HOBBIES weekly

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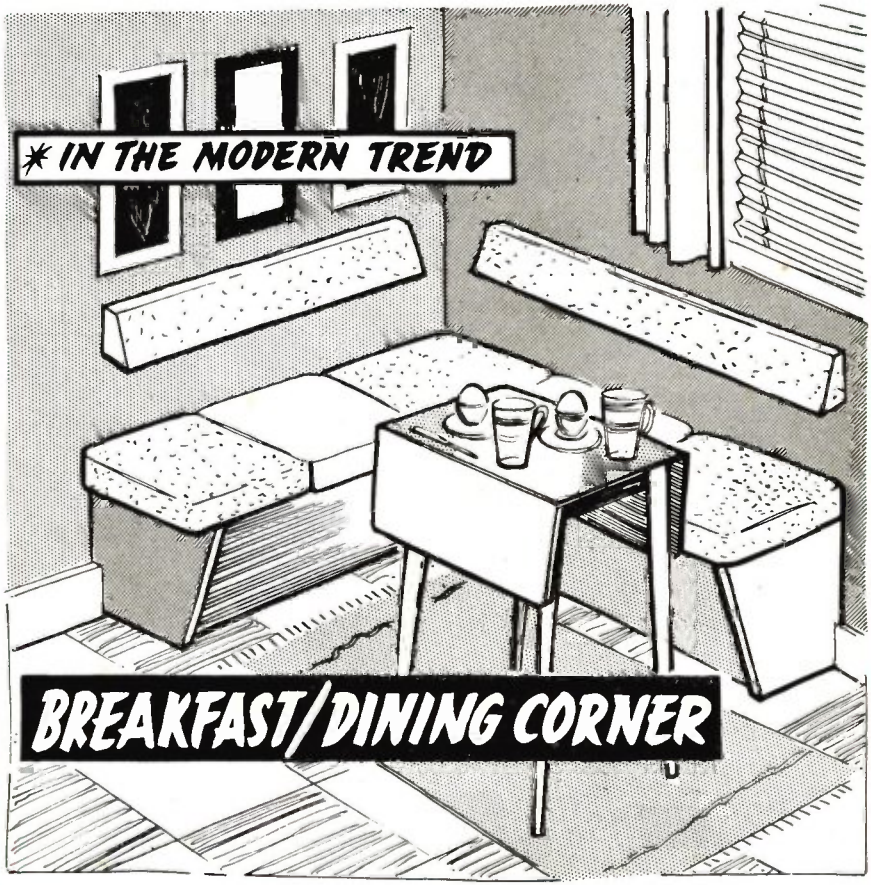


Hobbies

FOR CRAFTSMEN OF ALL AGES

6D.

2.—HOW THE VALVES WORK

THERMIONIC valves are used in receivers and amplifiers, and can increase the strength of a signal, or serve other useful purposes. The construction of a battery operated triode valve will become clear from Fig. 5.

The valve has a filament, which is a thin wire, heated by the passage of current from the filament or low tension supply. Electrons emitted by the heated filament pass through the mesh of the grid, and flow to the anode.

The grid is quite near the filament, and is made from a grating of thin wire. It is connected to one of the pins at the bottom of the valve. The anode surrounds the grid, and is often made from thin metal sheet. A lead also passes from it to a pin, for the anode connection. The whole assembly is enclosed in a glass bulb, from which air is withdrawn.

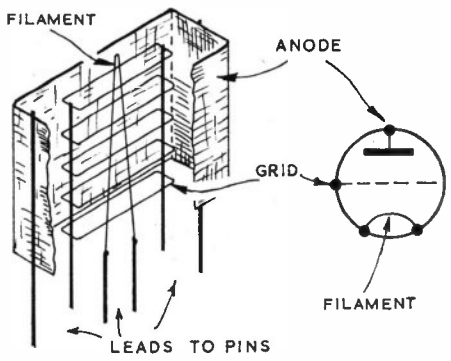


Fig. 5 (left)—Parts of a triode valve

Filament voltage

The valve filament is designed to work with a particular voltage, and this must be obtained from a battery, or other source. The valve cannot work properly if the filament voltage is incorrect, while a voltage higher than intended may actually destroy the filament, so that the valve is useless.

