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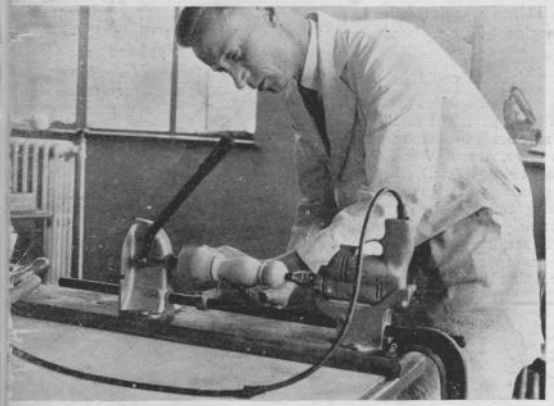

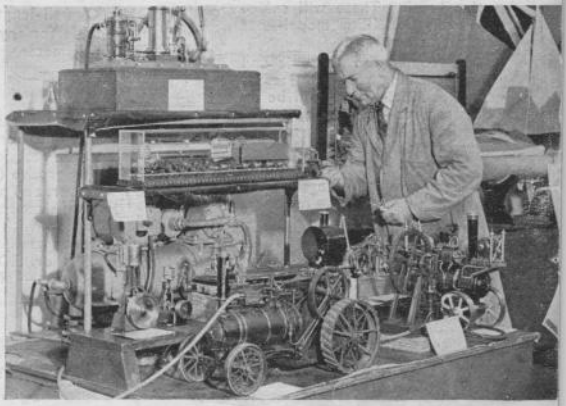

VOLUME 1 **NUMBER 2 (New Series)** **JANUARY 1951**

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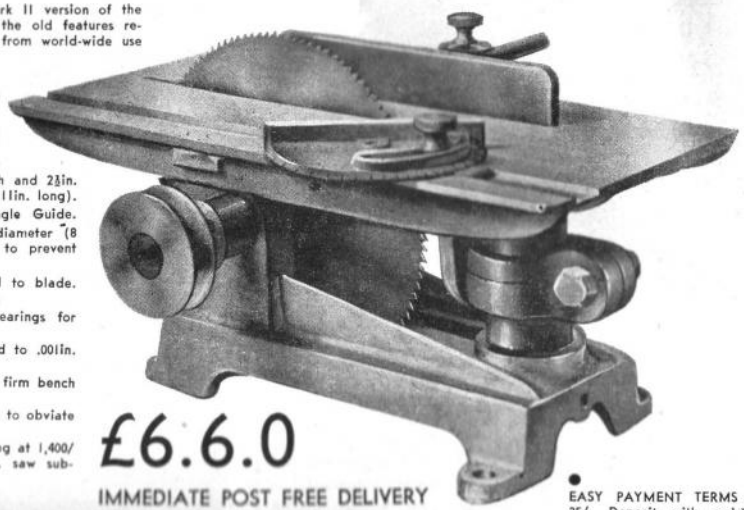

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Maserati Type 6c.—Overall length 18"; Overall width 7¼"; Wheel base 12¼"; Track 6⅜"; Rear clutch drive. Coil or leaf springing. Suitable for 5 c.c. engines.

M.G. Midget (based on T Type).—Overall length 16⅞"; overall width 7"; Wheel base 11⅜"; Track 5⅜"; Tyres 3⅛" diameter. Rubber or half-elliptic springing. Suitable for 5 c.c. engines.

Auto Union 1938 Grand Prix.—Overall length 17⅜"; Overall width 7"; Wheel base 11⅛"; Track 6¼"; Tyres 3⅛" diameter. Underslung coil springing. F.W.D. with clutch or alternative layout for direct drive off the rear wheels. Suitable for 5 c.c. engines.

E. Type E.R.A. Grand Prix.—Overall length 18⅞"; Overall width 6⅜"; Wheel base 12⅛"; Track 6"; Tyres 3⅛" diameter. Coil springing. Horizontally mounted engine driving by clutch through rear wheels. Suitable for 5 c.c. engines.

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MODEL MAKER
incorporating
THE MODEL MECHANIC & MODEL CARS

VOLUME I No. 2 (New Series)
JANUARY
1951

THE MONTHLY JOURNAL FOR ALL MODEL MAKERS

Managing Editor :
D. A. RUSSELL, M.I.Mech.E.

Co-Editors :
G. H. DEASON
D. J. LAIDLAW-DICKSON

Assistant Editor :
G. A. CULL

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Composite cover picture shows some of our many interests. Top right portrays a fleet of scale model sailing craft; then in the centre we have wood turning with a Wolf Cub outfit and a Brighton Exhibition scene; while the lower pictures depict model car racing at Eaton Bray and power boat enthusiasts at Victoria Park.

Inappropriate moment for a "touch"! We don't know for certain, but it looks as though L. Poyser is submitting to a spot of gentle blackmail to enable him to get on with his tuning up, at any rate for the duration of one ice cream cornet!

Contents

EDITORIAL

The Customer is Always Right !

OUR pleasure in the encouraging response that has greeted *Model Maker* is tinged with regret that we must announce the resignation through ill health of our co-Editor Lawrence Sparey. For many months he has been struggling against the doctor's verdict that he must take things more easily if he hopes to regain his normal vigour; now at length he has been forced to make this final break with a magazine that has been his particular brain-child since its inception as *The Model Mechanic* in May, 1946. His advice and assistance will continue to be at our disposal, and we trust he will be able to continue several features in this and our associated journal *Aero-modeller* that have so long been his special province.

In his place Public Relations Officer D. J. Laidlaw-Dickson will occupy the joint editorial seat with G. H. Deason, who will continue to watch over the interests of the ever-growing model car fraternity.

We feel it is appropriate, therefore, to reiterate our opening editorial remarks of last month, when we assured our customers, the readers, that they were always right. Many of them have accepted the invitation to offer suggestions for our future contents. May we add that while we thank those who have expressed unqualified satisfaction with the fare provided, we are even more grateful to those who have inserted a critical pill in the jam of their praise. There is so much to be learned from the sort of letter that goes on ". . . . but . . ."

One popular phase of model making that has we feel been neglected in our columns in the past is that of the miniature gauge model railway enthusiast specialising in the tiny 00 layout. This omission will be rectified in future, and, as a start, we are reviewing two popular books on the subject that have come into our hands. Starting next month there will be a regular miniature section devoted to 00 gauge.

Another section that we should like to develop is a regular readers' forum, where difficulties and their solutions can be ventilated by those who have encountered them. This is not intended as an answers-to-correspondents page, but more of a self-help column. So many model makers freely admit that they have little if any creative instinct, but prefer to satisfy their urge to make something by relying on the published designs of others more expert. But it is an achievement even to duplicate another's model, and by no means bereft of exciting tussles with the unexpected difficulty, and certainly productive of a great satisfaction in overcoming it. Will those "little men" of the modelling world then remember that other little men are just as interested in the adventures of the "rabbits" as they are in the stupendous accomplishments of modelling "tigers".

Yet another important function of technical journals is to keep readers advised of new developments in their particular technical aspect. Such a service can only be conveniently provided by a friendly liaison between the editorial staff and their advertisers. The old idea that because advertisers pay for their advertisements any editorial praise must be in the nature of a "puff" has long been outmoded. Indeed, some of our contemporaries might find it hard to fill their columns without editorial mention of their advertisers — and their readers clamour for more! We too would like to look upon our advertisers as friends providing essential services and materials to our readers and would cordially invite them to submit samples of their products for our review, tell us more about them than is possible in limited advertising space, and generally regard the editorial ear as ever open to hear of new ventures likely to help more readers make more models more easily!

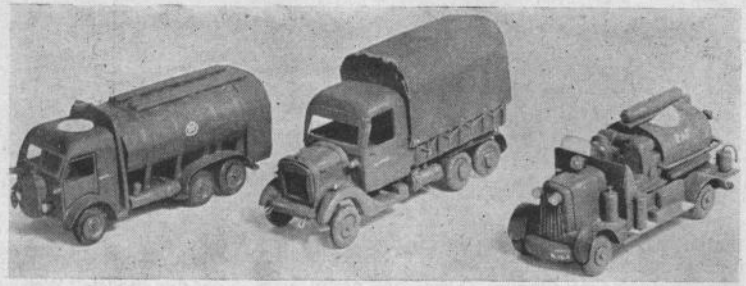
Calling all Cars !

WE have now had time to gather at first hand some personal reactions from the model car folk to the new combined journal, and there has been no doubt about its favourable reception. One condition has, however, recurred so often that we will deal with it here and now. "Can we rely on the model car interest being given its fair share of space in succeeding issues?" The answer to this is "Very definitely yes!" We shall maintain the same standard, both in quantity and quality as was found in *Model Cars*, and to this end we know that we may depend on the support of all those who are interested in keeping the hobby well to the fore.

Model Cars, like *Model Mechanic*, has in the past frequently broadcast appeals to its readers for contributions, and for their recent response we feel that they really do deserve a pat on the back. Our pages of late have reflected this response, and our grateful thanks, no less than those of our readers, are due to these experts who have so willingly given their time, that precious commodity, and their knowledge, so hardly gained, to stimulate the movement. For make no mistake, these outside contributions by men whose names are household words among readers do a tremendous amount to spur on the novice to greater efforts, and more than anything that we, the editorial staff can say, make him realise what a friendly and helpful circle he has joined.

This goes for the experts. We would, however, strongly associate ourselves with the sentiments of our co-editor in the previous column and ask the novices and the "middlemen" to join in too. It never fails to surprise us that so many of the club members we meet are so genuinely reluctant to talk or write of their work and their difficulties and achievements, purely on the grounds of modesty, and the mistaken belief that "nobody could possibly be interested".

The approaching Festival of Britain makes this entertaining series by Victor Sutton of topical interest, for it is his hope that these models may form part of some suitable R.A.F. diorama.



MAKING A FLEET OF R.A.F. VEHICLES

I AM sure that many model makers would enjoy making a series of small model vehicles similar to those illustrated in this article. They may not choose the same types of model, but there are many other directions in which the series can be built up.

This series, which started by my wanting a few suitable vehicles on my large aerodrome, has now reached a total of eighteen, and I have plans to bring this up to thirty-six. By so doing I feel that I can show them at any exhibition, and nobody will think that they are "just another lot of models"—perhaps they are the only set of their type.

In this case, the first few models were seen by me when visiting the aerodromes. There, besides the Control Tower stood the fire appliances and the breakdown lorries, all completely manned during the hours of operations. It was going from one 'drome to another that I realised that these vehicles were all different. Here was a chance to find out. I made some enquiries and then learned that so often there were so many technicians and mechanics on a station that these vehicles would be built more or less to suit the aircraft at the time operational from the base. To me this was a most interesting point, and from that information I was able to take the names of the chassis builders and write them for details of vehicles supplied to the R.A.F. during the war.

In this range, as it stands at the moment we have the following: 6-wheel petrol bowser, Dennis fire tender, Coles 6-wheel crane, remote control van, oil trailer, fire tender with tower (for bomber 'dromes), oil tanker, articulated flat platform lorry, 60 ft. articulated lorry (known to the R.A.F. lads as "Queen Mary"), chance light, general service lorry, fire-foam tender, foam cylinder tender, radar car, ambulance.

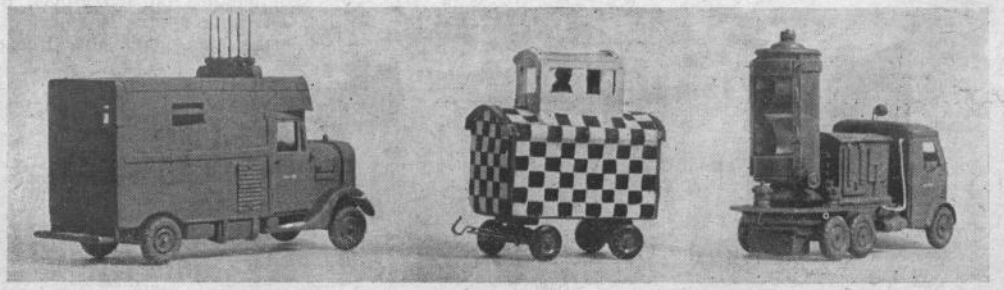
The wood as used in all these is obechi in the $\frac{1}{16}$ in., $\frac{1}{8}$ in. and $\frac{1}{4}$ in. sheet. I cut this into 1 ft. lengths so that it is handy to use.

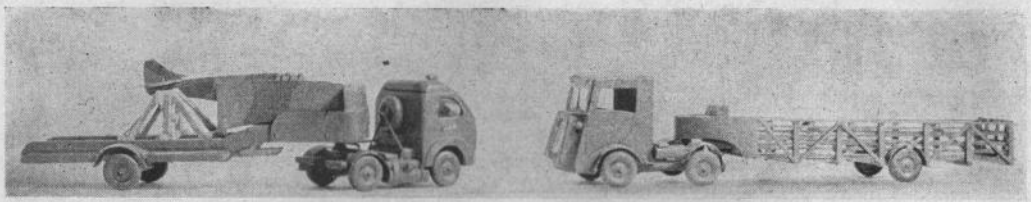
You will find that obechi will make the most clean looking dome roof you can have. Just work away with the sandpaper until it looks the right shape. Just a word of warning. You will make quite a lot of dust, so if you can shape off the well sandpapered parts outside, then do so.

In glues I like "Paffra", "Grip-fix", and "Croid" as you will, in dealing with a model range be using wood, card, and possibly tin. However, each model maker has his own way about adhesives, and I should not like to dictate on that point. However, do have a little damp cloth handy so that you can rub your messy fingers every so often.

However you fix little bits, they will get knocked off. It is a good plan to just stick in a pin as well as glueing, and I have shown a little system I use. See sketch No. 1.

A stock of cardboards will be necessary. Postcards, thin mounting boards and Bristol boards are handy. Where you have a thicker section and need to have





the cut edge bevelled then you can find some very fine cream laid mounting boards at any shop dealing with photographic supplies. These are useful sizes and most pleasing to use. They will take paint, poster colours, and all of them glue well.

For the interior of cabins I use various shades of passe-partout, which is very like the real thing used on seats and van interiors.

I use a flat grey paint for the colouring, and never dope. Three thin coats of paint are better than two thick ones. As you are using cardboard and wood then be sure that you give a coat of banana oil to the cardboard section first otherwise it will soak up the paint, and you will have two unsightly shades of grey instead of one good one.

Mudguards I make from sheet aluminium stocked by most model shops. These parts I shape out and then fit with a turned over pin as shown in Sketch No. 2. It is not wise or safe to just hitch them on with a bit of glue.

You will be interested in the mass of "gadgets" on the models. Well, these, strangely enough are made from ordinary household pins, slide-on paper clips, press studs, beads, nose-blocks used on solid models, garden wire, paper fasteners, and so on.

In making small models like these I try to have the few tools I need in a small box about 12 in. long and 6 in. wide. Three inches deep is enough and you will have to organise your needs to get the right articles there in this small space so that you don't have to keep dodging out to the workshop for other items.

I also have in my kit a piece of wood 6 in. long and $\frac{3}{4}$ in. x $\frac{3}{4}$ in., and this enables me to set it under the vehicles when I am working on it and thus prevent damaging the wheels or underpart. A cotton reel is also most handy for this idea, too.

Tables have to be respected, and I have a panel of $\frac{1}{4}$ in. plywood 18 in. x 18 in., with a green baize glued on base so that in the event of the board moving the table will not be scratched. Along the further edge I have a piece of 1 in. x 1 in. quartering screwed on but cut short by 2 in. This is handy if you have to saw a small piece of wood. A similar piece, but full length and on the opposite side is screwed to the other end. This keeps the board firm on the table.

In building vehicles you must first of all get the chassis correct. If you study all vehicles you will see that whatever the adaption it is only the question of building on and around it. The same applies to model vehicles. As a simple model I have

Some of the constructional stages. Fig. 1 shows use of pins for added strength. Fig. 2 mudguard attachment, again with pins. Fig. 3 steps in chassis construction. Fig 4 Cab details.

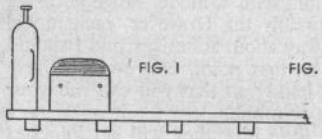


FIG. 1

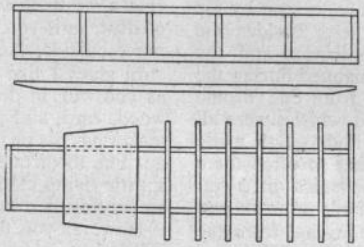


FIG. 3

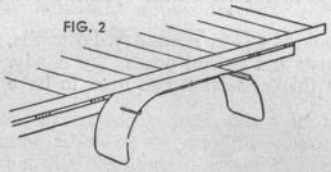


FIG. 2

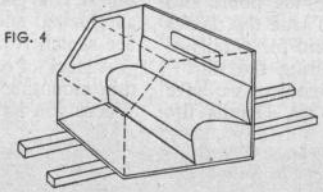
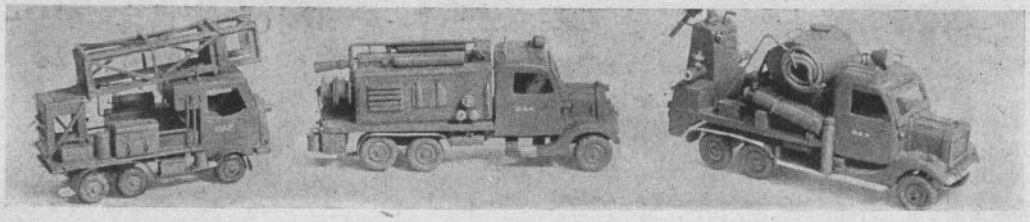


FIG. 4



chosen the 6-wheel, foam crash tender. The chassis is $5\frac{1}{2}$ in. long and $1\frac{1}{4}$ in. wide, and made from $\frac{1}{8}$ in. x $\frac{1}{8}$ in. obechi. Cross bearers are added from the same type of wood and are $1\frac{1}{2}$ in. wide to allow for the carrying of the platform which is set on after.

You will next note that the cab platform is added being from $\frac{1}{8}$ in. wood and $1\frac{5}{8}$ in. wide and $1\frac{1}{4}$ in. deep. Now plan out the back of the cab, and this is $1\frac{5}{8}$ in. x $1\frac{5}{8}$ in. Cut the seat section the full width of the cab floor and $\frac{1}{2}$ in. x $\frac{1}{2}$ in. Glue this in and then you will find it easier to work on the cab section without it collapsing.

Make the two side sections $1\frac{5}{8}$ in. high x $1\frac{1}{4}$ in. at base with slope back as shown. Before going further you should line the seat and back and inside sections as it is difficult to get at it once it is assembled.

The front panel is shown separately in the sketch because I make this from $\frac{1}{4}$ in. plywood and then add the transparent sheeting and then a thin cardboard panel. It looks better, and if you wish to paint in silver the lines will be cleaner and more definite. Your cab is now assembled. In this type (not too up-to-date) the bonnet is a piece of white wood $\frac{7}{8}$ in. square and $\frac{3}{4}$ in. long. Well rounded on the edges, but otherwise quite ordinary looking. Bands of thin card are added and also vents from the corrugated tin sold by model railway shops. The front is lined with fine wire mesh, and a design made from cardboard according to the type of vehicle.

Bonnet and cab should be well rounded off all round and lamps added from bits of $\frac{1}{8}$ in. dowel rod. Front mudguards are best cut from $\frac{1}{4}$ in. wood with the fretsaw, and sanded to the correct design. They are fixed to a cross-strut as shown, and then the space between mudguard and bonnet is filled with plastic wood. A neat buffer board is fitted between both, and adds to realism as well as strengthening the front.

Petrol tanks, tool boxes, are all interesting oddments, and added to pins and bands of thin card.

In this case the next item is the thin platform from $\frac{1}{16}$ in. wood. Once you have this on you can decide which type of vehicle you wish to make. In the case of this tender all the parts are made from blocks of wood, and the various taps, hooks, wheels and levers added before being put in position.

Wheels are of the type used on model aircraft and scored crossways with a file to represent the tyre pattern. For ease of running I mount them on "Lill" pins after having blocked up the hole with wood.

Try your hand at making one vehicle. Write to any good commercial motor firm and they will, I am sure, send you ample literature and plans, and from these you will get your own measurements, and by intense study enjoy making your own fleet of vehicles in the same spirit as I made mine.

FIG. 5

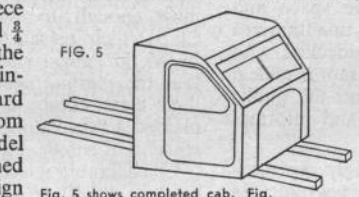


Fig. 5 shows completed cab. Fig. 6 arrangement of radiator and bonnet. Fig. 7 attachment of petrol tank. Fig. 8 main platform on which body is built.

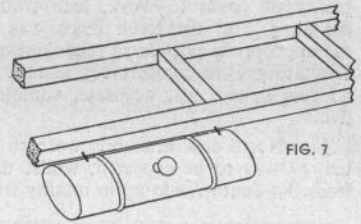


FIG. 7

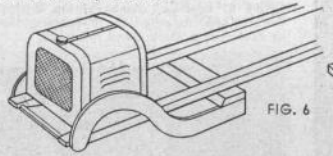


FIG. 6

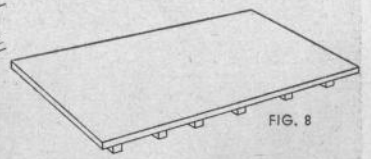
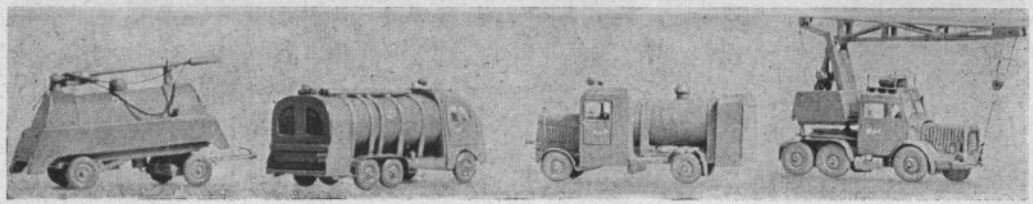
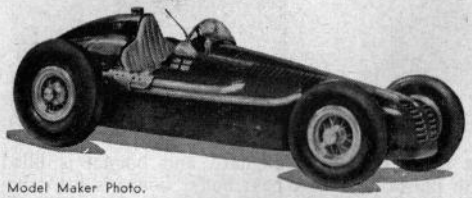


FIG. 8



METEOR OPEN DAY——12th Nov. 1950



Model Maker Photo.

Photos by courtesy of Meteor M.R.C.C.

(Above left) J. R. Parker's latest, a handsome free-lance Grand Prix model. (Above) Bob Gerard shows the same keen appreciation of "What makes them go" as he does with the big stuff, and is seen here discussing form with Gerry Buck and Eric Snelling.

As the cradle of high speed model motoring Staffordshire can always be relied on to put on a first class show when their Annual Open Meeting comes round, and this year's affair was well up to sample.

There is much to be said for an all-out effort once a year, with everybody's energies directed to making a "reet do" of it, and Harry Howlett and his merry men were rewarded with an enormous entry and a packed gallery, although owing to local press publicity going astray, it was only necessary to stack spectators in one layer instead of two.

An excellent programme was provided, all entries having been received beforehand, the club was honoured with the presence of D. A. V. Rist, who has so greatly helped the Meteor Club by the loan of the works canteen for several years, and Bob and Joan Gerard, who judged the Concours.

Some seventy competing models were housed in a separate enclosure with ample table space and plenty of room to work, safe from unauthorized meddling, and the track fence was bedecked with the appropriate posters so rendolent of motor racing. Spectators were comfortably seated, and the public address system was accurate, audible and informative.

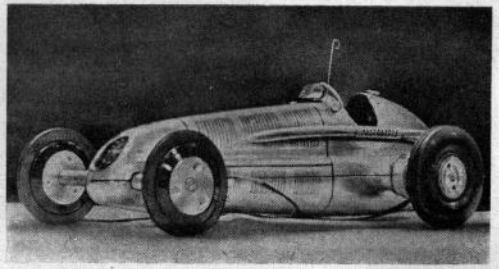
The North and Midlands were strongly represented, as was to be expected, whilst the few entrants from the South made up in quality what they lacked in quantity, and figured high in the results. As usual in Meteor events, the 10 c.c. class called for British engines only and a significant fact was the presence of only six American engines in the entire entry, five 5 c.c. Doolings and a lone McCoy, with the two-point-fives all British as usual. In the latter class a strong contingent of Oliver Tigers was very prominent, (almost enough to warrant an Oliver Enthusiasts' Club!) their private owners' interests watched over by M. le Patron and son John to such good effect that the *marque* occupied all the leading places in their class except a second by Wee 2, Topsy remained a "spectator" throughout the proceedings for reasons of safety on the small diameter track.

Considerable interest was aroused by F. G. Buck's entry in the 10 c.c. class of a Rowell Sabre, built up from a standard kit and fitted with a Rowell 60 engine, the body only being home built. This model was most impressive, and collected F.T.D. at the very tidy speed of 102.8 m.p.h.

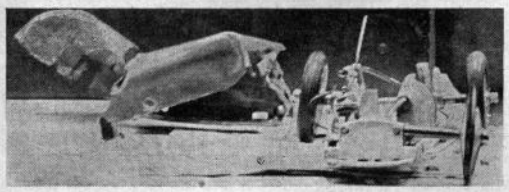
Eric and Alec Snelling had cars in all three classes, Alec's good looking Lago Talbot collecting second place in the 10 c.c. class, a tribute to his old home built long-stroke engine, a type now almost entirely superseded by the short stroke motor in first class racing. Third in this class was Harry Howlett's good looking Mercedes Benz, with his own engine.

The five c.c. class produced 24 entries, and here the Doolings and the E.T.A.s fought it out, Cyril Catchpole's B.R.M. Dooling snatching first place from Mrs. Moore's Moore Dooling by 2.75 m.p.h. in the Open Category, and B. Kershaw winning the British award with his E.T.A. engined model from John Oliver, who had persuaded an E.T.A. into an Oliver Tiger car. (*continued on page* 120)

(Left) B. Kershaw, winner of the British 5 c.c. class, collects his reward. (Below) Bob Gerard had no easy job in judging the "Concours". Note the "atmosphere" provided by motoring posters round the track.



Model Maker Photo.



(Top left) The Meteor Club en masse, with their host, D. A. V. Rist, and Bob and Joan Gerard. (Right) H. Howlett's Oliver after additional beauty treatment! (Above) Dire results of a broken bridle during practice. It was decided to withdraw the model from the competition!

RESULTS

Class 1 Cars

			m.p.h.
2.5 c.c.			
1. J. R. Parker	Meteor	Parker Oliver	68.7
2. F. G. Buck	Meteor	Wee 2, Experimental Car	68.2
3. J. S. Oliver	Derby	Oliver Car, Oliver Engine	65.2

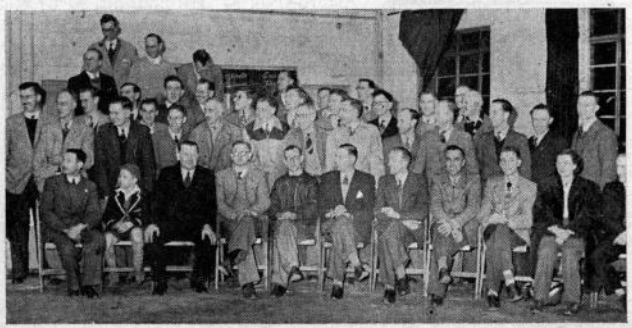
Class 2 Cars

5 c.c. Open			
1. C. M. Catchpole	Surrey	Own Design Car, Dooling 29 Engine	92.75
2. Mrs. Moore	Derby	Dooling Spur	90.00
British			
1. B. Kershaw	Bolton	British E.T.A., Spur Gear Drive	78.94
2. J. S. Oliver	Derby	Oliver Car, E.T.A. Engine	73.77
3. N. Haslam	Bolton	E.T.A. Engine, Bevel Gear Drive	72.00

Class 3 Cars

10 c.c.			
1. F. G. Buck	Meteor	Rowell "Sabre"	102.80
2. A. Snelling	Edmonton	Talbot, All Home Constructed	90.0
3. H. S. Howlett	Meteor	Mercedes Benz, All Home Constructed	87.39

(Below) This gathering of actual competitors must be a record for a single meeting! (Right) Beauty prize! E. Armstrong of the Sunderland Club had no difficulty in catching the judge's eye with his Austin "International" model, described recently in "Model Cars".



