cab floor, and the little wire braces (41) between it and the floor. This is a good stage at which to give the entire chassis and boiler a coat of matt black paint.

Bristol board, a superfine white card obtainable from artist's supply shops, is the ideal material for cab parts, and is required in two- and three-sheet thicknesses. The back consists of three layers, forming rebates for the celluloid windows, which can be slipped in after painting. Erect this part first, then

MAKING MODEL BUILDINGS (*Continued from page* 99)

wet. The two cut-outs marked A and B should be painted in moderately strong colours. These should be fitted in place with blocks of wood glued on the reverse side. Sometimes it is wise to strengthen the outer and taller edge with a strip of obechi wood. This will also protect it when you store them away.

These sections are enough to make a very effective background if you are showing a model villa or farmhouse. All you now need is to make up some tree groups with loofah or a cut-out tree as shown for a centre piece. A model will look better if it is raised a little, and this is shown in the Sketch No. 4 by introducing a small winding road.

You must, before finishing, link up the various parts so that they do not show as separate items. They must look like the combined picture. This is easily achieved with bits of dyed wool, moss, some small pieces of brick and other suitable oddments. Adapt these items to suit the model you are intending to feature. A very effective finish can be made by making the road climb and then wind away to the left. These features are always more effective if winding left and not right. Scenery on the right looking at the model will always look better if fairly higher than that on the left. This is just one of those peculiarities of showmanship which does apply to model making of this type.

As an added attraction (and if you are not putting in a full-scale model building) I have shown a neat little building which can be made up to form the main part of your model. The construction is quite simple and you can improve on this with some timber structure work made up with flat spills. In Sketch No. 0 you will see how this can be arranged so that it makes a full scenic model although the main building is very easy to make. If you have a youngster who is keen on art and wishes to enter such a model in a model exhibition here you have the very idea for him to start off with.

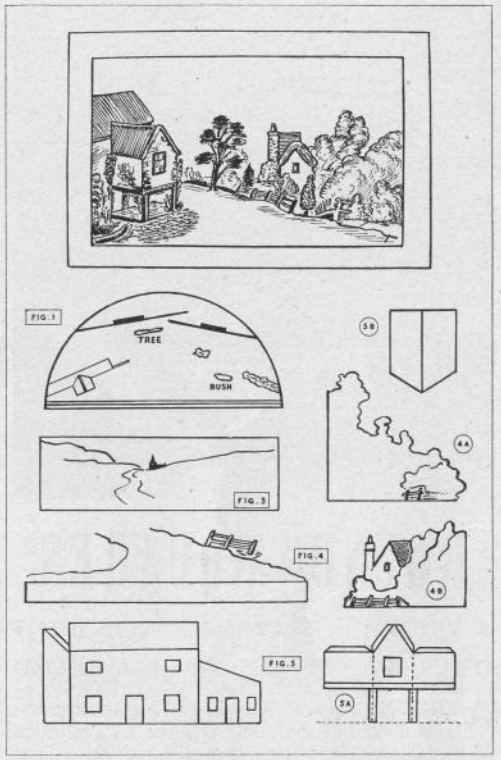
This model can be improved with a wooden framework about 2 in. wide and stained in light oak. Dark oak would not look so well. This will greatly improve it and as an exhibit would be very popular because people love to look into things these days.

With the floor of the model raised and the framework as suggested this would enable you to go in for a little lighting arrangement which always creates additional interest. Concealed lighting could be arranged, but you must provide for the dangers of heat and, should the model be fully enclosed, consider the question of ventilation.

★ MAKING MODEL BUILDINGS

BY VICTOR SUTTON

★ *Continued from November issue.*



AS a complete change from making the usual model buildings model makers may like to try out a cut-out scenic model. This I will fully explain in this article and also give details of the cut-out background and scenic effects which one can use and make to set off a model made for exhibition purposes.

One should study this type of model closely because I have known friends of mine to make these up for trade shows and these have been well paid for. For ideas in design one cannot do better than study the scenic effects on birthday and Christmas cards. Here you have the correct colouring by a real artist.

The basis of a scenic model is character and strength of detail. Study of shading and perspective for this will help train the model maker when tackling more ticklish settings perhaps in connection with his model railway layout.

As in display, composition plays a great part in the orderly arrangement of lines so that one tree group does not show up too heavy and overburden those behind.

Materials used are the same as needed for any other modelling such as your artist's water colours and poster colours. I do my masses of colour in poster shades, and then pick out my flower beds and highly coloured parts in "Crusse" enamel which, being thick, shows up better in small blobs. Pathways and roadways I use flat "Powder Tempera", which can be had from Reeve's or most art shops. It is a powder and has no lustre when dry. Flat oil paints can be used, and I use them fairly thick in making up small roof sections. It can be streaked to represent thatch or scraped to represent old tiles.

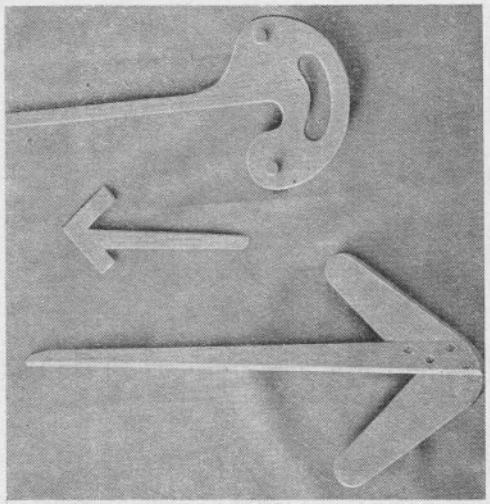
In Sketch No. 1 you will see the general layout of the proposed pieces which we intend to make. The half-circle background is made from thin cardboard and in Sketch No. 2 you will note how the scenic part is designed to give the idea of depth and cover up the surface when the "Flats" (that is the side sections), are in position. You can change the design of the background to suit your own particular taste. You can have it thickly wooded with a church in the distance or to go in keeping with a scenic windmill model. This particular set would do well for the latter.

The back-scene corresponds with the backcloth on a stage. Colour this in with a light wash in cobalt blue wiping the cloud forms in whilst the paint is still wet. Use a clean rag dipped in water. Avoid a heavy "sky" — this will over-ride the scenic part and make it very dark and very much out of all proportion.

Study the countryside before attempting to paint the distant settings. Make the shadows soft and misty in the distant parts and bring the lines darker and more definite towards the front. If you notice the effects of the sun on trees in the late evening you will notice that tree trunks, dark brown normally, tend to show a yellowish green in this particular light. Remember that when the sunset sky forms the background, the visible features in the west should be in darker and stronger tones, as if they were screened from the red glow of the setting sun, whereas the objects to the west would be more tinged with the reflection of reds.

Distant hills should be washed in with a light blueypurple and shaded lightly whilst the colour is still

(*Continued on page* 98)



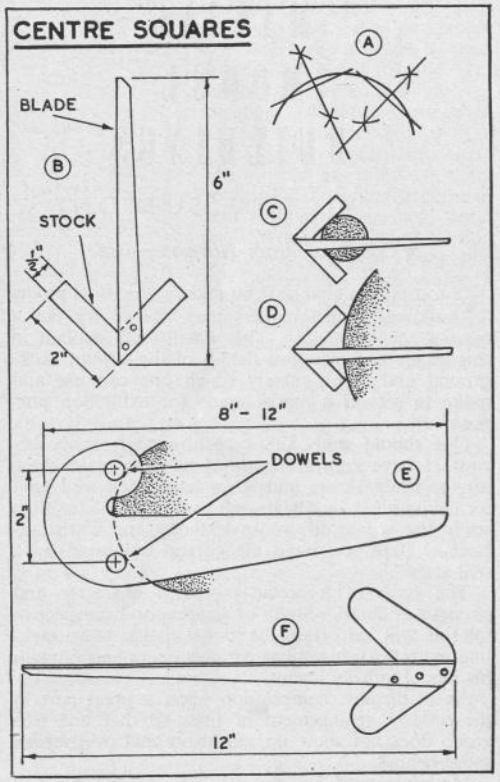
ROUND SQUARES

A NOVEL DRAWING INSTRUMENT DESCRIBED BY P. W. BLANDFORD

A "ROUND square" is obviously a geometric impossibility, but the name is given by craftsmen of the old school to the tool used for drawing lines radially to a curve. More correctly, the name should be "centre square". It is a tool which cannot be bought, except as part of an expensive precision engineer's combination square, yet it is a tool well worth having, whether the medium worked in is wood, metal or plastics.

The centre square has two main uses: drawing lines at right-angles to a curved edge, and finding the centre of circles. For the latter purpose, it is used to draw lines from two positions. Where they cross is the centre. This is so because the square is constructed so that it makes contact with the edge of the circle at two points, and the blade bisects the imaginary line between these two points—it is a geometric fact that a line bisecting a chord must pass through the centre of the circle. So that two lines bisecting chords must cross at the centre (A). Whether you bother about the geometry behind it or not, you are certain to find a centre square useful, whatever solid material you work in.

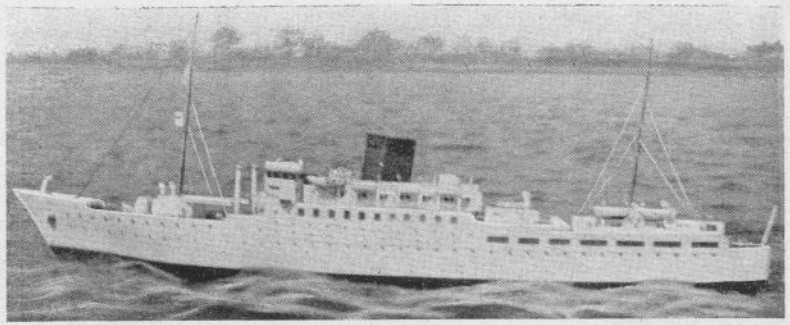
I do a fair amount of lathework, both in wood and metal, and the square I find most useful is quite a small metal tool (B). The stock is cut from $\frac{1}{4}$ in. plate. The important thing is the careful filing of the internal right-angle with equal length legs. The blade is a piece of $\frac{1}{16}$ in. bright-drawn mild steel riveted to the stock. One edge bisects the right-angle. This is set with a 45 deg. set square, then one rivet put in, and the angle again checked before putting in the second rivet. In use the sides of the stock rest against the work when centring small rods (C) and the points when dealing with large circular shapes as in (D).



For large work in wood, a centre square may be fretsawn from $\frac{1}{4}$ in. plywood (E). The place of the stock is taken by a pair of dowels located equal distances each side of the blade and on a line at right angles to it. If the dowels project each side the tool can be turned over. This tool is only suitable for use on curves with a greater diameter than the distance between the dowels.

For woodwork, a larger version of the first tool can be made. The stock is best made from stout plywood or a close-grained hardwood, such as beech. To avoid inaccuracies due to wear on sharp wooden corners the points may be rounded, providing the curve on each is exactly the same (F). The blade is straight-grained hardwood, glued and screwed on.

W. E. BARNES DESCRIBES HOW HIS AMBITION WAS FIRED BY A VISIT TO A SHIPBUILDING YARD AND DECIDED THAT HE TOO WOULD HAVE



. . . . A MODEL SHIPYARD

PAYING a visit, as a visitor to one of Britain's largest shipbuilding yards, I gazed with admiration on the work around me, and the preparations in hand, for the launching of an ocean liner. I came away wondering what it would be like to control such an organisation.

Then I became a "shipbuilder", with a yard of my own, yet! a model one. Still it had the same functions. Building, designing, launching and then trials, and not one ship of one class, but many, from tiny tug to luxury liner, from 24 in. in length to an overall of 7 ft. All have been power driven, electric, steam, and diesel, and to date thirty have been built. And again, like real ships, many of these models are in different parts of the country, with new owners. One of our liners is at present sailing a lake in Texas, U.S.A., and others, also like real ships, have ended their days in our scrap-yard, taken to pieces, to be rebuilt again.

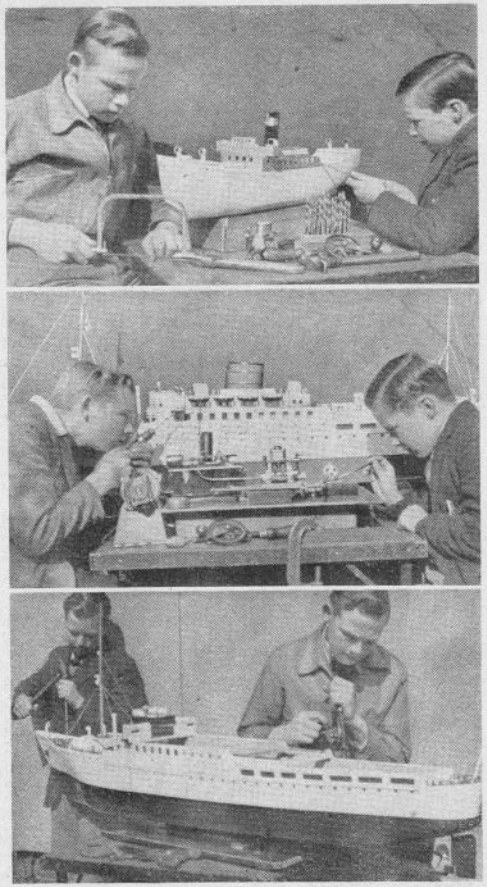
You may wonder, if I do all this work myself, "again like a shipyard", I must have workers, a new ship to be built means discussions, plans, material to be used, etc.

My workers are boys in their early teens. My son is draughtsman—only 14 years of age and eldest of the team. His work covers "orders" from abroad as at the moment he is re-drawing plans of our free-lance design motor liner *Patria* for an ex-Serviceman in New Zealand to build.

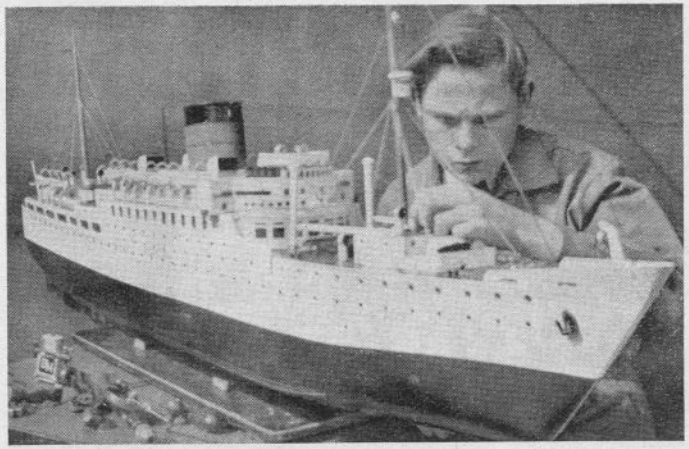
The other boys are bench workers, ranking as foreman and chargehand, as ability merits, and I, being the only adult, control the "shipyard".

Our tools are joiner and metal worker outfits. Bench drill, grindstone, bending vice for sheet metal, all hand-worked—no power tools at present.

Our sales department must only purchase from the trade, engines, propellers, shafts and such work



Heading : Model liner "Patria" undergoing trials on Wilmslow Lake. On the right : Working on a 30in. Cargo Boat ; testing and assembling steam plant for a destroyer ; and building the hull of "Patria".



The finished freelance liner "Patria". Length 5ft. 7in. Single screw 2½in. diameter 3 blade, powered by diesel.

that calls for lathe precision. All other work, including ship fittings, must be made, and the ways and means to achieve realistic results is in itself an article of great interest.

We now look back at our first model, a deep sea tug, length 24 in., single screw, electric, to our latest now building, a scale model, 7 ft. in length, 12 in. in beam, of the new White Star Cunard Liner R.M.S. *Caronia*, twin 2½ in. dia. propellers, coupled with reduction gears to two powerful electric motors, to be guided by radio control. I do hope in the near future, with permission of the *Model Maker* to give a full description, with photographs of this model as we have included all detail down to the swimming pool and lido deck, thanking the Cunard White Star Line for kindly lending scale drawings.