Old type battery valves were made to run from a 2V accumulator. These valves are sometimes very cheap, as surplus, and work well. However, the accumulator supply is rather inconvenient.

Most present-day battery valves have 1·4V filaments, which are intended to run from 1½V dry cells. (The actual battery voltage falls a little below 1·5V.) These valves can be run satisfactorily from dry batteries. Some valves have 2·8V filaments, which can be run from a 3V dry battery.

Amplification

The way in which a valve can amplify a signal can be understood by studying Fig. 6. The line marked 'valve conductance' may be examined first. It shows how the anode current of the valve is controlled by the grid voltage.

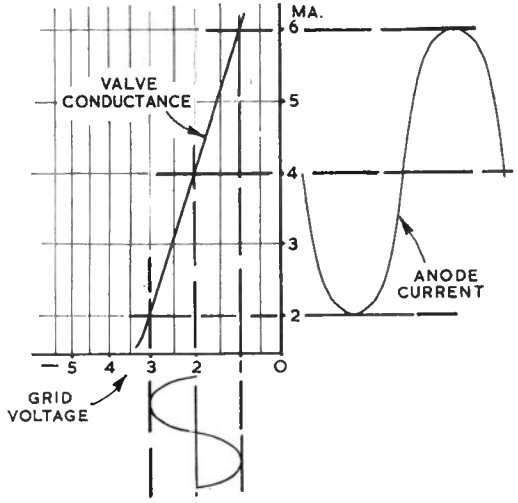


Fig. 6 (right)—Valve as amplifier

In Fig. 6, if 1 volt is applied to the valve grid, the current from filament to anode is 6mA, or 6 milliamperes. If the grid voltage is increased to 2V, the anode current drops to 4mA. In the same way, increasing the grid potential to 3V causes the anode current to drop to 2mA.

If the valve is acting as an amplifier, it may be supposed that a grid bias potential of 2V is applied to it. So if no signal is present, the anode current will be 4mA.

The small signal to be amplified is now applied to the grid. This signal is shown in Fig. 6 by the small wave, which swings 1V positive, and 1V negative.

When the grid signal is swinging negative, its 1V is added to the 2V grid bias, so that the grid voltage is 3V. So the anode current falls to 2mA. When the grid signal is 1V positive, its 1V is taken from the 2V bias, so the grid is at only 1V, and the anode current rises to 6mA.

The way in which the anode current changes is shown by the large curve. The small signal applied to the grid has caused this large change in anode current. The anode current can pass through phones, or a resistor or transformer, to furnish an amplified signal.

From Fig. 6, a change in 1V in grid potential causes a change of 2mA in anode current. This is called the Mutual Conductance, and is usually given in Milliamperes-per-Volt, or mA/V. The valve in Fig. 6 has a mutual conductance of 2mA/V. This is about average for a small battery output valve.

Valves have a particular Impedance, usually some thousands of ohms. This is listed by the valve maker. If **Impedance**

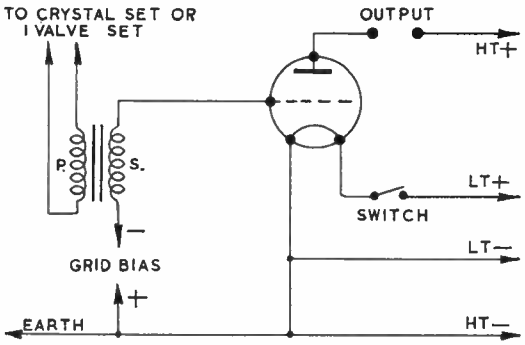


Fig. 7 (left)— 1-valve amplifier

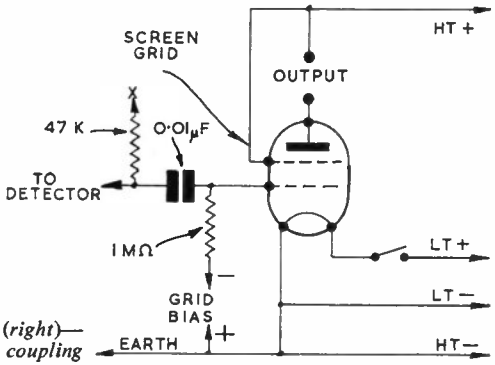


Fig. 8 (right)— Capacity coupling

is multiplied by **Mutual Conductance**, this gives the **Amplification Factor** of the valve.