A Synchronised Flash and Shutter Control Unit

AN EFFICIENT BUT INEXPENSIVE DEVICE FOR CANDID PICTURES

BY TREVOR HOLLOWAY

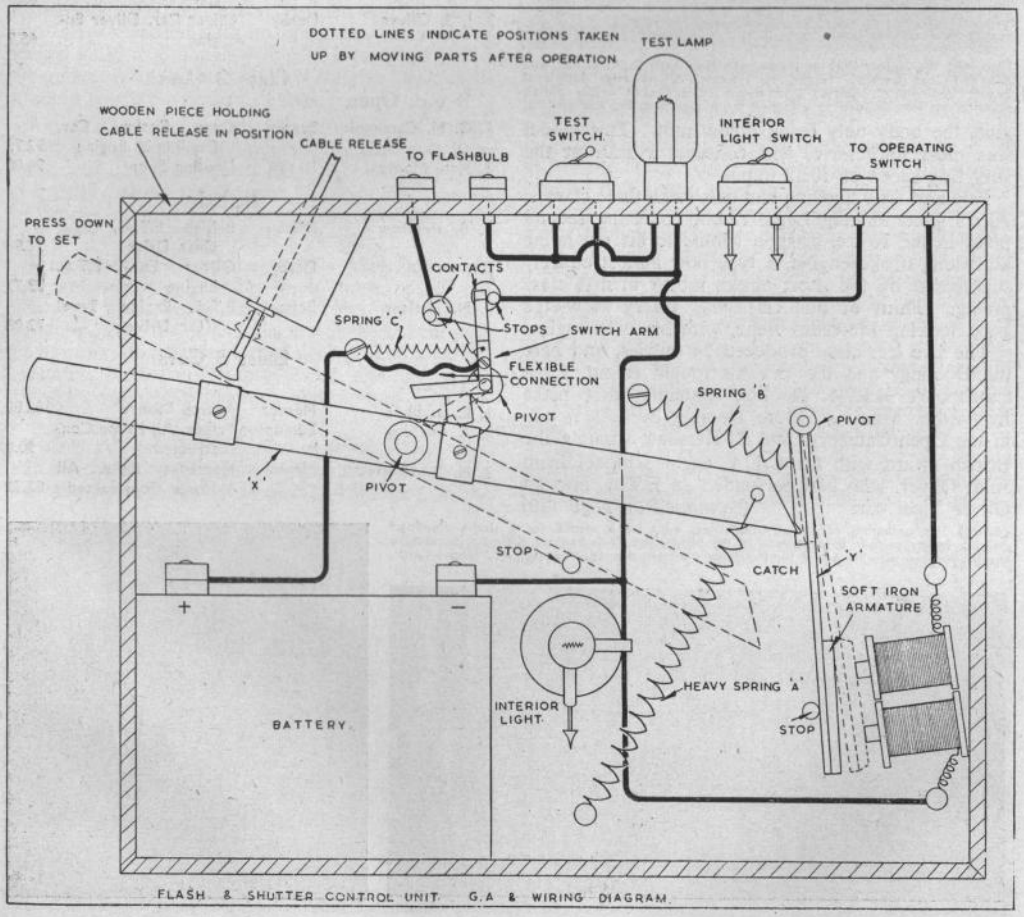
AS a person keenly interested in wild life photography, I found myself faced with the problem of how to synchronise the camera shutter with the flashbulb when attempting to secure flashlight studies of such nocturnal creatures as badgers, foxes, owls and so forth.

You may not be interested in wild life photography by night, but most camera owners will agree that synchronisation opens up innumerable possibilities for pictures which cannot be obtained by any other means. The model described here was, for the most part, built up from the various odds and ends that accumulate in almost everyone's junk box.

Flash and Shutter Unit.

The apparatus works as follows: The whole device is controlled by a switch, which is electrically operated, and can therefore be *at any reasonable distance from the synchroniser.* When the switch is closed, the camera shutter is opened, the flash-bulb fused, the shutter closed, and the electrical circuit switched off—the whole sequence taking only a fraction of a second.

It will be appreciated that the exposure time is governed by the duration of the flash (e.g. 1/40 sec. perhaps 1/75 sec.) and short enough to stop most movement.



FLASH & SHUTTER CONTROL UNIT G.A & WIRING DIAGRAM

The components are contained in a box measuring 9 in. x 7 in. x 2 in., and are operated by a 4½ volt large capacity cycle lamp battery. Two refinements have been fitted — an interior light controlled by a switch on the top of the box, and allowance made for switching a low-consumption lamp in series with the flash-bulb to indicate a complete circuit. Also situated at the top of the box are the terminals for connection to the flash-bulb and operating switch.

Referring to the diagram, the synchroniser is set by depressing the metal strip *X*, the end of which projects outside the box. This is prevented from returning to its original position by a catch on the armature *Y*. On closing the operating switch, current flows through the two magnets, which attract armature *Y*, thereby releasing *X* which presses down the cable release, so operating the shutter.

The release of *X* also allows spring *C* to switch over from the main contact to the flash-bulb contact, so that the bulb is fused and the circuit from the battery broken.

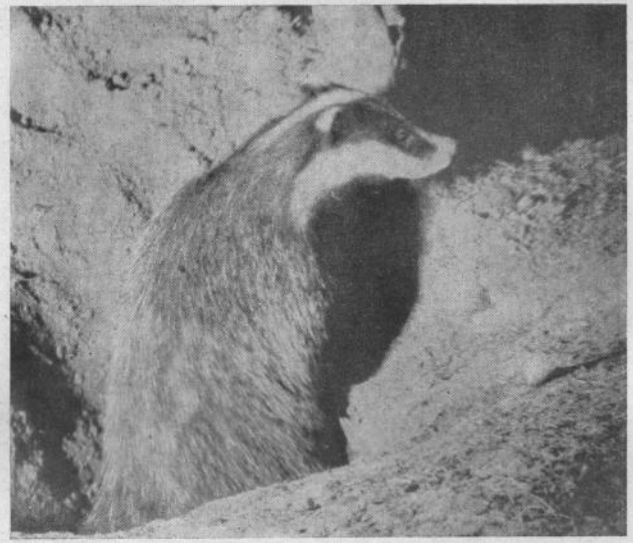
The arm *X* consists of a metal strip about 8 ins. long and pivoted in the centre (a "Meccano" strip was used in the model described). Armature *Y* is made of soft iron, so that good attraction is obtained from the magnet bobbins, which can be obtained from an old electric bell.

The camera cable release is held in place by a strip of wood in which is cut a slot to fit the end of the release, the wood being secured by a terminal screw so that the release can be detached when necessary. Two brass pillars form the contacts for the interior switch.

The connections for the interior light are not shown in the diagram, so as to avoid confusion. If this light is required (it will often prove extremely useful in the dark), one contact of the switch should be connected to the "plus" terminal of the battery, the other contact to the lampholder. The remaining lampholder connection is already shown as connected to the "minus" battery terminal.

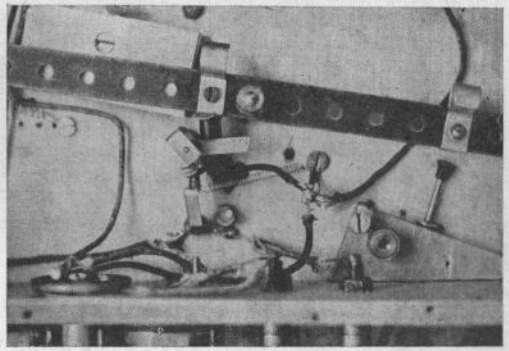
Before making preliminary adjustments, fix the cable release in position and tighten spring *A* until it is strong enough to work the shutter. Then depress arm *X* until it is set in the catch, and arrange the magnet bobbins so that the pull is sufficient to release the arm. The arm should only be *just* set in the catch.

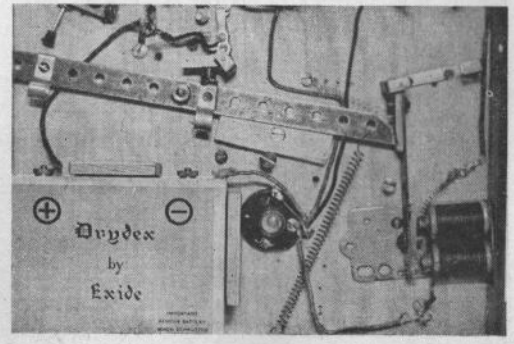
(*Continued on page* 94)

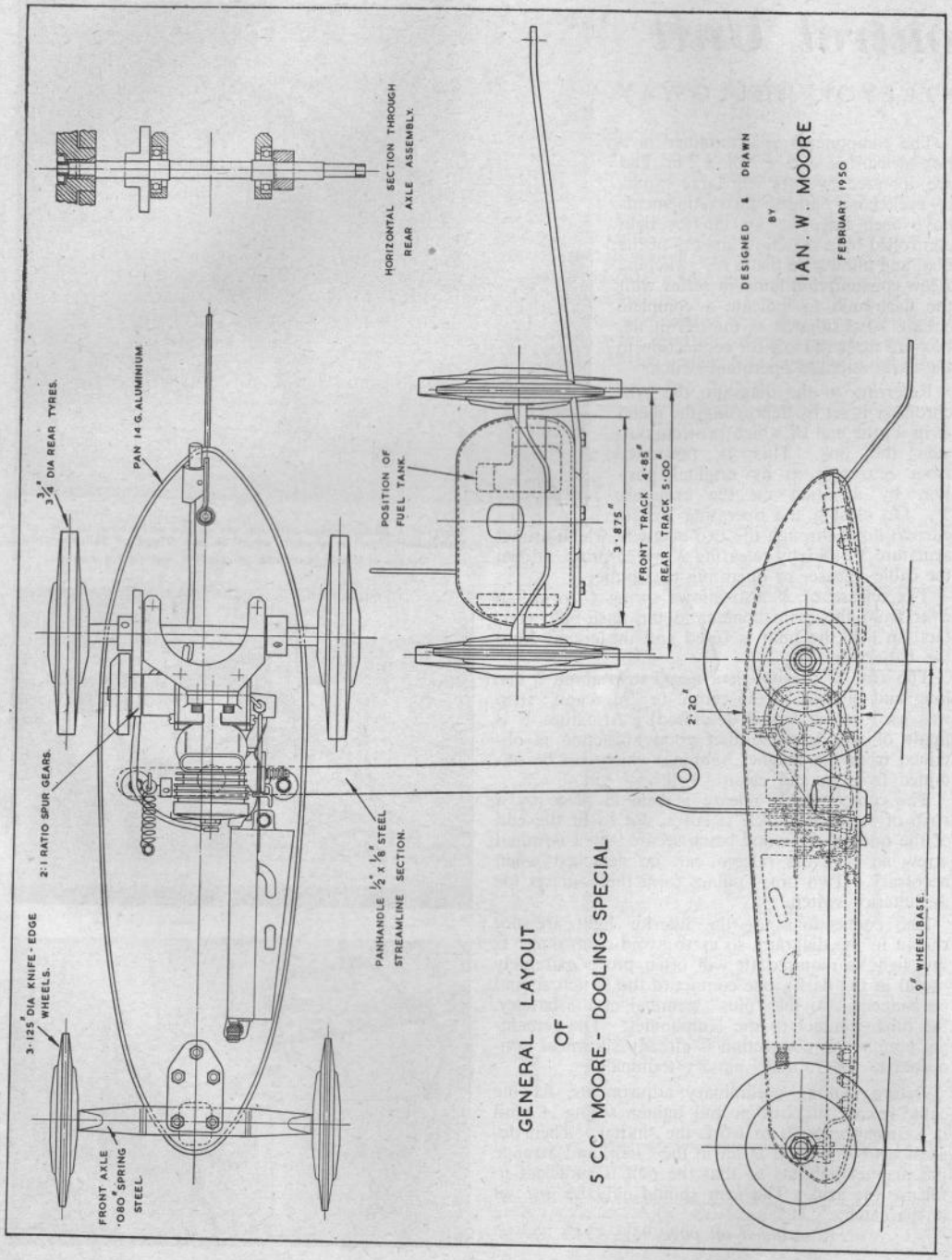


Study of a badger taken with the aid of the unit about 10 p.m. of a September night in a small wood on the fringe of Salisbury Plain.

Details of interior switching mechanism, and electro-magnet.







MRS. I. W. MOORE'S 5 C.C. RECORD BREAKER

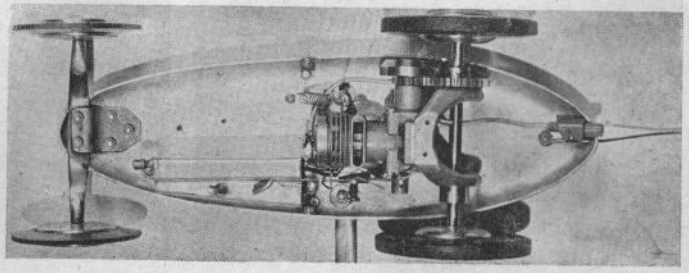
by IAN W. MOORE

THE car to be described has no great claim to beauty; however, the old saw has it that "Beauty lieth in the eye of the beholder" — and as such its chief claim to notice is that it was designed to do a job, and has handsomely exceeded its duty. Designed and built as a test car for experiments in gearing and as the forerunner of the pukka job, its competition successes during the past season have far surpassed our most fervent hopes.

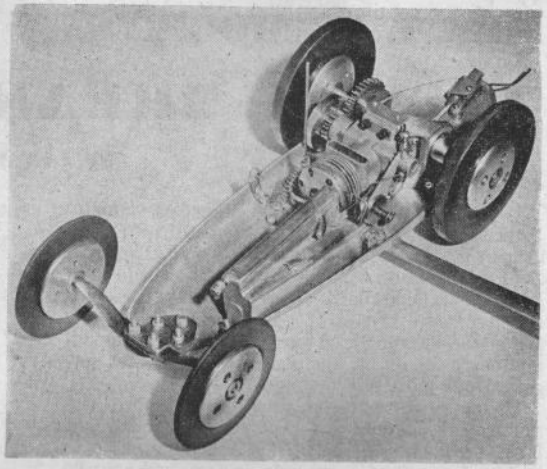
During the 1949 season, when fully occupied with running my Gardner and Dooling 61 powered cars, I was frequently reminded that I had promised to build a 5 c.c. car for my wife, in fact, had actually got a McCoy 29 for the purpose. The excuse of "no time" began to wear a little thin towards autumn and we decided to make this car the number one job for the winter. By the time we actually got down to start the design of the car the McCoy had been disposed of, and an E.T.A. 29 substituted, which was thought would fit very nicely into a scale Veritas. This was drawn out, and a spur gear bracket pattern was made and a casting taken, and a start made on the body. Not having had any experience with 5 c.c. cars, much thought was given to the question of gears and tyres, and the decision made to use $2\frac{1}{2}$ in. dia. wheels and $1\frac{1}{4}$: 1 ratio gears. However, later thoughts made me realise that if this was a bad guess and had to be altered there were not many alternative sizes of tyres available, and the all-enveloping body was rather a disadvantage, so it was decided to drop this project until more experience had been gained.

About this time, a Dooling 29 was obtained and a simple straightforward car with spur gears seemed the best proposition, both from the time and cost angles. The 20 D.P. spur gears, made by Bonds of Euston Road, filled the bill, although they gave a somewhat limited choice of ratios. A pair of 2 : 1 ratios were bought, which it was "guesstimated" should be fairly satisfactory when used with $3\frac{1}{2}$ in. dia. wheels. This ratio also gave a choice of tyre sizes both ways with which to experiment, and if necessary correct any slight under or over gearing found on trial. A start was now made in earnest, and a plan view of the engine, flywheel and gearing drawn, and an L fuel tank carefully positioned in what was hoped was the right position relative to the jet. The outline shape of the pan was then drawn round this and the track and wheelbase made to suit. Actually, a slightly longer wheelbase would have been an advantage, but this was not apparent until after a few runs on a bumpy track, and was not a very serious error.

A new bracket to suit the Dooling was now drawn out for the rear axle engine unit, but before the pattern was made a visit from our good friend Jack Cook of Sunderland brought forth an offer of one of the castings which had been developed to take the E.T.A. 29, and as it was found to be almost the same dimensionally this offer was very gladly taken up. It was found possible to reduce it somewhat in size, and J.C. even went to the trouble of altering the pattern slightly to improve its adaptation to the Dooling.



To avoid the necessity of making more new rear hubs the drive tyres to start with were to be ex-Dooling F Front tyres, as smaller and larger diameters with the same type heads were available for tests. A small problem was, however, presented here, as the standard Dooling hub is machined for a 10° included taper, on a $\frac{3}{8}$ in. dia. axle, and the 30-tooth Bonds gear had a boss hardly large enough to bore out to this. A search through the wheel and hub store brought to light a rather odd hub designed to fit Dooling tyres, but with the centre made to fit modified Z.N. collets, a pair of which were also in stock. This was obviously the answer, and hence the rather peculiar rear axle arose, to fit the $\frac{3}{4}$ in. bore ballraces, whilst the gear was bored out to $\frac{5}{16}$ in. dia. and the collets were $\frac{1}{4}$ in. bore.



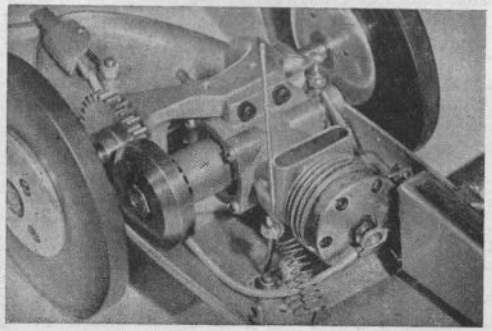
As the Dooling 29 crankshaft has neither thread on it, nor shoulder against which to pull up the flywheel and gear assembly, a method had to be used which could be positioned by friction, and a split taper collet was therefore made. The flywheel itself is $1\frac{1}{2}$ in. dia. x $\frac{3}{8}$ in. thick, of brass, and is shrunk on to the boss of the 15-tooth gear. The 30-tooth gear is $\frac{1}{8}$ in. taper pinned to the rear axle and both gears are cyanide hardened approximately 3 to 4 thou. deep.

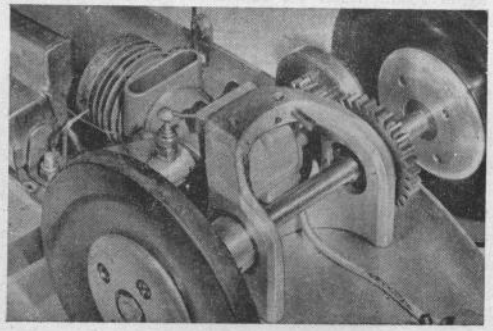
The pan itself is beaten out of 14g. aluminium, whilst the top half of the body is of 22g. The front wheels are a pair of $3\frac{1}{8}$ in. dia. Arrow type knife edges (actually ex-1949 10 c.c. car), and the front axle is of .080 steel, filed to streamlined shape and tempered, with suitable end fittings sweated on to take the $\frac{1}{4}$ in. ballraces in the wheels.

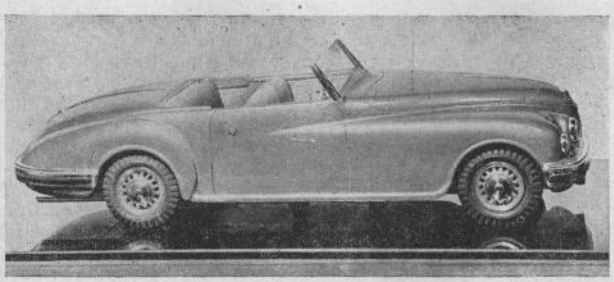
A good deal of playing around with different types of fuel shut-off valves was done, since we were not quite satisfied with some of the early designs. It seems quite difficult to arrive at a valve which is positive, both on and off, and yet easy to re-set, and doesn't leak. A plunger type was considered, but eventually a type similar to the Dooling, but with inlet and outlet at front and rear, was constructed, and has given no trouble.

It was intended to use a battery on the pushstick, and in an attempt to do away with trailing wires and plugs from the stick to the car, an insulated contact was fitted to the top of the engine casting and a spring loaded plunger put on the pushstick, which contacted the insulated plate and completed one side of the glow plug circuit, the other being run through earth. In the early stages of running the car, due, I think, to faulty technique owing to lack of experience with glow plug motors, this contact system was not considered satisfactory and was abandoned. I feel that had it been persisted with it would have been quite satisfactory when we got to know the engine better. Anyway, the insulated contact was removed and a socket placed in the tail, while a short length of wire was placed on the pushstick, the other contact being made by the stick on the bracket. It should have been said before that we push on the bracket and not the axle, so that contact from the stick is quite satisfactory, as it does not have to pass through any ballraces, which I find act as complete insulators.

(*Continued on page* 86)







C. POSTHUMUS LOOKS BACK ON A

RUSH JOB

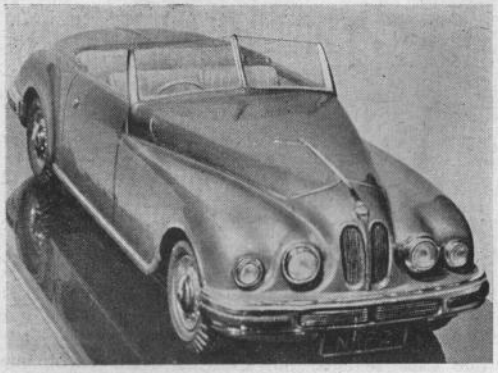
TO ardent film fans January 31st, 1950 was a vital date, marking as it did the 21st birthday of no less a celebrity than Miss Jean Simmons, the film actress who portrayed Ophelia so movingly in "Hamlet". Persistent and clamouring headlines in the New Year Press left no one uninformed of the approaching anniversary, but with that bovine indifference which is the lay reader's privilege, my interest remained mild. . . . Until, on January 5th, the 'phone rang . . . and the 31st suddenly became of desperate significance to me, for I then contracted to build for Anthony Crook, racing driver and proprietor of a Caterham motoring business, a 1/24th scale model of Jean Simmons' Bristol "402", a convertible coupe, as his 21st birthday gift to her. Barely three weeks to prepare plans and build what promised to be a complicated scale model! Out of that chair . . . away with that copy of *Model Cars* (advt.!) . . . I'd certainly have to get cracking!

Tony Crook had arranged for the Bristol Co. to send direct to me the coachbuilders' drawings of the car, but these did not arrive for several days, thereby occasioning considerable flap. However, by means of discreet machinations on the part of Tony Crook and Miss Simmons' housekeeper, I was able, in Jean's absence, to visit Manchester Square in London, where the Bristol was habitually parked near her residence. I then spent an industrious hour or so measuring the car up, making notes of various features in a sketchbook, a process which involved sundry stoopings and stretchings, and viewings from across the road, etc., all of which mystified the car park attendant and passers-by somewhat, so that I was relieved when able to roll up my tape measure, put away my notebook and depart from the scene of these contortions. From the data thus obtained I was able to determine the approximate layout of the "402", and with wheel and chassis dimensions to hand, got down to making these components, pending the arrival of the Bristol plans.

The wheels were of perforated disc type, and I turned them on the lathe in brass, drilling out the perforations afterwards with a simple circular jig. The Scale Model Equipment Co.'s excellent rubber tyres (at 3/9 per set of 4, mounted on simple turned wheels) came in splendidly for the Bristol, turning out exactly to scale when stretched on to the wheels and looking fine. Simple axles were used and the wheels were mounted on these, turned "dinner-plate" hub caps soldered on, and the whole chromium plated, both front and rear units being readily detachable from the chassis. The latter had but to serve as a concealed platform for the wooden body-to-be, and thus was starkly simple—merely a shaped piece of flat $\frac{1}{16}$ in. brass plate, annealed and bent at the front to clear the axle, but underslung at the rear.

The nucleus of the body was a piece of fine-grained English chestnut (so the wood man proudly told me) the wings being formed integrally and the seating area cut out, leaving a precarious $\frac{1}{4}$ in. bridge of wood 'twixt bonnet and boot. Plywood body sides were then set in with submerged screws and Durofix, the square "hole" thus achieved being subsequently furnished with instrument panel, steering wheel and column, gear and brake levers, door press buttons, window winders, seats in appropriate fawn hide and even a pseudo carpet for the floor in brown substitute leather. But . . . sterner tasks preceded the making of fripperies such as these, that very tricky Bristol front being tackled first. The radiator grille consisted of a carefully filed brass surround soldered to a backing of nickel-silver plate, grooved in the hand-shaper, annealed and carefully bent to shape. Having attained the approximate set-up of bonnet, rad., and wings, refinements began, and the head and side lights, which were turned in brass and later plated together with the grille, were set temporarily into plastic wood emplacements to determine their eventual position relative to other components. Having moulded their seat in life they were extracted—a smear of grease beforehand having prevented the p.w. from sticking to them—and their complicated housings merging into the bonnet-cum-wings were formed with shaped plywood pieces and the eternal and ever-to-be-blessed plastic wood. Let no one de-

The Bristol's rolled aluminium bumpers—the American term "fender" is more appropriate in this case—which hug the nose and tail closely, and incorporate a central rad. air intake at the front, and rear lights and number plate at the back, proved a major task, but some $\frac{1}{4}$ in. x $\frac{3}{32}$ in. brass, the hand-shaper, various files and good old Dr. Solder combined to overcome the problem. With various other metal fittings such as the vee-screen frame, orna-



mental body strips, door buttons, etc., made up and chromed (would that one could dismiss their actual making as easily as in writing of it!) the next big job was to get that sleek body right and, if not exactly "shipshape", at least "Bristol fashion". The radii of the aft portion in particular were tricky, requiring many references to Bristol's drawings, and delicate wielding of smooth files, followed up by cautious — almost apprehensive — glass-papering. Blending lateral and longitudinal curves is a different business, especially on an indistinct surface like natural wood (even if it is the best English chestnut), so eventually, after going nearly cross-eyed, I gave the body a grey cellulose under-coating, which eased the problem of correct and symmetrical lines.

The sands were running out, and with an eye ever to the calendar the finishing process began, first with alternate applications and rubbings-down of primer, and then, at last, the finishing coats of beautiful metallescent green cellulose, the actual finish as used on the car itself and supplied by Mr. Crook. Between these operations the lamp glasses were turned from a bar of clear "Perspex", and a protective box for the model was made, incorporating a wooden display base hastily machine-planed and bevelled, and fitted with a black "Perspex" sheet top, which was so shiny it revealed the minutest speck of dust and reflected the austere underneath of the chassis as effectively as any full-scale demonstration model at Earls Court. Three days before *the* day the model was assembled and mounted on its base for a last check before despatch. The lovely pale green finish and bright chrome fittings combined well although close investigations revealed a few tiny but maddening pock marks on the body surface. Lack of time precluded any remedy other than a frenzied last-minute polishing, so that, as usual, I did not feel wholly satisfied with the completed model when delivering it on the 29th January. But the race with time had been won, and my three high-pressure weeks were not in vain, for I am glad to say the eventual recipient was well pleased with the 1/24th scale miniature of her Bristol car.

MRS. I. W. MOORE'S 5 c.c. RECORD BREAKER (*Continued from page* 84)

For simplicity, and in order to test its effectiveness, we decided to fit a "panhandle", and this was made from a piece of ½ in. x ⅛ in. steel, filed to a streamlined cross section. Three holes were drilled in it in suitable positions, and the complete car, with fuel, etc., was balanced on a knife edge and one hole drilled through the pan and the handle fitted. The car was then suspended in the normal manner, and the other two holes marked and drilled.

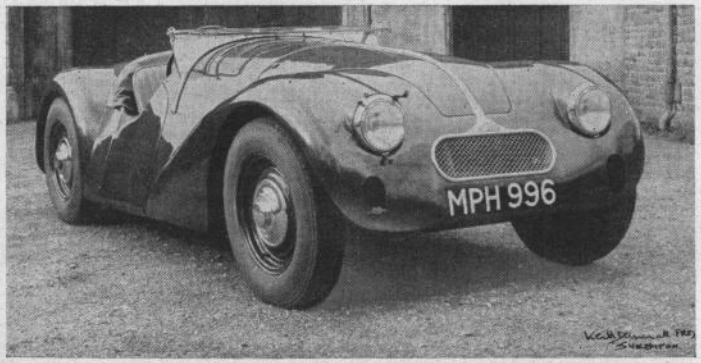
The complete car was now put on the scales and weighed 3 lb. in running trim. After the teething troubles with the starting procedure had been obviated, the car showed itself to be quite fast, and some experiment with tyre sizes was done. Two types of 3½ in. dia. tyre, with different expansions, were tried, but speed suffered, so a pair of 3⅝ in. dia. tyres of unknown make (believed to be C. & R., although not marked) were tried, and rather to our surprise, added about 3 m.p.h. to the previous best speed.