Like building a *Queen Mary* the shipyard has its trying times. Our first models were launched and tested in the bathroom. Now at 6 ft. to 7 ft. long we have had to construct a new testing tank of concrete at garden level, and again a launch at the nearby lake, with numerous spectators it is like a launch in a real shipyard. Seeing one of our large models being constructed a visitor passed a remark that was more than gratifying. "It reminds me of 'Harland & Wolfe'."

We have in hand plans to enlarge and redesign the shipyard to enable us to have two ships building side by side, also new equipment including lathe power drills and a small paint spray, that being a most important item, as we have found by past experience that the finish to a model in her final line, colours must be done with great care and patience. A bad finish can spoil a good model.

We have gained in our "model shipyard" two rewards: the builder's pride in building, and the shipowner's pride in running "voyages" with hulls vibrating with miniature machinery.

With the conclusion of this chapter we bring our article on an introduction to a "model shipyard" to its close, trusting this will interest all those who enjoy models and the building of models.

CAR MODELS IN SPAIN . . . . . .

VISITING Barcelona, that beautiful city where the sun is warm even in November, you can ride on the trams free of charge by hanging on the outside, and where the majority of the taxis are ancient Citroens painted black and yellow, I went to a reception given by the motor club that, on the morrow, was organising the Spanish Grand Prix over the Pedralbes circuit.

Waiting for Fangio, Farina, González, Ascari, Villoresi and Baron de Graffenried to arrive I espied a showcase in one corner of the clubroom. It contained a variety of models. There was a large model Jeep and two small car models. But what caught my eye were the excellent miniatures of car parts. These included a beautiful radiator stone-guard of the kind you would find on a luxurious Delage or Hispano-Suiza, beautifully scaled, plated, and about 5 in. high. Beside it was a model friction shock-absorber, its arms about 2 in. long, a miniature petrol tank, a sparking plug and a petrol can.

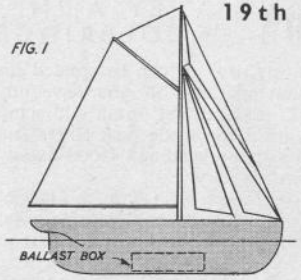
Over the fireplace were a pair of identical model cars, rather angular sports two-seaters, reminiscent of our "kitchen table specials". I thought these might be early i.c. engined models but although I made circular motions with my forefinger and moved my hands rapidly up and down as if trying to start a tiny engine with a cord (I do not speak Spanish!) my host did not seem to have heard of r.t.p. racing!

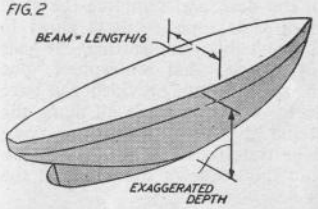
Later, strolling through Barcelona's shopping centre I spotted some good miniatures used as part of a display in a large store. Two of these were models of early Panhards, one being a delightful tonneau-bodied car, another was of a veteran Reo, complete down to pedals on the floor of the driving compartment, and the fourth miniature was a very realistic open-bodied modern Fiat. I also saw some commercial miniatures like our Dinky toys but could not identify the makes represented. W.B.

19th CENTURY

MODEL YACHT DESIGN

BY R. H. WARRING





DIGGING through old records the writer came across some most interesting details of model yacht design in the 19th century. These all differ from modern practice, the present fin and skeg or full keel designs being products of the 20th century.

Fig. 1 is typical of a "racing model" of 1850. The hull lines are clumsy and distinctly reminiscent of the ful-size fishing boat. In those days, too, a lead keel was unheard of and instead a ballast box was fitted inside the hull, to which weight was added as required. Presumably different weight adjustment could be used for different winds.

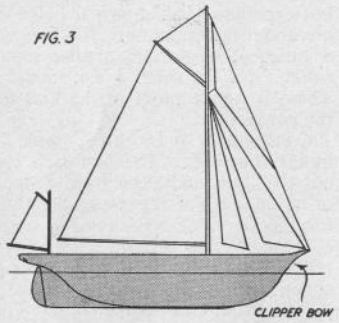
An attempt to clean up the hull lines in the 1880's produced the deep, narrow-beam boat of Fig. 2. This type, or its influence, is still to be seen today. They were called "plank-on-edge" models.

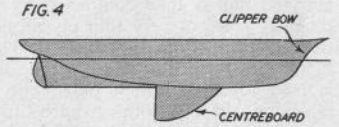
Sail area rules were introduced in 1887 and the "thistle" type was evolved with somewhat similar lines, but a "clipper" bow. Hull depth was reduced somewhat and larger beams employed, but the same large fin was preserved. Sail plan was standard for the time, with the possible addition of a small mizzen (Fig. 3).

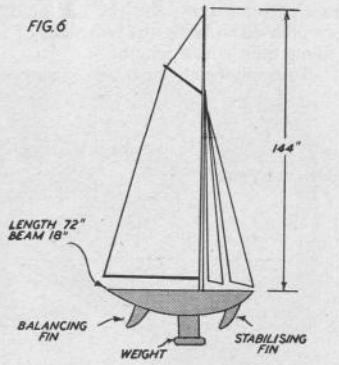
A somewhat similar American type appeared in the early 1890's with still further reduced hull depth but improved stability by the use of a centreboard (Fig. 4). Performance was somewhat better than the "thistle" design, although it is interesting to note that the same "clipper" bow was employed.

Proper fin keels began first to appear in the early 1900's and some typical types of this era are sketched in Fig. 5. With fin keels came a further improvement in hull lines. Of them all, probably the balance fin type was the most successful.

A successful model of the 1902-3-4 seasons is outlined in Fig. 6. This is of the balance fin type where the smaller aft fin replaces the rudder. The boat in question was first sailed with just the central fin but behaved badly, and so the aft fin was added. This was satisfactory up to a degree, but did not give the required directional stability in light winds. The designer therefore added a third fin forward which appears to have resulted in complete stability in light winds. At anyrate, the boat was certainly most successful in its racing career.







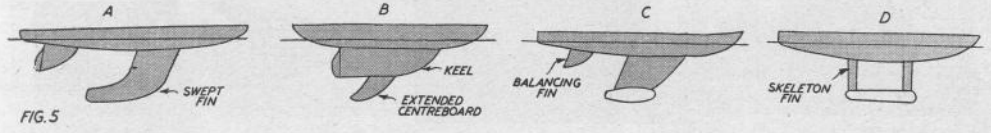


FIG. 5

SIMPLIFIED HULL CONSTRUCTION

BY A. M. COLBRIDGE

EXPERT ship modellers are kindly requested not to pass comment on this article. It is not intended for them! But for the modeller who likes ships and is not bounded by convention, here is a simple and rapid method of hull construction which has proved extremely successful. It is definitely a short cut to a finished model and the resulting hull is light, yet robust and seaworthy. Just the sort of job, in fact, that you could tackle in a spare evening.

The method lends itself to almost any size of hull, but experience has shown that the dimensions given are about the optimum. This size will accommodate a range of electric or similar motors, and is also suitable for the small $\frac{1}{2}$ c.c. model aircraft engines. There is ample room in the hull for installation of the power plant.

Construction is by three simple stages, as shown in the drawings. The first step consists of cutting out the deck and stern from plywood. One-eighth or $\frac{3}{16}$ in. ply for the deck, slightly thicker material for the stern. Dimensioned patterns for these two components are given. The actual deck shape is not all that important. The widest section should come at about mid-length and the deck should be parallel from here to the stern. The forebody fines away to a pointed bow.

The stern block is screwed and glued to the deck and the hull is then completed by wrapping a rectangular piece of very thin ply around, as shown in the second drawing, pinning and glueing to the stern block and along the edges of the deck. The stem is held together with a paper clip whilst the glue is drying, the hull form given by the natural curvature assumed by the ply skinning. At one point only, the extreme bow, the ply has actually to be folded or creased to bring the two sides of the stem together along their whole length.

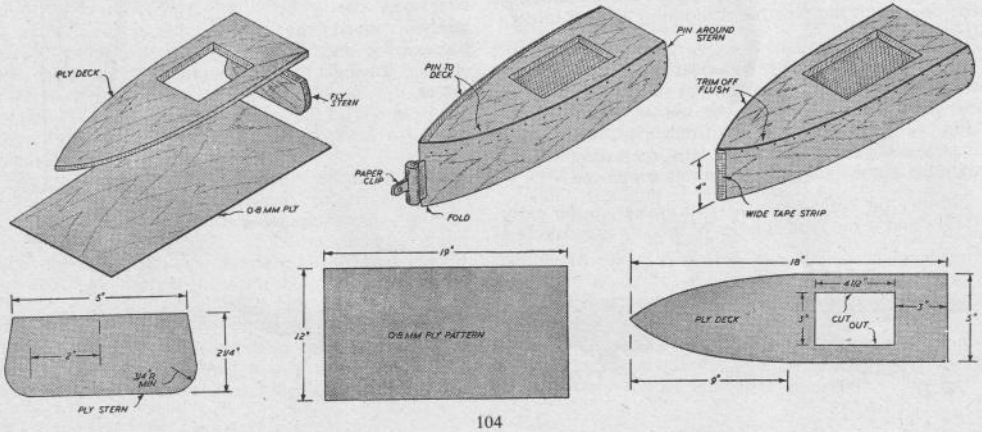
Thin plywood, such as .8 mm. as specified, will bend quite satisfactorily dry. It can be creased for the bow fold without splitting. If you have any doubts on this score, practice first on an odd scrap of ply. Some plys are more brittle than others and do not react well to extreme bending. Good quality ply should be quite satisfactory.

If you have to use thicker ply ($\frac{1}{16}$ in. or 1 mm. ply is the thickest which can be used satisfactorily) you can soak the ply skinning in hot water first to facilitate bending. You should, however, be able to obtain 0.8 mm. ply from most model supply stores.

When the hull assembly is quite set, trim down the skinning flush with the deck and reinforce the stem with a stem band of wide tape, securely glued in place. This will prevent this joint parting. It goes without saying, of course, that waterproof glue should be used throughout when, provided you have made a good close fit of the skinning all along the deck line and around the stern block your completed hull should be watertight. It is a good plan to paint or flush out the whole of the inside of the hull with shellac or clear varnish.

Your hull now, is quite complete, and the further treatment you give it depends on the type and size of power unit you intend to install. Bearer blocks for the motor can be glued and screwed directly on to the skinning. If you are using a particularly heavy motor, or one which is subjected to vibration when running, double up the skinning (inside) where the bearers are to be attached. This will give increased local strength and help distribute the load over a greater area of the skin. Other fittings are also quite easily attached.

Never leave any bare wood parts directly exposed so that they can come into contact with water. Untreated wood can soak up a considerable amount of water, so paint or varnish everything, even the motor bearers, for example.



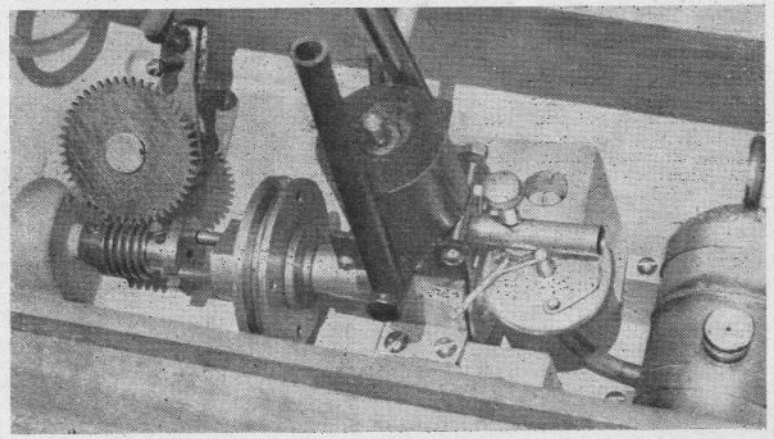
A MODEL DIESEL ENGINED LAUNCH

BUILT & DESCRIBED BY A. SLACK

THIS model boat is 30 in. long by 8 in. beam and 4 in. deep. The hull is constructed from two pieces of wood, each 2 in. thick, the top piece having the centre sawn out to leave about 1 in. all round, except at the bow and stern where it is left stronger. The two pieces are glued and screwed together and the lower piece then carved to the appropriate shape. The deck and superstructure are made from $\frac{3}{16}$ in. mahogany, the funnel and ventilators of thin brass.

The engine is a Mills Mk. I diesel of 1.3 c.c. capacity, and I made a water-cooled cylinder jacket to screw on the cylinder in place of the original. An old oscillating steam engine which I had made a few years ago now serves to pump water round the jacket. This pump is $\frac{3}{16}$ in. bore by $\frac{5}{16}$ in. stroke and is driven by a 50 to 1 Meccano worm and worm - wheel. Water is taken in via a filter below the water line and returned overboard through a $\frac{1}{8}$ in. dia. copper tube. The exhaust gases are taken up through the funnel. The fuel tank is brass and holds $1\frac{3}{4}$ oz. of fuel, while the propeller is of build-up construction being two-bladed and $1\frac{5}{8}$ in. dia.

This boat has now several hours running, the speed being between 3 and 4 m.p.h., and runs for 15 minutes on one tank of fuel. The weight of the boat is 11 lb.



MODEL YACHT CLUB NOTES

BY "COMMODORE"

SPACE will be devoted each month in future to reports from the Model Yacht Clubs. Secretaries and Publicity Officers are invited to make the fullest possible use of these columns, and to remember that *Model Maker* is always ready to consider articles on model yachting subjects from their members. In submitting material we would earnestly remind all concerned that more space will naturally be given to matters of wide interest such as new models in being, new techniques adopted, rather than items of more limited local interest.

Model Yachting Association

The A.G.M. was held on 17th November, but owing to several clubs being unable to make firm dates for fixtures without further consultation it is not possible to publish 1952 Contest Programme. Mr. C. S. Seabrooke was elected Chairman, and Mr. M. Fairbrother (Bournville), Racing Secretary, amongst other changes. It is hoped to publish main dates in our next issue.

Bournville M.Y. & P.B. Club

A favourable balance in hand was reported by the Treasurer at the A.G.M. on October 26th. Equally encouraging was the roll of new members totalling 33, including 13 juniors. This makes a live membership, after allowing for unpaid subscriptions of no less than 75. The Sailing Captain was able to report successful skippers both at home and on the waters of other clubs where competition had been very keen. The Power Boat Captain was also happy to report considerable success during the season. Club prestige was high both as a result of their own well organised Regatta and by reason of members' performances away from home.

Proceedings were terminated with the presentation of the Club awards, and a hearty vote of thanks to Cadbury Bros., Ltd.

Y.M. 6-m Owners' Association

Mr. N. D. Hatfield, Hon. Secretary, provides a summary of the club's recent activities:—

The Club has just completed a successful racing season, during which races were keenly contested, and open events were supported by Eastbourne, Portsmouth, Gosport, Birmingham, and South London clubs.

The winners of the various Trophy events for the International "A" Class held at the Rick Pond, Hampton Court, were as follows:—

OPEN RACES

GLENHAM CUP: *Barika*, Brig. F. R. Inglis.
GOSNELL TROPHY: *Fantasy*, N. D. Hatfield.
SERPENTINE CUP: *Fantasy*, N. D. Hatfield.

CLUB TROPHIES

NAIRN CUP: *Barika*, Brig. F. R. Inglis.
VICTORY CUP (on handicap): *Glist*, Major R. Alston.

The South London M.Y.C.'s "Jubilee Cup" was won by Brig. Inglis with *Barika*, and the same Club's "Surbiton Shield" was won, after a six-round contest, by Mr. C. M. Smith with *Charm* (ex-*Effort*), a full-keel boat designed and built by Mr. W. J. Daniels before the war for Mr. T. O. M. Sopwith.