Using the valve

A 1 valve amplifier working in this way can be made from the circuit in Fig. 7. A coupling transformer with a ratio of about 1:3 or 1:5 is used between crystal set and valve. The transformer primary P is connected to the headphone terminals of the crystal set, which can be constructed as in Fig. 4 (see part 1).

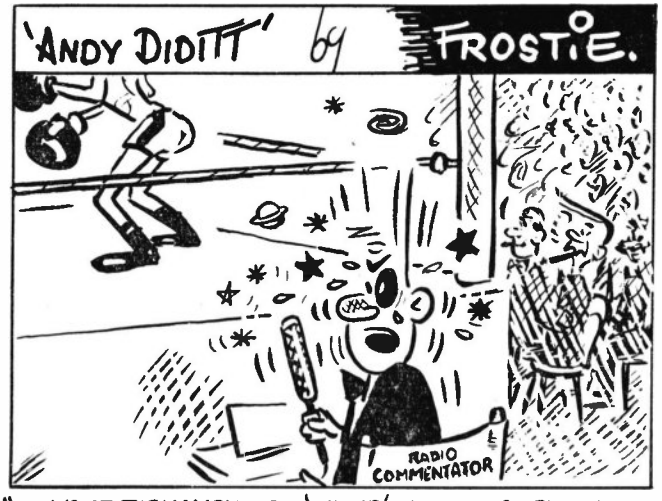
Any small audio amplifier or output valve will work in this circuit. LT positive and LT negative are taken to the low tension battery. This will be a 1½V cell, or 1½V battery, for the usual 1·4V valve.

For high tension, a 45V, 60V, 90V or similar battery can be employed. To obtain amplified signals for headphones, a small battery (say 45V) will be sufficient. But a 60V, 67½V or 90V battery is useful when a loudspeaker is to be operated.

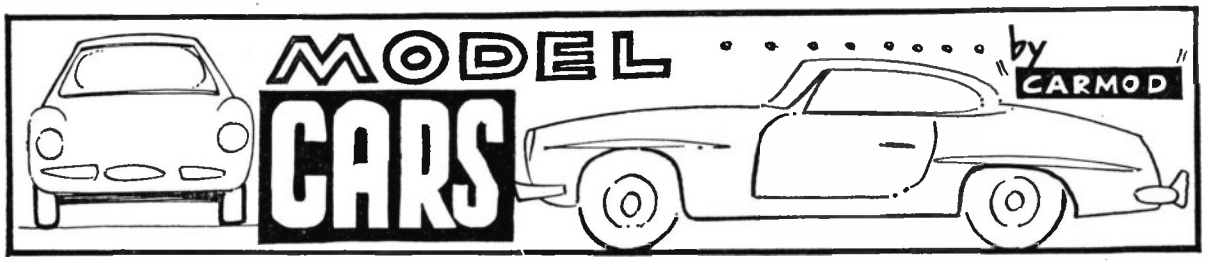
The best grid bias voltage depends on the high tension voltage and valve. For a small power output valve such as the 3V4, 4½V bias would be correct. A grid bias battery which is tapped at each 1½V up to 9V may be obtained, and bias can then be adjusted to suit any valve. The correct bias is that which is as high as possible, without causing distorted signals.

The need for the grid bias battery is rather a nuisance, but it is not difficult to change the circuit so that no battery is wanted. When this is done, bias is produced by the voltage drop in a resistor. This is described later.