The competition debut of the car was not very impressive. During practice at the Bolton Open Day on May 21st, a mysterious lack of "go" became evident, and when the end of the crankcase was removed a broken rotary valve disc was found. This was afterwards replaced by a later type and the car came back into favour the next Sunday by setting a new ¼-mile British Open Record at Eaton Bray.

The rest of the season the car did quite well, the only real failure being at Bolton again—we seem to have a jinx on that track! No alterations to the general design have been necessary, and only one structural failure occurred, when the aluminium front axle support broke, and was replaced by one of steel.

The speeds on all types of track, and sizes from 70 ft. dia. down to 40 ft. dia., have been very satisfactory as the list shows:—

May 21st, Bolton. Rotary valve disc failed.
May 28th, Eaton Bray, ¼ mile 85.71 m.p.h. (New Record).
June 4th, Ossett, 1st, ¼ mile 88.24 m.p.h. (New Record).
June 25th, Derby, 1st, ¼ mile 87.63 m.p.h.
July 23rd, Bolton.
August 7th, Harrogate, 1st, ¼ mile 92.75 m.p.h. (New Record).
August 27th, Cleethorpes, 1st, ¼ mile 96.25 m.p.h. (New Record).
September 3rd, M.C.A. Regional Midland Area, 1st, ¼ mile 89.73 m.p.h.; Sept. 10th, Hooton (*Daily Despatch*), ¼ mile 90.00 m.p.h.; Sept. 17th, Worcester M.C.A. National Finals, 1st, ¼ mile 93.55 m.p.h.; Sept. 24th, Eaton Bray, Jaguar Trophy, 1st 93.71 m.p.h.
October 15th, Liverpool, 1st, ¼ mile 94 m.p.h.
October 15th, Liverpool, ½ mile British Open Record 91.37 m.p.h.



PROTOTYPE PARADE
No. 26

CONNAUGHT Competition Two-seater

Described by
G. H. DEASON

THE production of sporting motor cars of character, capable of being bought and driven by private owners in the various phases of motoring competition, has very largely devolved on the small specialist firms, establishments presided over by keen and experienced men who drive their own cars, and have their finger very much on the pulse of the competition world.

The interest to the prospective model maker lies, obviously, in the good looks and distinctive form of the car, and the two-seater Connaught forms a fine example of the type which is beginning to attract the power model enthusiast who is tiring of the inevitable single seater, yet who wants a practical prototype capable of being developed into a fast track car. As it seems likely that many more model car clubs will be staging events suitable for such models next season, I recommend the Connaught as a subject worthy of attention, and hope shortly to describe a powered model by E. Armstrong, who made a start on this type with his good looking Austin "International" recently.

The frame of the Connaught is of partial box section with channel and tubular cross members. The original car, M.P.H. 329, had non-independent suspension, but all the existing cars now have I.F.S. of the torsion bar and wishbone type, with long semi-elliptic rear springs controlled by Girling dampers. Braking is Girling hydro-mechanical.

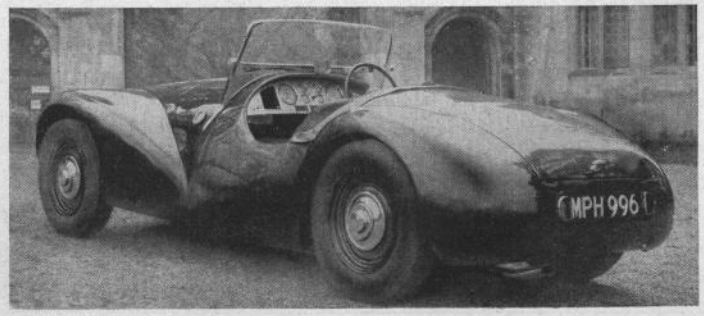
The 1767 c.c. four-cylinder engine is based on the Lea Francis, having two high camshafts operating the valves through short push rods. On the off side of the engine four Amal carburetters supply the mixture, and special attention is given to the exhaust arrangements, a sweeping 4 branch manifold on the near the side leading to two tail pipes which continue to the rear of the car.

The four-speed gearbox is provided with a remote control lever, and a short tubular shaft takes the drive to the semi-floating spiral bevel rear axle.

The now popular pressed steel wheels are fitted, which have a five stud fixing, and it will be noted that M.P.H. 995, shown with hood erected, has drilled discs, the other cars having plain wheels. Tyres are 600 x 16.

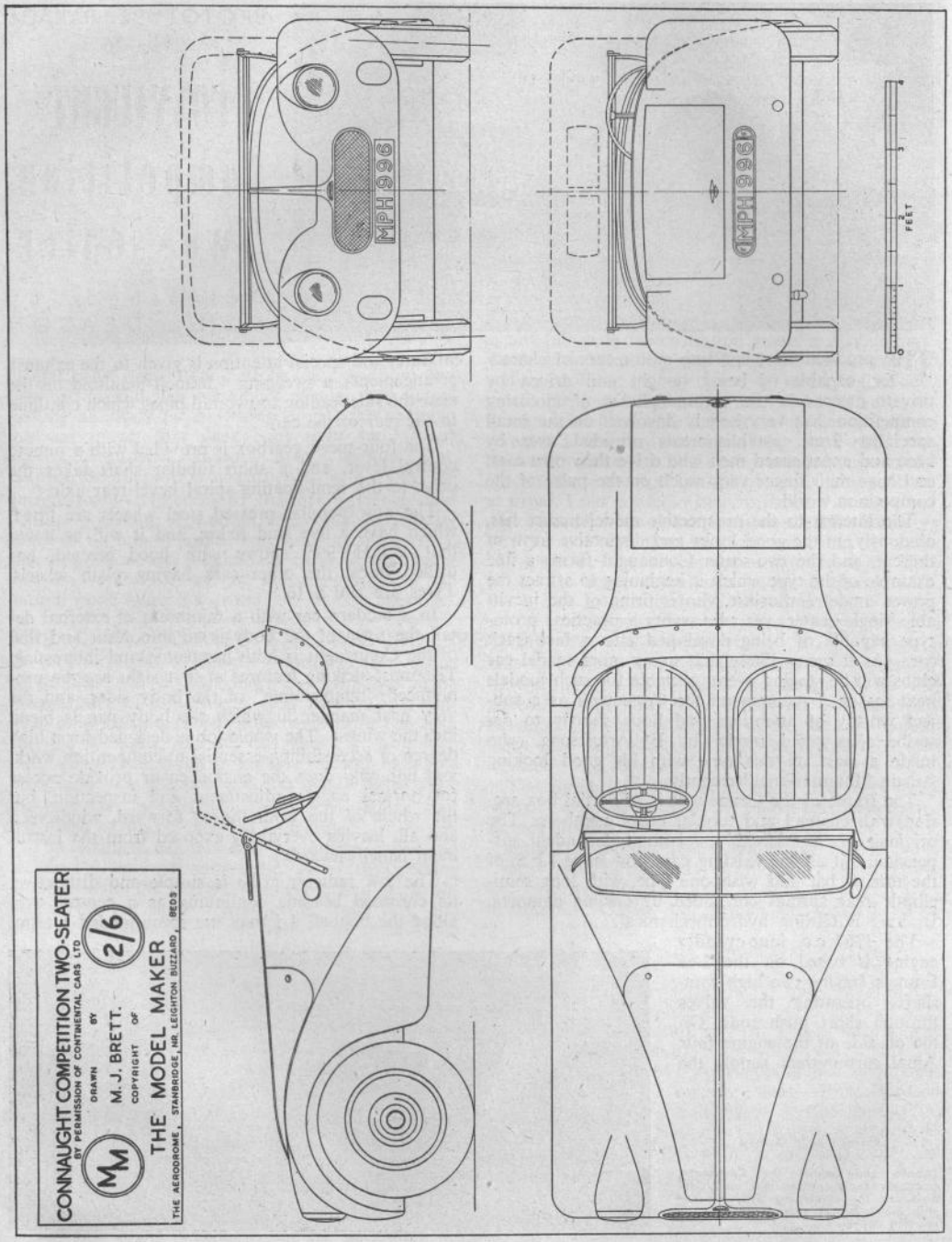
In a modern car with a minimum of external detail the form of the body is all important and that of the Connaught is both handsome and interesting. The most striking features at first sight are the pronounced "tumblehome" of the body sides, and the very neat manner in which the body panels blend into the wings. The whole job is designed for a high degree of accessibility, essential to competition work, and not only does the engine cover provide access for normal engine adjustment and inspection, but the whole of the front hinges forward, windscreen and all, leaving everything exposed from the instrument panel onwards.

The low radiator grille is simple and distinctive, its chromed beading continuing as a central strip along the bonnet, if I may use so outmoded a term.



Photos : Keith Dannatt

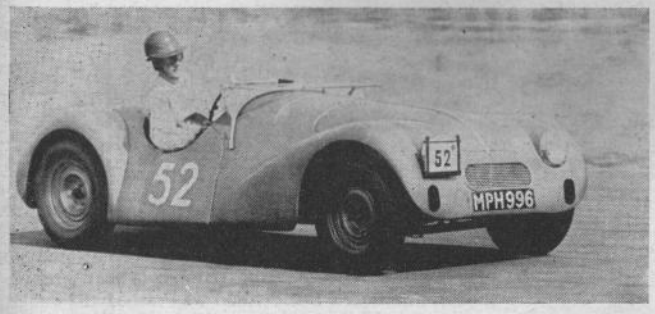
(Above and below) The Connaught, from any angle, proves that up-to-date lines and the enveloping bodywork can still blend into a motor car of truly sporting appeal.



(Right) The two 'works' cars in line ahead on the Blandford circuit, and (below) a close-up of MPH 996 in fighting trim.

Photos : Guy Griffiths

(At foot of page) A production model, with hood erected. Minor modifications will be noted including large external door hinges, and perforated disc wheels. The front panels hinge upwards from the scuttle joint, on a pivot behind the front number plate.

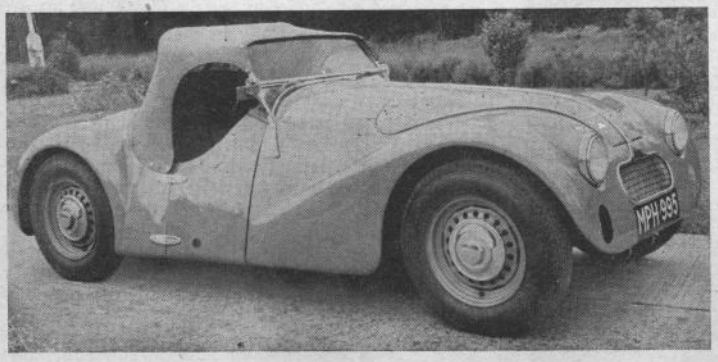


and two large oval apertures admit cooling air to the front brake drums. The external headlamps are faired into the body, and a normal fold flat screen is fitted as standard, replaced by small aero screens for racing. The tail is graceful and short, and particularly in side view the car looks beautifully balanced.

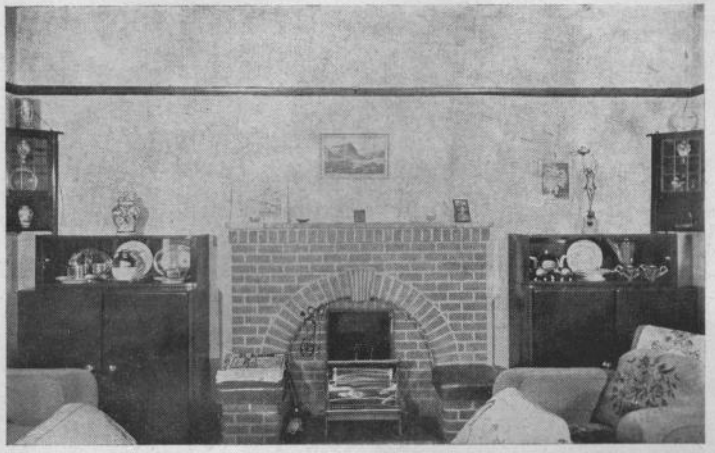
Two comfortable armchair type racing seats are upholstered in pleated hide. The cockpit equipment consists of a 17 in. four spoke spring steering wheel, and the mottled aluminium instrument panel carries a large speedometer and revolution counter with oil, ammeter and petrol gauges, and water and oil temperature dials set between and beside them, an array of separate switches controls the auxiliary equipment and lighting in the traditional manner, and the instruments are illuminated from the back of the panel, variable by a rheostat. The fuel tank, like the body, is mounted on rubber, and holds 13 gallons, the car's normal racing diet being 50-50 petrol benzole.

Photo : Keith Dannatt, F.R.P.S.

The Connaught is supplied tuned for road use, but both Rodney Clarke and Kenneth MacAlpine have raced M.P.P. 329 and M.P.P. 996 with considerable success, and these cars are shown in action in our illustration. Some modifications were made to the cars as raced, both having T.T. Amal carburetters in place of the 276 type, somewhat fiercer cam profiles, modified valve springs and tappets, larger exhaust manifolds and Lucas magneto in place of coil. First and second places were gained on the tricky Blandford circuit in 1949, the lap speed being 73.74 m.p.h. and a first and a second at Goodwood at almost the same speed. At Silverstone, on the Club circuit, Rodney Clarke lapped in 1 min. 45 sec. in the sports car relay race, giving a speed of 78.10 m.p.h. fastest in the race, and the two cars came home third and fourth in the Formula B event. At Chimay this year Ken MacAlpine was fourth in the first heat, but broke a rocker in the second heat. Altogether a most encouraging record for a new *marque*, and high hopes are now pinned by the firm on their new single seater, work on which has somewhat limited the appearance of the two-seaters in competition during the last months.



Continental Cars Ltd., concessionaires for the Connaught, have been most helpful in providing data and drawings of the cars, and it should be recorded that Rodney Clarke is himself keenly interested in scale models, particularly those of his own cars, so I hope in the not too distant future to be able to show him examples of readers' Connaught models in the pages of *Model Maker*.



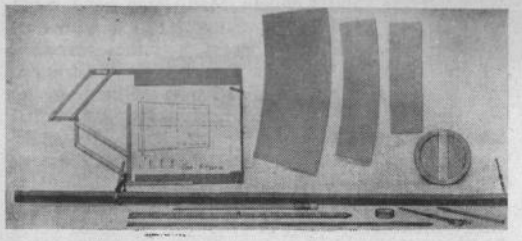
Wide angle shot 2¾ ins. wide on 3¼ x 2¼ in. roll film of room fourteen feet square, lighting two 100 watt lamps. Note both corners of room come into the picture !

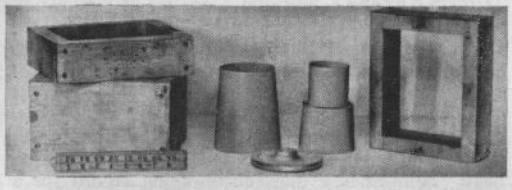
A UNIVERSAL CAMERA

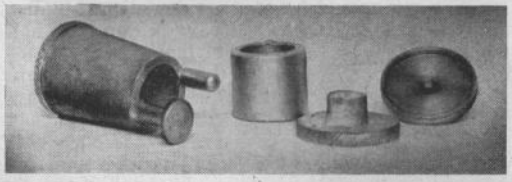
FOR STILL PHOTOGRAPHY

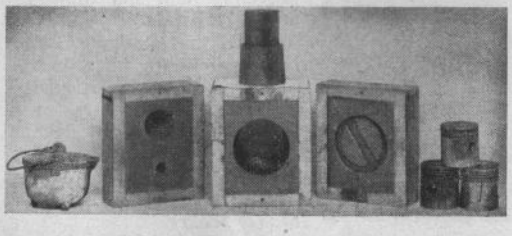
FURTHER WORKSHOP ADAPTIONS

BY J. F. CROLL









WHEN large castings have to be made the first query is can one obtain suitable wood for the patterns. This query was never answered. The amount of wood used consisted of a couple of feet of 6 in. x 1 in. floorboard from which was turned the flange portion of the lens cones and a rectangular block was cut for the camera front and another for the roll film carrier. The partitions in the last two were moulded with the aid of $\frac{1}{8}$ in. slips of wood pressed into the sand separately and withdrawn by the use of points into two scribers dug into the wood. The cones and lens screws were moulded in a novel and interesting manner by means of shapes cut from stout wrapping paper. In more detail the procedure for the 8 in. lens was to use three moulding boxes cut from some more of the same floorboard, one of them being nearly 6 in. deep, and the other two about 3 in. Then a wooden flange mould was pressed in flush with the top of one of the 3 in. boxes, a paper cone allowing for $\frac{1}{8}$ in. to be machined off, was cut, joined up with a transparent sticky tape, rammed full of sand, care being taken to keep it circular. This was then stood on the table and the 6 in. box placed over it keeping it carefully in the middle. The box was filled with sand and well packed down when the sand was pushed out of the paper cone and the paper withdrawn. Slight irregularities were carefully rolled out with a piece of 1 in. aluminium tube. The core box consisted of another paper cone and a cylinder made up separately again allowing for machining. Each was rammed full of sand and baked dry, when the sticky tape was stripped off and the paper removed. This completed the moulding and the mould was put together by standing the truncated cone in the middle of the impression of the flange. The baked cylinder was gently placed centrally in the cone and the deep box carrying the sand representing the outside of the mould placed over the lot.

On opposite page : Drawing, paper patterns, cones and wooden flange patterns.

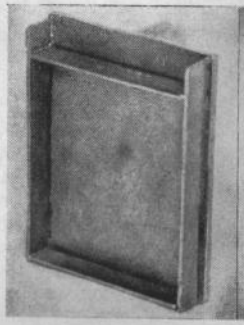
Mouldings, paper patterns and cones set up.

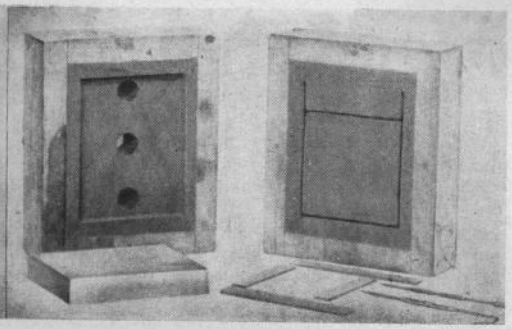
Castings for cone and lens screw, pattern and machined casting for mandrel jig.

The sand moulds and cones with raw material.

On this page : Casting and sand moulds.

Below : Some of the work done with the universal camera. Close-up of brass plated hull, and below shots taken of prototype boats at Bedford Regatta. Exposure F.8 at 1/150.

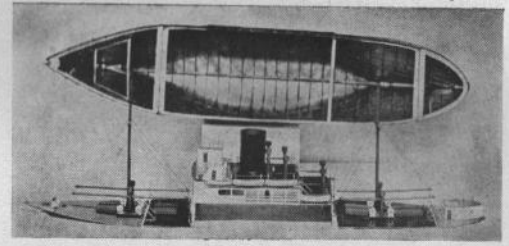


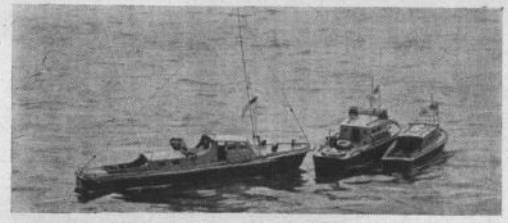


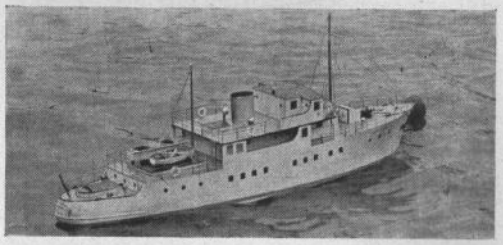
The third sand box was then filled and two 1 in. holes made for pouring in the molten metal and releasing the air. Then when a little damp sand had been sprinkled on top of the second box to seal the join, this third box was placed on top, note being taken that the two holes did connect with the body of the proposed casting. A sufficient number of old motor car pistons were then melted in a plumber's lead pot and the casting poured. Fifteen minutes later the boxes were taken apart and there was a nice clean casting ready for the Myford lathe.

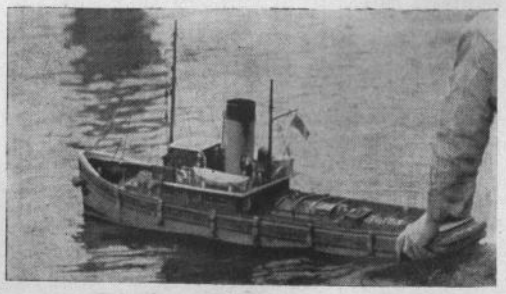
The first step was to face the flange and cut the 24-thread to fit the camera front. As it had been realised at the time that these lens cones would have to be set up in the lathe several times in connection with adjusting to the correct length for the infinity focus a special lathe mandrel was cast which screwed on to the lathe spindle and into which could be screwed by the 24-thread and all the lens cones in turn. Machining from this point was quite straightforward until the multi-start threads had to be tackled. The Myford has a $\frac{1}{8}$ in. threads per inch lead screw, and a standard set of change wheels will give all the threads mentioned above, but instead of a thread indicator being used the work itself was marked 1st, 2nd and 3rd thread, etc. As this was a one-off job each thread had to be fitted, therefore instead of cutting each start to full depth the same cut was taken on every start until the estimated depth had been reached, when a further two cuts were taken with no increase of feed to ensure smoothness and finish of depth by eliminating most of the effects of any spring existing in the tool lathe or holder. When the screws came to be fitted they were cut in the same manner, but a very considerable number of final scraping cuts had to be taken to ensure a good fit. A carrier for each lens was screwed internally to suit the particular lens, 24 threads per inch being the English standard. The telephoto lens being of the barrel type was completely enclosed in a tubular extension of its particular casting.

This story is quite simply told, but the number of castings that were scrapped as faulty or through poor machine work is nobody's business.



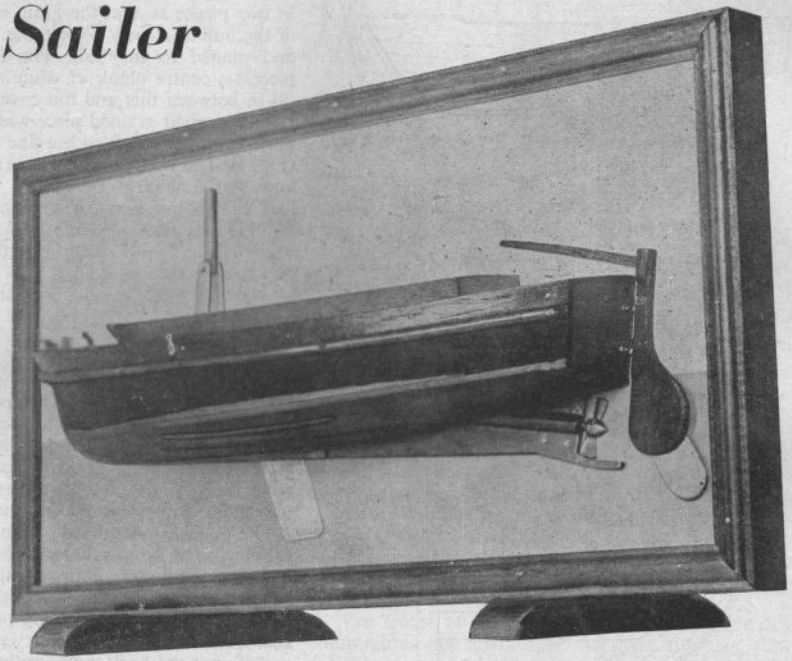






Making a Half Model Hard Chine Sailer

K. N. HARRIS SHOWS HOW A HALF MODEL CAN BE MADE FOR DEMONSTRATION OR DECORATIVE USE. THIS HARD CHINE SAILER IS ONE OF HIS PERSONAL "DREAM-SHIPS".



THIS is not a case of half a model being better than no model, and has nothing to do with half-finished models. No, this is about boats.

The half model may be made in a wide variety of ways for an equally wide variety of purposes. It can vary from a simple solid block model whose sole purpose is to show the "lines" in three dimensional form to a model built up in exactly the same manner as the prototype. It can be framed and part of the planking left off to allow the interior arrangements to be shown, it can be left in the natural timber or metal finish, or it can be finished in exactly the same manner as the prototype, whilst the fittings can be altogether absent, partially represented, or complete.

We are concerned here with a block half model of a general purpose hard chine motor sailer, three-quarter decked, fitted with a centre board, and drop pin rudder for use when sailing. Scale is $\frac{1}{2}$ in. to the foot.

The model consists primarily of one solid block with stem, had transom decking and coaming added.

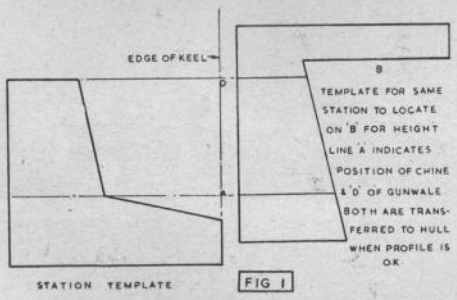


FIG 1

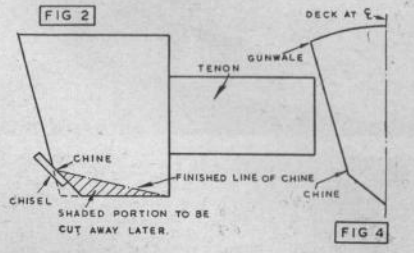


FIG 2

FIG 4

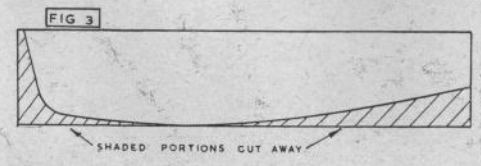


FIG 3

First of all a piece of timber was planed up true to an overall size just sufficient for the purpose. On the inside of this was marked the profile of the planked hull and vertical lines representing the stations at which the cross sections were drawn. The station lines were marked across the upper surface being careful of course to keep them at right angles to the centre line.

On the top surface the deck plan was drawn, and at the stern the transom was marked off. Reverse half sections were cut from Bristol board for each station.

To the inside face was screwed a piece of oak about 1 in. x $1\frac{1}{2}$ in. x 6 in. to act as a tenon by which to hold the block whilst shaping, this was fixed with its narrow edge to the block and, of course, well clear of any part which had to be cut away.

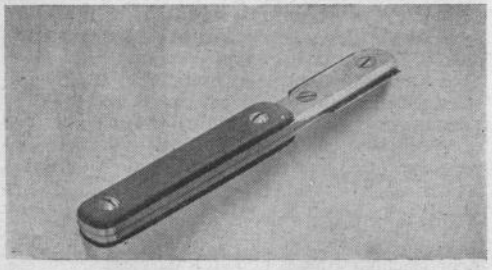
Then as much surplus material as could conveniently be removed with a saw was cut away, and with a long bevel edged chisel the embryo half full was pared away to the deck line. Note at this stage the fairing was at right angles to the upper surface, so that when the first stage was completed both top and bottom had the same outline.

Next a set of reverse templates were made giving the profile above the chine, and each with a hook piece by which it could be located at the correct height. Note that there is a "sheer" or curve along the deckline, but as this was not yet cut the templates were made to locate on the uncut top surface of the block (Fig. 1).

Paring was now continued working to the second set of templates, when all was fair the position of top of gunwale and of chine was at each station marked off on the block from the appropriate template.

The topsides were now finished outline. Taking care to keep well outside the finished bottom the block was pared away to the chine marks (Fig. 2). Next the block was cut away to the steel keel and stern profile (Fig. 3). This completed the boundaries of the bottom, and working with the templates it

A useful home-made razor blade holder described by the author.



was a simple matter to finish off to correct shape.

The last job on the block was to cut away to the sheer. It should be made clear that the profile marked out on the back of the block represented the deck on the centre line, the marks transferred from the templates indicate the gunwale line, these of course are not the same; take a cross-section, as through the bow decking, and you get something like Fig. 4. Cutting away to these lines must be carefully done. The well was not cut right out, but only about $\frac{1}{8}$ in. below line at coaming.