Congratulations are due to Mr. W. G. V. Blogg who, with *Sharma*, finished top of his Division in the "A" Class Open Championship at Fleetwood. He deserved, however, a far better placing in the Finals.

The race for the Sirious Cup, which was presented to the Club for winter sailing, will take place on Sunday, 16th December, at 10.30 a.m.

If all "A" Class Clubs in the South will let us have their 1952 Fixture List as soon as they are ready, we will do our best to support as many open events as possible next season. We also hope to be able to challenge Gosport M.Y.C. to a Team Race.

The Wicksteed Model Yacht & Power Boat Club

Model Maker has already had the opportunity of visiting the Wicksteed Club's water—albeit in somewhat inclement weather that hardly permitted our pictures to convey the full picture of their pleasant setting. Mr. G. S. Thorne, Hon. Secretary, reports:—

Commenting on the Balance Sheet, the Hon. Treasurer pointed out to members the stable financial position of the Club and a profit on the year's working. The Hon. Secretary in his report gave the results of seven yachting events which were held during the season, and stated that Mr. L. A. Garrett had represented the Wicksteed Club in the British Nationals at Dovercourt for "M" Class, and the 10 Rater British Nationals at Birmingham, besides sailing at Birmingham for a Midland area trophy.

It was announced that some time between *Easter and Whitsun the Midland District Championship for* 36 *in. Yachts would be held at the Park*, when clubs from Nottingham, Bournville, Leicester, Trent, Birmingham, Sheffield and Coventry would be represented, and this was esteemed a great honour. *Thanks were given to the Wicksteed Village Trust for all the help and interest taken in the Club*, also thanks were given to the *Evening Telegraph* for their accurate reports of activities.

In closing, the Secretary said the Club had gained 10 new members in the last season, and it was hoped this would steadily increase. In the Power Boat Secretary's report, it was stated the Club had staged its biggest Regatta yet, and the 1,000 yards British record had for the second year in succession been broken at Wicksteed, this time at a speed of 53.4 m.p.h.; also the Club now had two members with radio controlled boats..

Birmingham Model Yacht Club

The A.G.M. was held at the Albion Hotel, Birmingham, on Thursday, 8th November.

Under the Chairmanship of Mr. H. Bach, proceedings were soon under way. Mr. S. C. Langford, the retiring Commodore, gave a brief outline on the season's activities and it was generally felt by all that the club had further cemented its status as the premier Midland body.

After the presentation of the five championship cups, the Treasurer gave his report, and stated that the club again had a reasonable credit balance and had also increased its assets throughout the past season.

A vote of thanks was passed to all retiring officials and a general welcome extended towards all new members of the club. Mr. E. W. Hague was elected the General Secretary for the club's forthcoming season.

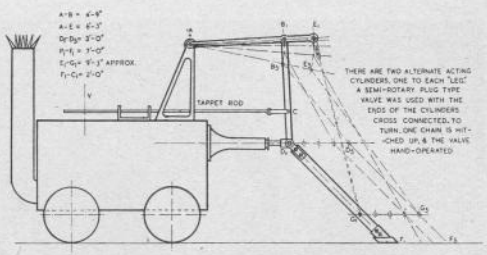
Doncaster & Dist. M.Y. & P.B. Association

Though one of the youngest affiliated clubs the Doncaster & Dist. M.Y. & P.B.A. were able to report a healthy

(*Continued on page* 128)

SOLVING THE STEAM HORSE PROBLEM

BY "HOBBY HORSE"



THE STEAM HORSE - CIRCA 1813

I WAS very interested to read the article on Brunton's Steam Horse in the July issue of *Model Maker*, as it raised boyhood memories. Not that I am old enough to remember the actual machine, but I remember reading something about it in a bound volume of a magazine whose name I have forgotten, in my great-uncle's library. That reference spoke of it in the terms of a scientific curiosity in the year 1870, but was accompanied by a wood-cut showing a three-quarter rear view which was probably fairly authentic, being written some fifty years after this engine was made.

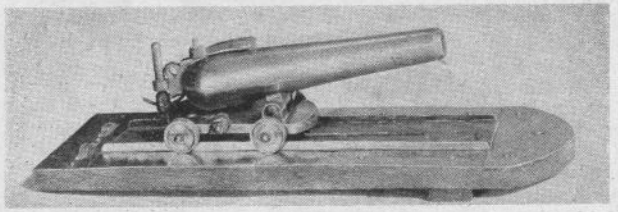
Referring to the old patent drawing, I think where the mistake has been made is in assuming that the extension of the beam (A-B, Fig. 1, p. 477 July *Model Maker*) is part of the vertical link B-D. This is not the case, as was clearly shown in the old wood-cut referred to. In fact, A-B and its continued extension backwards forms a single lever. B-D is a link, and D-F is of course the leg. A chain connects the outer end of A-B with a point on the leg D-F. In the old cut a pair of cross-connected chains are shown connecting the extremities of the beam A-B with the same chain anchorage on the legs but to the opposite side. I cannot see the exact function of this chain except as a safety measure in the event of one of the others breaking, as it would have a very inconvenient effect unless the exhaust side of the cylinders was restricted to give a slow return stroke equal to the working stroke of its opposite number. It will, of course, be clear that this engine was a two-cylinder device, one to each leg. The valve gear consisted of a pair of plug cock steam valves with the two cylinders cross-connected to give an alternate action.

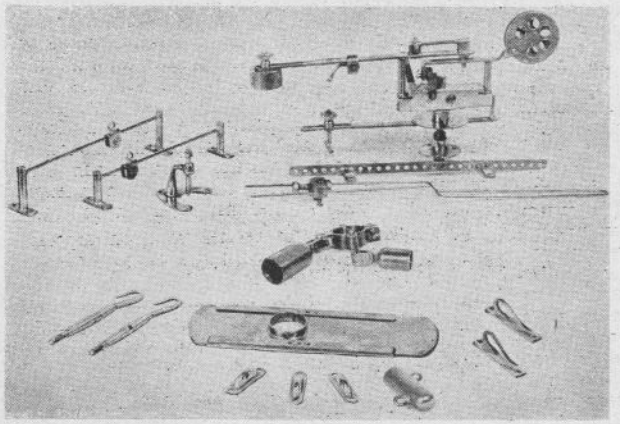
The axis of the valves was horizontal, they were connected by a short rod which carried a vertical lever with a weight at the top end which flopped over centre to give a quick action and thus prevent stalling as the stroke changed over. The valves thus connected were operated by a further pair of vertical levers fixed to the axis, which were alternately struck by tappets on the valve rods connected to the vertical link B-D. As illustrated the old engine had very wide concave treads to the wheels, and it was obviously intended to run either on a rail track which in those days was probably the somewhat primitive track used for colliery tubs, or to run on hard ground. In the latter case a measure of steering could be obtained by hand operation of the valves by cords led to the front end of the engine where the driver had a footplate. The boiler was of the return flue type, with the smoke stack and firedoor at the same end, as was the case I believe with "Puffing Billy". By the above means, the driver could regulate the stroke of the feet on one side or the other, and thus guide the Horse on hard ground around slow curves. The old article stated that the locomotive could be turned by chocking the wheels on one side and hooking up the appropriate chain when one foot became ineffective, so that it slewed round something like a modern tank.

With the above description in mind, I proceeded to set out the linkage on the drawing board, and the attached sketch is the result. So far as memory goes, the sketch may be considered fairly accurately to the scale of 1 in. to the foot, which would make a very reasonable working model, bearing in mind that very low pressures were customary at the time. The important points discovered in constructing the linkage were that the beam A-B performs the greater portion of its motion below the horizontal, the link B-D being only 3 in. longer than the distance between the centre line of the piston rod and the fulcrum "A". Secondly, the link B-D performs all of its motion ahead of the vertical, i.e. when the piston is in the extreme inward position ready to commence a power stroke, the point of junction with the beam of the link B-D is 3 in. behind the end of the piston rod "D". With the proportions set out in my drawing, the length of the chain for parallel motion of the leg will be found constant within an inch or so throughout the stroke for a total overall chain length of 9 ft. odd, which is better than 1 per cent accuracy.

In analysing these old devices from contemporary descriptions and sketches the state of knowledge at the time must be taken into account. At the time (1813) when this engine was constructed there was available a great deal of knowledge and ingenuity, particularly in the field of textile machinery and clocks and watches, so that a simple but effective

(*Continued on page* 110)





TEST BENCH

A REGULAR TRADE REVIEW

Dollar Drive

THOSE model makers who have noted all those gloomy adverse export balances and similarly depressing figures in the national press will be delighted with our heading picture which portrays Mr. Graham Farish demonstrating his skill with a model railway kit (dismantle 2½ minutes, reassemble 3½ minutes) while visiting John Page, Editor of *Model Railroader*, and his staff. This marks the beginning of a Graham Farish export drive to capture the quality market in America. Ed. Miller of E. B. Miller Associates, Inc., who will be handling their products is enthusiastic at the reception they are receiving. As he remarks: "There is always room in the States for a quality product: and there is nothing on the market there to touch these kits for detail and finish."

Fittings for "Festive"

Submitted by Arthur Mullett, 16 Meeting House Lane, Brighton 1. Complete £6/7/-.

IT is so unusual to find dexterity in both wood and metals that model yacht makers for the most part depend on fittings manufactured for them by specialists, rather than attempt the—to them—difficult and lengthy task of making their own. The collection illustrated while assembled specifically for W. J. Daniels' *Festive* recently described in *Model Maker* is, of course, equally suitable for any other Marblehead. In their polished brass finish they present a very pleasing and shipshape appearance guaranteed to enhance the looks of the proudest model yacht. For the benefit of those who would like to price the items individually here they are: Mk. II Vane Gear, £2/10/-; Jib Rack, 4/-.; Jib Horse, 5/6; Mast Slide, 10/-; Pr. Spinnaker Hooks, 3/-; Three Gunwale Eyes, 3/9; Main Horse, 6/3; Gooseneck with Spinaker Tubes, etc., £1/1/-; Jib Boom Ferrule, 3/6; Top Pintle, 15/-; Two Turnbuckles, 5/-.

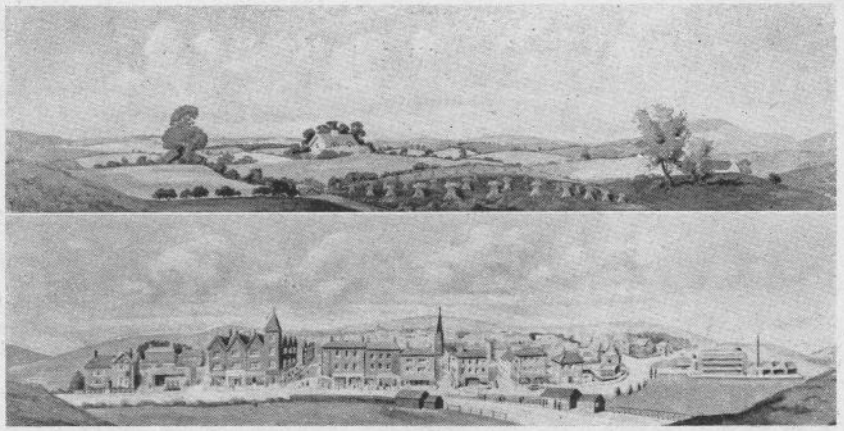
Sets of sails can also be obtained from stock ready for bending at £1/16/- the set.

Our own *Festive* is being Mullett-equipped, and should be taking the water for sailing trials in a few weeks.

Top : Mr. Graham Farish demonstrates his practical skill watched by 'Model Railroader' staff, Editor John Page looking over shoulder and Linn Wescott on right. (A 'Model Railroader' photograph.)

Centre : Model Carronade (sic) a 19th century muzzle loader model in brass, one of Messrs. Wallis & Wallis' typical lots. (Photo: Prothero, Lewes.)

Bottom : "Festive" fittings available from Arthur Mullett of Brighton.



Top : Two of Bassett-Lowke's new scenic railway backgrounds now available in full colours.

Centre : Lines' Bros. new Nuffield Farm Tractor — a recent addition to their Minic series.

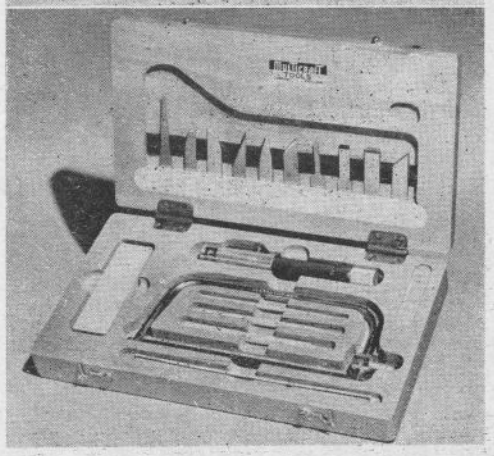
Bottom : Multicraft Major Toolkit in polished box — a newcomer to the range of model-makers' fitted kits.

New Scenic Backgrounds for 0 or 00 Gauge

Submitted by Bassett-Lowke Ltd., Northampton, London and Manchester. Set of four sheets (inc. P.T.), 12/6d.

SOMETHING new from Bassett-Lowke is always an event, and we are sure model railway enthusiasts will join with us in welcoming this magnificent set of scenic backgrounds in full colours. At least that great majority of us who can never get a painted background to look anything but a conglomeration of brush strokes will be rejoicing. These are four in number, each 3 ft. long x 9 in. deep. They represent rolling countryside, fields and woods, with one sea-view through the cliffs and a thriving township. They can be assembled in any order, to suit the particular nature of the layout, and join up naturally without evidence of a break. Two of the four strips are illustrated on these pages—though monochrome does little more than indicate their real nature.

We have also been browsing through some of the B.-L. catalogues. They have far too many things to display or advertise, and an evening spent with your choice, general, locomotive or ship, will undoubtedly be rewarding. A number of our "wants" have been easily filled including such things as where to get drawings of a good model traction engine *and*



the necessary castings and fittings, varieties of power units for boats—in fact a model maker's Aladdin's Cave of discoveries.

Tool Kits for Model Makers

Submitted by Phillips Omnipool Ltd., 29 Bolsover Street, London, W.1. Major Kit, £2/2/-; Cadet Kit, 27/6d.

THERE is a subtle fascination about a nice polished box, suitably recessed for a variety of tools, particularly when they are good, novel and useful tools. Away with the old cigarette tin, and on with the Multicraft Tool Kit. We illustrate the de luxe Major Kit, which retails at £2/2/-. The small Cadet set follows the same general plan, contains most of the same tools—though with fewer spares—and is contained in a less elaborate box, but still finely polished and a pleasure to handle. With a fairly wide expereince of assorted modelling knives, we have always suffered from the bane of blunt blades which could seldom be re-sharpened satisfactorily. The Multicraft people have overcome this by providing blades of considerably tougher calibre that will not break off during the cut, are as sharp as the so-called "surgical" blades, and yet can be re-sharpened speedily on the excellent sharpening slip in each kit. We like too the novel cutting knife handle that can contain spare blades. The head is reversible when it forms the handle of the neat little Abrafile saw. In addition to assorted blades there is a keyhole saw, chisel, screwdriver, coarser Abrafiles—indeed, nearly a workshop in miniature.

"Nuffield" Tractor

Submitted by Lines Bros. Ltd., Tri-ang Works, Merton, London, S.W.19. Price (inc. P.T.), 23/11d.

"MINIC" road vehicles have long had a keen following among both collectors and mechanically minded youngsters, and few manufacturers have so successfully applied die-casting and plastic moulding to the accurate production of detailed models. The latest "Minic" model, the Nuffield tractor, is on a scale large enough to allow of considerable scope in detail, and is an excellent replica, some 8 in. in overall length, of this popular agricultural machine. Body and chassis are in plastic, and power is provided by a good quality clockwork motor, wound almost invisibly through the wheel, driving 3½ in. "Trak-grip" rubber tyred wheels. The motor is controlled by a lever at the back of the body, which provides forward, reverse and neutral positions, stop and start by another lever on the near-side. Steering works on Ackerman principles from the wheel, and a towing attachment is fitted. Complete with lifelike detachable driver, the tractor sells for 23/11d. including P.T.