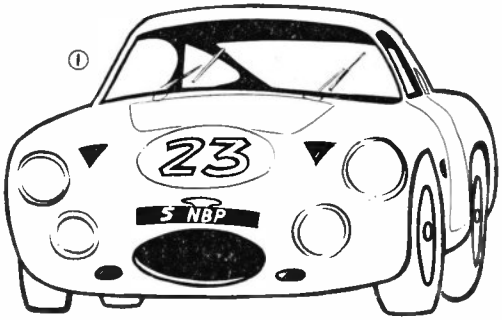
If signals from the crystal set are really strong, a 1 valve amplifier will give just about enough volume for loudspeaker listening, to local stations. Volume and range would be much greater if a 1 valve receiver were used before the amplifier, thus forming a 2 valve receiver.



"... AND AT THE MOMENT THE 'CHAMP' SEEMS TO BE PUNCHING WITHOUT ANY SENSE OF DIRECTION AT ALL— I'M SORRY TO SAY!"



ASTON MARTIN DB 4 GT



FOR THE 1963 racing season Aston Martin developed a prototype Grand Touring car to race at Le Mans, known as Project 212. Using similar bodies they prepared two further cars based on the long established and competition proved DB 4 GT chassis and power unit. These three cars were raced throughout 1963 in Aston Martin works colours, achieving victory at Monza and twice at Montlhéry. At the end of the season the Prototype was sold to the Hon. John and the Hon. James Dawney, while the two DB 4 GTs went to Mike Salmon and Brian Hetred.

For the subject of this conversion I have taken the former car which has recently changed hands again, the owners now being Messrs Tom Rose and Derek Pye. It will be remembered that Tom Rose also possesses that magnificent 1928 4½-litre Le Mans Bentley. I recently had a letter from Mr Rose saying that the car was away at Uxbridge having modifications carried out on the body. It may be, therefore, that the chopping described here is not of the up-to-date vehicle. However, Mr Rose has a spare body shell for the car which, I understand, is in its original form so, it can be said, this is how the car will probably look during its hill climbing in 1965. In any case it is how the car looked under Works and Mike Salmon banners.

The patient for this particular metallic surgery was an Aston Martin DB 4 made by Solido of France. The chopping was made early in 1964 before the DB 5 by the same makers was released, and if I were to undertake the conversion again, it would be this model that would be used as a basic, it having the advantage of being already fitted with good wire wheels and streamlined headlamps which dispenses of a good deal of filing. Either basics can be used, but this description is intended to cover the DB 5.

First strip the model. Solido fit the baseplate of the DB 5 with very neat hexagonal headed screws so it is not necessary to file off locating pegs. Leave in position the opening door mechanism, instrument panel and steering wheel inside the body, also the wheels, axles, and springs on the baseplate.

Hacksaw off the rear end of the car with a vertical cut 11 mm. behind the lower edge of the rear wheel arches. File off the side pieces of the rear bumper. Saw off the rear of the baseplate to enable this to fit in the reduced length car.

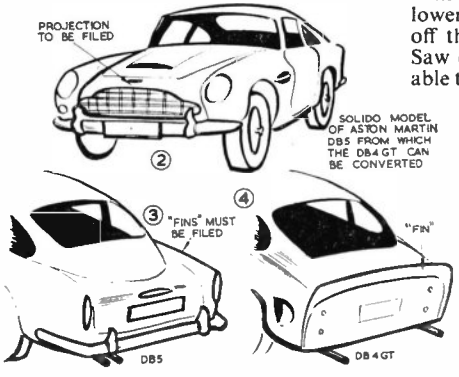
File off the front bumper entirely. The airscoop on top of the bonnet must also be removed with a file. The projection over the radiator grille and the two rear 'fins' have to be filed to give a smooth rounded effect to follow the 'natural' curves (see Figs. 2 and 3). Remove the raised lines of the bonnet, boot and two side engine air vents by filing these smooth with the surrounding metal.