The whole surface was rubbed down with fine glass paper, and the topsides and bottom given a coating of "Alabastine". The "Alabastine" raised the grain like a ploughed field which entailed free use of quite coarse glass paper, a second filling with "Alabastine", and a third rubbing down.

The next job was to cut out the stem and keel. This could have been cut in one piece, but it seemed better to do the job properly, and a piece of mahogany was found with the nicely curved grain for the stem; planed down to just under $\frac{1}{16}$ in. thick and glued and pinned in its correct location on the hull block. The "keel" covered all the rest of the inside of the hull (Fig. 5).

The tenon piece had to be removed whilst fixing the stem and keel. When these were fixed it was temporarily replaced.

Now comes the stage of "putting bits on". The first was the transom made from a butt of $\frac{3}{64}$ in. straight grained mahogany with the grain running horizontally. This was made a little oversize, glued in place with Croid, and trimmed off when thoroughly set. The gunwale was the next item, and this was made in two pieces, using a piece of very thin cedar about $\frac{1}{32}$ in. thick which started life as a covering board for the bow end where the curve was pronounced, and a long piece for the balance where the curve was slight. Do not make the mistake of cutting a plank the exact width—it will not look the job. The method adopted was to take a piece nearly three times the width of the required finished plank, press it up around the bow deck line and run a chisel-pointed pencil around the deck edge to mark it, a second line $\frac{9}{32}$ in. away was marked parallel to this and the plank cut out with a safety razor blade held in a special holder, taking care not to cut into the grain, but always away from it. The finished plank was shaped roughly as Fig. 6; somewhat surprising until the solid geometry of the job is considered.

The second plank was made in the same way, but the amount of edge curve was, of course, very much less.

To fix the front portion it was necessary to find some means of holding the bow end, next the stem, tightly in place whilst the glue set, as the curve here was severe. To do this the tenon piece was removed and the hull screwed on to a backboard which projected well ahead of the bow, a short piece of wood was bevelled at one end to bear against the gunwale

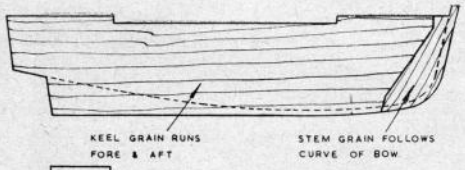


FIG 5

FIG 6

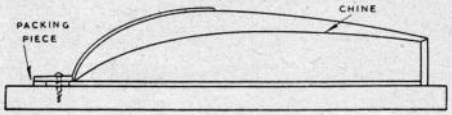


FIG 7

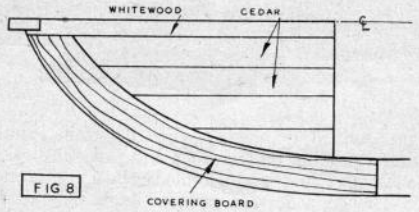


FIG 8

plank, a screw put through it, and a little packing piece put at its outer end. The inside of the plank and the surface on which it was to fit were coated with Croid, the bow end of the plank nipped down with the wood clip and so tiny brass brads driven through the plank, starting from the bow end. The second part required no special holding other than the brads.

The covering board for the deck was also made in two pieces so that the grain might follow the line of the hull as closely as possible. This too, was glued and pinned to the hull. The fore deck is in two pieces, a centre plank of white wood and a piece to fill in between this and the covering board of cedar. A nice straight grained piece was chosen and marked out for the "planks" with a fine chisel pointed pencil (Fig. 7). The rear deck had no king plank, but otherwise was similar.

The rubbing band was made by planing down half-way through a length of $\frac{1}{8}$ in. dowel rod. This was quite stiff, and had to be steamed to bend to the bow curve. It was glued and pinned in a similar manner to the gunwale, and the same means was adopted to hold the bow end in place whilst the glue set.

The coaming was cut from $\frac{3}{64}$ in. white wood, and glued in place. The breakwater was made from $\frac{1}{16}$ in. mahogany and was an awkward little brute as it is set at an angle two ways to a curved deck.

The rudder was built up from $\frac{1}{32}$ in. cedar with a recess for the brass extension piece and a thickened stock and head. The tiller was made from $\frac{3}{32}$ in. mahogany with a curved grain to suit its profile.

The decks, stemhead, transom, gunwale and rubbing band are bright varnished. The topsides are blue and the bottom copper painted. Before painting rubbing battens were fixed along the chine and below the bilges, whilst a thickening piece was fixed to the keel over the propeller shaft (strictly to the "deadwood", not the keel), and another to the keel in way of the centreboard.

Very thin shellac varnish was used, applying at least twenty coats with a pad. The topsides were painted with artists' oil colour thinned with turps., four coats. The copper finish was achieved by mixing a little bronze powder with a drop of turps. A coat of gold size was first given to the part to be coppered. As soon as this was tacky the copper paint was applied with a soft camel hair brush.

The chine was mounted on a back board painted sea green to waterline with varnished moulding round it, and set on two mahogany bracket feet.

Try a simple "half model", and you will be surprised what a pretty job you can make of it.

A SYNCHRONISED FLASH AND SHUTTER CONTROL UNIT (*Continued from page 81*)

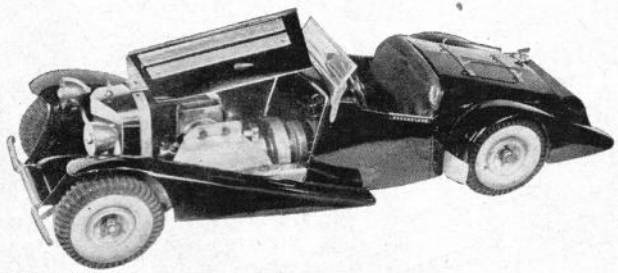
The interior switching mechanism for the flash-bulb has now to be adjusted. Connect up the bulb and put the test-bulb into circuit. (N.B.—The test-bulb is in circuit when the contacts of the test-switch are *open*). The arm *X* should now be slowly released by hand and the interior switch arranged so that the shutter opens *just* before the test-bulb lights. The bracket operating the switch can be arranged to slide along the arm and so allow a certain amount of adjustment, but when the correct position has been found, it should be firmly fixed to the arm. With the arm in the "set" position the interior switch arm should be resting on the right-hand contact.

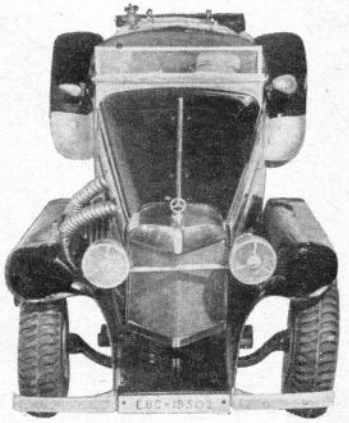
When actually using the synchroniser, the box may be placed on the ground at the side of the camera, or affixed to the tripod; alternatively, the camera and flash-bulb can be mounted on the side of the box, thus making one complete unit.

The apparatus should be tested at least once before using, but don't forget to close the test switch before making the actual exposure, and also see that there are no acute bends in the cable release! A 10 in. cable release will overcome any difficulty in this respect. The camera shutter preferably should be set at 1/5 sec. or 1/2 sec., but the synchroniser will work quite efficiently at 1/25 sec. or less.

Mercedes 540k

By E. Clamp





THE "Model of the Month" series, a regular feature in *Model Cars*, has dealt with many types and sizes of model, but in the main the accent has been on cars to which we have come to refer as "scale" type, meaning that they have realism; to a greater or lesser degree they resemble full-sized vehicles. This policy is in no way intended to decry the full-blown "hundred-plus" racers, for the workmanship and performance of which we have nothing but admiration. The fact remains, however, that design in this class tends to standardisation, the differences in performance lying in subtleties of fitting, tuning (and chemistry!) beyond the powers of the camera to portray, whilst the "scale" types have much of general interest to offer to a wide section of readers.

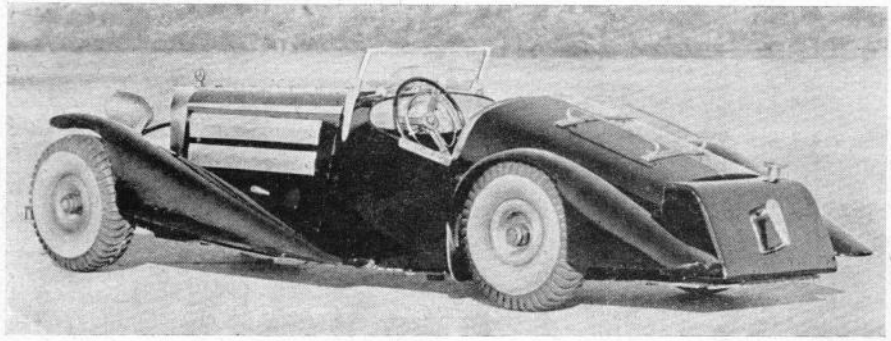
The model Mercedes we are presenting this month is outstanding in several ways. While it does not claim to be a true scale model, it gives to an uncanny degree the impression of the car that inspired it, that potent Mercedes which was, in pre-war days, almost a badge of high rank in the Nazi Party, and some years later the sign of eminence in the "Mil. Gov."!

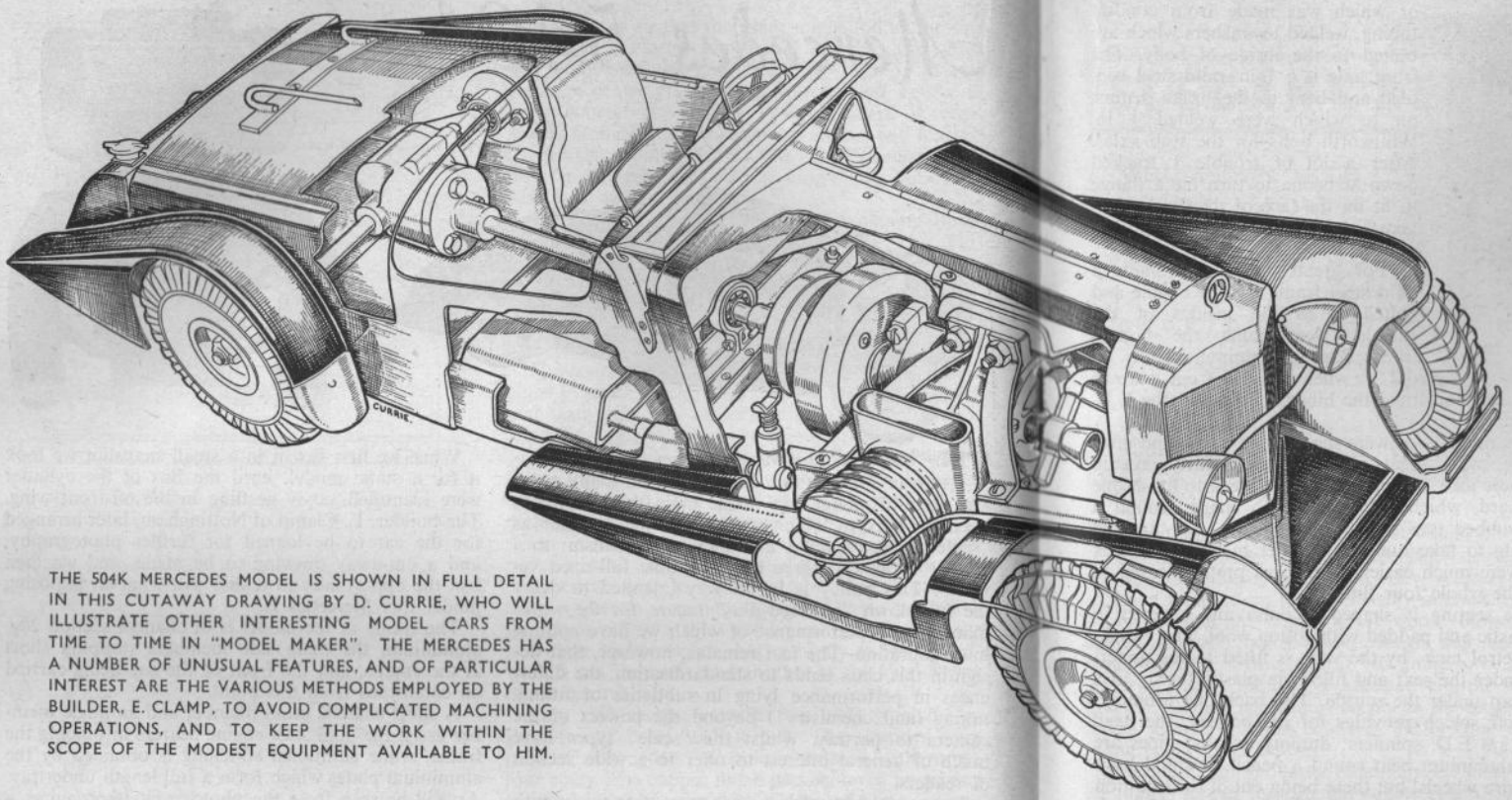
When we first saw it in a small snapshot we took it for a static model, until the fins of the cylinder were identified, coyly nestling in the off-front wing. The builder, E. Clamp of Nottingham, later arranged for the car to be loaned for further photography, and a cut-away drawing to be made, and we then had the opportunity to realise just what an imposing model this Mercedes is.

The frame of the model is of channel section 20g. aluminium, the main side members stopping short at the engine, and the front of the car being carried on extensions from this point.

A short channel cross member and an angle member assist the mild steel engine bearers in bracing the frame, while additional stiffening is obtained by the aluminium plates which form a full length undertray. As will be seen from the photographs the engine, a 10 c.c. Conqueror, lies horizontally athwart the chassis, and is much too large to go in between the frames. The solution, that of allowing the barrel and head to project into a cutaway in the off wing, is not perhaps ideal, but is certainly ingenious and not too glaringly obtrusive, particularly as the large flexible

Model Maker Photos





THE 504K MERCEDES MODEL IS SHOWN IN FULL DETAIL IN THIS CUTAWAY DRAWING BY D. CURRIE, WHO WILL ILLUSTRATE OTHER INTERESTING MODEL CARS FROM TIME TO TIME IN "MODEL MAKER". THE MERCEDES HAS A NUMBER OF UNUSUAL FEATURES, AND OF PARTICULAR INTEREST ARE THE VARIOUS METHODS EMPLOYED BY THE BUILDER, E. CLAMP, TO AVOID COMPLICATED MACHINING OPERATIONS, AND TO KEEP THE WORK WITHIN THE SCOPE OF THE MODEST EQUIPMENT AVAILABLE TO HIM.

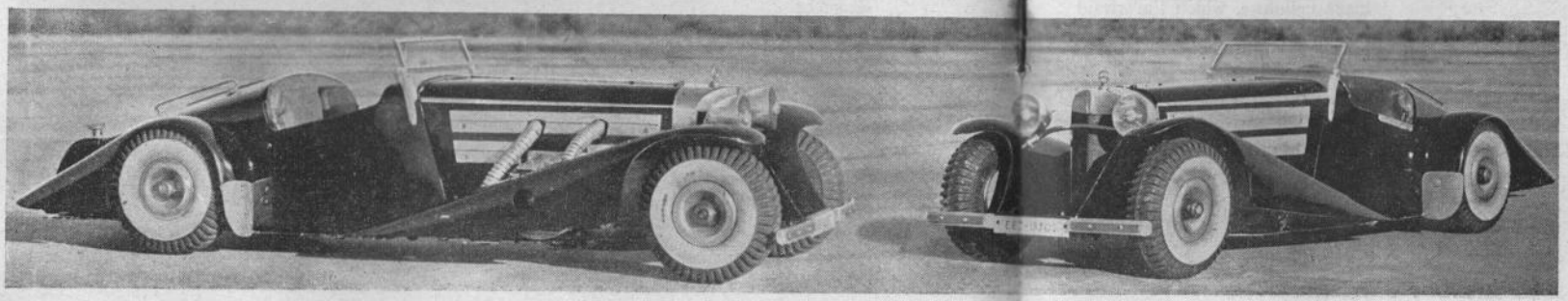
exhaust pipes partially conceal this unusual feature.

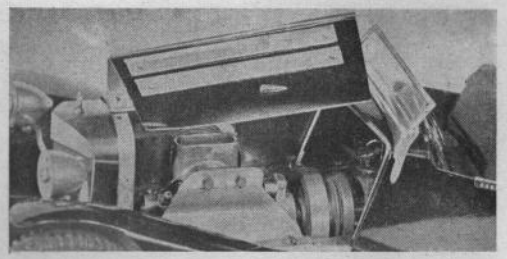
A surprising point is the adoption of direct drive as opposed to the use of a clutch. (We feel that so majestic a model may reasonably be expected to jib at the indignity of a "push stick" start!) However, this is again a matter of taste, and in no way detracts from the model's interest.

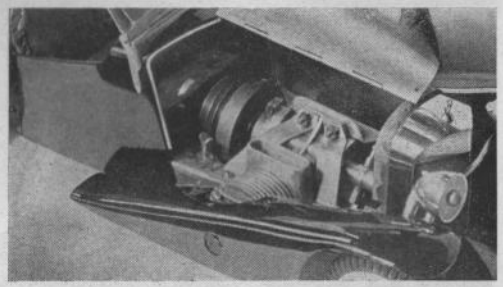
The most remarkable fact, however, is the equipment with which the model was produced. Let those readers who complain of the inadequacy of their own workshop take heart from the fact that the "workshop" which produced the 540K consisted of a stool, a small portable vice, and a handbrace! We leave the builder to describe some of his ingenious shifts to overcome the lack of machine tools.

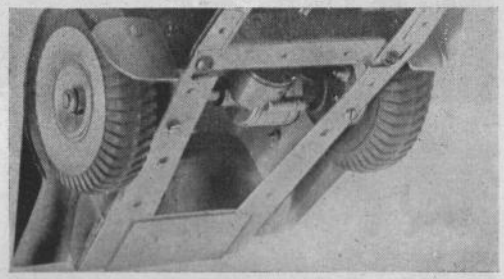
"I had made an Aston Martin sports car when I joined the Nottingham M.C.C., and at that time we had no permanent track. Early in January I started to draw the plans of my idea of a Mercedes Sports 540K.

"I made the radiator from a strip of stainless steel, bent by hand, using a cardboard template for size and shape. The gauze mesh I bought from Woolworths; the body scuttle was cut from 20g alum. with a flange turned under to bolt under the chassis. The back part of the body is made in two halves, and joined down the middle with four 6 B.A. screws.







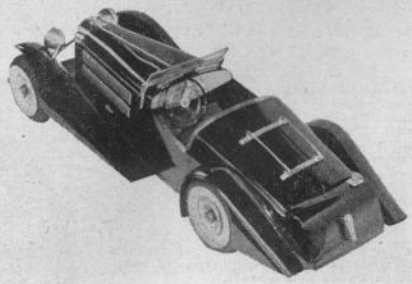


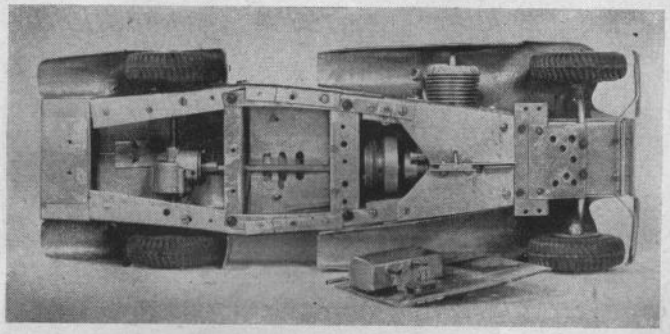
(Above) Two views of the underbonnet arrangements showing the special mild steel engine brackets and the scuttle fuel filler cap which feeds into the working tank.

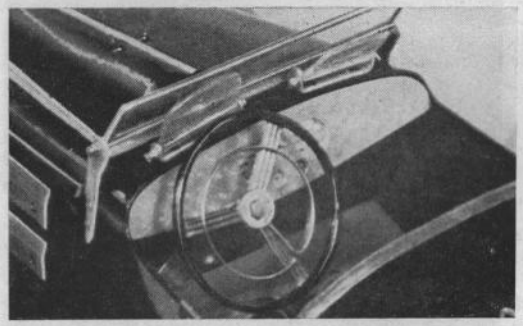
In the underside view the fabricated ball race housings can just be seen.

(Below) Apart from the out of scale wheel nuts it would be difficult to distinguish the model from its massive prototype.

Model Maker Photos







This also has a flange turned under and bolted to the chassis, the body sides not being riveted to facilitate putting the body on and off the chassis. The back axle was the next item, using 0.75 to 1 ratio bevels, and fitted with two outrigger ballraces, the housing of which was made from conduit tubing, welded to washers which are bolted to the inside of body. The front axle is a $\frac{1}{4}$ in. mild steel rod, filed and bent to the brake drums, on to which were welded $\frac{1}{4}$ in. Whitworth bolts for the stub axles. After a lot of trouble I tracked down someone to turn me a flange to fit on the face of the flywheel to take a $\frac{1}{4}$ in. silver steel shaft to the gearbox.

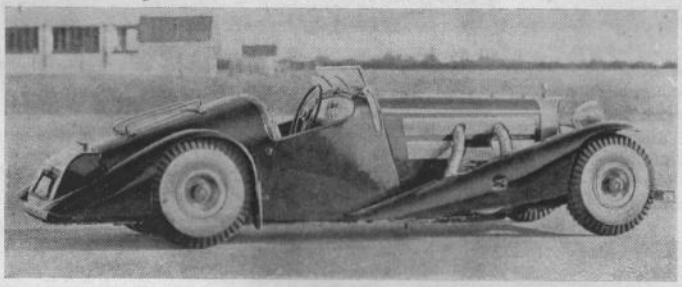
"For greater strength I made a mild steel frame for the engine and bolted it to the insides of the chassis. Next came the bonnet from 22g aluminium, bent to shape over a chair! . . when satisfied I cut it down the middle and fitted the hinge. I cut away the L.H. side later.

"The mudguards were the last big effort, and after wasting several sheets of aluminium I nearly gave up the whole job! It took me a whole week to finish one mudguard, which I hammered to shape around a solid rubbed tyre off a dinner wagon, and finished by filing to take out the hammer marks. The back ones were much easier, and I was pretty pleased to have the whole four finished.

"The seating is shaped in balsa and covered in red plastic and padded with cotton wool. The "working" petrol tank, by the way, is fitted to the undertray under the seat and filled via plastic tubing to a filler cap under the scuttle. The back one (dummy) takes off, which provides for the battery; the head lamps are E.D. spinners; dummy exhaust pipes are scrap aluminium bent round a pencil. I would have liked wire wheels, but these being out of the question I bought Dunlop 9.00 x 13 track grip wheels. How these will behave I have no idea! The engine used is a 10 c.c. Conqueror.

Here are some measurements: Wheelbase 13 in., track 6 in., overall length $19\frac{1}{2}$ in., overall width 7 in., height from ground $4\frac{1}{2}$ in., weight less bridle $6\frac{1}{2}$ lb.

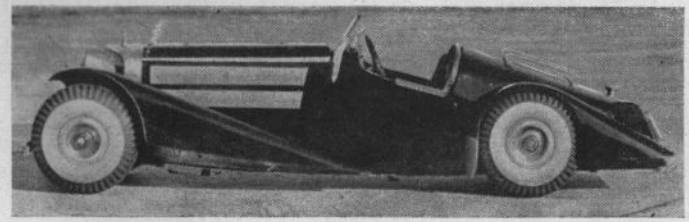
"The body finish I had sprayed black cellulose, which I'm afraid I spoilt by coating with fuel proofer."



(At top of page) A general "worm's eye view" with the rear shielding removed to show the axle casing and long propeller shaft. The fuel tank is seen attached to the centre undertray. The cockpit fittings are excellently carried out.

Model Maker Photos

Above and right are views of the car from off and near sides. Apart from the wings, all panels are simple bends.



ELEGANT REBUILDING

A WELL KNOWN MODEL ENGINEER REBUILDS AN OLD HORIZONTAL STEAM ENGINE

Described by

C. STRATFORD MASON

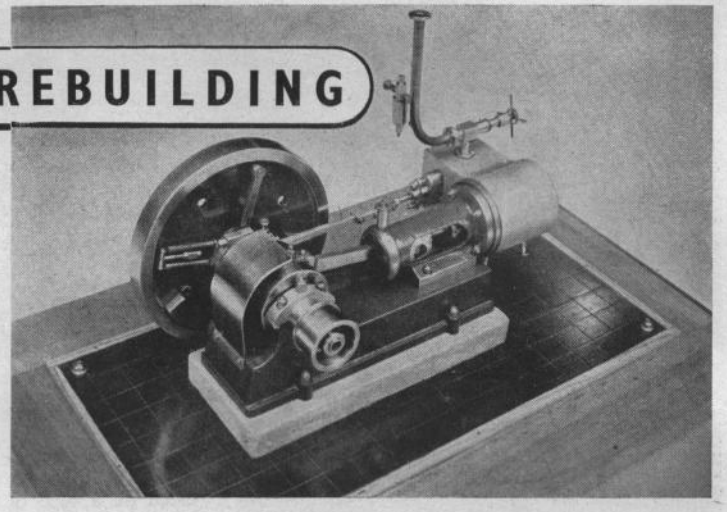


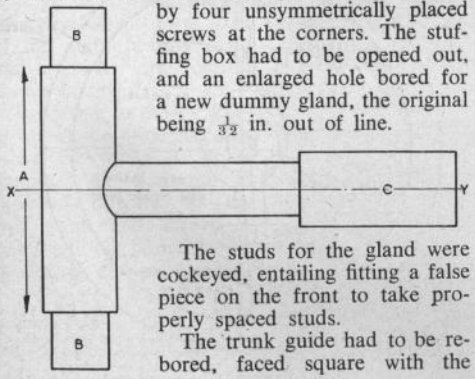
Fig. 1. The completed rebuild of an old horizontal engine. Attention to detail is the making of such models, particularly with such items as the base, so often scamped by the over eager.

THIS little engine started to be a rebuild of one of ancient vintage and considerable decrepitude which came into my possession a few years ago.

When I started on the job I really intended merely to recondition the engine as it stood. However, I found so much faulty work, design and material, that it became obvious that it was going to be a case either of "scrap the lot" or alternatively, the sort of "rebuild" which sometimes occurs in the locomotive world wherein all that is left of the original engine is the bogie wheel centres!

I decided upon the latter course. In the final event, all that is left of the original engine is the cylinder, steam chest and trunk guide.

The cylinder was re-bored and had its ports squared up and enlarged, its passages increased in size and the port face re-surfaced. The steam chest had to be faced up square, its opening increased to allow of sufficient valve travel for a valve with long lap, and re-drilled, as it had originally been held on by four unsymmetrically placed screws at the corners. The stuffing box had to be opened out, and an enlarged hole bored for a new dummy gland, the original being $\frac{1}{32}$ in. out of line.



The studs for the gland were cockeyed, entailing fitting a false piece on the front to take properly spaced studs.

The trunk guide had to be re-bored, faced square with the

Fig. 2. The new bed in front of the original one. The designer's aim in the original would appear to have been to separate cylinder and crankshaft by the greatest possible length of cast iron bed.

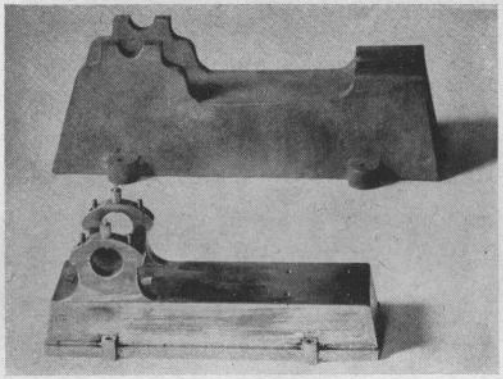
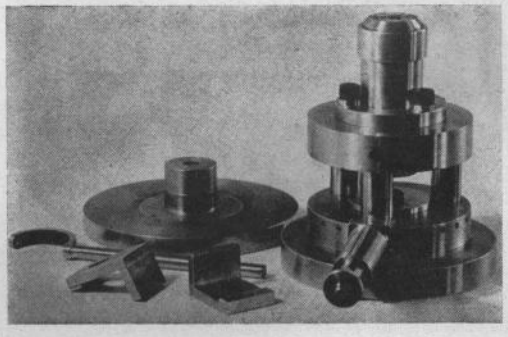


Fig. 4. Vertical collet holding fixture and plain divider.