Going, Going, Gone !

Forthcoming Auction Sale of Models by Messrs. Wallis & Wallis, 200 High Street, Lewes.

ONE of our favourite occupations has always been to watch the activities of an auctioneer, taking care all the time to avoid sneezing, shaking a shoulder, or giving any of those intimations of a bid that leads to a collection of spears various, a dustbin lid, and a chandelier changing hands. We were therefore particularly interested to hear that Messrs. Wallis & Wallis, well-known auctioneers of Lewes, Sussex, were shortly holding a sale exclusively devoted to *models*. Such a thing we thought must surely be a rarity, but we are assured that the auctioneers have successfully run them in the past, usually in conjunction with other items such as arms and armour. This forthcoming sale, early in the new year, promises to have a more than normal accent on the models. We are glad to give it every possible publicity, for there must be literally hundreds of modellers with unwanter models that they would gladly turn into cash to further their brain-child of today. Let them hesitate no longer, and dash off a brief, but accurate, description of their offers and send it for inclusion in the catalogue. Goods for inclusion should be sent straight away to the auctioneers—very well packed, and above all securely labelled.

Just as many will hasten to sell, there must be even more in the market to buy some of those models that have for so long been off the past-war market. This is their chance—a line to the auctioneers will ensure a catalogue in due course, when they can mark up their needs. For the benefit of those unaccustomed to auction practice, it is quite possible to send written instructions to an auctioneer to buy in certain lots on your behalf.

SOLVING THE STEAM HORSE PROBLEM

(Continued from page 107)

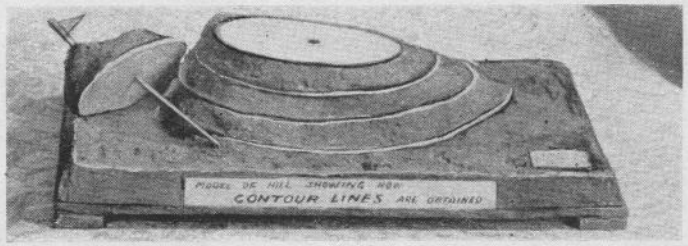
design for a linkage is quite likely to be found. On the other hand, sizeable machine tools were very primitive, and by modern standards, highly inaccurate, so that it is very unlikely that designers of engines in those days paid attention to the high order of accuracy which is current practice today, and anywhere within an inch or two on a device of this size was likely to be all that could be achieved with the hand-forged and roughcast parts available. It is likely that the construction of this engine was entirely from hand-hammered iron plates with cast cylinders and possibly cast wheels, and that the beams and other parts were of wood reinforced with iron plates. No doubt the chassis was also of wood, and I would very much doubt if it had any springs.

I hope that the above description of this interesting and ancient device, culled almost entirely from memory, will be helpful to your readers, who may wish to construct a working model, and should any of your readers feel so disposed I would be very happy to give any other details or to suggest methods of making it applicable to model work, with sketches and additional dimensioned detail, should there be sufficient interest.

A USEFUL CONTOUR MODEL

FOR DEMONSTRATION

BY H. A. ROBINSON



HERE is an instructional model which would be useful to teachers, Scoutmasters and others who have to demonstrate the meaning of contour lines. The model is in the form of a miniature hill which can be taken apart layer by layer, thus showing that a contour line is in very truth a plan at any given level. Sheets of paper go between the layers and these can be laid on one another to demonstrate how a contour map is eventually built up.

To make of wood, obtain six or seven odd rectangles, varying from 6½ in. x 4 in. to 5½ in. x 2½ in., and also a large rectangle 9 in. x 5½ in. for the base —all the pieces are ½ in. thick, although the base can be a trifle thicker if necessary. The hill layers must be all the same thickness, however.

Put the pieces together temporarily as Fig. A, and drill a hole right down the centre of the pile large enough to take one of the thicker kinds of bicycle spokes. Having obtained one of these spokes (any cycle shop will supply one), cut to a length a little longer than the height of the hill and bend the one end as (a) Fig. B against which jams a washer (b). A second washer of the same size is required for the other end to sit against the nipple.

Where the spoke comes through at the underside of the base an opening is taken out big enough to take the nipple and washer.

Put the spoke through with washers in position and screw the nipple up really tight. This will hold the piece as one solid block, but greater rigidity for the cutting that is to take place can be given by driving one or two long thin sprigs in from below through the base, and also from the top.

Now with a saw shape as per the dotted lines in Fig. A. Make the one side slope more than the other so that the final hill will not be too regular, which will demonstrate contours better.

Having done the rough shaping, take a really sharp chisel and working downwards, round off the corners and in general produce a possible mountain as the lower sketch in Fig. B.

To make everything fit well now give the model a good sandpapering, for it is essential that the layers join smoothly at the sides without visible breaks.

So far we have no peak to the hill. This is shaped from a home-made plastic, as say sawdust and glue, or papier mache will do. It is built up round the top end of the spoke (some of which is left sticking out) after a piece of paper has been placed on the top layer of wood so that it will not stick.

Having got the hill nicely shaped (and this will mean easing the bottom away to meet the base) take out the temporary sprigs and then, after getting some sand or ground-down sandstone, paint the model with thin glue and sprinkle on.

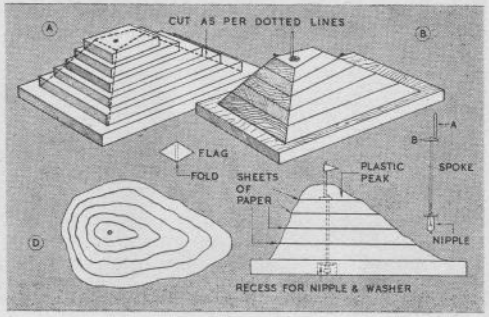
The top of the spoke which sticks out above the peak is now finished with a tiny triangular flag, simply a diamond of red paper doubled and glued.

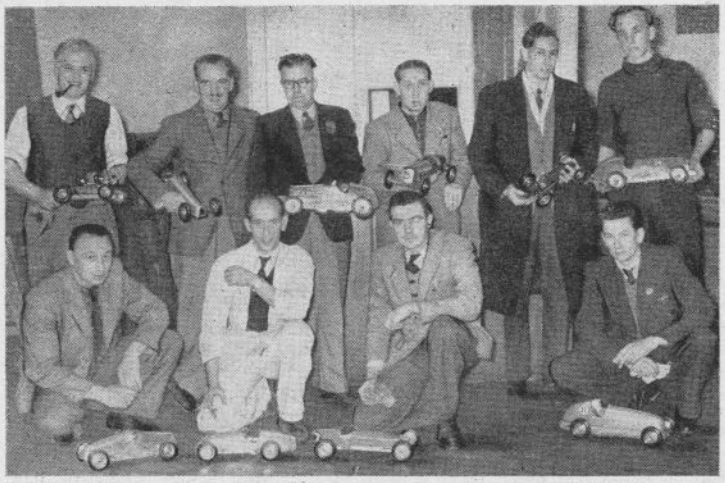
Now unscrewing the nipple, take the whole model apart, and placing a sheet of thick paper on each layer in turn mark on this the outline of that particular piece. Cut the pieces to the shapes given and black in the outer edge as indicated in Fig. C.

When the model is together these pieces lie between the layers, and their purpose is to lay one on top of another and thus show to the pupils that a contour map is in very truth the outlines at various levels laid one on top of each other.

If the hill is not made of a too regular shape, but steeper at one side than the other, the contour "map" made by the papers will be as Fig. D, from which it can be deduced that the nearer contours are together the steeper the land—the further apart the more gentle the slope—as well as many other points.

The utility of the model greatly depends on the ingenuity of the demonstrator as will be understood, but one of the big uses of the model is to help students to visualise land shapes from a contour map and this it does automatically.





VINTAGE AT EDMONTON

BY G. H. DEASON

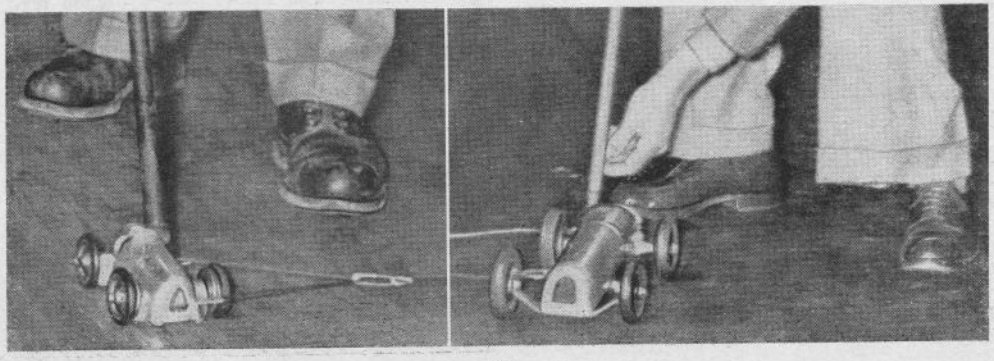
Left : Competitors in the "Vintage" class at Edmonton with their "bootlace and Ronsonol" models. Below : Pioneer pushers-off ! Left : R. W. Flower's minute Mills engined direct driver, and right : J. Cruickshank's fast and famous Mercury Ten.

JUST how or when a model racing car becomes qualified as a Vintage specimen is not too easy to define in precise words, but the invitation extended by the Edmonton M.C.C. to owners of Old-Timers was rewarded by the welcome appearance of quite a number of battle-scarred warriors which have been languishing on workshop shelves for several years at least, out-dated by the rapid march of progress in the model racing field. In some cases their owners have remained active in the movement, and in others have been devoting their energies to other hobbies. There were still a goodly number of once well-known models that we looked for in vain, but the Edmonton Club can congratulate themselves on a successful first step towards keeping the older cars in action by promoting sensible competitions for them in an atmosphere of enthusiasm and tolerance towards their modest attainments.

The meeting held at the Rego Works on November 10th was in fact a team contest, run on consistency lines, and all classes of car ran together. Teams of three cars were formed after single individual runs had given the organisers something to go on, and the combined speeds of each team were added together and compared to the totals of the second runs. The distance was $\frac{1}{4}$-mile in each case. The Vintage section also ran for individual consistency and speed prizes.

Thirty-four racers competed, including several fast "tens", which we felt were safer watched from a discreet distance in an indoor setting! Proceedings included several minor mishaps, one or two wheels coming adrift, whilst Cyril Catchpole's 10 c.c. car did a number of smooth and quite rapid circuits on its back, without appreciable damage. Amongst the 2.5 c.c. class the trend towards the cigar-shaped nacelle with streamlined wheel-spats was noticeable, there being three of these present, including Alec Snelling's record breaker, and an outwardly similar job by K. Robinson of Medway Club, with a home-built experimental motor. Another noteworthy

(*Continued on page* 126)



TRIALS & TRIBULATIONS

L. MANWARING RECOUNTS THE STORY OF HIS FIRST MODEL CAR VENTURE

I WAS first bitten by the model car bug on my second visit to the 1946 "Aeromodeller" Exhibition where I spent some considerable time admiring the efforts of Messrs. Buck, Cruickshank and Wainwright and wondering how on earth I could possibly build anything as good.

Very soon I made the acquaintance of G. H. Deason who supplied me with no end of "gen" and a plan of the "Galeota", and thus sealed my fate—and later my wife's.

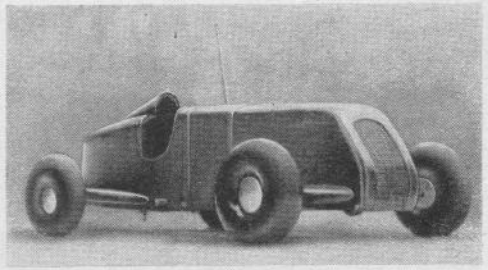
At the exhibition I also purchased two pairs of "Riderwheels" and caused much awe at home by having some small wheels which actually "pumped up". Casting around for a suitable motor (I was as green as grass and knew nothing of small i.c. engines or where to obtain them), I saw the "Atlas" 3.5 c.c. engine advertised in *Model Cars* and it seemed to fit the bill, so I sent off for one complete with flywheel, coil and condenser.

Material to construct the chassis was next in order of priority, so again after reference to *Model Cars* I wrote off to Messrs. Laws for a supply of 18 in. x 1 in. x $\frac{1}{4}$ in. ash and some plywood. Meanwhile the motor arrived and was brought to my bedroom where I lay for nearly an hour admiring my first engine and visualising the car into which it would eventually be installed.

By the grace of my parents, I was allowed to bring an old table into the living room to serve as a bench and work on the "Galeota" commenced. Various odds and ends of wood and tools were contributed by my good pal Pete (who was later to perform the function of "centre pivot" during the initial tests of my second car—happy days!) and soon he and I were hard at it every evening. Pete had built model aircraft before, but I had made nothing previous to my essay into model car building, so a lot was pure guesswork.

The old "Galeota" is a dead simple car, but we struck many snags in assembly due to our inexperience and the words heard most frequently from my father were "Now if I were building that car . . ." and he was more often than not told in no uncertain manner, "Well, you are not so let me alone". Poor old dad. I must confess that I lost my temper more over the "Galeota" than over any of my later cars. But it certainly taught me patience, and now I often find myself muttering, "Oh, bother the thing" when an engine is being cussed, whereas I would have hurled the car across the track had it been old Number 1!

Meccano gears as specified, were hard to come by, but I ran some to earth in a model shop and had to pay an exorbitant price for them. However, in those palmy gratuity days money was no object and the



We dredged the Editorial archives to produce this picture of the Manwaring masterpiece, which has distinctive bodywork of the builder's own design.

brass gears were borne home in triumph and duly fitted into the chassis. The wheels were fitted and inflated and much time was taken off in admiration of the device that was gradually assuming shape.

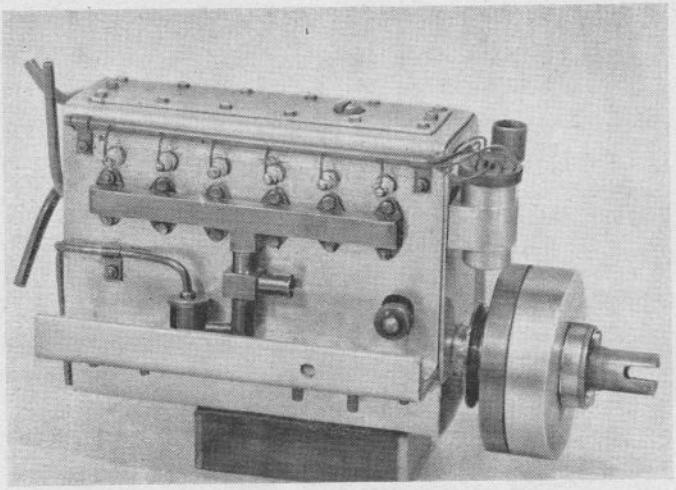
The "Atlas" motor was installed—as yet unrun—and wired up. A battery box was fabricated and fitted with two No. 8 batteries—not wishing to overburden the coil! Some suitable fuel—"Ronsonol" and Castrol "XL"—was mixed, the tank filled and the chassis conveyed to the lean-to in great expectation for a trial run of the engine. Needless to say, despite great exertions with a length of cord in the approved manner, the motor refused to start—much gloom reigned that evening.