Cut a piece of ⅛ in. balsa to form the rear panel, as shown in Fig. 4, allowing for a raised fin to project by 2 mm. After cementing this panel in place with a wood-to-metal adhesive such as Uhu, taper the rear from the upper outside edge to the lower inside edge with a balsa cutter or razor blade. The front edge of the fin should be rounded off to blend with the rear of the car. A line to show an outside edge should be marked on the rear panel, as shown in Fig. 4.

The next stage of the chopping consists of building up to form the smooth contours of the GT car. I used Plastone for this purpose (first smearing the metal with an adhesive), but plastic metal or even putty can be employed. A look at Fig. 1 will show there is a considerable amount of building up to be done, mainly in the indentations caused by the headlamp bulges, and by the radiator front.

The best guidance that can be given to this build-up is that the car should take on a rounded, even ovoid, appearance at the front end. Before the Plastone has set hard, the radiator cooling hole and the two small holes on either side of this, the two triangular shaped slots inboard of the headlamps, and side lights should be pressed into the material. It will be found that the Plastone will shrink to some extent, leaving small gaps at the edges, and it is necessary to fill these gaps after the material has hardened, and to smooth off with a file. The engine cooling slots in

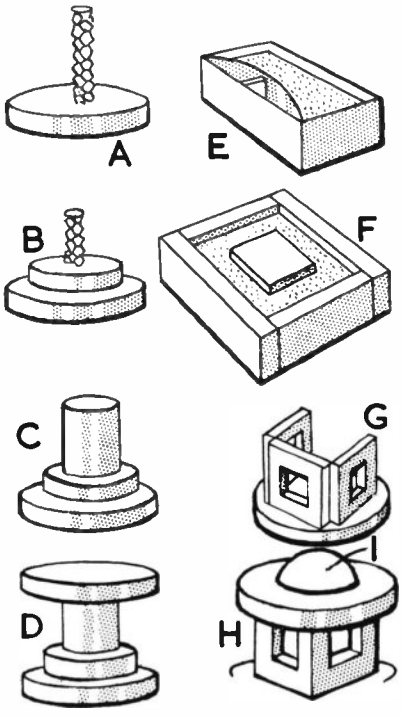
● Continued on page 389



Garden attraction in concrete

Japanese Lantern

ILLUMINATED garden ornaments are steadily growing in popularity, and one of the simplest ways of providing a light in a garden is with the Japanese-style lantern shown here. Made of concrete, and lit by an ordinary candle, it is cheap to make, and casts an attractive glow. If a more permanent light is required, the lantern could be wired for electricity.



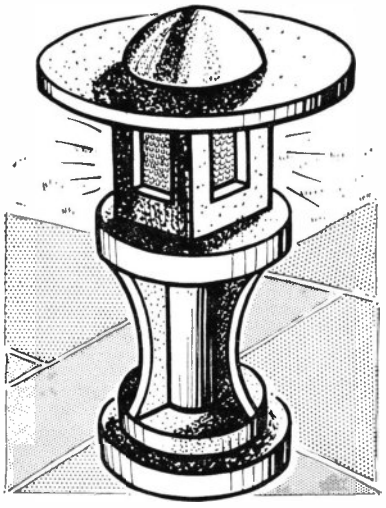
The cement used is a 3:1 sand and cement mixture or a bag of ready-mixed fine casting cement. The dimensions given here, which are for a lantern some 28 in. high, can, of course, be altered if desired.

The pieces for the lantern are cast in sections, which are then assembled on the site. The moulds for the circular sections of the lamp are made from scrap pieces of linoleum, bent round to shape, and pinned to scrap blocks of wood on the outside.

The lower part of the lamp is made first. A ring of linoleum, 12 in. in diameter, is laid on a flat surface which has been covered with a sheet of polythene. It is filled with concrete to a depth of 2 in., and a 12 in. high cylinder of wire netting is stood in the middle of it A. After twenty-four hours, a second ring of linoleum, 9 in. in diameter, is laid on top of the concrete and filled with cement to a depth of 2 in. B. After a further twenty-four hours, a cylinder of linoleum, tinplate or plastic, 6 in. in diameter and 9 in. high, is put in position, and filled with concrete C. The moulds are carefully removed after two days, and the concrete left to harden off, after which time the base is cemented in position on a path or other firm foundation.