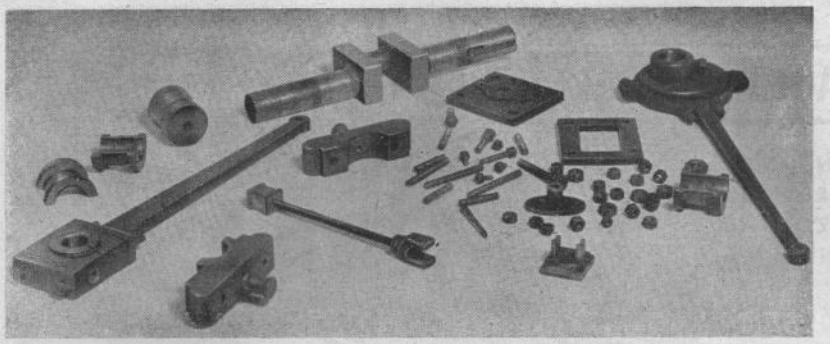


Fig. 3. Some of the parts discarded from the original engine. Though really a harder task to remake an old-timer like this than start an entirely new project there is a certain satisfaction in creating order from chaos.

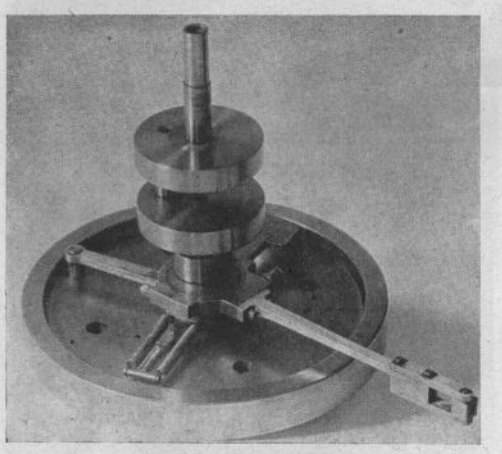
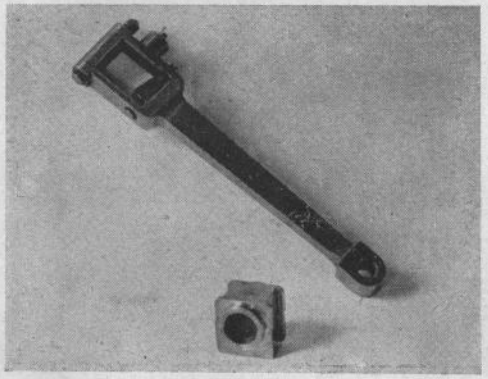


Fig. 5. Crankshaft, flywheel, governor gear and eccentric assembly.

Fig. 9. Connecting rod with brasses shown dismounted.



bore and the bolting face squared up to match.

That work done, I had the guts of a passable engine, and I began to theorize. My theorizing was about the form the engine should take, and I decided on a type of small horizontal engine to be found in many small works and factories at the end of the Victorian era. The first new job to tackle was the bed. As I have no love for pattern making where it can be avoided, I decided on a built-up job, the basis of which was a length of 2 in. x 1 in. x $\frac{1}{4}$ in. brass channel. All the neadings, bearing housings, lugs, etc., are made separately and pegged and sweated in place.

The clearance race for the big end of the connecting rod was cut out with a 3 in. x $\frac{1}{2}$ in. side and face milling cutter, but it could of course have been done with a fly-cutter in the lathe.

The built-up crankshaft was the next job. Each web and its shaft was turned from the solid, and a separate crankpin was made a press fit between them. The webs are circular, and the crankpin is locked by round keys.

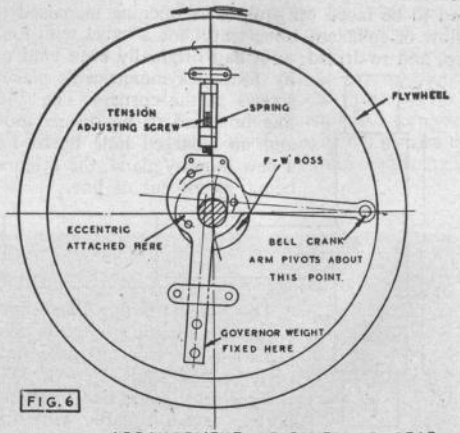


FIG. 6

ARRANGEMENT OF GOVERNOR GEAR.

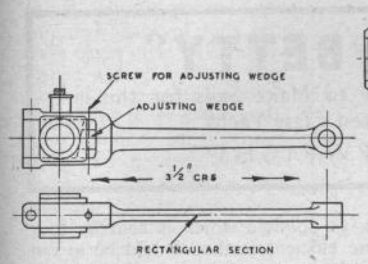


FIG. 8 CONNECTING ROD.

The trunk guide is susceptible to a very simple method of obtaining really accurate alignment. The method is to make a "Tee" piece as sketch.

The cross arm had its ends turned to fit the bearing housings on the bed, the length A being exactly equal to the space between them, and the axis XY exactly bisects this distance.

The single arm of the "Tee" has an enlarged portion C, which is a good sliding fit in the bore of the trunk guide. The most essential point to watch and one upon which the valve of the fixture is entirely dependent, is that the centre lines of the two limbs shall be exactly at right angles one to another and shall intersect.

The fixture is first set in the bearing housings and the caps of the latter are fitted, then the trunk guide is slid on to the portion C and located in its correct longitudinal position relative to the axis of the crankshaft. It is then clamped on to the bed, and the holes for its front holding down bolts spotted through on to the top surface of the bed itself after the trunk has been temporarily bolted in position with turned fitting bolts.

A small groove is turned around the centre of each phosphor bronze bush and a series of small holes drilled through to allow passage of oil from the lubricators which form part of the main bearing caps, and which are clearly shown in Fig. 7.

Reverting to the flywheel governor the principle upon which it works is quite simple. The eccentric is fastened directly to the bell crank, and instead of being a fit on the crankshaft a slot is cut in it which

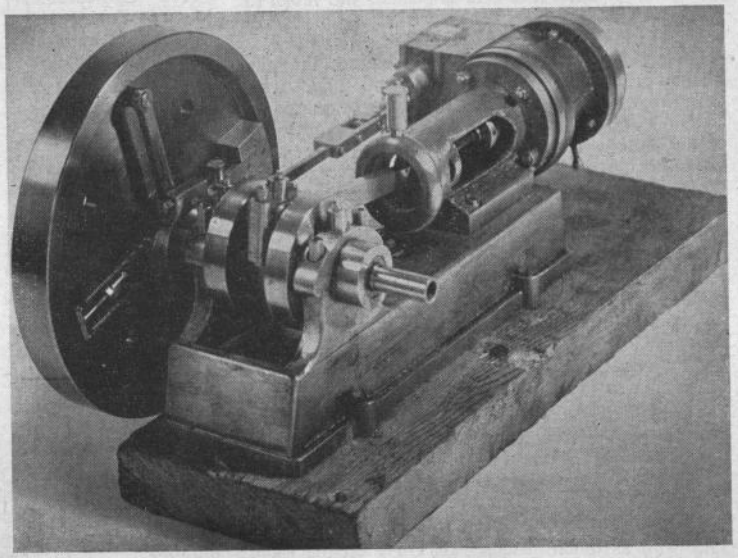


Fig. 7. The rebuilt engine set up for preliminary testing. The floating bush bearings can be clearly seen. The outer portions are steel bushes, dowelled to prevent rotation : inner portions are phosphor bronze.

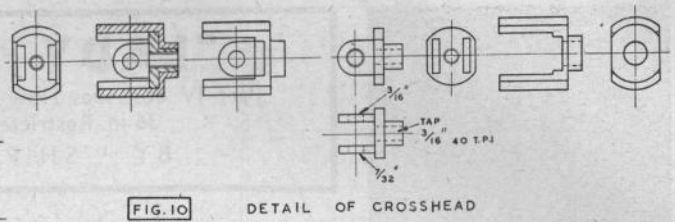


FIG. 10 DETAIL OF CROSSHEAD

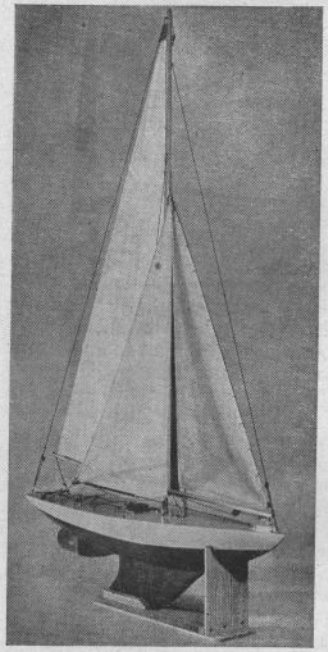
allows it in effect to vary its eccentricity or travel. The path of this slot is so chosen that though the travel varies as the eccentric moves along the slot the timing of admission remains the same. One arm of the bell crank is pivoted to a point near the rim of the flywheel about which it can rock to an amount allowed by the slot in the eccentric, to the end of the other arm is affixed a weight and directly in line with this, but on the other side of the crankshaft are attached two tension springs which are adjustable.

The flywheel is of the "plate" type, as the eccentric assembly is carried by the flywheel. Very accurate eccentric setting is easy as one can work from a flywheel rim 5 in. dia. instead of from an eccentric about $1\frac{1}{8}$ in. diameter.

The flywheel is held in place on the shaft by means of a setscrew and a saddle key.

The connecting rod detailed in the drawing in Fig. 8 and pictured with its loose brasses in Fig. 9 is of a type for which I have a great personal liking, for it is strong and comparatively simple, its centres are $3\frac{1}{2}$ in. = $3\frac{1}{2}$ times stroke, which gives a low angularity and consequent low loading on the crosshead.

(*Continued on page* 124)



"LADY BETTY"

Part IV describes How to Make Sails for this 36 in. Restricted Class Yacht

BY "SHIPWRIGHT"

★ Full size dyeline drawings of hull profiles, body plan and half-breadth plan are available price 7/6d. from the publishers.

Further instalments will cover the Braine Automatic Steering Gear; Painting, Varnishing and French polishing; Theory and Practice of Model Yacht Sailing.

THE primary function of a sail is to propel the model, but to achieve this object in the most efficient manner other factors enter into the matter.

It is thought by many that the wind blowing against the weather side of a sail causes the vessel to move forward. While this is true of a square sail it is not so in the case of a fore and aft sail.

Of late years aerodynamics have entered into the calculation of a yacht's sails, and wind tunnel tests have proved that the jib of a racing yacht causes an area of negative pressure to act on the leeward side of a Bermudian main sail. This negative pressure or, more correctly, suction, has from three to five times greater forward propelling momentum than direct wind pressure on the windward side of the sail.

To obtain the maximum effort the jib foot should be one third of the length of the main boom, and should cover the latter by a quarter of the length of the boom, thus obtaining what is known in aeroplane circles as a "slot effect".

This overlap is very apparent in any photograph of a full size racing yacht. The "Dragon" class is a typical example.

Unfortunately this cannot be carried out on a model as there is no one on board to pass the jib foot forward of the mast when going about, and, therefore, a certain amount of efficiency must be lost.

We can offset this somewhat by cutting a model's sails with as much "roach" i.e. curve on the leach or trailing edge, as possible which is held by four battens. A more efficient method would be to cut our sail with a most pronounced roach, like a bird's wing, but this would entail the fitting of many battens if we wish to prevent this curved edge from collapsing.

We must, therefore, do the best we can by cutting our sails as well as we are able to ensure that they retain their shape, and also remembering that the jib sail, e.g. if the main boom is set at 450 to the fore should always be slackened off more than the main sail, e.g. if the main boom is set at 45 deg. to the fore and aft centre line, the jib clue—or boom—must be at 50 deg. This is important to preserve the "slot" effect.

Material for Sails. The first consideration is the selection of material. "Union Silk" is specially woven from the finest Egyptian cotton for model yacht sails and although in short supply is still procurable. Messrs. Lance and Mullett of Brighton, I believe, can now supply.

An enquiry addressed to the following firms mentioning this book will receive courteous attention:—

Messrs. Bassett Lowke Ltd., St. Andrew Street, Northampton.

Messrs. Lance and Millett, 16 Meetinghouse Lane, Brighton.

The spinnaker should be made of lighter material and parachute silk is admirable.

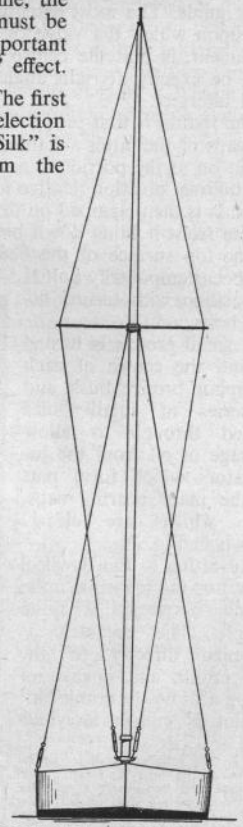


FIG. 26. WIRE STANDING RIGGING

In order to preserve the original shape of sails certain edges must be carefully taped with $\frac{3}{8}$ in. linen tape as will be described later. A supply of large dress hooks and some $\frac{3}{16}$ in. luff rings will also be required, the former from a drapers, but see that they are large ones; and the latter from the above firms.

MAKING-UP. Fig. 25 is a reduced sail plan, but as the actual lengths of the various sides are given in the encircled figures together with a scale of inches the dimensions should be readily accessible.

These dimensions are the size of the finished sail so when marking out allowances must be made for the hem.

The best way to mark out the material is to pin it without stretching it to a table top or lino floor. Then with a soft BB pencil mark the outline allowing twice the width of the hem for turning in. Also allow $\frac{1}{8}$ in. of hollow in all luffs, i.e. the forward edge of the jib and that part of the main sail against the mast, as this ensures a flat setting.

A sewing machine should be used, and the help of a lady member of the household should be enlisted for this part of the work.

Use the smallest hemmer available, and silk is preferable to cotton for all machine work.

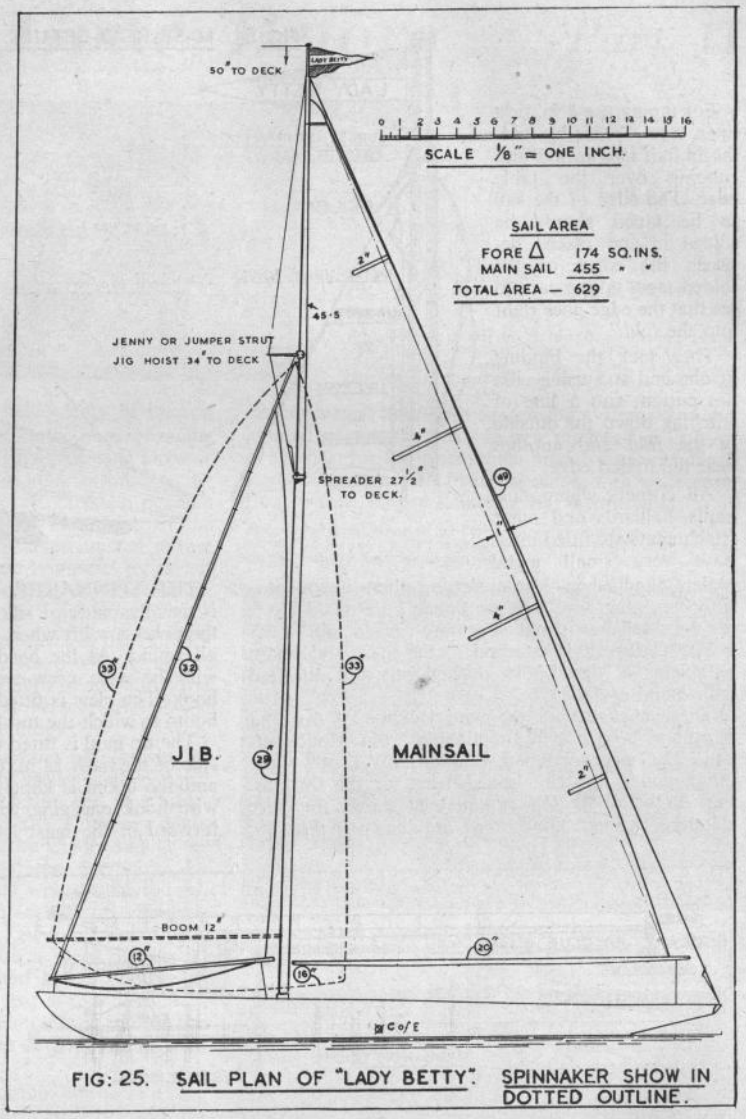


FIG: 25. SAIL PLAN OF "LADY BETTY". SPINNAKER SHOW IN DOTTED OUTLINE.

The jib is loose footed, and to prevent the foot from rising it is cut with a pronounced curve which is taped with a straight tape from tack to clew, the rounded foot being hemmed only. The luff is taped, but the leach hemmed. The tack is lashed to the outboard end of the jib club, but the clew, or inboard end is stretched by means of a hook, line and bowser, the hook engaging with an eyeletted hole in the clew. Luff rings are fitted through which the forestay is passed, being tightened by means of the jib halliards fitted to a double hook engaging with a screw eye on the mast.

The main sail is taped at foot and luff. Cut the foot with $\frac{1}{8}$ in. of hollow to ensure a good set. Fig. 5 shows the head of the main sail which is fitted with a metal head-board, the height of which must not exceed 1 in. To this head-board is attached the mainsail halliard.

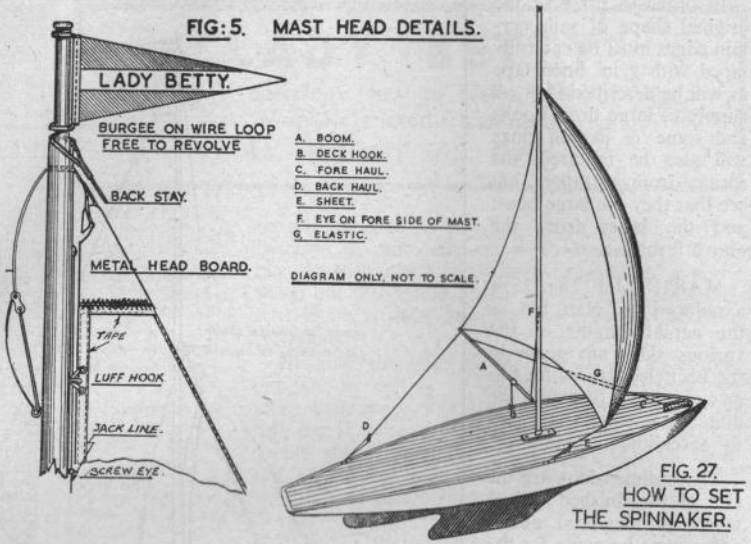


FIG: 5. MAST HEAD DETAILS.

For taping use ⅜ in. best linen tape. Crease by folding in half lengthways and rubbing over the table edge. The edge of the sail to be taped should be folded in and placed between the edges of the folded tape, taking care to see that the edge goes right into the fold.

Then tack the binding at one end and using silk, not cotton, run a line of stitching down the outside of the fold and another near the folded edge.

All corners where out-hauls, halliards and other attachments are fitted must have very small metal eyelets punched in. Use eyeletting pliers if you possibly can, otherwise a centre punch on a metal block can be used, but it makes a more ragged job.

The main sail is attached to the mast and boom by means of dresshooks opened out and attached with metal eyelets.

These engage with the wire jackline of 6-strand phosphor bronze wire obtainable from Modelcraft Ltd., 77 Grosvenor Road, London, S.W.1, at 2/- per 30 ft. coil. This wire is also used for the shrouds. Fig. 26 which is self explanatory shows the wire standing rigging. The booms are shown in Fig. 10.

FIG. 27. HOW TO SET THE SPINNAKER.

THE SPINNAKER.—As already mentioned this is usually made of silk as it is cut very full to give the necessary lift when running. This sail is hemmed all round. At the head is fitted a hook to engage with the same screw-eye as that carrying the forestay hook. The clew is fitted to the end of the spinnaker boom to which the out-haul and back-haul are fitted.

The up-haul is fitted to a screw-eye on the forward side of the mast 12 in. up from the goose-neck band, and the boom is kept in place by means of a long wire hook engaging with a gunwale eye fitted just forward of the mast line, one on each gunwale for port and starboard positions. Reference to Fig. 27 will make the setting of this sail clear.

When in use the spinnaker is carried right around of the forestay, as when running the jib is inoperative and should have the jib sheet slacked off.

THE CARE OF SAILS.—After the first few hours in use sails will have stretched to their working shape. Never roll up sails when damp. After sailing hang them up until thoroughly dry, then roll them loosely around their booms having slacked off all out-hauls to relieve stretching strains.

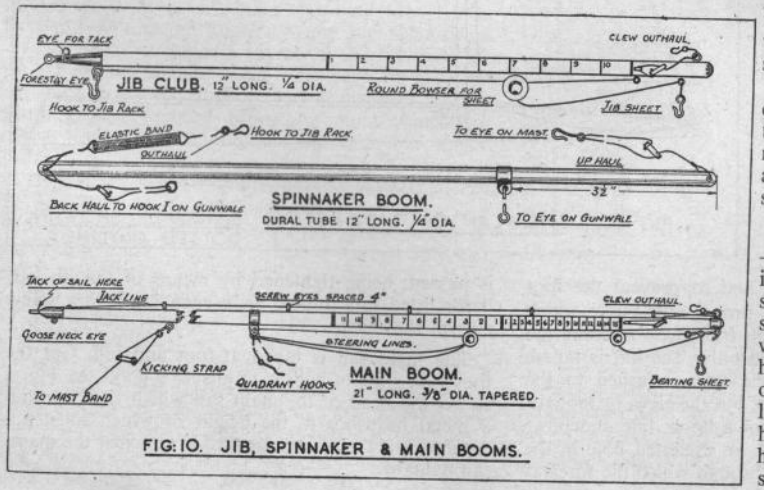


FIG: 10. JIB, SPINNAKER & MAIN BOOMS.

What's Gone Before — Part 11

THE STORY OF THE MODEL CAR MOVEMENT CONTINUED THROUGH 1948 AND 1949

by G. H. DEASON

Distinguished visitors to "Model Cars" headquarters at the B.R.D.C. Exhibition. Left to right, Earl Howe, The Duchess of Devonshire, Countess Howe, and the late Sir Malcolm Campbell, examine Mrs. Gascoigne's M.G.

THE early months of 1948 held plenty of interest for model car fans, even before the outdoor racing season began. In January the British Racing Drivers' Club held a fortnight's exhibition of historic racing cars at Henley Hall, Osnaburgh Street, to which *Model Cars* was invited to show something of the new hobby to the big-car folk. This created a vast amount of interest, and we were honoured by a visit from H.R.H. the Duke of Kent, who inspected an array of models in company with Earl Howe.

Early in February the opening meet of the Edmonton M.C.C. was held at the Rego Works, Angel Road, the club going from strength to strength from the word "go", until it has at present one of the largest memberships in the country.

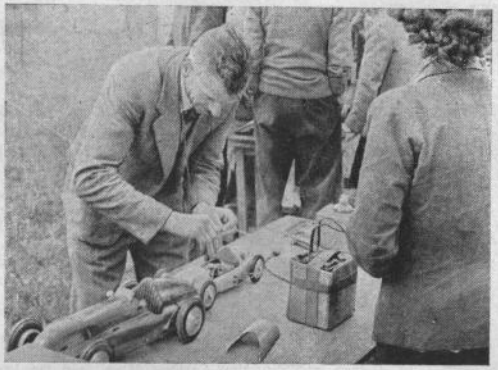
The Pioneer Club held a number of pleasant indoor meetings during the early spring, and in April the Model Car Association was launched at a meeting of club representatives at the Kingsway Hall, Bob Curwen being elected to the Chair, and G. E. Jackson, of the Derby Club, as Hon. Secretary.

The outdoor racing prospects were bright indeed. Although as described last month, L. S. Pinder's McCoy engined three-wheeler "Rednip" had rounded off the previous autumn with a speed of over 80 m.p.h., the new car, Topsy, had had a number of outings before the close of the year at over 90 m.p.h., and was plainly going to shake things up on the 70 ft. tracks, as F. G. Buck was determined to reach three figures first.

He was not alone in this ambition, however! There were few, if any, other contenders with British built engines, but the powerful American racing units were by now finding their way fairly freely into private owner's hands, and a number of Anglo-American models were being developed with the 100 m.p.h. mark in view. The most menacing of these was probably J. Gascoigne's Red Arrow II, which employed open-bevel gearing and a 10 c.c. McCoy, housed in a fabricated steel frame. Topsy, on the other hand, was spur-gear driven, and a shade lighter. Neither car concerned itself with suspension systems, and the inflated pneumatic tyre was now regarded as a thing of the past for the speeds such models were reaching. Red Arrow appeared from the outset with knife edge front wheels, Topsy following suit a little later.

(Below) A typical scene at the first M.G. Trophy meeting. R. A. Hinks starting up his son's Mills "Whippet" in the first round, prior to making the best "1.3 c.c." run of the day.

That great motoring sportsman and journalist "Sammy" Davis presents the M.G. Trophy, a bronze replica of the Magic Midget, to B. C. Miles, its first winner.



A notable competitor in open meetings with his team of fine scale models was H. C. Wainwright, seen above with the E. Type E.R.A. and his wife's 5 c.c. Mercedes.

Before the battle of the giants was joined, however, the season opened at Eaton Bray with the first race meeting in the country to be held for under 2.5 c.c. cars only. Some little while previously I had been at Abingdon as a guest of the M.G. Car Co., and when they offered a trophy for model car racing they agreed to my suggestion that this should be offered as an encouragement to the builders of smaller and less expensive models, which I believed would greatly extend the scope of the hobby. Considerable doubts were expressed as to the suitability of engines of under 2.5 c.c. for racing, or even propelling a car at a reasonable speed, but when the meeting was held, it was seen that these little machines had distinct possibilities, and B. C. Miles managed 41.7 m.p.h. with a very presentable looking model powered with the new E.D. Mk. III diesel unit, which he had helped to develop. The new class promptly achieved official recognition and has proved immensely popular.

By now a number of complete American racing models of a high calibre had arrived in the arena, and one of these, in the hands of W. S. Warne, took the stage at the Austin Trophy meeting, which that year was decided on an average of two quarter-mile runs. This led to the undoing of Topsy, as a first run of just over 75 m.p.h. spoilt the advantage gained by F.T.D. in the second round at 91.84 m.p.h., and the winner proved to be Bill Warne's Dooling, with an average of 89.11 m.p.h. Close behind was Jack Gascoigne's "Red Arrow II" at 85.4 m.p.h., and third place went to Peter Hugo's Dooling Hornet, he having recently arrived from South Africa.

This meeting marked the beginning of the American ascendancy in British Speed contests, and set organising secretaries the task of finding other forms of contest than those decided on sheer m.p.h., in order to retain the interest of the ordinary club member and the home constructors. This proved no easy task, and although a number of solutions have been tried, the problem still exists, despite the segregation of British from "Open" classes. The only real answer seems to lie in the building of models capable of holding their own with the American jobs, since there are no secrets in their make-up, or in introducing conditions more akin to real motoring and less to Land Speed Record attempts.

The Meteor M.R.C.C. had by now been formed in Stoke-on-Trent, with a strictly limited membership and a strong bias towards home constructed models. Nottingham, Ossett, Otley, Bradford, Hooton and Derby were opening their first full seasons, and the Luton fraternity adopted the title of the Chiltern M.C.C., running meetings at Eaton Bray pending the completion of their Woodside track.

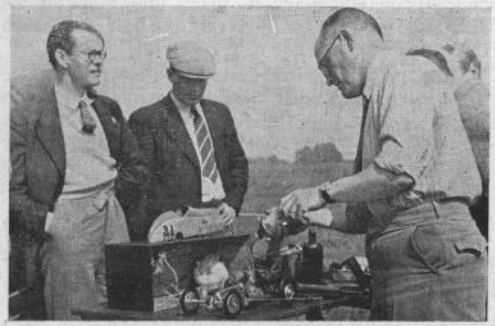
By the end of the season there were many more clubs in existence, Bolton having opened their ambitious car and loco. tracks at Leverhume Park, and Harrogate, Eastbourne and Leicester were amongst others to report activity.

1948 saw, among other advances, the adoption of the glo-plug for model car work, leading to further simplification of models. The magneto in miniature form had plenty of adherents, but many of the fastest models clung to coil and battery and still do so.

(Left) A staunch supporter of fast and realistic models, and a pioneer of the movement, W. P. Jones is seen working on his 90 m.p.h. Bugatti.

Photos by Norman Foster

(Right) Speed king of 1948 was W. S. Warne, who showed what could be done with a well handled Dooling motor and intelligent tuning. He won the Austin Trophy in 1948 and 1949, and the first M.C.A. Championship.