However, next day I visited a local model shop "discovered" by my mother, and obtained some gen on engines, including the very enlightening statement that "rotation anti-clockwise" was when viewed from the crankshaft end. Boy, was I green! On the expert information imparted by the shop proprietor, Mr. Wreford, I purchased a $4\frac{1}{2}$ volt bell battery to serve as a booster and wired this up to the car. Not fancying another session in an icy lean-to—February 1947—I obtained parental permission to try the engine on the living room carpet! Again she was fuelled up, the front end propped up a book and the cord brought into play. First pull resulted in a pop or two—much joy—and on the second she went away like a bomb—or so it seemed. All the family had to view the wonder and soon the room was thick with fumes. My parents are, as you can see by this time, very tolerant and this latest lapse was overlooked.

The work now proceeded with fresh enthusiasm Provision was made for a $4\frac{1}{2}$ volt flat battery in the chassis, and as I did not care much for Mr. Galeota's body design, a fresh idea was evolved. My body was fabricated from aluminium and obechi and was painted B.R.G. A knock-off switch was made and fitted, and a tether rigged up. Now it only needed a visit to a track to see how my first model car would perform—if at all.

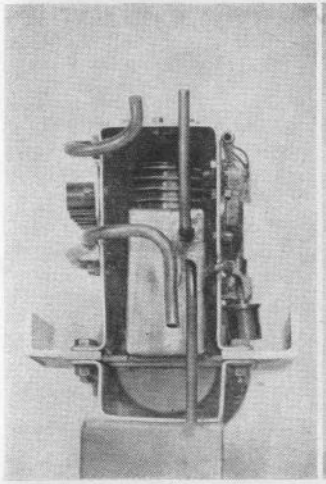
This car represented a great achievement for me, as I had never built a model before, not even one

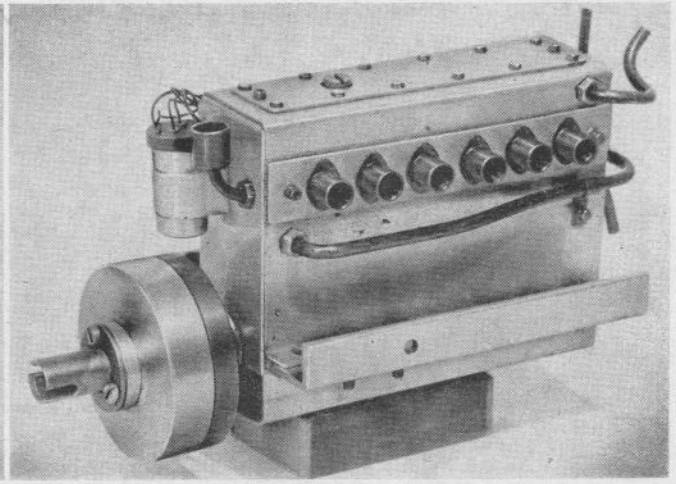
(*Continued on page* 117)



FULL CONSTRUCTIONAL DETAILS OF A DUMMY 6-CYLINDER ENGINE SHELL TO CONTAIN AN E.D. OR SIMILAR ENGINE

BY L. JEWKES





UNDER BONNET REALISM

OUR recent description of a fine scale model of an M.G. P.-Type two-seater built by F. H. Buckley, and in particular our comments on the seeming impossibility of fitting such a model with a true to scale engine to match, brought forth a most interesting response from L. Jewkes, of Great Barr, Birmingham. At first sight when we inspected the pictures of his model Alfa Romeo, we were well and truly deceived by the engine unit, and took it for a small multi-cylinder job. Reference to the accompanying letter, however, explained things, as follows.

"It is now 12 months since I finished my latest model car, a 1932 Type P.3 Alfa Romeo, and on completing it I was quite pleased with its external appearance. When the bonnet was lifted, however, I often gazed with dismay at the lonely and incongruous single cylinder protruding from within. 'This is not at all as it should be', I thought to myself, and began to scheme something more in keeping with the car's racy lines. The fitting of a dummy engine was my first thought. It would certainly be an improvement so far as appearance went, but what could I use as motive power? An electric motor definitely didn't appeal to me, as I wanted that bark which is so essential a part of the racing car's charm."

After giving much thought to the problem I decided to see if it would be possible to install a single cylinder engine in a dummy four or six cylinder monobloc, so a few tentative sketches and templates were made, based on a straight six-cylinder engine of no particular type, dimensioned to accommodate an E.D. Mark III diesel engine as the actual power unit. The space within the monobloc ahead of the engine proper is used to house the narrow vertical fuel tank.

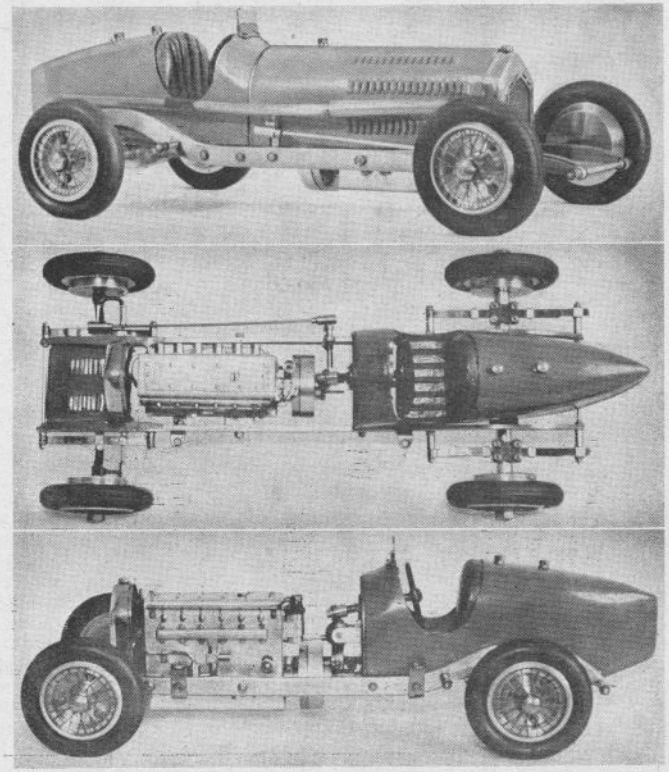
Constructional details of dummy engine casing

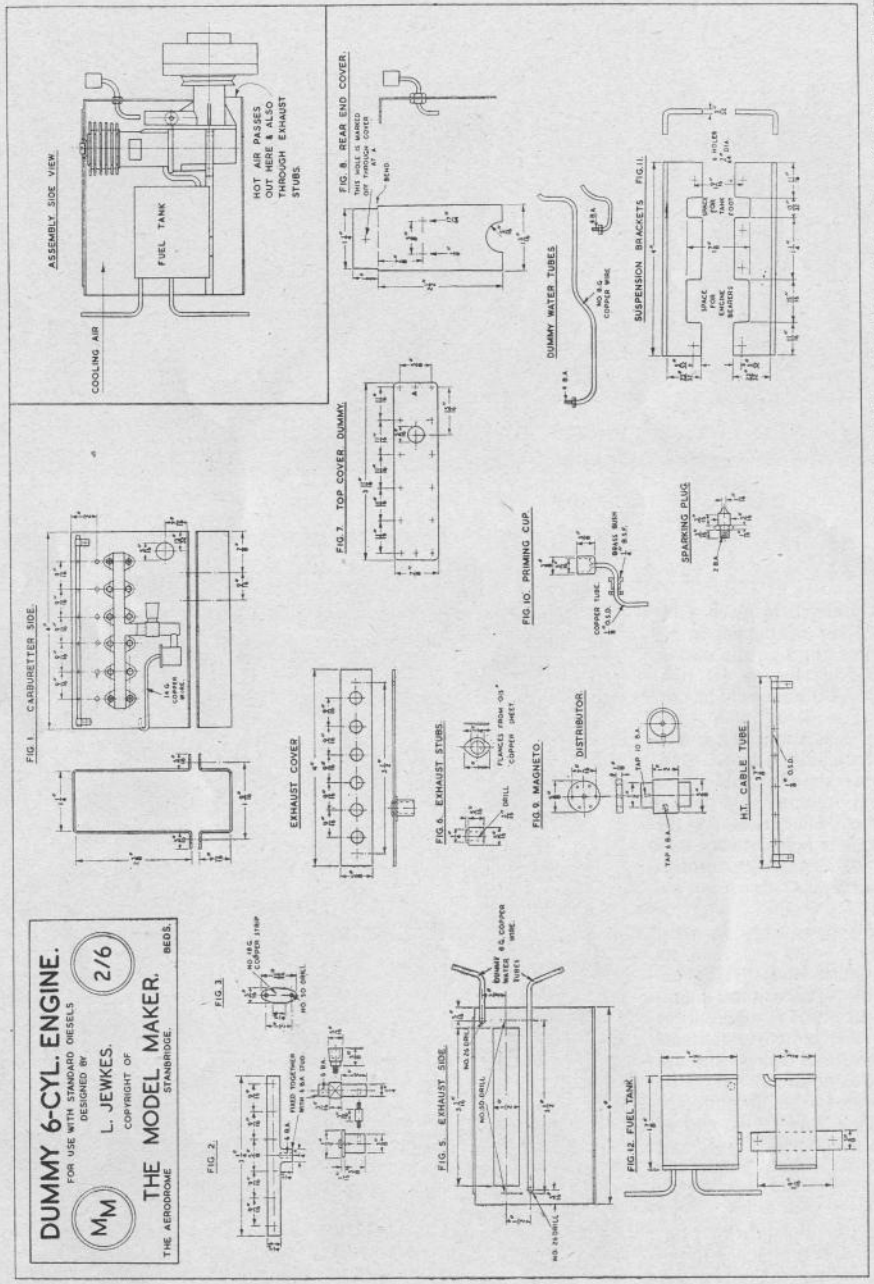
The engine casing is made from 20 g. aluminium sheet (see Fig. 1). Two hardwood blocks are required, on which to the form the top and bottom portions of the casing. The upper forming block should be $1\frac{1}{2}$ in. x $2\frac{3}{8}$ in. x 4 in., and the lower one $\frac{9}{16}$ in. x $1\frac{1}{4}$ in. x 4 in. These are quite straightforward as there are no intricate shapes in this engine. When completed, the upper and lower halves are bolted together, sandwiching between them the engine bearers, which are of $\frac{3}{32}$ in. aluminium angle and extend the full length of the dummy casing, and upon which the E.D. unit and fuel tank are mounted.

This, however, is anticipating the final assembly. Meanwhile the details have to be fitted to the upper half casing. On the carburetter side six holes are drilled and tapped 2 B.A. for the dummy sparking plugs. Should the thin casing show signs of stripping, locknuts must be used on the inside, and if so the fins of the E.D. cylinder head will have to be cut away sufficiently to allow the head to enter the casing. Below the sparking plug holes are four holes (marked A) drilled No. 46, for the inlet manifold, and one in the lower right-hand corner to clear the jet needle bush. The inlet manifold itself is made from copper strip, $\frac{1}{2}$ in. x $\frac{5}{16}$ in. x $3\frac{1}{4}$ in. long, as shown in Fig. 2, the bolt flanges being 18 g. copper sheet soldered in place. Only the outer pair of flanges is actually bolted through the casing, the other four having 10 B.A. hexagon head dummies. The carburetter (Fig. 4) is made from odds and ends of brass, and is fixed to the manifold by a 6 B.A. stud. Above the manifold is the $\frac{3}{32}$ in. o.d. copper tube which carries the H.T. leads to the plugs. This is bolted to the casing with 10 B.A. bolts through thin copper straps.

On the exhaust side an aperture is cut, $\frac{1}{2}$ in. x $3\frac{5}{16}$ in. to clear the inner ends of the exhaust stubs. The exhaust manifold with its stubs is made up as in Fig. 6 and bolted to the casing. Above and below this are drilled two holes to take the dummy water take-off pipes, of No. 8 copper wire. One end of each pipe is screwed 4 B.A. and fitted with a locknut inside the casing.

The top cover plate is of 18 g. aluminium, and is attached to the top of the casing by the two end





FULL-SIZE WORKING DRAWINGS (WHICH CAN BE ADJUSTED FOR ANY NORMAL ENGINE) CAN BE OBTAINED PRICE 2/6 POST FREE FROM MODEL MAKER PLANS SERVICE, BILLINGTON ROAD, STANBRIDGE, NR. LEIGHTON BUZZARD, BEDS.

bolts only, the other twelve being merely pushed through the holes in cover and block, allowing about $\frac{1}{64}$ in. to protrude for riveting. Next the $\frac{5}{16}$ in. hole is drilled in the cover to clear the compression adjusting screw of the E.D. The end cover in the case of my own engine is made separately, but could be in one piece with the top casing if desired. The end cover carries the dummy magneto and the priming cup. The opposite end of the casing is left open, facing towards the car's radiator. The magneto is made from a piece of $\frac{25}{32}$ in. sq. dural, turned down to $\frac{1}{2}$ in. at each end. An ebonite cap is screwed to the top of this, through which the H.T. leads of enamelled wire pass. The opposite ends are twisted together and pushed into the end of the lead tube, the plugs being connected by separate short lengths, soldered to the plug ends and passed through holes in the conduit.

The $\frac{1}{8}$ in. o.d. priming tube passes through the front cover by means of a screwed bush with a locknut, into which the tube is soldered after bending to the correct shape to bring the inner end over the air intake of the E.D. carburetter. A brass cup is fitted to the outer end, and is used for priming with neat fuel for starting purposes.

The fuel tank calls for little comment, except to ensure that the fuel pipe is in line with the outside edge of the tank and the jet.

"The E.D. engine, which incidentally is fitted with the standard E.D. flywheel-clutch, has its compression adjusting screw replaced by one with a slotted head.

"After all brass and copper parts have been polished, a coat of clear lacquer is given them, to prevent future discolouration, and the complete engine unit assembled as seen in the photographs.

Details of the Alfa Romeo Car

"This is based on a *Model Cars* plan for the main outline, and the chassis frame is formed on a steel jig and machined from 0.040 in. stainless steel, in channel section.

"The front axle is of $\frac{3}{4}$ in. x $\frac{3}{32}$ in mild steel, machined to girder section by milling in the lathe. The rear axle casing is turned from the solid dural bar, and contains a pair of 2/1 bevel gears.

"The radiator is formed from 18 g. copper sheet over a steel jig. This was one of the longest jobs calling for care and patience, as I wanted a real Alfa Romeo radiator with that famous slotted grille. I found that this was time very well spent, as the result was very pleasing.

"The wheels are machined from $2\frac{1}{8}$ in. dia. dural bar, and are in two halves, bolted together with 6 B.A. bolts. Each front wheel is fitted with a pair of $\frac{3}{16}$ in. bore x $\frac{5}{32}$ in. x $\frac{1}{8}$ in. ballraces. The spoke units are made separately, being a push fit in each wheel and secured by the hub nuts. Thus they can be used either as a dished disc or spoked wheel; 1066 air-cored tyres are fitted all round.

"Working steering is fitted, operating through a worm and wheel via a drag link, each end of which is fitted with a spring-loaded ball-joint. Road-springs are cut from gramophone spring, each having five leaves $\frac{1}{8}$ in. wide and fitted with two clips.

"The body is of aluminium, and is made in two halves, welded down the centre. The bonnet is in one piece, with the louvres punched in before bending to shape. The exhaust manifold is bolted to the bonnet from the inside. The instrument panel is of bakelite, and is fitted with the usual instruments, and the driving seat is made from balsa, fluted, painted and mottled to represent leather upholstery. Bodywork and spoke units are finished in red enamel."

TRIALS & TRIBULATIONS

(*Continued from page* 113)

of those elementary cardboard aeroplanes which used to be given away in the *Modern Boy* of fond memory.