The circular platform for the lamp itself is cast separately, and is 12 in. in diameter, and 2 in. thick. It is left for at least forty-eight hours after being cast, then cemented to the top of the base section D. The four curved ornamental supports are each cast in a wood or cardboard box, 9 in. long and 2 in. wide. A strip of linoleum is sprung in place along one side to give the curved edge, and the box filled with cement to the depth of 1½ in. E. Four of these supports are made, and when dry, they are removed from the mould, and cemented to the sides of the base section.

The four lantern sides are cast in a wooden box mould 6 in. square on the inside. A 3 in. square cardboard box weighted with sand or stones is placed in the centre of the mould, and the cement poured round it to a depth of 1 in. F. When dry, the sides are removed, and three of them cemented in place on the round platform G, the corners between the sides being filled in with concrete. Three pieces of frosted glass, about 5 in. square, are cemented to the insides of the sides, then the fourth side is cemented in place, but not glazed. The upper disc H is 16 in. in diameter, and 1½ in. thick, and is cast as before in a lino strip mould. It is cemented to the top of the lamp sides, and capped with a concrete dome I, which is cast in a small plastic bowl, and cemented in place when dry.



A knife or small pointing trowel is then used to go over the finished lantern, making good any gaps or defects. A candle is inserted through the unglazed fourth side, which should be at the back. Should the site be very exposed, a pegboard cover for the opening may be necessary. It is held in place by a woodstrip lip on the inside.

The concrete is best left untreated, to dry out to its natural pale grey colour. Where another finish is desired, dark grey emulsion paint looks best. (A.L.)

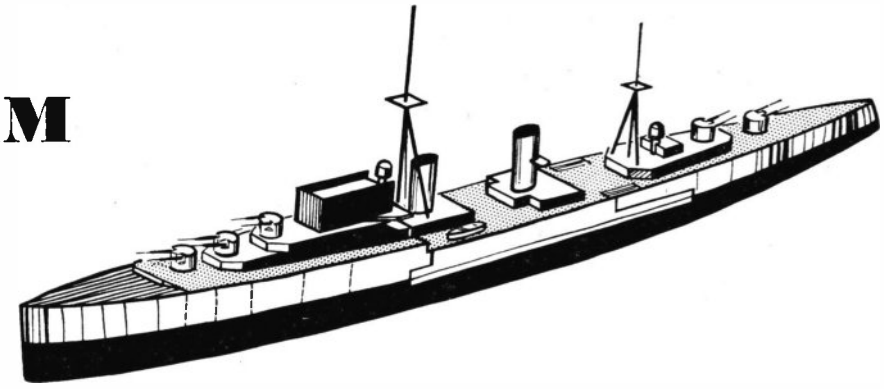
● **Continued from page 388**

ASTON MARTIN

each side of the bonnet should be filled with Plastone and smoothed, and the rear corner of the side windows filled in a little with Plastone to give the effect shown in Fig. 4. Disc brake cooling vents should be drilled or etched behind each wheel arch. In the case of the front vents, these overlap the original vents. The shape of the vents is a capital D, with the perpendicular towards the front. Rear lamps as shown in Fig. 4 can be simulated with small pin heads, and painted red.

This completes the work on the body. The interior can be detailed by painting the front seats grey, and filling in the back seats with Plastone (the DB 4 GT is a two-seat vehicle). It is now only necessary to paint the body and reassemble. Should the car be required in its Works livery, the Sage Green of Aston Martin should be used. This is a metallic finish produced by I.C.I., and is in fact the standard colour of the Solido model, so it will be necessary to paint only the built up and filed parts. Since the car has been bought by Tom Rose and Derek Pye it has been repainted midnight blue, with the headlamps and radiator cooling hole picked out in white, so this is an alternative finish.