Speeds rose rapidly all round. J. R. Parker, of the Meteor Club astonished everybody with over 50 m.p.h. from his 2.5 c.c. E.D. engined car, which was beaten later in the season by J. S. Oliver's 55.5 m.p.h. with an engine of his own design driving direct.

The 100 m.p.h. remained elusive, Topsy eventually reaching the magic figure first on her home track, and putting in a mile at over 96 m.p.h. at Eaton Bray whilst winning the Jaguar Trophy. Topsy also collected the "Russell" for 1948, beating W. P. Jones's Alfa Romeo by a small margin. American motors were invading the 5 c.c. class by the end of the season, when Mrs. Warne's McCoy Special set a new half mile figure of 66.4 m.p.h. at the Jaguar meeting. On the same occasion J. R. Parker's "Parker 500" put the 2.5 c.c. mile to 48.55 m.p.h.

The end of the "outdoor" season saw B. P. Winter's two-seater Cisitalia sports model with 10 c.c. McCoy put in fastest time in the Rickard Trophy at Normandy at 93.71 m.p.h.

1949 was marked by the early demonstration of a new and promising form of racing by the "Raildromers", a private group of experimenters led by Jack Gascoigne, who constructed a small (64 laps to the mile) rail track, on which cars of up to 2.5 c.c. capacity race side by side. This innovation aroused considerable interest, and though as yet not fully developed, may well be the forerunner of many such courses.

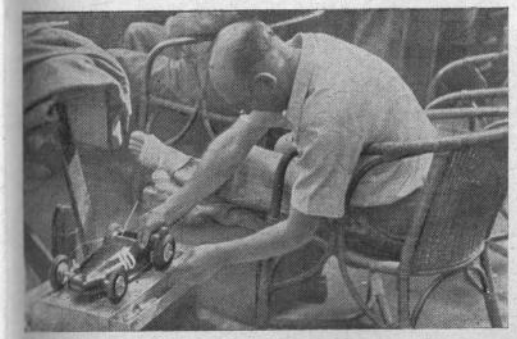
The M.G. Trophy was won by J. R. Parker with his Parker 500 at 55.02 m.p.h., and at this meeting Lt. White's 10 c.c. Dooling and Pacemaker models demonstrated "100-plus" motoring, the latter car covering the quarter mile at 107.14 m.p.h.

In May, W. S. Warne again won the Austin Trophy, this time at 113.21 m.p.h., and Gerry Buck's Topsy broke the British record, now recognised separately by the M.C.A., at 109.87 m.p.h. to run second. This so encouraged the other two classes that R. W. Flower's McCoy Special took the 5 c.c. quarter-mile Open record at 81.82 m.p.h., and John Parker pushed the 2.5 c.c. half-mile to 55.89 m.p.h. Running the ex-Lt. White Pacemaker—Hornet Jack Gascoigne clocked 107.14 m.p.h., and Eric Snelling's home-built 5 c.c. Maserati managed 66.18. Much more was to be heard of Eric and Alec Snelling and their exciting home-brewed motors in the next twelve months.

(Left) A most successful builder of interesting models, Alec Snelling, with his first Maserati. (Right) Miss Julie King, an enthusiastic assistant to her father at Pioneer meetings.

The Woodside track opened with a first class meeting at Easter, christened by "Herbie" White's Pacemaker with a 100 m.p.h. run, the Dundee Club announced their Scottish Speed Challenge Trophy, and the M.C.A. Speed Championship and eliminating dates were announced, the final to be held at Derby, when the winners were W. S. Warne (10 c.c.), R. W. Flower (5 c.c.), and J. S. Oliver (2.5 c.c.).

At the close of the summer season the Model Car Association approved a series of records, which are worth quoting in full, as a yardstick to performance up to that time.



(Left) Bert Winter, casualty of a model car accident, operates from a trackside seat in the Percival Marshall Trophy.

Model Cars Photos

(Right) A. F. Weaver with E.R.A. III and pipe, receives the P.M. Trophy from S. W. Arthur-Brand at the Horticultural Hall.

The latter figure is of particular interest, as it certainly represented a remarkable personal effort on the part of the operator. It should be explained for the benefit of those unversed in model car matters that "long distance" records have, with one exception, been taken on standard fuel tanks, necessitating several refuelling stops, as the problems involved in designing a 100 m.p.h. tank of sufficient capacity to last a thirsty engine for 10 miles are considerable. The exception to this was an early long distance (10 mile) record by J. Batten's chain drive car, with a cooling fan and large tank, which worked satisfactorily at the much lower speeds obtaining at that time.

Finally, 1949 was notable for the exchange visits with the Swedish model car folk, organised by the M.C.A. in which matches were arranged in both countries, and it is noteworthy to record that the British team ran 100 per cent British models, which gave an excellent account of themselves against the all-American cars fielded by the Swedes. The British 2.5 c.c. and 5 c.c. models run by J. A. Oliver, F. G. Buck, J. Walker, and Alec Snelling emerged victorious both at Stockholm and Orebro.

Summing up the year, it was obvious by now that the American engine had a very strong following among British builders, who nevertheless would have preferred to be running something British if it gave them a sporting chance of success. A small band of experts nailed their colours to the mast and continued to do battle with home-built engines, encouraged by the division of classes by the M.C.A. and the majority of those who "went foreign" for their power units asserted their individualism by building their own cars. The scale lover was getting a more frequent opportunity to score in contests of his own type, and with new tracks north, south, east and west the hobby was quite literally within most people's reach by the end of the year.

Class

2.5 c.c. ½ mile British—J. R. Parker, 55.9 m.p.h.
2.5 c.c. ½ mile Open—Ditto
5 c.c. ¼ mile Open—R. W. Flower, 81.83
5 c.c. ½ mile Open—Ditto, 77.8
10 c.c. ¼ mile British—F. G. Buck, 107.83
¼ mile Open—W. S. Warne, 113.9
½ mile Open—Ditto, 111.1
1 mile Open—J. Gascoigne, 102.8
10 mile Open—P. Hugo, 57.14

(Top of page) A 1949 picture of the enthusiastic Edmonton Model Car Club, and below Lt. Herbie White, U.S.A.F., first to beat 100 m.p.h. on the Eaton Bray track at Easter, 1949, refuels the Pacemaker. (Bottom left) A most successful 1949 5 c.c. Car was R. Flower's McCoy engined special. (Below) A notable occasion at the Surrey Club's track, when the visiting Swedish team (in overalls) were entertained in a match race in '49.

MAKE YOUR OWN LATHE SAW

A SIMPLE SAW THAT CAN BE MADE IN A FEW HOURS

A SMALL circular saw is an extremely useful thing to have and the attached photographs show one that an amateur craftsman of the north-west has made to fit to his lathe.

Fig. 1 shows how the saw is attached to the spindle. It is done by the adaptor (e). This is made of brass and is bored and internally threaded at the one end to take the externally threaded spindle, while at the other it is taken down to a narrow section which just goes through the opening in the centre of the saw (f). This end is also threaded, in this case to take the nut (g) which with the washer (h) keeps (f) tight.

Fig. 2 shows details of the cutting table. The sides and base are of 1 in. wood to give sturdiness, but the top is of ¾ in. plywood, plywood being used as this gives perfect flatness and in this thickness, a surface that will never warp.

The sides (A) are 10 in. wide at the top and 6 in. at the base, their height also is 6 in. Between these two vertical pieces a rectangle of wood (B) is fitted to act as a spacer and give rigidity to the whole structure. This piece is 10 in. wide.

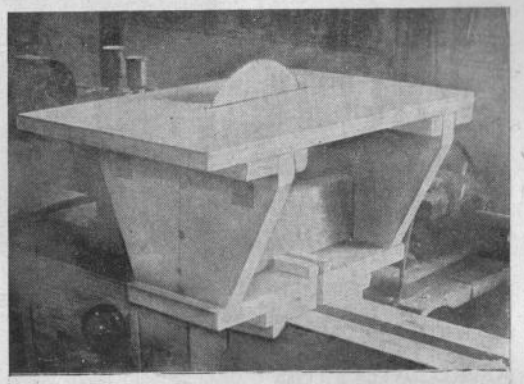
When the sides are fastened to (B), with long screws, the H-shape so formed is fastened to the base (j). Below this main base another but narrower base (p) is fitted, and fastened to the sides of this are the pieces (r).

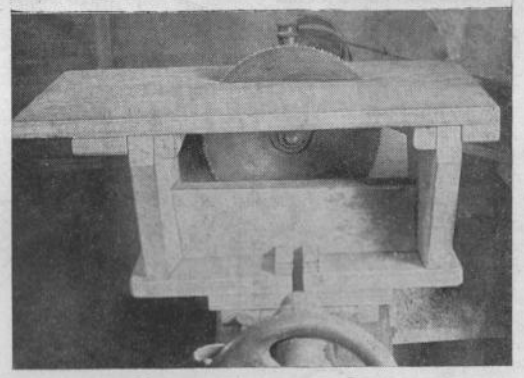
The sides of the frame (A) are secured by screws taken up through the top layer (j) of the three pieces and are given added strength by the spacer (B) which is of sufficient thickness to take screws in from the side to its ends. Two more lengths of wood are now added to the top of the table as (z). They are 10 in. long and of 1 in. x 1½ in. section, and their purpose is to give a neat and firm fitting of the table top in its "down" position.

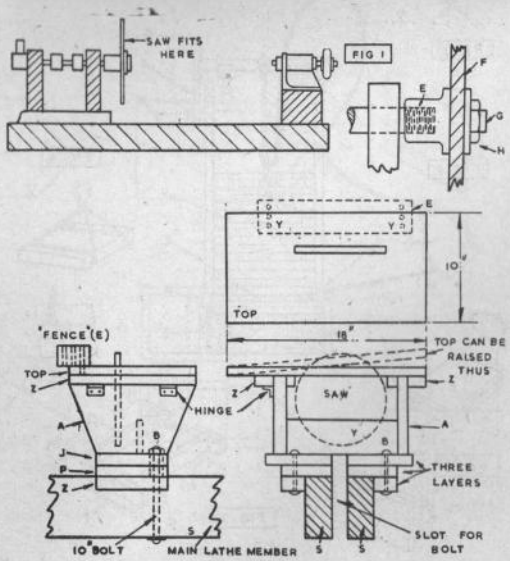
At what will be the side from which the saw will be operated the top is now secured by two stout hinges as shown in the cross-section and end elevation. These are fastened firmly to the underside of the last mentioned strips and to the sides (A). Hinged thus the "sawing table" can be raised through a small angle as per the dotted line, which means that the amount of saw protruding above can be varied to a certain extent thus allowing of grooving.

Look at the base pieces in the photographs, and it will be seen that they are slotted for a distance in and lined with two small strips. This is to receive the bolt (10 in.) which goes between the two halves of the main longitudinal member of the lathe and holds the table firmly.

Lastly for the "fence" (E) set on the sawing surface. It is only a rectangular block of wood, well squared and bored for several bolt holes to agree with the holes y and y' in the top so that it can be adjusted in several positions with respect to the saw.

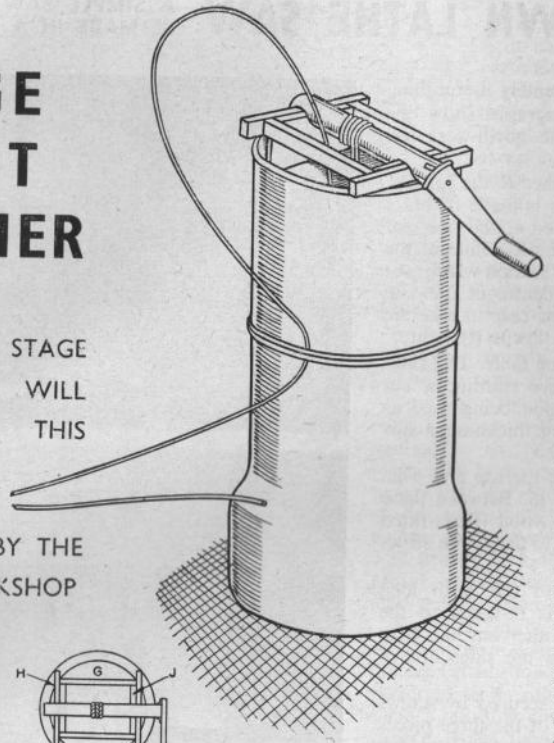






STAGE LIGHT DIMMER

AMATEUR STAGE MANAGERS WILL APPRECIATE THIS USEFUL DEVICE PROVIDED BY THE HOME WORKSHOP



NO stage lighting is complete without a "dimmer" which makes it possible to "fade out" the lamps gradually and just as slowly bring them back to a state of full intensity. Indeed many plays favoured by amateur dramatic societies depend for their whole effect on being able to dim off the stage to an eerie glow as and when desired. Fading-out can be used too with good results in ordinary concert work.

Here, therefore, are the details of a dimmer that can readily be made up by any amateur stage electrician. It is perfectly effective, simple to handle, and costs at the most only a few shillings.

The dimming effect is secured by passing the current to the lights through water containing salt or soda, by means of terminal plates introduced into the vessel holding the liquid, the resistance, and consequently flow of current, varying according to the distance apart of the plates. In other words, being dependent upon the distance through the solution the current has to pass.

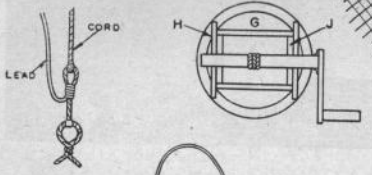


FIG. 5.

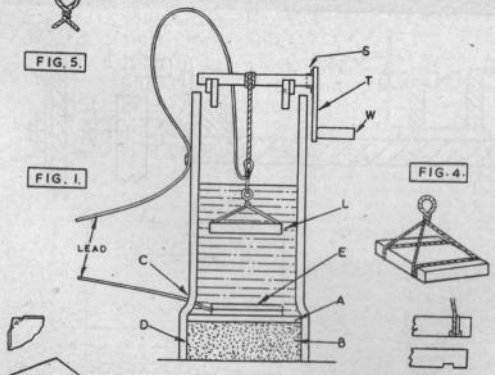


FIG. 1.

FIG. 4.

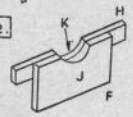


FIG. 2.

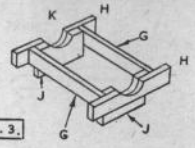


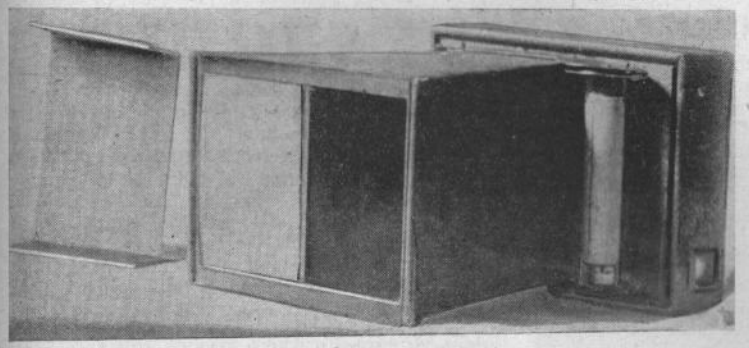
FIG. 3.

In the apparatus described here the solution container is a length of ordinary drainpipe, obtainable at any contractor's yard for a modest sum. Other materials required are two squares of metal (cast iron for preference) of sufficient area to give 1 sq. in. of surface for every ampere of current to be dimmed, a length of wooden curtain pole to make a spindle, and some odd pieces of wood to rig up a frame to hold it. Also needed is some cement and sand for filling the end of the pipe, and a piece of slate of sufficient size to allow a circle about the same as the larger part of the pipe to be chipped out of it.

With these materials to hand, construction can be started. Invert the drainpipe and quite roughly chipping the slate make it fit into the lip of the larger end, as (A) Fig. 1, and then fill the space (B) with cement and sand to about the proportions of 1 to 2 —not using too much water. Press the mixture well up to the slate, round the edges and into the internal threads of the pipe (D), for it is essential that the plug so formed shall be perfectly water tight.

Drill through the side of the pipe at (C)—materials like porcelain can be drilled—the hole being to take one of the leads. When the cable is through, this opening is made water-tight with a touch of cement or other suitable filling.

(*Continued on page* 112)



TWO PICTURES FOR ONE

A WELCOME ECONOMY FOR THE HARD-UP ENTHUSIAST

FILMS are now in fairly good supply, but they are still expensive. To be able to get twice as many pictures on any film would therefore be a great advantage, and this can be done by inserting a mask in your camera so that half-size snaps are taken.

The smaller dimensions are no detriment if you make your prints through an enlarger (or have enlargements made at the chemists) and it is very little drawback in sizes not less than $3\frac{1}{4}$ in. x $2\frac{1}{4}$ in. if greater care is taken to completely fill the available space.

Half-masking is particularly useful when the taking of a good number of pictures seems almost essential to the getting of a few pleasing results—as is sometimes the case at sporting events.

With a few exceptions, amateurs can readily adjust their own cameras to take the extra pictures, and the methods by which this is done with various types of instruments and materials are here given.

Film Packs

In this case make a new cover for the adaptor from thin tin as (A) with an opening, half the standard picture size, taken out at the further end from the tabs. When the adaptor is in the camera, remove the usual cover and replace with the new one (A). Exposure No. 1 can now be made, sighting the subject on the opposite side of the view finder. Now pull out the film tab, but only *half way*, and all is set for exposure No. 2. When this has been made pull the tab right out and exposure No. 3 is ready. To assist in the quick pulling out of the tab just half way, a small piece of card should be made to act as a gauge and be used as indicated.

Plates

A special cover is needed for plate cameras also, but the rectangle is now cut out on the near side as (D). To use—take out the standard cover and replace by (D). Make first exposure. Now pull cover out half way and make second exposure. Figs. (E) and (F) show the rotation of actions quite clearly. In this case the subject is sighted through *alternate* sides of the finder.

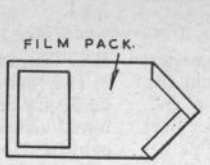
Roll Holders

Taking halves with these is simpler than with packs or plates. Prepare a tin cover as (C) which when pushed into position masks half the picture space. This remains set in the slots all the time and in this case the film must be wound on a half distance for each picture. This is effected by spotting the first of the intermediate dots (which will be found on the backing paper of every roll), when the film is in the correct position for the second "half-picture". Then wind on to the following number and then again spot the first of the dots in the red window, and so on down the whole film.

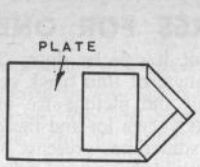
Folding Film Cameras

These are perhaps rather more difficult to adjust

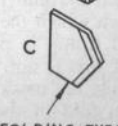
(*Continued on page* 112)

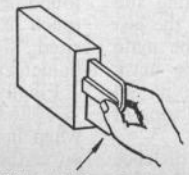


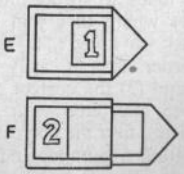
A



D







STAGE LIGHT DIMMER

(*Continued from page* 110)

The pipe now being turned the other way up thread a length of cable through the hole just made, and stripping the insulation for some little distance from the end fasten the bared wire securely to one of the small squares of metal (E). Danger of the wire slipping off is prevented by filing small channels at each corner for it to lie in (Fig. 2). Place this square at the bottom of the pipe as shown, and pulling the lead through (C) seal the hole.

Now make the frame for the spindle, which lies across the upper end of the container, as Fig. 3. It is simply two end-pieces as (F), which are each made up of the strip (H) and a deeper piece (J). The completed ends are joined by the bars (G) which are of such a length that they keep the pieces (J) up against the inner side of the pipe. The strips (H) lie on the rim and take the weight of the winding gear. No dimensions can be given for these members, as they depend on the size of pipe being used, but with the idea in mind of how the frame fits it is easy to arrive at the necessary lengths. The arrangement is completed by taking out the two openings (K) to act as bearings, the size here being determined by the diameter of the curtain rod.

The spindle, which really should be about 2 in. dia. for even winding, lies in the openings (K) and is kept in position by the weight of the plate and lead suspended from it. For comfortable turning the simple handle (T) is fitted. This is about an 8 in. length, and is secured to the spindle by the two small angles (S) and a long screw into the end. A short hand-piece (W) is fitted at the end and this can be made solid with the crank.

The upper plate (L) can now be slung in position. File two channels as shown on the underside and take round two strands of about $\frac{3}{32}$ in. copper wire, turning the ends together to make a central loop (Fig. 4). It is important that the bottom of this plate should present an absolutely flat surface so that it will lie in perfect all-over contact with the plate (E) when in its lower position and full non-checked current is passing.

Fig. 5 shows how the second lead is attached to the plate (L), and how the cord to the spindle is taken from it. This method of attaching ensures that the lead is only held where it is fully insulated. Enough cord is wrapped round the spindle to allow (L) to settle down on to (E) and still leave one or two coils in hand. The cord should be fastened to the wood by a few tacks at its end, as any danger of the spindle suddenly starting to slip round idly in a loosened loop of cord must be avoided.

All now being ready the solution can be added. The weight (L) is wound up till 12 in. from (E) and water is put in till the hanging plate is comfortably covered, the current being off.

Now switch on. At this distance apart the water resistance is too great to give any light and the salt or soda is added till at this separation the lamps just begin to glow, the effect of the addition being to reduce the resistance of the liquid.

With the lamps only slightly glowing at the 12 in. separation it will be found that a little more raising of (L) extinguishes them altogether, while lowering the plate gives a gradually increasing intensity till full illumination is secured as (L) and (E) touch. To prevent any drag from the top lead use fairly stiff cable and form a loop by lashing it to the outside of the pipe as depicted in the sketch of the complete dimmer.

TWO PICTURES FOR ONE

(*continued from page* 111)

for half pictures—but it can be done. The easiest way is to cut a rectangle of thin black celluloid (P), with an opening half the picture-size in one end. Folding camera backs vary a lot and the guides over which the film runs sometimes presents two lips between which the celluloid mask can be "caught" and held firmly in position.

If this is not possible then by careful cutting and fitting, the mask can be made to spring into the last tight fold of the bellows where they join the main body. Two points must be noted: (1) the mask should have rounded corners and fit easily so as not to damage the bellows and (2) the correct closing of the camera must not be interfered with.

The taking forward of the film the correct distance is again effected by sighting a number and the first of the next series of dots alternately under the red window. This method of moving a film forward a half picture-space distance is quite simple once the knack has been learnt.

Box Cameras

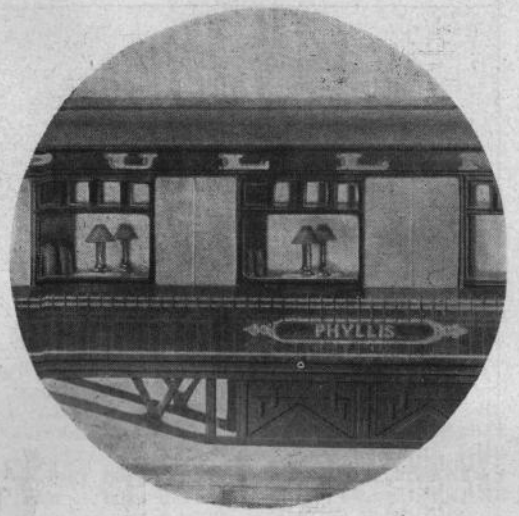
The procedure here is extremely simple, all that is necessary being to insert a half mask of card or celluloid across the picture opening in the back of the camera, close to the film. If precisely cut with the ends of the material turned in at a right angle, the "mask" can be sprung into position, where it will be found it holds perfectly well by friction alone. A touch of some adhesive may be used however if desired. Moving the film forward is as with the roll-holder and folding cameras.

Finally, when continually using one side of the view-finder only—which is really every case except when half-masking with plates, it is a good idea to cover the unwanted side of the glass with a tiny piece of adhesive tape—insulating tape will do nicely.

If not using both sides alternately, or not wishing to put on the adhesive tape, the half-way line of the finder should be indicated by two minute marks scribed on the metal frame at the mid-way points.

TEST BENCH

A REGULAR TRADE REVIEW



Close-up (larger than full size) showing detail in the Graham Farish Pullman Coach for 00.

OUR trade review feature is devoted this month to miniature gauge model railway equipment and catalogues that have been passed to us. We can approach them not only in the cold light of reviewers, but also like any other potential customer, for we are in the throes of designing and laying out our own office miniature railway, which will form the subject of future articles.

Graham Farish Pullman Coach

Two specimens of these new Pullman coaches were sent, distinguished only by the names thereon, being Phyllis and Minerva. This detail of versimilitude impressed us at once, for two coaches of the same name in any scheme of things would tend to jar. Made of plastic material throughout, with the exception of a few screws and the couplings, they use their medium to the utmost advantage. Apart from an exterior true to scale appearance, developed from designs specially provided by the Pullman Company, they carry things a stage further with seats, tables and lamps within. One almost expects to see a diminutive steward ringing his bell and announcing "First Service", or inviting passengers to order drinks!

The bogies, of plastic material, have ample movement for use on small radius curves. Weight has been kept quite moderate. Length overall is $10\frac{1}{2}$ in.

On the subject of price we were pleasantly surprised to find that the figure of 27/6 each included purchase tax. They can be recommended to every modeller running a long distance express.

With these coaches came specimens of the Graham Farish Formo track, which fills all the manufacturers' claims of realism and convenience. By cutting the insulated web between sleepers quite sharp curves can be made by bending in the hands without any trouble in preserving the correct gauge. In steel the two-rail track costs $4/3\frac{1}{2}$ per yard inclusive of purchase tax, in brass $7/1\frac{1}{2}$. Three rail is also available at 5/6 and 8/6 per yard respectively.

The E.R.G. Catalogue & Manual

After several evenings enjoying this immense publication by the fireside we are still finding new items to digest. The company has gone to no little expense in producing this comprehensive work—in fact the nominal 2/6 (2/9 by post) asked represents but a fraction of its cost, we, as print-buyers, know only too well.

It contains not only the well known E.R.G. specialities, but very nearly everything in fact that is on the market, including the tiny 000 gauge, for serious miniature gauge enthusiasts, who prefer to make their own rolling stock, locomotives, track and trackside buildings. For the enthusiasts prepared to pay for exquisite hand-built models a variety can be made to order at prices ranging from 40 to 85 guineas. Most of us, however, must be content with more modest outlays, and here the manual really comes into its own.

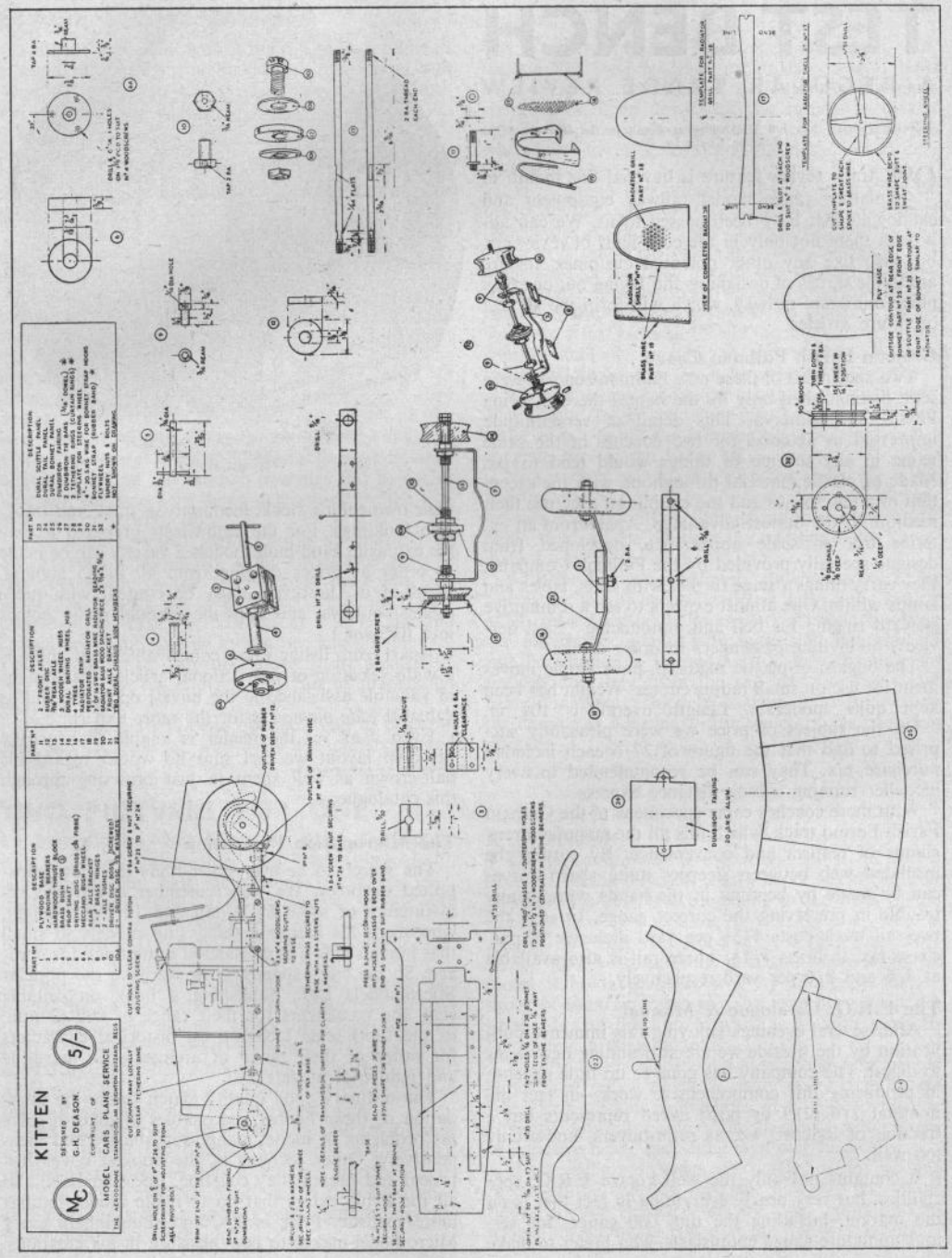
Apart from listing every conceivable need, there is a wide selection of instructional articles that can be of valuable assistance to the novice operator, and as valuable *aide memoires* for the more expert.