Mr. Wreford conveyed me and my car to Eaton Bray and with some misgivings I placed my humble effort on the pit table in company with the handiwork of Mr. Wainwright, Russell, Field and other well-known pioneers. Mr. Deason was most interested (being himself a pioneer of the smaller engined model) and requested photographs which were later published in *Model Cars*. Quite a number of people wished me luck as the little car took the track for the first time, and it was here that I first encountered the friendly interest that is taken by members of the model car fraternity in other people's efforts. The motor started first pull, adjustments were made to ignition and mixture, and with some trepidation the car was hand launched. She got away without stalling and started snorting round at between 15 and 20 m.p.h. All went well for several laps until she shed a front wheel, a peculiarity which has occurred in my later models on their trial runs. Through the good offices of Mr. Wonnacott (who, you may remember, raced Mr. Russell's Jaguar), a repair was effected and the car put in one or two more runs with no further trouble.

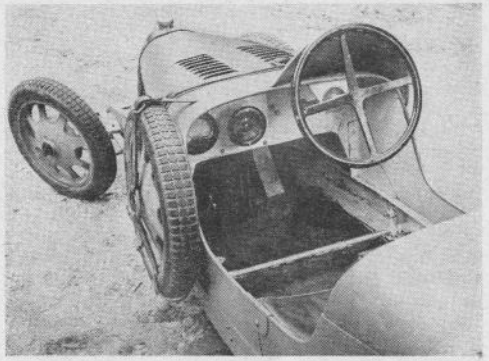
I returned home highly delighted but filled with the desire to possess something faster fitted with a centrifugal clutch which was "the wear" for those times. Ah me! We model car fiends it seems, are never satisfied.

Well, the Galeota's life on the track was very short, but the experience gained in construction was enormous and enabled me to plan my next car—the "Monoposto Tipo 1" — in such a manner that it went together like a Meccano model and has served me well over three hard seasons racing and gaining four prizes.

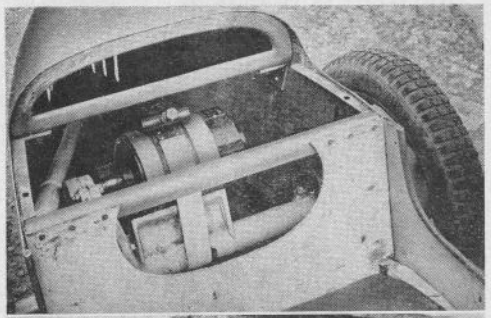
THE FABULOUS BABY BUGATTI

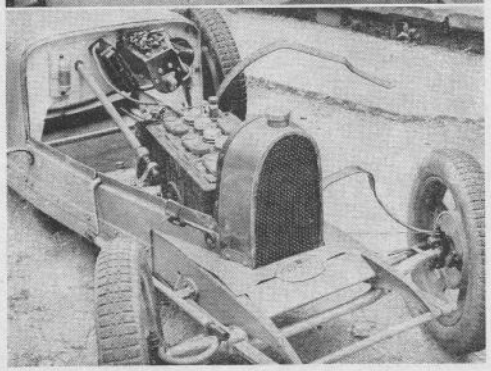
THE MOST FAMOUS OF ALL "CHILD CARRYING CARS" BY G. H. DEASON

PHOTOS BY OWNER P. L. DE LASZLO



Above and below : Three views showing the constructional details of the Baby Bugatti. Accelerator and reversing controls are seen above, and below is shown the modified tail to take a passenger or adult driver.



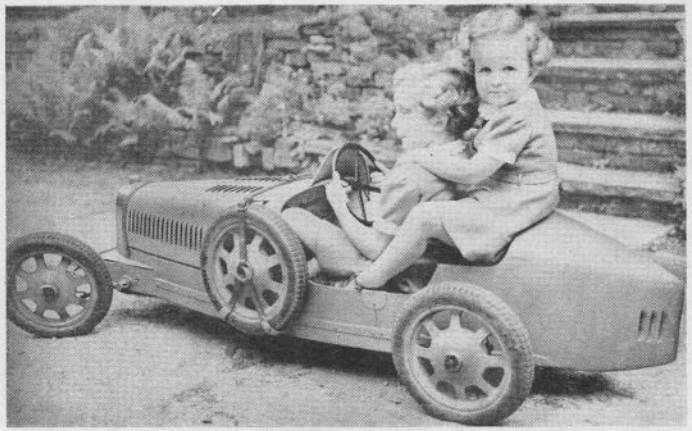


WHENEVER anyone talks or writes of large models of the wheeled variety, sooner or later you can be pretty sure that someone will bring up the subject of those fabulous electric Grand Prix Bugattis. Pursue the subject further, and ask the narrator if he has ever seen one, and nine times out of ten he has to admit that he hasn't and nor has anyone else in the company. The thing was beginning to annoy me more than somewhat, when one morning amongst my mail I came upon a postcard, sent by a reader of long standing, Mr. Stanhope Kenney, of Liphook, Hants, upon which was pasted a small ad. from *The Times*, offering one for sale over a Box number. This was intriguing, but being very fully occupied with other matters at the time I put the card aside with the thought that the car was probably in the hands of a dealer anyway, and that a letter of enquiry would be useless. The thing kept giving me a mental nudge, however, so not very hopefully I wrote to the Box number, saying that although I was not a customer and was probably a nuisance, please could I have some particulars. In a surprisingly short time there arrived a most courteous reply from the Bugatti's owner, Mr. P. L. de Laszlo, together with a packet of photographs, which proved to be proofs from a set of excellent plates. The car was still in his possession, and was in fact in his garage in a London mews. It was for sale for £120, but whether or not I wanted to buy it I was most welcome to all the information the owner could give. This was most encouraging, so a number of queries were prepared, and in due course Mr. de Laszlo answered them, and at the same time loaned the original plates for enlargements to be made.

Even now I do not know the full story of the origin of these really charming models, for various theories exist. They were certainly made at the Molsheim works, probably under the personal supervision of M. le Patron himself. In W. F. Bradley's biography of Ettore Bugatti there appear two photographs of the prototype model with young Roland Bugatti at the wheel, and the author refers to it as "a genuine racing car, with the same frame members, the same radiator and bonnet, the same light-alloy wheels and brakes, the same spare wheel on the side, the same hollow front axle, as supplied to Costantini and other race drivers. It was a racing car accurately scaled down, with the petrol engine replaced by a battery and an electric motor."

The author also recounts that young Bugatti was taught to drive and to corner in the correct Grand Prix manner in this model in his father's private

The Bugatti with driver and passenger aboard. Note the excellent "likeness" to the real G.P. car, and the authentic spare wheel mounting.



grounds, and adds that Bugatti père was accustomed to watch the progress of these lessons, and would from time to time throw his hat in front of the car, for the pleasure of seeing the embryo driver take the necessary evasive action. Since M. le Patrons' favourite headgear was a very fine line in gents' brown bowlers, one cannot but feel that a fairly gloomy atmosphere existed in the Works on the days when young Roland's reflexes were not quite up to sample. "The Baby Bugatti drew forth so much admiration and so many requests for duplicates that Bugatti . . . consented to make a series of them for children of other doting parents. At Deauville and other fashionable holiday resorts Baby Bugatti Grand Prix races became a great attraction." All of which suggests that a considerable number were made, unless the same bunch of Continental juveniles transported their opulent playthings from resorts to glittering resort week by week, lured by the hopes of boni and starting money! On the other hand, some interesting notes appear in the November issue of *Motor Sport*, written by Rob Walker, owner of various well-known racing cars, including the E.R.A.-engined G.P. Delage driven by Tony Rolt. He himself is the owner of one of these models, which is pictured alongside the Delage. He says: ". . . one story is that one was given away with each Bugatti Royal sold, and another story is that one was given to the son of every reigning monarch. All I know for certain is that the King of the Belgians has one, and one of Ettore Bugatti's sons had one, so also do the Bugatti Owners Club, I think."

To revert to Mr. de Laszlo's notes, the overall length of the car is given at 72 in., with a wheelbase of 52 in. and a 22 in. track. The tyres are Dunlop "Juvenile" pneumatic cord balloons on 10 in. rims. Drive is by a 12 volt electric motor mounted above the rear axle and driving by chain, as can be seen in one of the pictures reproduced. The battery, an Exide starter battery in the case of Mr. de Laszlo's car, is housed under the bonnet and gives a range of about 25 miles at one charge, with a road speed on the level of about 7 m.p.h. (Rob Walker speaks of a 20 mile range and a speed of about 6 m.p.h., but refers to one of the drivers as Tony Rolt, who is a pretty lusty infant!) Ordinary main road hills can be climbed comfortably, but at reduced speed. By adding an additional cell and increasing the voltage to 14 the hill climbing performance can be markedly improved without injury to the motor.

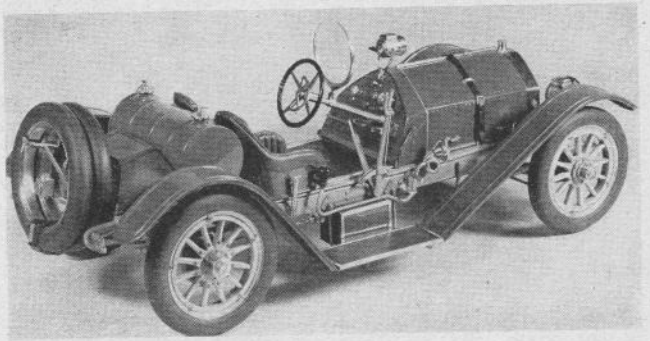
Controls are an accelerator pedal operating a rheostat, a reversing switch on the dashboard and a racing type handbrake which work on the cable operated four-wheel brakes. The dashboard carries an ampere meter and a 30 amp. fuse. To drive one of these models an adult or a larger child has to sit on the tail, but Mr. de Laszlo has modified the body of his car, a removable section behind the seat allowing either another youngster to be carried or a larger driver to seat himself.

I imagine the original model to have been built around 1930, and the owner puts this specimen at about 1937. Certainly there are very few in England, and no source of further supply. Amateur mechanics with a taste that way may well feel it worth while to study this handsome model with a view to reviving the cult of the passenger-carrying miniature car. Quite a number of successful passenger-carrying models have been built within recent years, using a modified car starter motor as motive power, and these units in good condition are comparatively easy to come by in breakers' yards. Some builders have found it possible to operate a 12 volt motor on 6 volt batteries, thus cutting down performance to suit very junior drivers. The drive is not difficult to arrange, using either chains or one of the many forms of rubber and canvas belt used for dynamo or even industrial drives. To obtain suitable gear reduction it is usually found necessary to interpose a countershaft, which should not unduly complicate matters, and against this it should be remembered that a clutch and change speed gears are not called for.

Wheels need present no problem, since a wide range of wheels and tyres are produced for many purposes, some of which could be adapted for the job, and for those with really ambitious ideas and a fair quantity of money to spend, the variety of motorised cycle units on the market opens up a really fascinating field.

A TWELFTH SCALE 1912 MERCER RACEABOUT

A MAGNIFICENT SOLID VERSION OF A FAMOUS AMERICAN CAR BY HAROLD PRATLEY



AT stages in automotive history have appeared names destined to stand head above contemporaries, names that live for all time in the enthusiast's mind. Almost unknown here, the Mercer is in the land of its origin a household word to the growing band of American motorists who are fast getting to appreciate motoring as we understand it, rather than just a means of transport. The rakish two-seater known as the "Raceabout" (they also built a "Runabout", which here would be designated respectively, "Sports" and "Fast Touring"), formed small part of the total production but has come to be regarded as *the* Mercer. In the years 1910-1915 these cars fought many a grim duel with the Stutz Bearcat—already featured in *Model Maker*—on the fairground tracks and in road races, from coast to coast.

Only some two dozen Raceabouts still survive, of which one of the most painstakingly restored examples forms the subject of the model illustrated. Commissioned by the owner as a reminder of a great car, literally dazzling with polished brass, resplendent with spotless paintwork, here was a model to be taken seriously. Since no examples live in England drawings were made from data in photographic form, together with dimensions supplied by the owner. Thanks to the care taken to get ample detail in the photos, little trouble was experienced in getting out satisfactory general arrangement drawings. As a matter of interest one of these was reproduced by the *Antique Automobile* in connection with their "History of the Mercer", thus stamping the drawing with the seal of authenticity.

To save time many small parts were made direct from assembly drawings, a practice not recommended to the novice! Readers who ask for fully detailed plans in *Model Maker* should note that to get out a full set would have, in the case of the Mercer, cost £25! The secret of successfully modelling an object is to *study* it, quite regardless of drawings.

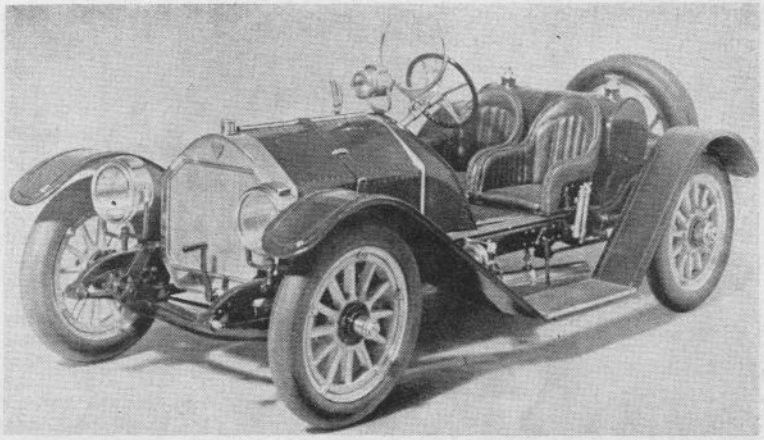
Before a tool was put to metal "Assembly Procedure" was worked out, the object being to enable all parts, however small, to be painted or polished before assembly. And once painted that the parts be subject to as little handling as possible.

During the final assembly no filing was done, the model was placed well away from the "work" section of the bench and all tools laid on that section. Parts awaiting action were stored in clean boxes, while the actual model was also stored between sessions, the more delicate components having the luxury of new tissue paper! Only by such methods can a "winner" be produced as against one just that shade less perfect. Putting together a model is just as important as the first saw cut. I think all model workshops should have written on the wall . . . "It's the *finishing* stages that matter. . . ."

The chassis frame side-members were flanged over steel formers, the cross-members and sub-frame being cut from $\frac{1}{8}$ in. stock. The front axle beam is a three-part built-up job, to produce the H-section, having spring pad-cum-shocker brackets bolted to the axle with hexagon headed 12 B.A.s. The springs are laminated, and have clips made from $\frac{1}{8}$ in. x .010 in. strip and 16 B.A. bolts. The Hartford shockers are fitted with discs, centre "star" and nut. On slacking off the latter the springs can be set and hold this position against the weight of the model by re-tightening the nut, a most useful way of correcting any slight misalignment.

For ease of construction the rear axle was built with telescopic tube as base, the larger forming the spring-pad mounts, and a smaller size passing through and from side to side to carry the brake drums and dust covers, together with the final drive housing. A size smaller in turn supports the wheel hubs, which are held in position by a screwed $\frac{1}{8}$ in. rod the nuts of which form a spigot on which is pressed the hub caps. Radius rods and prop. shaft complete the rear end.

To produce the effect of honeycomb type radiator core, plated gauze was used, the brass shell being so made as to provide a moulding and a flange against which fits the gauze. To ensure the radiator fitting, and keep on fitting, the bonnet, a spigot on the shell fits inside the front of the sheet metal bonnet. After unsuccessful attempts to make a solid



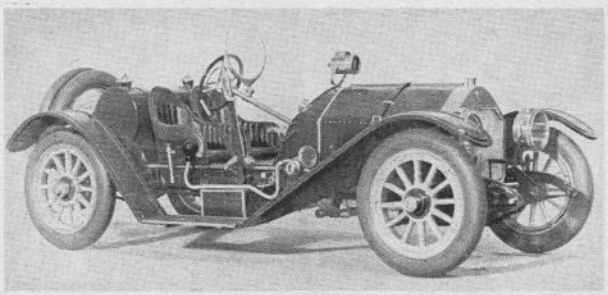
rod *look* like a hinge, I made a real one thus proving that "the long way is the shortest". The rivets are formed by our old friend the centre punch, while the strap clips, lifting handles and clips are in brass. The strap is a narrow length of real leather, very thin, of course, and has brass wire buckles. Painting round the fittings on the bonnet proved no good, so the whole was painted over and when dry the colour was removed from the brass parts. A card cover with small holes in enabled these to be polished without marking the paint. Behind the bonnet is an alloy beading, then the dash fairing. The sloping facia has various fittings thereon, all of brass and fixed by stems which press into holes passing through the mahogany veneer facing into a wooden block inside the metal sheet. The floor boards, like the steps, are black "rubber", with brass angle edging. The seats, mounted, like the bonnet and dash on a mahogany sill, are covered in real leather, with the correct number of folds, etc. The little pumps on the seat sides, together with the other small fitments, are held in place by 12 or 10 B.A. nuts.

The wheels proved an interesting job, but not one I looked forward to! As with other parts of the model full-size practice was copied. The construction consisted of 12 spokes per wheel, each shaped rather like an arrow, the shaft passing into the wooden felloe and the heads pointing towards the centre. When all were in they were drawn towards the hub and clamped between the two halves by a ring of six 12 B.A. hex. bolts, the heads being rounded off to look like coachbolts. The brake-drum is held to the wheel by a second ring of similar bolts, all of which had their heads painted before fitting.

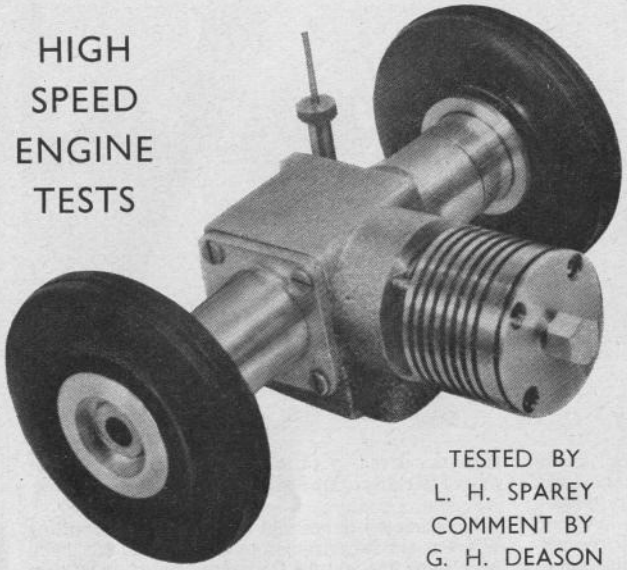
Outside the felloe fits the rim proper, of metal, which carries the tyre. The spares are, of course, only fitted with the metal rim, as in those days the luckless automobilist had to change a rim. To remove the actual wheel was a job of workshop proportions. Even so an improvement over the earlier way of hacking off the worn cover with a huge knife.

A characteristic of old-time American sporting cars was the large rather touring mudguards, with steps slung low and the Raceabout runs true to type. On the model they are cut from .025 in. brass sheet, with flange brazed to the underside and a half-round moulding soldered on top. Stays of $\frac{1}{16}$ in. steel are soldered on and pass through the frame, to be held by a 10 B.A. nut. The headlamps are glazed and fitted with "U" brackets, the fog lamp having its mount fitted to a small brass flange on the facia.

The curious screen was ground to size for the job and sprung into a turned frame, which is brazed to a steering mounted clip. The T-section spokes of the wheel were filed from stock "T" brass and soldered to a hub, control levers above are dull plated. This particular Mercer is in red and maroon, other popular colours were blue and all-white. The official "works" team, however, went to town on their paint-job, with a wizard yellow finish! Altogether some 450 hours went in this model, not counting drawing time.



HIGH SPEED ENGINE TESTS

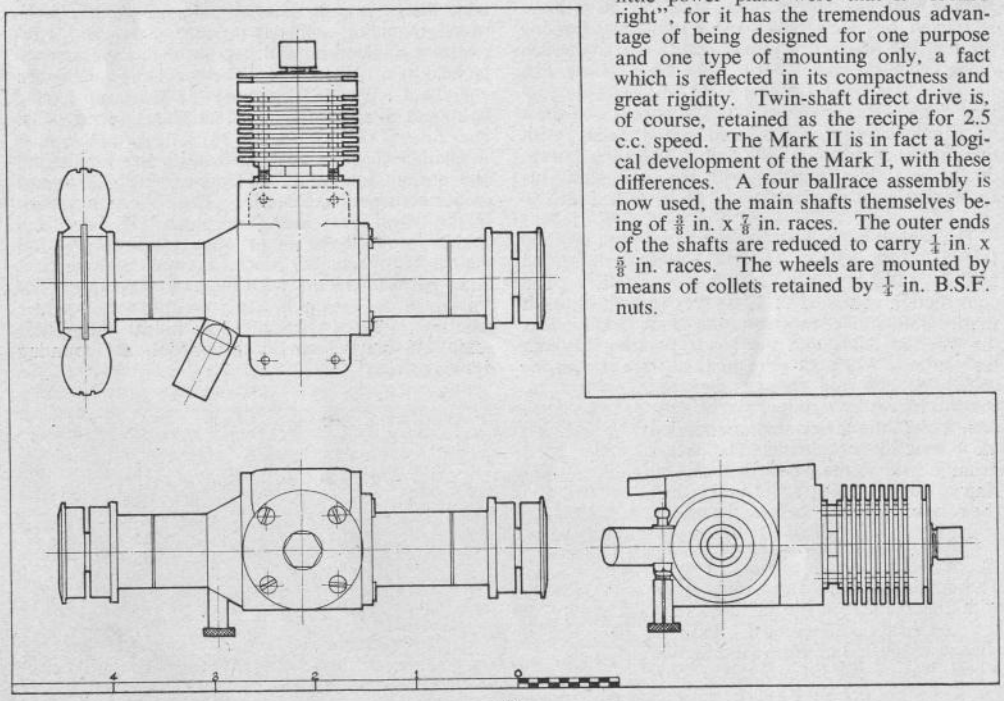


OLIVER TIGER MK II RACE-CAR UNIT

TESTED BY L. H. SPAREY
COMMENT BY G. H. DEASON

AS model racing enthusiasts already know the name of J. A. Oliver (Engineering), of Nottingham, is inseparable from success in the 2.5 c.c. class, so firmly have this enterprising small concern made this category their own in recent years. By adopting a policy of strict specialisation, and by refusing to be tempted into dalliance with other engine sizes, their products have been able to compete successfully with those of much larger manufacturers. Both J. A. Oliver, the senior member, and "Young John" are regular attenders and competitors in first-class racing events, a fact not without significance, and a further factor in their success is their willingness to apply the experience of the private owner to improving the breed.

Bearing all this in mind, therefore, we were more than interested to receive for test the latest Oliver Tiger Mark II. First impressions on examining this chunky little power plant were that it "looked right", for it has the tremendous advantage of being designed for one purpose and one type of mounting only, a fact which is reflected in its compactness and great rigidity. Twin-shaft direct drive is, of course, retained as the recipe for 2.5 c.c. speed. The Mark II is in fact a logical development of the Mark I, with these differences. A four ballrace assembly is now used, the main shafts themselves being of $\frac{3}{8}$ in. x $\frac{7}{8}$ in. races. The outer ends of the shafts are reduced to carry $\frac{1}{4}$ in. x $\frac{5}{8}$ in. races. The wheels are mounted by means of collets retained by $\frac{1}{4}$ in. B.S.F. nuts.



The crankcase casting is of new design, giving improved transfer porting, and another improvement is the bolting down of the cylinder head in place of the previous screw-in method. This innovation is claimed to eliminate the tendency of screwed cylinders to cause fading and "hardening" at peak revolutions.

The venturi is on the near-side of the engine, arranged with the fuel valve vertically, and the contra-piston is adjustable by a hexagon, thus giving easily checked adjustments of "one flat at a time". The machined base of the crankcase forms a most rigid and convenient method of bolting the unit down to the chassis pan. Fuel tank position is stressed by the makers as of particular importance, as this unit is arranged for suction as opposed to the pressure feed of earlier units, and it is recommended that the fuel tank should have its inside wall on the same fore-and-aft line as the jet.

As readers will perhaps recall, the engine used in A. F. Snelling's world-record holding 2.5 c.c. streamliner was a Tiger Mark I unit, and a comparison of the modifications carried out to that illustrious little engine as described in our November issue with the specification of the new Mark II version should convince them that "Racing *does* improve the breed".

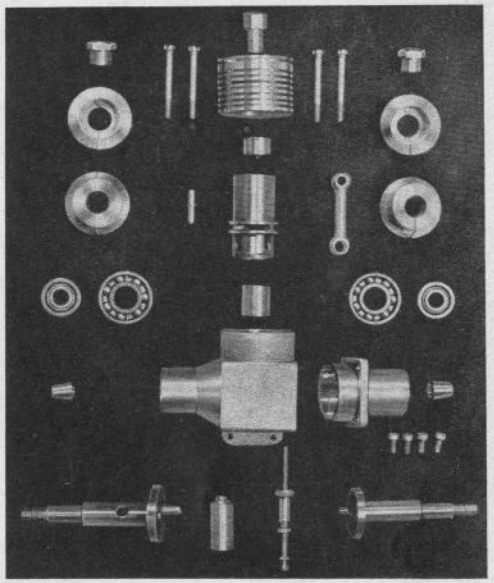
The engine was handed over to L. H. Sparey for bench test, and the following report was received from him: —

B.H.P. TEST

Engine
Oliver "Tiger" Mk. II Race-Car Unit, 2.5 c.c. Diesel.

Fuel
Mercury No. 8 Diesel Fuel plus 3 per cent amyl nitrate.

Starting
As this engine is intended to be push-started, a temporary pulley was fitted, and pulley-and-cord starting was used throughout. Engine started easily at all times.



Running
Good at all speeds, but was happier at speeds above 10,000 r.p.m.

B.H.P.
The extremely high figure of .324 b.h.p. was recorded at 14,800 r.p.m. Even at the remarkable speed of 15,250 r.p.m. output was still in the region of .3 b.h.p., and was down to .2 b.h.p. at 15,900. It is interesting to note that the $\frac{1}{4}$ h.p. mark was reached at 11,000 r.p.m. and again at 15,700 r.p.m. As this is such a high-speed engine, tests were not taken below 6,000 r.p.m.

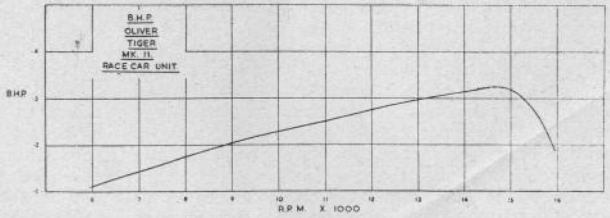
Remarks
The engine ran well at all times, and is remarkable for the manner in which it builds up power output at speeds around the 15,000 mark.

The price of the Tiger Mark II unit, complete with wheels, is £8/18/6, and a full range of spares is available. The makers are J. A. Oliver (Engineering), 136 Radford Road, Nottingham.

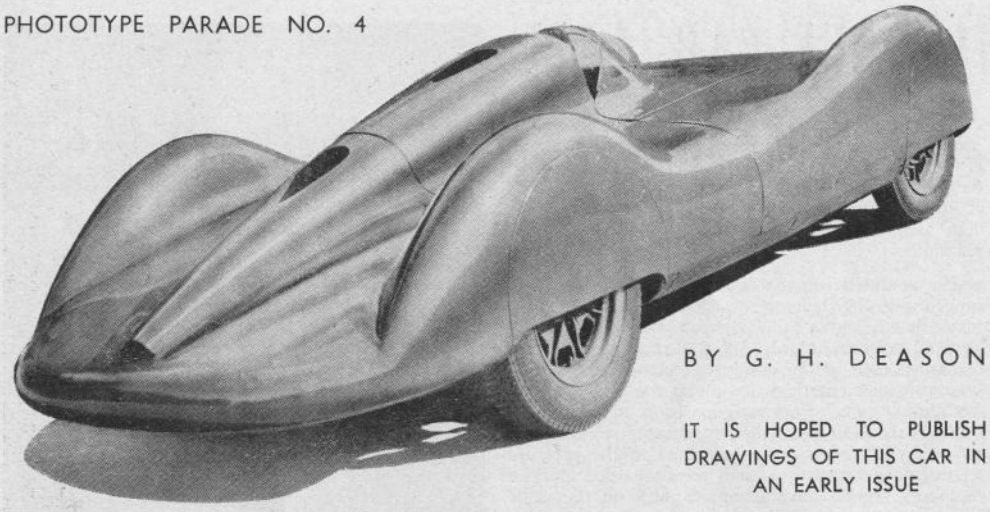
Heading : The Oliver Tiger Mk. II unit shown complete with wheels, ready to bolt to a chassis pan. The new unit has a bolted-down cylinderhead.

Top right : An exploded view of the Tiger's component parts.

Left : A general arrangement drawing of the unit, and right : the power curve produced by L. H. Sparey's tests.



PHOTOTYPE PARADE NO. 4



BY G. H. DEASON

IT IS HOPED TO PUBLISH DRAWINGS OF THIS CAR IN AN EARLY ISSUE

THE COOPER RECORD CAR

IT is only as recently as last October that a description was published in these pages of the famous little Cooper Mk. V., latest production version of that highly successful half-litre racing car. Variety, so far as possible, has been the keynote of this series, but I must plead special circumstances in once again choosing the *marque* Cooper, and I think that readers will agree that this choice is justified.

In the late summer of 1951 it became generally known that a special Cooper was being prepared for record attempts, the project being sponsored partly by W. S. Aston and partly by John Cooper himself. In early September the motoring press released details of the car, which was hailed with great interest, and in October the party travelled to Montlhery to attack a series of records in two classes, the 350 c.c. and 500 c.c. categories.

The car is based on the normal Cooper Mk. V chassis, the chief modifications being to the steering, fuel tanks and the body mountings. Special extensions from the frame are carried outwards to look after the overhangs of the body envelope, and for long-distance record work a pair of 10½ gallon fuel tanks are carried on either side of the chassis and concealed by the sponsons of the body. So far as the steering is concerned, considerations of body form made it imperative to mount the steering wheel in a horizontal plane, carried on a short vertical column. At the base of the column is a bevel box, with a further shaft extending forward to pick up with the normal rack-and-pinion steering connections.

The car is noteworthy as being the first to be specially built for record attempts since the construction of the giant Napier Railton for John Cobb's onslaught on the Land Speed Record, and, at anyrate from our point of view, by far the most noteworthy point is the very beautiful aerodynamic bodywork. This was the result of most careful experiment and design on the part of Gordon Bedson, who made a very fine reduced scale model of the body with which intensive wind-tunnel tests were carried out before the full-sized shell was put in hand. Those model car enthusiasts who visited the recent exhibition of British racing cars and car models staged by Simpsons, the Piccadilly outfitters, had the opportunity of examining this wind-tunnel model for themselves, and doubtless admired its fine finish. Since the actual car was also on view on the ground floor of the building it was most instructive to be able to compare the model with the full-sized job.