Even if as yet the reader is unable to construct his own layout we feel sure he would regard his half-crown as well spent in just browsing through this catalogue.

The Microputian Population

The search to be ever tinier finds the most unexpected devotees. We well remember a wartime acquaintance of some $6\frac{1}{2}$ ft. tall and 16 stone weight, who spent his leisure making ship models so small that human hair was considered quite thick for cordage. So the cult expands. Now we have the popular Micromodels Ltd., publishing a book on suitable staff and passengers for their range of 000 (2 mm. to the foot) scale locomotives, historical characters for other of their range of architectural, maritime and industrial models.

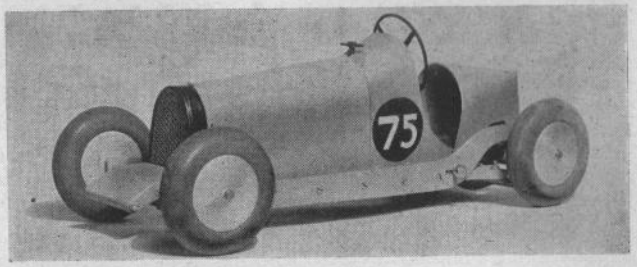
The ordinary good quality match forms the foundation of these figures and enables anyone to solve his problems of model manpower quickly and inexpensively. Other sections of the booklet cover historical and present day costume, trees, animals, and all the living extras that go to make model settings more realistic. Price is 2/-, and should help every Micromodel-maker to new pleasure in his creations.



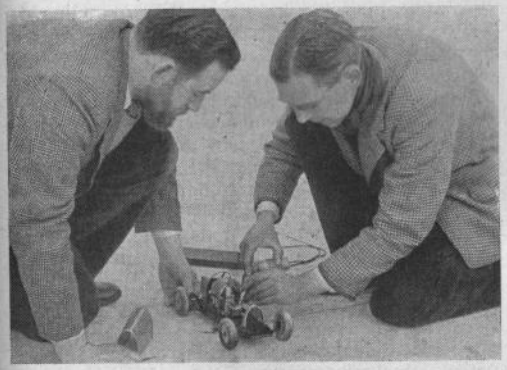
"KITTEN"

by

THE EDITOR



Model Cars Photos



THREE main reasons prompted the building of the original "Kitten". Firstly it was to prove that a practical working model car could be built round the smallest sizes of commercial diesel engines, a variety of which were, and still are, being made and sold for very competitive prices, even though at that time these baby aero engines were considered to be far too small for model car purposes, by most club competitors. Secondly it was to be produced from simple materials as a true "primary" model, using methods of construction well within the scope of the keen youngster with a mechanical bent but few tools and limited skill; and thirdly it was intended, when powered with a reliable little engine, that the car should be easy for a beginner to operate in confined spaces, and certain to provide him with a car which would really run, even though slight and forgivable errors had crept into its construction. This was considered important, for all too often the more elaborate and "engineering" models, unless built to fairly precise limits, just wouldn't function at all, and caused disappointment and despair to their novice builders.

The original "Kitten" (christened in honour of Clive Lones's little forward-engined 500 sprint car "Tiger Kitten") was built in odd corners of the sitting room, and frequently assembled on the edge of the office table, with the enthusiastic assistance of Lawrence Bagley, then *Model Cars* artist, and started life as a bevel drive job. The little Mills engine soon showed that there was speed enough available to more than satisfy its creators, but starting was tricky, so the rear end was rebuilt incorporating friction drive, loaded only by the weight of the car. In this form the little car ran many trouble free miles on a variety of tracks, with no more trouble than the occasional renewal of the driven disc.

After a rather more becoming body had been evolved for it, the Kitten was taken in hand by Masco Products and with minor modifications to assist quantity production, was put on the market in kit form. A large number of these kits were sold and served to introduce the hobby of building powered car models to many beginners. The Kitten was never, of course, intended as a speed or competition job, but is a useful introduction to those loftier spheres.

The base of the car is plywood, cut to shape in the kit and provided with the flywheel clearance hole. The engine is mounted on wooden runners, and a flywheel with driving pins is supplied. The drive is taken via a short propeller shaft, running in a long plain bearing in a hardwood thrust block, to the friction drive on the rear axle. This axle runs in a special hinged bracket, which allows the driven disc to drop away from the drive disc when the car is lifted or supported on a starting block. When the weight of the car brings the faces of the two discs into contact a light push is all that is required to get the car away.

The front axle is of flat steel strip, giving a limited spring effect, pivoted centrally for steering, and since the drive is on one wheel only, small radius circles can be used quite satisfactorily.

The bodywork is in three main parts, the radiator is built up from metal strip and brass beading with a perforated front, and to add to the realism, full length shaped dural chassis members, dumb iron apron, fairing and steering wheel are added.

In the kit supplied, axles are of $\frac{1}{8}$ in. dia. steel with the necessary machining already done, whilst the stub axles are supplied ready riveted to the beam. Assembly is simple and requires little more than a handbrace and a few drills, a screwdriver and a soldering iron.

The first kit of its kind on the market, the Masco Kitten is still serving as a useful introduction to the hobby to hundreds of young beginners, and is available with illustrated step by step instructions and a working plan for 49/6 from Masco Products. The working drawing only can be had separately from *Model Cars* Plans Service, The Aerodrome, Stanbridge, Nr. Leighton Buzzard, Beds., price 2/-.

First Steps in Making a Miniature Railway Layout

"A STUDY OF THE MODEL RAILWAY" by E. Rankine-Gray, ERG (Bournemouth) Ltd.; size 8¼ x 5½ in.; 46 pages with 18- page advertisement supplement; 14 diagrams, 13 half-tone illustrations on inset art paper. Stout drawn-on cover. Price, 3/6 (by post 3/9).

"THE PECO PLATELAYER'S MANUAL" by R. Watkins-Pitchford. A Peco Publication; size 8 x 5 in; 112 pages with 28 half-tone illustrations and 87 diagrams. Art paper with two-colour half-tone drawn on cover. Price, 6/9.

THESE two excellent publications appeared for review within a few days of each other, and, as they approach the same problem from two viewpoints, offer a fine opportunity of discussing just how that dream layout doodled idly on the back of an envelope can best be translated into delightful reality.

Mr. Rankine-Gray approaches the problem as one of a practical professional pair who have actually produced an exhibition layout at a cost of some £4,500, embracing 814 feet of track, providing 11 scale miles of running, which has been successfully operated for the past year for the benefit of over 30,000 visitors. His book is the story of its construction to an exacting specification, with details of just what problems were met, how they were overcome, together with a wealth of valuable advice at all stages of the work.

Naturally the average amateur will be thinking in terms of perhaps one per cent. of this ambitious expenditure, but the main questions of untroubled running, scenic effects, arrangement of points and crossovers, and those essential tricks of the trade to disguise routes and dead ends will apply even more strongly with only a hundred or so feet of track.

In *The Peco Platelayer's Manual* Major Watkins-Pitchford confines himself to an exhaustive treatise on all aspects of track laying, covering two and three line track and outside conductor rails, points, switches, crossovers, radius curves and other matters of track with particular reference to the Peco system. Advice on joining the Peco track with many other proprietary systems are also given, which considerably enlarges the scope of the book.

It is interesting to find that while each author is primarily concerned with the use of one particular make of 00 track, and, of course, advances the particular advantages of that over any other, they are both agreed on certain fundamentals.

The current timber shortage of whitewoods has led both to employ building board as a foundation base. Mr. Gray goes so far as to declare that even had whitewood been readily available he would still have used the baseboard he did. In each case the experts plumped for Weyroc, which is a synthetic timber substitute of beautifully smooth surface consisting of small shavings and particles of wood resin-bonded under high pressure. This provides a surface that is both smooth flat and ready for the direct attachment of the track. It would obviously be undesirable to lose these benefits by the insertion on any cardboard or other sub-surface liable to cockle or present unevenness.

In describing his layout at Bournemouth, Mr. Gray begins at the very start with details of the space available. This was a hall 32 ft. x 28 ft., round the walls of which the track was laid in a continuous circuit. Access of the public to the central well was achieved by a small bridge over the track at the entrance. Lack of headroom made a drop of 18 in. from the main running level necessary at this point. The long gradients required to obtain this drop were cleverly disguised by loop runs on the main continuous route. On this route was superimposed a second run of horseshoe shape, which the layout diagram will serve to clarify.

Scenic effects were a major concern of the designers. These came under two headings: the actual three dimensional effects, including bridges, viaducts, tunnels, trackside scenery in general, station buildings and villages, and—what was more difficult for them—the backcloth effects of sky and distant scenery that had to be painted on hardboard flanking the walls.

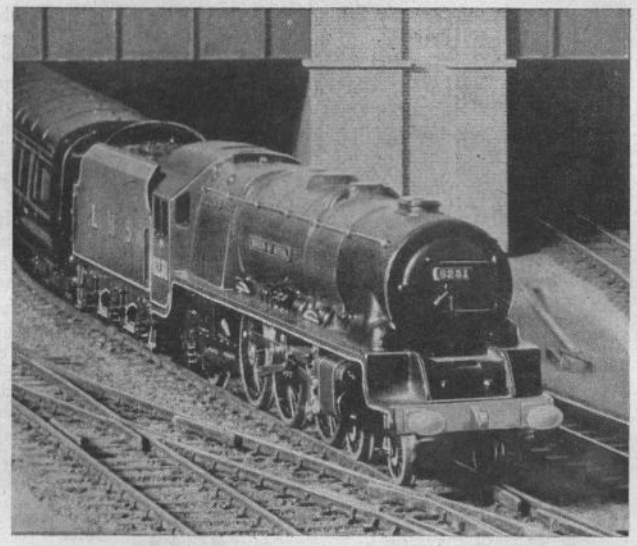
Included in the ambitious scheme is a lake in pastoral surroundings, to which a stream meanders down the rough mountain side. An electric pump is used to lift water to the hidden "source". This has to date given some trouble by a tendency to bottleneck at one of the culverts and overflow—the sort of snag that the home constructor will appreciate and share the builders' concern in solving during these quieter winter months. Hessian, rag, cardboard and cement all have their place as basic materials for tunnelled portions. Non-tunnelled parts are built up on fine wire mesh and cement, keying into baseboards with large headed tacks. Wire and wooden fences are built in with grassland and ploughland areas realistically imitated. Hedges are made from wire wool, trees from gorse and cotton grass or heather—whilst even the rockery has been robbed of suitable alpine plants.

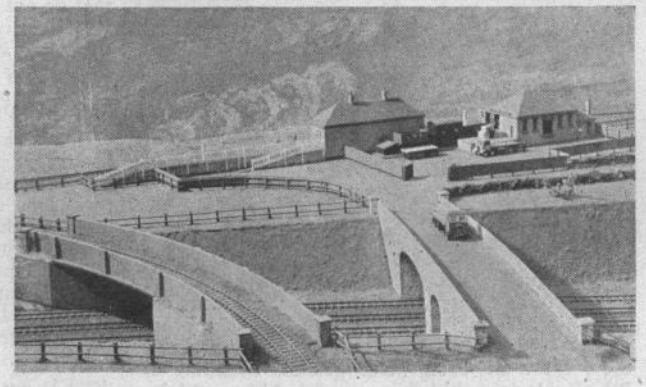
Railway buildings for the most part have been made up from Anorma kits and Romford statio fencing, whilst the country town owes its being to the wide range of cutouts supplied by A. W. Hambling & Co. These Bilteezi Building Construction Cards have proved ideal for the job—particularly the feature of being able to buy individual cards, as so many buildings such as churches would appear only once or twice, whilst others may go to make a whole building estate. In view of their intended permanence main walls were all reinforced with balsa backing, though the card itself is really astonishingly strong and suitable for any normal use.

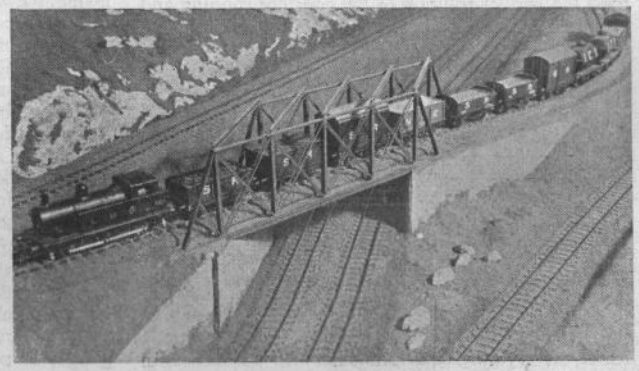
Road traffic includes Wilson's lorries and their various spare parts, whilst the human element is catered for with Slater's plastic human and animal miniatures.

The backboards were treated with the greatest simplicity. The designers make no claim to be artists, and have rightly contented themselves with simple sky and cloud effects and a certain suggestion of grey moorland scenery and distant fields in the hills. By so doing they have achieved the real purpose of such decoration—to be a background and not steal the picture rightly provided by the railway layout.

Initial stud of locomotives consisted entirely of 0-6-0 tank engines, with a little variety provided by the running of a pannier tank amongst the more numerous parallel and tapered boiler types. These engines were all—except the pannier tank—built up from Stewart-Reidpath cast bodies. Each chassis had fixed driven axle with springing on front and rear axles. This saved valuable time, though later models were sprung on every axle. Zenith Mk. IV motor units provided power for the original engines. Later additions included a Southern "West Country" 4-6-2 and an L.M.S. "Royal Scot" Class 4-6-0. An L.M.S. "Coronation" 4-6-2 and a G.W.R. Class 61xx 2-6-2T have also been added. The original Zenith Motors have to date covered 500 *actual* miles of

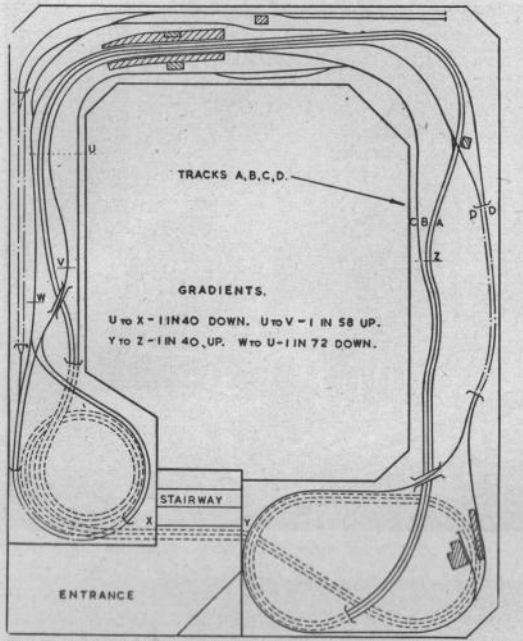






Heading Picture: This realistic scene shows a Hornby Dublo "Duchess of Atholl" locomotive converted to two-rail running and working on Peco-Ind.vidulay trackwork. (Illustration and caption from "The Peco Platelayer's Manual".)

Lower Pictures: Scenes from the model railway at Bournemouth. Station buildings from Anorma kits, single track bridge and road bridge with Anorma brick paper and Modelcraft stone paper. Girder bridge soldered up from Brooks' 00 channel sections and ERG 0 boiler bands! (Illustrations from "A Study of the Model Railway".)



The Bournemouth layout comprising four main circuits. Three (A, B and C) are continuous with about twice as much out of sight as is visible. Fourth circuit (D) is a horseshoe with a loop at each end: alternate trains go clockwise and anti clockwise. The loops on each side of stairway are necessary to make the gradient under the stairway.

running! Some of the later locomotives are using Romford Series III Motor bogies but have not had time to vie with this achievement as yet.

Rolling stock includes four handbuilt S.R. suburban coaches, but in the main all initial stock consisted of Exley bodies mounted on G. & W. ball bearing sprung bogies. Later C.C.W. Construction units became available and were widely used. All coaches run on ERG nickel plated solid brass wheels, their use for two-rail being made possible by fitting of Peco-Insulaxles, which have proved a boon and indeed the perfect solution to the constant running and high performance demanded and obtained from the layout.

Goods stock was made up from ERG Precision Card Parts and ERG Masterpiece Parts for 00 rolling stock. Only a few detailed vans and wagons were initially available, but these were rapidly augmented by this use of prefabricated components.

As we write we learn that their little book has proved so popular that already it is going into its second edition in good time to follow on the initial demand without any of those sometimes aggravating delays attributable to reprinting.

This record of achievement is certainly an incentive to the amateur to go and do likewise—but first importance will always be rightly laid on the track itself. Everything else is ancillary to its successful laying and operation. Here Major Watkins-Pitchford comes into his own. His *Platelayer's Manual* provides everything that one expects under the heading "manual", that is to say an exhaustive treatise on its title! Irrespective of whatever kind of track is to be laid no serious modeller could fail to be helped by its presence.

The Peco method is given due prominence, but that is not by any means a fault, for it has much to commend it as a practical form of tracklaying, where the manufacturers have really gone out of their way to make the amateur's task as easy as it possibly can be. We particularly like the use of tapes to lay out the track direct on the baseboard without the need to scale up hosts of detail drawings initiated on countless envelope backs. Thereby it gives the builder an early and immediate opportunity to *do something*, rather than "doodle around".

Even if for reasons of existing stocks of other makes of track Peco-way must take a back seat the methods can still be happily employed, while virtually any miscellaneous track can be combined with Peco-way, making the system almost interchangeable.

That novice's bugbear the construction of points that do not short all the time or even every so often is so ably covered that the most complicated crossovers can be tackled with no more than a steady hand and a proper degree of soldering skill. We are pleased to note that the author makes no attempt to instruct the reader in soldering. Frankly, unless he or she is already reasonably well versed in this neglected side of modelmaking the future in 00 modelling is bleak, unless one is content to buy all the tricky bits readymade. Happily this hobby is one where depth of purse can adequately compensate for lack of technical skill, but we feel that the average man attempting a fairly ambitious track would prefer to invest in additional rolling stock, if that can be managed by acquiring a little dexterity with the soldering iron!

Lest any assured gentleman may smugly assume there is not a whole book to be devoted to platelaying, we would hasten to add that the Manual contains 112 pages 8 ins. by 4¾ ins., set in 8 pt. type —a size smaller than this journal—while there are copious diagrams covering every stage of the work where pictures can tell the story better. Finally there are a number of really first class pictures of other people's efforts, showing a pleasing complexity of tracklaying and some very attractive locomotives and rolling stock against scenic backgrounds and modelling that do credit both to the builders and their photographers!

As a last word on the subject, we are happy to announce that, starting with our February issue, Major Watkins-Pitchford will be writing a regular feature on miniature gauge railways in *Model Maker*. His first article will deal with some of the various gauges in popular use today.

Make your own TYRES & WHEELS

Pt. II

By H. C. Baigent

A set of miniature rims and hubs drilled for spoking and ready for assembly. The correct rim sections and forming of the centre lock-hubs add immensely to the appearance of the finished wheels.

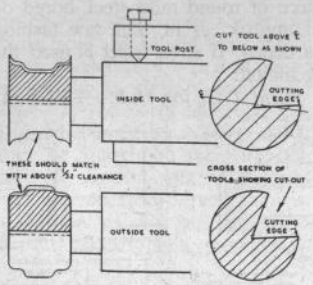
Last month H. C. Baigent described the making of tyres of a high degree of realism which would at the same time stand up to racing speeds on small models. In this issue he goes on to describe the building of true-to-scale wire spoked wheels upon which to fit these tyres. As he stated at the outset, the equipment required is not very elaborate, and although those who wish to produce really first class wheels must of necessity go to some trouble to achieve satisfactory results, all the special tools needed for the job can be produced from odds and ends by the average amateur worker in his own workshop.

The following notes and sketches have been provided by H. C. Baigent, to describe the preliminary work of preparing the tools and fixtures with which to work on the various types of wheel in common use on modern and not-so-modern racing cars.

Form Tools

Rim Tools.—These are best turned from bar, and can be made from cast steel or mild steel and deeply case hardened; the latter will last for three or four sets of wheels if done properly.

It's much easier to turn these tools to shape. You don't have to worry about undercuts or reliefs, and you can keep sharpening without losing shape. The two tools should match with about $\frac{1}{32}$ in. clearance.

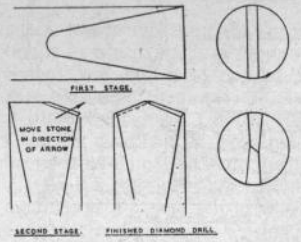


If you can reverse direction of your lathe, set the tool to work upside down with the lathe in reverse, minimising chatter.

Suitable Drills.—This is a sticky problem, as on small wheels you will be working to .018 in. dia. to suit 26 s.w.g. wire, and drills of this size are not only difficult to get but will "run" when brought in contact with small round surfaces.

To overcome these difficulties I used No. 9 needles, allowing only about $\frac{3}{16}$ in. projection from the chuck, and there has never been any tendency to run, when used direct on to small diameters without any guide or centre pop.

Make your drills as per sketch with a smooth hand stone (*not* a grinder, or else you will see your drill disappear before your eyes).

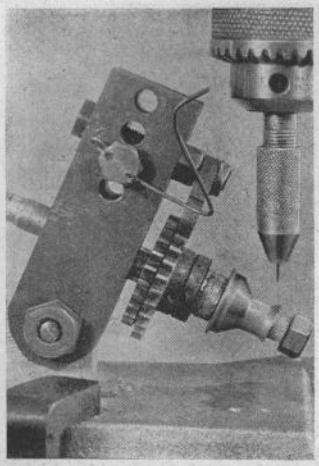


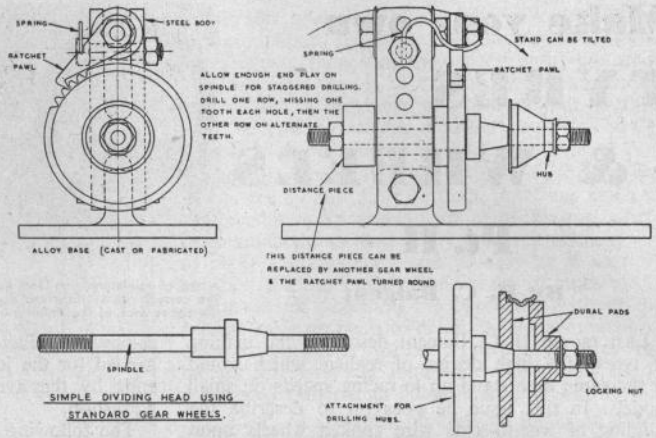
Break off the needle about half way down the shank and stone a flat on each side, leaving a very slight flat on the end.

Now stone lightly at an angle across the top till just past halfway. This will give the cutting angle; now reverse the drill and do the same on the other side, and the result will be a diamond drill.

This will go through a thin wall of brass very quickly, and true to size.

Simple Dividing Head using standard gear wheels. The dimensions depend on the largest wheel one intends to make, and the sketch is only given to convey the idea of construction, actual measurements being left to the constructor. Very useful gearwheels for this tool can be bought from Messrs. C. C. Whitney & Co. Ltd., 1 Fairlop Road, Leytonstone, E.11. These are of bronze, have large bosses, and are cheap. As a guide to the gear wheels needed I use one 56 tooth, one 24, one 28, and one 42. This covers all spoking.





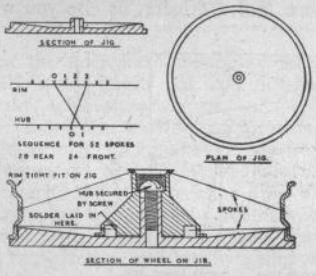
Correct spacing of spoke holes in the tiny hubs and rims is ensured by means of this simple home made div'ding head, details of which are shown in the drawing on the right. The outer hub spoke holes are being drilled in the picture above.

Spoking Arrangement.

Continental.—28 spokes on back row; 24 spokes on front row.

Rudge Whitworth 2 row—42 back row, 28 front.

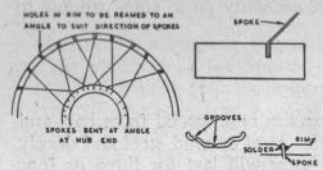
Rudge Whitworth triple row—Rim: 14 back, 56 front; Hub: 42 rear, 28 front.



Assembly jig for 52 spokes wheel (24 front, 28 rear).

Reamer for rim holes.—Stone four flats on $\frac{1}{32}$ in. drill shank and hold in pin chuck.

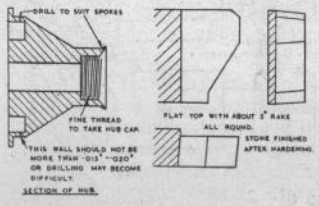
A small brass block with a hole drilled in it will make an excellent spoke bender (hole same size as drilled in rims only). Bend spokes one end only. Drill approx. $\frac{1}{16}$ in. deep.



Turn small grooves as shown in rim. These have two uses, to assist drilling, and as a help in the building up of strength with solder.

Tube cutter for recess in back of hub.—This is a piece of round mild steel, bored out to leave a wall of approx. $\frac{1}{16}$ in., cut saw fashion, and then case-hardened. If silver steel is used the teeth are apt to break off.

Form Tool for Hub.—This tool is quite a simple form, made from $\frac{1}{4}$ in. plate filed to shape and then hardened, getting the working tip red hot and quenching to prevent breaking under stress.



METEOR OPEN DAY (*continued from page 79*)

In the small class J. R. Parker, running his Parker 500, now equipped with an Oliver motor, snatched first place by a fraction from F. G. Buck's ebullient Wee 2 with its peppy little Elfin, J. S. Oliver occupying third place. John Parker, incidentally had in his pit a new and very glamorous looking free lance 10 c.c. job, powered by a "Conqueror" with cylinder head by Harry Howlett, wire wheels and much authentic detail. This car did not run, but was "short listed" in the Concours. Another big 'un we were interested to see was E. Armstrong's Austin International, a very pleasant looking model which caught the judge's eye.

Finally there was the Meteor cake, competed for by the spectators, the winner being the holder of the car number which stopped nearest to the miniature "pit" placed on the outside of the course by Mrs. Gerard. Altogether an excellently run meeting which gathered together a most enthusiastic crowd. Prizes, of which there was a large array, were presented by D. A. V. Rist, Esq.

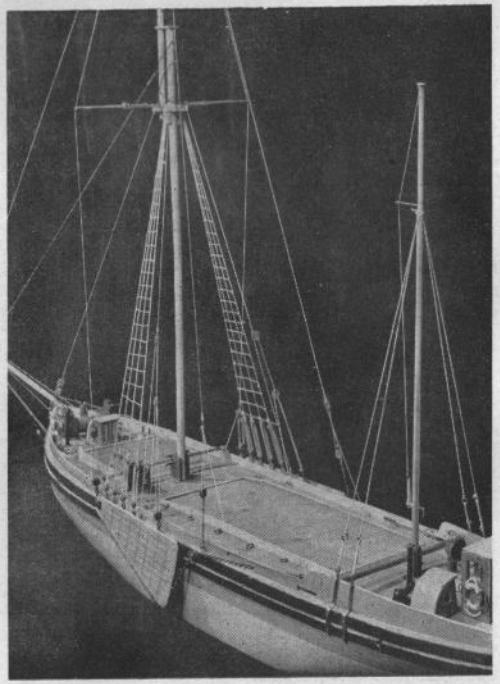
COASTAL SAILING BARGE

"WILL EVERARD"

PART IV: SAILS and STANDING RIGGING

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

Readers are reminded that a set of full-size working drawings are available on five sheets from the publishers, price 17/6 post free, or 18/6 rolled in stout card tube.



"Will Everard" with standing rigging completed. Details such as jib net have not yet been added, but apart from such finishing touches it is ready for bending of sails and running rigging.

THIS deals with the work of setting up the standing rigging, and making the sails. A further article will cover running rigging and bending of the sails.

The selection of materials is also important especially as regards cordage sizes. As all who dabble in ship craft know rope sizes always refer to the circumference of the rope. In model work this may, for all practical purposes, be taken as three times the diameter, and the dimensions thus found must be reduced to 1/48th i.e. a scale of $\frac{1}{4}$ in. to the foot.

Materials

For mooring ropes, hawsers, bolt ropes, sheets and halliards you can obtain from any large fishing tackle shop cordage known as "water cord". It is supplied in various diameters, usually in 10 yard hanks and of a light fawn colour. If the particular rope you wish to represent is tarred it must be dyed to match the rich brown colour of Stockholm tar. For the thinner cordage there is surgical silk, sometimes called Chinese twist, obtained from large chemists. This is an excellent material as it is not subject to stretch under different atmospheric conditions, neither is it "fluffy".

There is also silk twist sold by haberdashers, usually numbered to represent its thickness, e.g. No. 40 is 1/40th of an inch in diameter. These twists can be obtained in the correct shade of light brown, but if at all fluffy they must be laid smooth by means of a rub over with cobbler's wax or beeswax.

Wire rope is largely used for a barge's standing and much of the running rigging. The former is usually G.I. (galvanised iron) and the latter F.S. (flexible steel). Model shops supply stranded phosphor bronze wire .022 in. diameter (equivalent to 24 gauge) and fishing tackle shops stock a twisted rustless steel wire known as "gimp".

Most wire rigging is tarred, much of it parcelled and served. We need not concern ourselves with the latter, but to represent the former please do not attempt to use paint, it is far too thick and a wire so coated will be quite out of scale. All "brassy" wire should be chemically blackened by immersing in a solution of 1 oz. Copper Nitrate in 3 oz. water. Gimp is usually sold coloured black or very dark brown and thus needs no further treatment.

I do not advocate the use of cotton as a rigging medium as it is very sensitive to atmospheric changes and does not retain its tension.

Speaking of rigging tension, this is a very important matter as nothing looks worse than slack rigging. All cordage should have the initial stretch taken out before being set up otherwise the rigging will sag. To stretch cordage it is only necessary to reel off a yard or two, form a loop at one end to hang it up, attach a heavy weight to the other end—I use a couple of old flat irons—and let it hang for a few days. Give a rub down with wax, polish with a piece of leather and the rope is ready to be made up.

All rope ends are either whipped or back-sliced. In small stuff as used in model work this is a tedious job and the same results may be obtained by dipping the ends in Certofix or Durofix before cutting to length. All cordage for reeving through blocks dead-eyes should be worked to a point with Durofix.

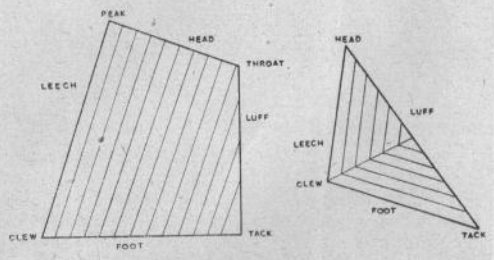


FIG I PARTS OF A SAIL

Sails

The best material for sails is known as "union silk". It is made from the best Egyptian Cotton for model racing yachts and is stocked by suppliers of model yacht accessories. Failing this draughtsman's tracing linen with the dressing boiled out makes a good substitute.

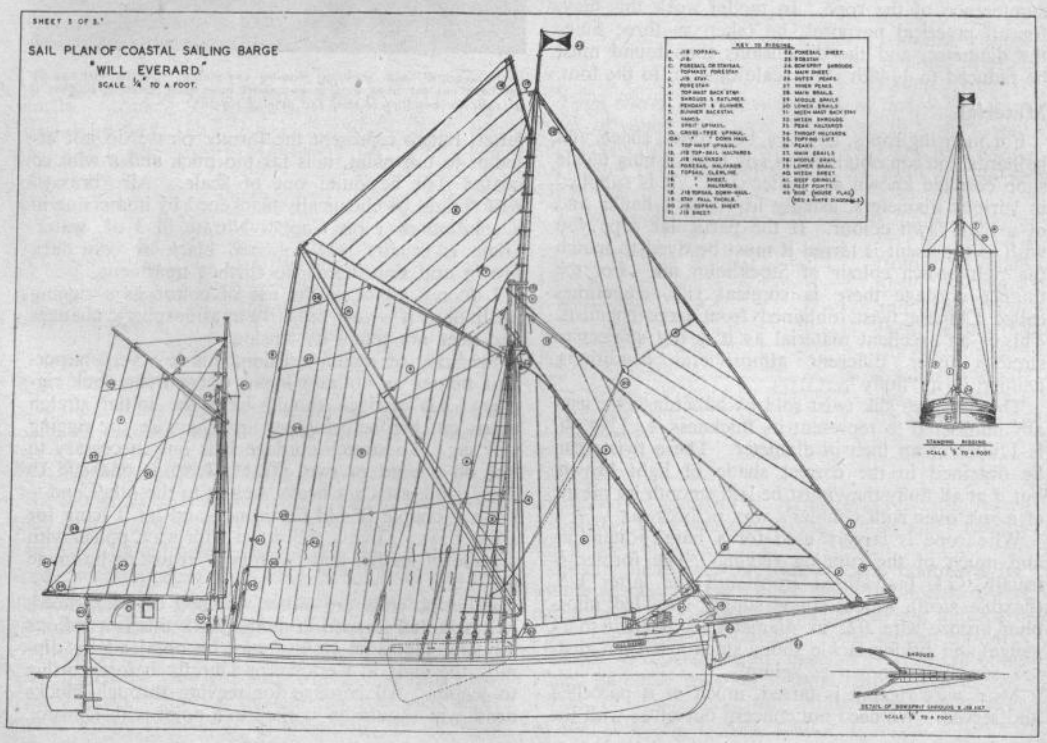
The material must be dyed the correct shade of russet brown, preferably before making up, by means of one of the proprietary brands of household dyes; one maker retails a dye known as "autumn Glory" which is very near the shade of the sails of the prototype.

Always use paper patterns for sails and do not forget to allow enough material for the hem. The best way to cut the sails is to stretch the material on a deal table, not too tightly, just enough to take out the creases and cut by means of a razor blade.

Engage the services of the lady member of the household and ask her to turn in the smallest possible hem, using stitching silk not cotton. A line of machine stitching must be run in to represent cloth widths—again using silk. Cringles are worked in with a buttonhole stitch and bolt ropes shown. Bolt ropes are always on the port side of fore and aft sails and are sewn on by following the lay of the rope with the sewing silk. You will find the bolt ropes have a tendency to turn over when being attached unless special care is taken.

When the sails have been completed they should be dyed, dried and ironed, a little starch—very little —may be used with advantage to give a certain amount of stiffening which will aid the set.

This reduced size reproduction of Sheet 5 of the set of working drawings should be studied in conjunction with Sheet 4 reproduced in the December number of "Model Maker", which gives a number of enlarged details.



Setting up the Rigging. (Reference Plan Sheets 4 and 5)

Before starting work read carefully the following instructions in conjunction with the plans in order to understand thoroughly the general lay-out and position of various parts of the rigging.

Step the main-mast, without the top-mast, and proceed to set up the shrouds. These are always made up in pairs, firstly the first and second shrouds on the port side, following with the corresponding pair on the starboard side. Then the third and fourth pair on the port side, completing with the corresponding pair on the starboard side.

Seize a dead eye at the end of the shroud and fix this to its fellow, which should be already in place attached to the chain plate on the hull, by means of the bent wire jig or link (Sheet 4). Pass the shroud around the mast over the yoke and down to chain plate 2. Seize the throat of this shroud (Sheet 4) and having carefully measured for length, form a loop for the second dead eye and cut off. This pair should now have their dead eyes married by means of a lanyard reeved as shown (Sheet 4) but not cut off as minor adjustments for length will in all probability be required.

Proceed as detailed above with each other pair of shrouds until all are set up, all dead eyes in line and all lanyards correctly tied off.

Ratlines

Although the prototype has ratlines of 3 in. G.I. wire I suggest a little licence here and the use of surgical silk.

To get even spacing of the ratlines take a piece of white card 11 in. long and 2 in. wide and rule the shrouds and ratlines thereon, place this behind the shrouds and work to these dimensions.

To form the ratlines take a needle threaded with the silk, form two turns and a couple of half hitches on the after shroud, clove hitch to the second and third, and finish off with a round turn and two half hitches on the forward shrouds. Do not pull the ratlines tight, it only distorts the shrouds, and when they have a slight downward curve they look more ship-shape. The final detail on the shrouds is the sheer-pole, a piece of 18 gauge wire—a cycle spoke is excellent—lashed to each set of shrouds just above the upper row of dead eyes. Give each knot of the ratlines a coating of Durofix to secure it. Shrouds and ratlines are tarred down so they must be black on the model.

Stays

Now step the top mast and set up the fore-stay (No. 3 Sheet 5) with its stay fall tackle of special blocks (Sheet 4) which should have been ready for fitting in common with all other blocks and fittings.

This stay is the heaviest in the ship as it has to carry the full weight of the mast when it is lowered, and thin picture wire makes a good substitute for the 4 in. wire stay on the prototype. Colour your wire with silver lacquer to represent galvanising.

The wire loop, which is 1½ in. long, is seized to the standing part with thin fuse wire, soldered. The loop passes over the mast head and rests on the thumb cleat on the after side of the mast (Sheet 5).

The next is the Jib Stay (No. 2 Sheet 5). This is of thinner stranded wire with a loop at the end fitted over the mast head resting on the upper thumb cleat. The lower end is reeved through a single block on the bowsprit and belayed to cleat on the bowsprit heel near the windlass.

Top Mast Forestay (No. 1 Sheet 5)

The upper end has a short loop which rests on the shoulder of the top mast pole. It passes down and through the lower sheaves of a fiddle block shackled to the bowsprit end iron, along the bowsprit and relayed to a cleat on the windlass.

Top Mast Backstay (No. 4 Sheet 5)

The upper end of this stay also has a loop in its upper end which, with the top mast forestay, rests on the shoulder of the top mast pole. From here it passes through the cross tree spreaded (see bow view Sheet 5) and is set up by means of two double sheaved blocks, the lower of which is shackled to the forward chainplate. Two stays are, of course, fitted one on either side of the mast.

Pendant and Runner (No. 6 Sheet 5)

This Pendant has an eye splice at its centre which goes around the mast with the shrouds. It is long enough to reach half way down the mast on either side and terminates in a single block. The runner is shackled to the 6th chain plate, up through the single block on the pendant and terminates in another single block (not a double one as shown on Sheet 5). A further single block is shackled to the last chain plate the runner reeves through this up through the upper block and belays to a cleat inside the bulwarks.

Runner Backstay (No. 7 Sheet 5)

Three inch Pendant looped around head of topmast and terminates in a single block. A single block is attached to a length of chain shackled to an eye bolt inside the bulwarks and the falls belayed to a cleat inside the bulwarks.

The lee pendants are slacked off when the mainsail swings over to port or starboard—the weather pendant being tightened to take the strain.

Bowsprit. The Bobstay. (No. 23 Sheet 5)

This consists of a length of chain—18 links to the inch (from Bassett Lowke Ltd.), to which is shackled a short length of stranded wire. The wire is shackled to the lower eye on the bowsprit end iron and the chain is led through a roller sheave low down on the starboard side of the stem up through the hawse hole and is set up by the windlass and finally belayed to a cleat inside the bulwarks.

The bowsprit shrouds (see sketch Sheet 5)) are of wire and lead from the side eyes on the bow-sprit end iron. They are set up by means of a luff tackle, i.e. a single block, with the end hooked into an eye plate on the outside of the bulwarks, the running

part passing through a hole in the round of the bow and belayed to a cleat on the inside of the bulwarks.

Jib Net

This is of wire shackled to the side eyes of the bowsprit end iron, passing through the hawse holes and belayed to cleats inside the bulwarks. Foot ropes are of No. 3½ surgical silk clove hitched to the side wires in the same way as ratlines. These footropes are close together at the outer end and get wider apart as they approach the bow.

Mizzen Mast

Before stepping in its tabernacle the back stay and jumper strut should be fitted (No. 31 Sheet 5). The top of this stay carries a loop which rests on a shoulder just below the cap, passes through a hole in the end of the strut and terminates in a thimble It is connected to an eye on the afterside of the gooseneck band by means of a lanyard bowsed down tight.

The mast is supported sideways by two pairs of shrouds made up in the same way as the main shrouds, i.e. middled seized, one end being connected to the forward chain plate on the starboard side, around the mast at the hounds and down the same side of the second chain plate.

The port shrouds are similarly fitted and the lanyards connecting them to the chain plates adjusted and bowsed taut. No ratlines are used on these shrouds.

This completes the standing rigging.

ELEGANT REBUILDING

(*Continued from page* 101)

The little end is of the "eye" type, and is case-hardened, as is the wrist fin on which it works. It will be seen that a lubricator of good capacity is built on to the big end.

The brasses are of chill cast phosphor bronze, and have oil grooves cut in their bearing faces. The rod was cut from a piece of $\frac{5}{16}$ in. x 1 in. flat mild steel, so more went in waste than remains!

The crosshead is a simple two-piece job with a steel jaw fork and boss which attach (by means of a fine thread, with locknut) to the piston rod, and a G.M. turned shift which fits the bore of the trunk guide and is fastened to the back flange of the steel fork by C.S.K. headed screws put through from the inside. The steel jaw unit was turned, bored, and threaded in the lathe at one setting to ensure absolute concentricity of the thread. The end of the piston rod which screws into the crosshead was also threaded in the lathe; 40 t.p.i. in both cases.

The wrist pin is held fast in the crosshead, and the connecting rod swivels about it.

The eccentric is of steel with a centre locating rib for the strap which is of gunmetal, split and held together by two studs and locknuts. The strap carries a lubricator with a screwed-on cap.

The eccentric rod is cut from the solid and is of rectangular section to match the connecting rod. The end remote from the eccentric is a built-up fork.

The valve rod passes through the centre of the crosshead, and is nutted each side, hence adjustments to valve settings can be made without turning the valve rod.

The slide valve is of gunmetal, built up in two parts and silver soldered together.

The slide valve is driven by a substantial cross nut fitted in a slot in the back of the valve, the rod passing through another slot milled longitudinally and the outer end of the valve rod runs in a dummy gland fixed in the back end of the steam chest.

The piston is on gunmetal and is packed with a single ring of $\frac{1}{8}$ in. square braided graphited asbestos packing.

The piston and valve rods are of stainless steel. Drain cocks are of the needle type, fitted below the cylinder. The stop valve is of the usual screw down type with a "Star" handwheel, with circular flanges for pipe connections.

The lubricator is of the displacement type with a steam jacket to ensure fluidity of oil, and a separate steam supply controlled by its own needle valve. Oil feed and drain valves are, of course, also included.

The main bearing caps have built-in lubricators of the wick feed type, and the connecting rod big end has a built-in oilbox with small screw plug filler.

Crosshead and little end lubrication is taken care of by the lubricator, wick feed mounted on the rib at the front end of the trunk guide.

The motion work is all bright finished, and a stainless steel polished splash guard is fitted over the crank throw and big end.

The cylinder steam chest back cylinder cover, etc., are all lagged with wool felt with a brass covering finished in dull chrome.

Paintwork is a royal blue shade—a change from the more usual green. Brass is bad stuff for paint adhesion, so I had the bed lightly sandblasted to give the paint a key. Two points need watching here (a) protect all fitting surfaces with surgical tape before sandblasting, (b) avoid fingering surfaces to be painted, and get a coat of paint on as soon as possible.

The engine bed is mounted on a precast concrete base which had the foundation bolts moulded in, and this pre-cast concrete is in turn mounted on a $\frac{1}{8}$ in. thick sheet of aluminium.

This latter was lightly sandblasted and then hand engraved in squares and spray painted brick red to simulate quarry tiles.

The whole issue is mounted on a wax polished mahogany baseboard which has turned brass feet at the corners. Raising the baseboard permits the exhaust pipe to be carried straight down and through the engine room floor, and when running on air, exhausting direct, for steam of course, some means of carrying away the steam is desirable.

SCRAP-BOX by "Tailstock"

Ghost Train

" . . . popular story . . . "

MOST of us are familiar with the popular story of the ghostly railway train that, at the precise hour of midnight, screams madly through the lonely wayside station; belching its smoke and hell-fire to the terror of the few passengers huddled in the desolate waiting room. We know also of the explanation — involving underground sidings and gun-running — with which the ingenious authors disentangle the web.

There lives, somewhere just north of the Tyne, a railway guard who believed for a few brief moments that he had, in sober fact, seen another ghostly train when acting as guard of a goods train on a stretch of line between Bladen and Newcastle.

Properly, the story starts in a signal-box alongside the permanent way, where, one bright morning, the signalman was horrified to see a goods engine steaming steadily by pulling a dozen trucks or so; while, a hundred yards behind, the remainder of the train rolled slowly along.

It was obvious to the signalman that the train had become uncoupled somewhere about the middle, and that both the driver and the guard were unaware of the situation. There then arose an urgent problem, because although the engine could have been halted further along the line by means of the signals, there was then the danger of the detached trucks running into the rear of the stationary train with probable grave results.

Unable to attract the attentions of the driver or guard, the signal man, with commendable resourcefulness, bethought himself of a nearby siding into which he could switch the engine, thus leaving a clear stretch of line along which the trucks could roll to a standstill. The scheme took but a few moments to put into operation, and after 'phoning particulars to the boxes up and down the line, the signalman relaxed with the knowledge that his duty had been well done, and that no dire consequence could now arise.

Meanwhile, quite unconscious that he was, as it were, paddling his own canoe, the guard lolled happily out of his cab window; by which time the engine had been suitably side-tracked and brought to a stop. Now, the guard being a cheery, north country soul, much given to the exchange of friendly greetings with passing traffic, prepared to pass the time-of-day with the driver of the goods engine which he perceived standing on the adjacent line, but had scarcely formed his opening words when, to his intense amazement, he found himself addressing the driver of his own train, who should by all the laws of precedent and mechanics have been a quarter of a mile ahead at that very moment. . . .

" . . . guard lolled happily . . . "

Maybe it is upon some such foundations that some of the most authentic cases of apparition have been founded.

The Decay of Craftsmanship

Like many other people I am sick to death of being told that the age of craftsmanship is over, and that we moderns have lost that pride in our work which is supposed to be such a marked feature of the past. Frequently we are told on the radio, the television, and in the Press, of that golden age when work was done for work's sake, and the fact that it provided a living was of secondary importance.

Not only is it extremely doubtful if such an idealistic outlook ever existed in a general way outside of a monastery, but all the facts relating to modern craftsmanship prove the falsity of the idea that craftsmanship died with the spinning wheel and the hand forge. Craftsmanship has simply taken on new forms.

When one enters a modern mass-production factory it is true that one is likely to see banks of repetition machines operated by semi-skilled or unskilled labour in which the workmen seems but to be an extension of the machine itself. In the clatter and whirr of the machine shops one is apt to forget the quieter atmosphere of the tool room, where craftsmen equal in most respects, and superior in many to the old-time workmen, labour to make possible this wonderful spate of production.

Why the skill and craftsmanship required to produce the machines is so generally overlooked is a mystery; one rarely hears of the tool-maker being brought into the picture — almost as if the machines created themselves as in some fantastic dream of the future. It is also not often realised what a great amount of hand-work still goes into the production of machine tools. Many processes, in fact, where particular accuracy is needed, still depend upon the skilful use of hand tools, such as in the fitting of bearings and the production of truly plane surfaces. It is, indeed, true to

" . . . dream of the future . . . "

say that the wonderful accuracy of the majority of machine tools depends upon the hand-scraping of the surfaces and slides.

Old Crafts in Modern Times

Apart from this vast range of new crafts which has sprung up in the past few generations, there are a surprising number of old trades which are today carried on in almost precisely the same manner as they have been for centuries past, and the products are as good as ever. The building of small boats and yachts, for instance.

All around our coast there must be literally hundreds of small boat yards where rowing boats, small fishing boats, and yachts of all kinds and sizes, are built by men whose families have often been in the business for generations. Here one may see methods which have not changed for hundreds of years, carried out by tools almost identical with those of centuries past. It is, in fact, difficult to see how the work could be done in any other way in spite of modern progress in other directions.

Boat building must, I suppose, be one of the oldest of crafts, so that it is not surprising that the most satisfactory methods must have been evolved long since. As for the boats themselves, they have not substantially altered since the days of the Vikings.

The Oldest Craft

" . . . in the business . . . "

It may come as a surprise to many to know that the oldest craft in the world—flint knapping — is still carried on in the little village of Brandon near Thetford in Suffolk. It is safe to say that the chipping of flints has been carried on unbrokenly in this district since the days of pre-history many thousands of years B.C.! I believe that the knapping of flints is now confined to only one family at Brandon—the sole survivors of a vast primitive industry that once spread across the world. I have not visited Brandon since pre-war days, but I was then told that the chipping of flints is now confined solely to the making of striking-flints for *flint-lock guns and rifles*. One might well wonder today where on earth a market would exist for such a commodity, but I understand that there is a small but steady demand from the Far East, particularly Arabia and parts of Asia. It seems that many flint-lock guns — they must be at least a hundred years old—are still used by the tribesmen in these districts, and it has even been hinted that they are confined to these weapons for political reasons. Time marches on—but not at the same pace everywhere it would seem.

" . . . steady demand from the Far East . . . "

Norfolk and Suffolk have been famous for the quality of their flints since the dawn of time, and there is plenty of evidence of the antiquity of the "flint trade" in these areas. The various pre-historic flint mines, particularly those known as "Devil's Dyke", not far from Brandon, throw an interesting light of this most ancient of crafts. These mines are situated in a field in a particularly lonely part of the country, and take the form of holes or shafts, about twenty or thirty feet deep, and spaced about an equal amount, with tunnels connecting them together at the flint-bearing level. It is curious to note that the shafts pass through several layers of flints, which have been ignored in order to get to those of better quality at a lower level.

There is plain evidence that these mines were strongly defended with earthworks and ditches, and were obviously places of great strategic and "commercial" value — a prehistoric Harwell, in fact. As one stands and looks over these deserted fields with the murmuring of bees among the tansy flowers, it is difficult to imagine the bustle and the turmoil, the plottings and the alarums, and the bloody encounters which this spot must have witnessed in the days when our very existence depended upon flints and the craftsmen who worked them.


" . . . murmuring of bees . . . "

IN THE FEBRUARY ISSUE: Tramway Modelling . . Load Waterline Calculations Sit-Hathor-Yunet—a Model of an Egyptian Princess . . Model Fishing Village . . A Novice Model Engineer . . Scenic Effects for Model Buildings . . Self-oiling Lathe Centre . . Vice Clam Mould . . Review of Model Railway Gauges . . Coastal Sailing Barge . . 36 in. Class Restricted Yacht . . 5 c.c. Eta-engined Speed Model Car . . Tyres and Wheels . . Australian Model Car Championships . . 2.5 c.c. Skirrow Speedway Model Racing Car . . A B.R.M. Model . . M.C.A. Recognised Records . . Prototype Parade featuring the BRM . . Making a 'Mike' . . Dope & Castor . . Test Bench and other regular features

DOPE & CASTOR

By JERRY CANN

AS you will observe, I survived the Meteor Open Day unscathed, was forgiven for libelling Topsy, and thoroughly enjoyed myself into the bargain. Here and now let me hand a large bushy bouquet to Harry Howlett for his slick organisation of the show. It's far from easy to put on a big meeting in a building that is quite otherwise occupied until the fatal day, as is the case with the canteen at Messrs. Rists Cables, and an astonishing amount of donkey work is required in a short time, plus lots of advance planning. Anyway, it all came right on the day, and such a gathering of racing blokes has rarely been seen in one spot. The prize table had to have concrete piers to carry the weight, I liked the posterlined safety fence, and the wee little racing pit that Joan Gerard placed at the trackside to decide the destination of the mammoth cake.

I found the quaint old character pictured at the head of this page lurking in the pits, and getting into conversation with him found him a mine of local knowledge and a fund of folk-lore on the early days of model car racing. Prodding me in the waistcoat button with a gnarled finger and fixing me with a watery eye, he expressed his opinions on the cossetted youth of today. "Things, young man", he said, "ain't what they were, not by a long chalk. All this buying little cars in boxes and taking 'em out and running 'em before the wrapping paper's had time to burn! Tcha! I mind when I built my first model thirty-two years ago come next muck spreading, it would be, I wore out two pairs of Uncle Ebeneezer's Sunday bootlaces on 'er, afore she so much as sneezed!! Hot tube ignition, she had, and anything over a steady 10 m.p.h. blew the burners out! Alcohol? I tell 'ee young man, you could bet a drop o' rum down at the old Goat and Compasses in them days as would blow the head off one of these 'ere Doolings! I mind one night . . ." Hastily backing away I mumbled something about not missing old Gerry Buck's run "Not so much of the Old Buck, young man", said my acquaintance, with a nasty look, "I mind him when he was a shaver!"

The model car cult is gaining favour with the schools, and a letter from D. J. Kruse, metalwork master at Raby Boys' School, Barnsley, tells of four models at present being constructed under his supervision. One, a Mills engined job, is regularly clocking 27.5 m.p.h. on a 56ft. diameter course laid in the playground. In view of the growing interest, however, it is hoped that a proper track may be built shortly. This is all very heartening, and an excellent augury for the future. We may yet see inter-school meetings, and an excellent idea they would be. I must write and tell the old gentleman I met at the Meteor Club all about it! They didn't do that sort of thing in *his* young days!

On our right we have recorded the impression of the quaint old character at the Meteor Club do who could possibly have been Gerry Buck's great-grandfather. F.G.B. put up a particularly good show by clocking fastest time of 102.8 m.p.h. with a Rowell Sabre built from a standard kit WITHOUT recourse to the machine tools of the Buck workshop. Everybody was glad to see this from a British "same as you can buy".

K. Robertson, track secretary of the Medway Club, has made the excellent suggestion that Dope and Castor might publish a monthly calendar of events for the benefit of intending competitors, and also the rules for the major competitions as early as possible in the season. I'm all for this, and if club secretaries will let me have the necessary information in good time, i.e., at least four weeks before the publishing date, I will certainly make it a part of the Jerry Cann Service. The Medway Club have asked me to publish the following, in order to catch the eye of other prospective racers in the Medway Towns.

The Club have a 70ft. track on an enclosed site (outdoor) with workshop facilities adjoining. It has been passed as o.k. for 100 m.p.h. by our very good friend Mr. C. E. E. Smith, of the Surrey Club. The track is available any day *except Sundays* and is in use by members every Saturday throughout the year (weather permitting). Visitors with cars are very welcome at these Saturday meetings. The track secretary will be pleased to make necessary arrangements if notified.

The Club have perpetual trophies for class records—a monthly challenge cup—and a championship cup on a points system—

3 points for a monthly cup win; 2 for second; 1 for a run; and 3 for a track record.

It is hoped to stage an open meeting during the coming season if sufficient support would be forthcoming for a Saturday date. The track secretary, K. Robinson, 101 Valley View Road, Rochester, Kent, would be pleased to hear at an early date from club secretaries or others interested.

Well, Christmas draws on, so to speak, as I found last week when the Sunbeam Car Owners parked me on the highest hill in Oxfordshire for three hours as a marshal in their Treasure Hunt! It seems no time at all since I was wishing Cannery Customers a Happy New Year for 1950, and we've had lots of fun since then. Here's wishing everybody a highly successful season for 1951. There are signs that it should be the best yet.

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