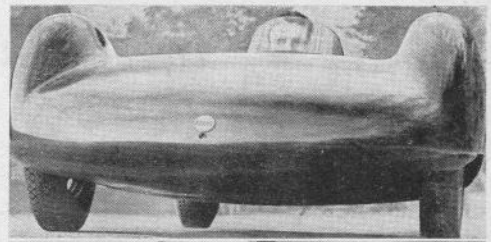
The impact of this beautiful little vehicle on the model racing enthusiast was obvious and immediate. As one well-known miniature record exponent said to me, "It's got everything," and I couldn't agree more. Subsequent opinions expressed by other members of the model racing world confirmed that the little Cooper had certainly fired their imagination as a most promising and appealing prototype on which to base a functional speed model, for it allows some real attempt at a scale model to be happily blended with what is required of a high speed track machine. For this reason, if for no other, I hastened to contact John Cooper with a view to obtaining his permission to include it in this series. This permission was very freely given, together with an invitation to the Surbiton works. Whilst there it was agreed that as soon as possible some drawings for

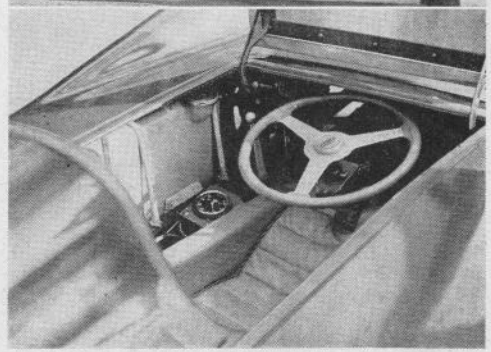
publication should be prepared at the works, but at the time of writing I do not know whether these will be ready for inclusion in this issue.

To return to the car, this is so sleekly proportioned that the frontal area is a mere 6¼ sq. ft. The driver as will be seen in the photographs, sits in a well-inclined hammock seat which continues forward to give support under the knees. A rectangular hinged panel allows access to the cockpit, which is not entirely enclosed, there being an opening above the driver's head behind the curved "Perspex" screen. The only instrument is a small revolution counter on the left of the steering wheel. The bodywork, which is of 18 gauge light alloy, is so designed as to obviate the lifting tendency which has troubled a number of light aerodynamic bodies in the past, and the car has been driven at 140 m.p.h. without trouble in this direction, with a big twin engine installed.

Cooling of the rear mounted engine is arranged by means of air ducts from the back of the front wheels, running along the sponsons and exhausting from the apertures seen behind the headrest and at the extremity of the headrest fairing. The central opening is for the engine exhaust. Detachable panels give access to the wheels, the rather limited lock at the front being adequate for record work at Montlhery. The complete body shell can be removed in a matter of minutes. The small opening in the nose allows a towing hook to be screwed in place for starting.

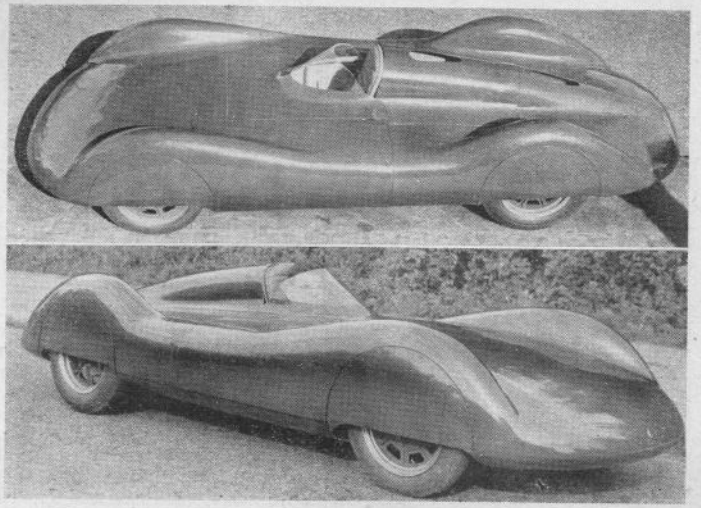
For the record runs Jap engines were used, a 350 c.c. single and a 500 c.c. V-twin. Most of the records attempted were previously held by Stirling Moss and Ken Gregory in the Kieft Norton, and of these the classic "Hour" was probably regarded as the most important. On October 8th John Cooper went out with the 350 c.c. engine installed and took six records from 50 kilos to 200 kilos, and putting 90.27 m.p.h. into the hour. With the 500 c.c. twin on the following day Bill Aston broke the same six records in Class I, falling short of the 100 miles in the hour by a mere 0.59 mile. It is likely that later on attempts will be made with a 1,100 c.c. twin, and there seems every likelihood that the Cooper will gain further record honours. John Cooper tells me that the car handles magnificently, and that he had no trouble at all in accustoming himself to the rather unconventional driving position.





Chassis dimensions and wheel sizes are as for the standard Mark V, and the weight of the complete car is about 7 cwt. with 500 c.c. engine.

I am most grateful to the Cooper Car Co. Ltd., of Surbiton, for their help in presenting this extremely interesting little record car to readers of *Model Maker*, and feel sure that next season will see plenty of replicas running on the model tracks.



These "Autosport" pictures of the Cooper give an excellent impression of the car's fine lines, and the interior of the cockpit with the hatch raised. Note the rev. counter and near-side fuel tank.

Letter to the Editor . . . . . .

Dear Sir,—Since leaving my previous workshop I have been rather alone in modelling, and at times have wondered whether or not I have been working to a dead end, towards something which others have tried to do and proved to be impracticable. Certain non-modelling acquaintances have, in fact, already expressed that opinion to me.

However, seeing my article in print with your encouraging comments has given me a new hope that I may be heading in the right direction.

I enjoyed the article by "W.B." called "I'm Sick of Speed", although I cannot say I agree with everything he has said. I too prefer scale models running at scale speed, but I do realise that some people prefer to put their brains to streamlining and engine tuning.

I would like to propose that you put this suggestion to both model makers and suppliers. Let us agree to a definite scale, say 1/10th, both in building and in speed, and perhaps we too can have clubs and meetings. Suppliers to provide tyres, etc., in as wide a range of sizes as possible. This should not be difficult, for even though I find Mr. Baigent's tyre moulds a bit out of my reach for the odd four or five tyres I may need, I feel that they would not be expensive if they were turning out tyres by the hundred. The same applies to things like rear axles. By all means keep the diff., and ratio standard (most cars are about 3: 1 anyway), but give us different length axle housing and axle shafts. Those two items are, in my opinion, the most important.

Then comes the question of engines. In my present model, the Rolls Royce, I am using a group of three German "00" gauge 24 volt motors as a power plant, and an extra one for steering. This model is also to be remotely controlled, preferably by radio. The radio is already designed, but the question arises: "Where are we going to get the power for the motors?"

I need 2.4 amps. to drive the model at a scale speed of 80 m.p.h., plus another 0.6 amps. for the steering motor. Of course, I could save up about £20 for a 24 volt bank of miniature Venner batteries, but I would rather spend it on a 30 or 40 c.c., four or six cylinder petrol or diesel engine, running at around 3,000 r.p.m. max. With 3 in. tyres, and a 4: 1 axle ratio the speed of the model would be about 8 to 9 m.p.h. Then all I need is the steering which can be electric, clockwork, or even elastic.

I know I can buy a 10 c.c. engine running at about 10,000 r.p.m., but whoever heard of a Rolls Royce cruising along with its engine screaming like an All Clear siren?

As I feel that I am far from being alone in this opinion, I should appreciate it if you would publish the relevant parts of this letter, in the hope that others will support my proposition. At the same time, perhaps you could add a reminder to the makers of what few component parts are available that there are many model makers like myself who have no access to model shops, and who have to rely on advertisements in *Model Maker* to know what is available.

Finally, may I again thank you for your interest in the Jaguar. Even though it is now outdated, and proved over-powered, it has served its purpose as a test bed, and will be rebuilt when the Rolls is finished.

ROBERT F. LILLEY.

VINTAGE AT EDMONTON (*Continued from page* 112)

Tiddler was the pretty little Offenhauser with a direct driving Elfin, which won the M.C.A. 1.5 c.c. class this year for C. Hart, and has now been sold to young Edmonton member Cook.

Ten Vintage models took part, although honesty compels us to admit that not all of them completed their runs. Nevertheless, there was plenty of life in most of them, the fastest being Jim Cruickshank's Mercury Ten, which scooped the speed award handsomely. Cyril Field's old 5 c.c. o.h.v. Bugatti model won the consistency award with an error of 0.05 m.p.h., looking as spick and span as ever, and it was amusing to see expert R. W. Flower coping feverishly with the vagaries of his old Majesco-powered Galeota, now converted to Glo-plug and entered by member Risley. We had thought of Jim Cruickshank as the first exponent of the push-stick until R. W. Flower produced that diminutive Mills powered direct driver which so startled the old Horticultural Hall meetings. The original golf-club shaft provided the starting urge, and this mite is probably the grand-dad not only of direct drive, but of cast-body construction in home-built models and the 1.5 c.c. class itself. It went with great zest, touching the ground intermittently. Arthur Weaver represented the scale school with his E.R.A., and Edmonton stalwarts Jack Pickard and Les Manwaring had spots of bother with the P & N Special and the E.D. Monoposto, which indicated that you can't run a meeting and an old school racer at the same time! C. F. Thorp entered a massive Stentor engined model with a most cherubic-looking driver, and other well-remembered cars were run by H. G. Bassom and H. Jackman. Ultimate winners of the team contest were Messrs. Kayes (2.5 c.c.), Griffin (2.5 c.c.) and Catchpole (2.5 c.c.).

DOPE & CASTOR

By JERRY CANN

THERE was no doubt at all about the success of Edmonton's inclusion of a "Vintage" class in their recent meeting at the Rego Works, to judge by the comments of those who took part. Perhaps one or two constructive criticisms may be allowed in order that a repetition, either at Edmonton or organised by any other club, may be even more successful. It would be nice to see an even more clear-cut event specified for the Old Brigade, and plenty of latitude to allow them to get on the move. (Ray Flower was heard to call up further assistance with his old Galeota, saying, "It always takes four people to get the old girl under way!") I doubt if anyone really cares a cuss who wins what, but the main idea should be to give everybody the maximum amount of running, with just enough in the rules to give the affair a purpose. Secondly such an event needs to be fairly widely advertised, since many of the owners it is intended to attract are now, unhappily, rather out of touch with current events, and may need a fair amount of encouragement.

Thirdly, it mightn't be a bad idea to give the Vin-agents a day to themselves sometime. Natter always formed a large part of the enjoyable meetings of earlier days, interspersed with occasional exclamations of "Oh heck! is it me now?" and a bit of racing. You could talk in reasonable comfort whilst the cars were running them days, which is more than you can now, to judge from three letters I have received in the last fortnight, all of which contain such phrases as "As I was trying to tell you when last we met. . . ."

Apropos of the above, I sometimes have doubts as to the advisability of running the more ferocious types of model at indoor meetings, where I have rarely seen safety precautions which would be adequate in the event of a crash or a breakaway, quite apart from the acute discomfort caused by their inhuman noise. Alas, this seems to provide enormous satisfaction to a certain element amongst competitors, who are rarely, if ever the more expert performers. One is tempted to remind them that a new distinction has come to be recognised in real racing, known as FTP, or Fastest Time in the Paddock, the holder rarely being he who makes Fastest Time of the Day. Nastiest Noise in the Pits should be regarded with just as much disfavour.

Which reminds me of a little gem of wisdom for owners of c.i. engined models which appears in that excellent little news-sheet, "Tiger Tattle", published by the Oliver concern. It is an extract from a letter from the pen of Alec Snelling, who says, "When will Types realise that Dooling noises from a diesel running idle don't mean a thing?" Nuff said?

From the same source I learn that Harry Howlett, who made old "Busy" into an Alfa, is now pressing on with a Howlett-Mercedes on similar lines. The Works is giving its official blessing and support, and castings are likely to be available shortly. Castings for the new Tiger Bomb are to be ready in December. This functional streamliner was primarily intended for the Continental market, hence the somewhat awkward engine size of 3.25 c.c., but as it is also capable of taking the 2.5 c.c. motor plenty of folk will doubtless adapt it for this class.

Bill Warne tells me that a repeat of the successful meeting at Hubert Dees of Croydon, the Ford folk, is fixed for March 15th, and it's not too early to put that one down in your diary, if you live within travelling distance. Intending runners other than Edmonton Club members should write to W. S. Warne, 50 Jersey Road, Hounslow, Middx.

A virulent onset of the influenza bug prevented *Model Maker* from visiting Newcastle-under-Lyme for the last railtrack meeting of the season, and at the moment of writing no report has been received, but it was hoped that nine or ten cars would be present to take part, and owners were advised to take plenty of fuel along. That's just one advantage of being able to run four cars at a time! Up to now we haven't seen any privately built examples of circuit racing models, but these will doubtless come along as the number of tracks increase. I do hope that when they do appear they will show plenty of signs of individuality, and perhaps by then someone will have broken away from the so-far universal direct drive and pivoted front axle arrangement, which accords ill with the desire, otherwise evinced by the present rules, to stick to realism as far as practical considerations allow.

Talking of the Newcastle-under-Lyme affair, the Christmas holidays, which affect everybody one way and another, including our printers, make it impossible to include an account of the Stoke Open meeting this month, but this omission will be made good in the following issue.

An item of interest to model car owners and builders is the auction, referred to in our trade feature this month, which is to be held early in the New Year by Wallis & Wallis of 200 High Street, Lewes. This unusual affair is given over entirely to models of all kinds, together with books and literature on the subject. So if you've anything to sell, drop the firm a line, and if you are one of those people with a nose for a bargain or even if you just enjoy browsing among models, a visit on sale day will probably be time well spent.

MODEL YACHT CLUB NOTES (*Continued from page* 106)

financial state at their second A.G.M. Highspot of the meeting was the announcement that the Committee had agreed to conclude negotiations with the National Coal Board for a lake at Woodlands, subject to suitable insurance cover being effected. Though offered at a purely nominal rent it is claimed to be amongst the finest inland waters in the country. As such it should add distinction to the Northern District M.Y.A. Championship for 36 in. Restricted Class boats to be held on Doncaster's water in 1952. It is hoped that a demonstration of radio-controlled models will be held on the same occasion, offering visitors a double measure of entertainment. Incidentally, this club is one of the keenest in the North with the 36 in. Restricted Class, and can put up a full day's sailing with the club boats alone!

As a very friendly gesture the A.G.M. approved without dissentient the proposal to hold the 1953 *Model Maker* Novice Championship Trophy on their water for 36 in. Class. (In 1952 as announced last month, this Championship will be inaugurated by the Midland District Committee, of which more anon).

One very sound practice of this club is to offer the Presidency each year to the Civic Head, who on retirement becomes a Vice-President for the ensuing year. Where such friendly liaison is possible progress must always rebound to the mutual benefit of both club and district.

Paignton M.Y.C.

Unfortunately this is not always the case. Some local authorities are slow to appreciate the value of an active club in their midst. At Paignton, for example, full use of their water is permitted only during the winter months: in the summer, Saturday evenings only, which puts paid to inter-club or open events on their home water, so their Commodore, Donovan Pinsent writes. Alternative water is available, but alas in poor condition, and the local Surveyor just cannot see his way to advising the necessary expenditure. Far be it for us to judge the case, but it does seem that a high class resort such as Paignton would be more than justified in voting a little of the necessary funds to provide an amenity that should appeal strongly to the type of visitor for whom they cater. Those other resorts who have dipped quite deeply into the civic pocket for their local model yachting enthusiasts have had cause to bless the day when they regard the added publicity, prestige, and practical increase in visitors their foresight has provided.

Nevertheless Commodore Pinsent's *Psyche* proved good enough to take part in the "A" Class Championships at Fleetwood, and the Commodore afterwards acted as mate to *Zenith*, to which his vane gear had been added for the last day's sailing. Part of a Paignton yacht at least had the pleasure of contesting the final!

Wellwishers

Friendly letters have also been received from the following clubs with the promise of news reports from time to time: Lymington M.Y.C. (who also hunted up a contributor, whose first contribution will be appearing February issue); Barrow M.Y.C.; Southgate M.Y.C.

INDEX TO VOLUME ONE

Readers who would like an Index to Volume One of Model Maker are invited to send a large stamped addressed envelope to the publishers, when a copy will be sent to them free of charge.

SKODA COMP. 2-STR.

Owing to the necessity of closing January Number of Model Maker somewhat earlier than usual in view of the Christmas Holidays it has not been possible to include the next instalment of building the Skoda, which will be continued in February.

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