H.M.S. DEREHAM

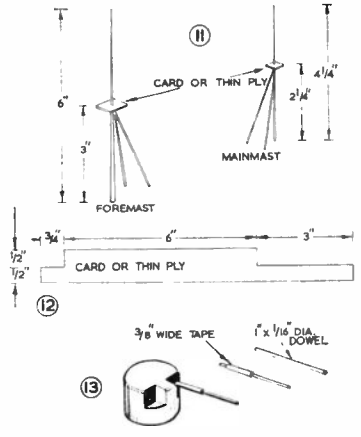


INSTRUCTIONS FOR FINISHING THIS WORKING MODEL

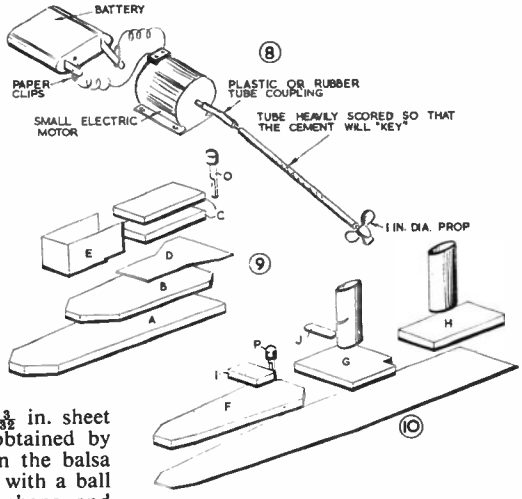
NOW is a good time to fit the prop assembly and motor. The motor should not be more than $1\frac{1}{8}$ in. high so that it may be accommodated in the hull without any internal carving. Several British motors are suitable as well as some of the smaller Japanese motors. The position of the motor will be determined by the available commercial prop assembly. The two are coupled by a short length of plastic or rubber tube. Ideally, the motor and prop shafts should be in line, and, if height permits, the motor may be mounted on a wedge of wood tapered to the same angle as the prop shaft. This is cemented to the floor of the hull. The prop tube must be heavily scored along the length which has to be cemented into the stern unit to provide a key for the cement.

TYPES OF MOTOR SUITABLE FOR THIS PROJECT SHOWN ON BACK PAGE

A $4\frac{1}{2}$ volt battery will just fit on the floor under the forward funnel. It may be wedged between the hull sides, and must always be removed when the model is not sailing. Paper clips soldered to the motor leads can be used as connections to the battery, however the $4\frac{1}{2}$ volt battery cap and on/off switch in *Hobbies Annual* page 185 would be perfect for the job.



FULL SCALE PLAN ON CENTRE PAGES



The decks are cut from $\frac{3}{32}$ in. sheet balsa, and the outline is obtained by placing the inverted hull on the balsa and transferring the outline with a ball point pen. Cut the decks to shape, and before cementing in place, cut out the opening in the after deck shown in the plan and in Fig. 10. Use a modelling knife so that the panel will be a snug fit when replaced. Paint the interior of the hull and the underside of the decks, then cement the latter in position. The deck panel will drop right through the opening, so a stripwood edge, cemented to the underside of the deck, will provide a rebate on which the deck panel will sit. Glasspaper the outside edges of the deck flush with the hull sides.

This is a simple commercial assembly. Drill through the hull to suit the tube. The conventional tiller arrangement will look out of place on the deck of a warship, so cut the tube and shaft just at deck level. Bend the shaft slightly to obtain a friction fit in the tube. A dummy hatch could cover the top of the tube on the deck.

The superstructure is formed mainly from $\frac{3}{8}$ in. sheet balsa. Parts A, B, C, F, G, H and I are cut from this material and care must be taken to ensure clean square edges. Cut part D from $\frac{3}{32}$ in. sheet balsa and part E from card; they will be assembled as shown in Figs. 9. and 10.

The funnels are formed from 2 in. gummed paper strip wrapped round a waxed $\frac{3}{4}$ in. diameter dowel several times. Before the gum has set, remove the tube from the dowel and allow it to dry out in a vice; it should be squeezed gently to form an oval section. Finally cut them to $1\frac{3}{4}$ in. and $1\frac{5}{8}$ in. long. The after funnel has a sawcut in it to take part J which is cut from stout card. The base of the funnels should contain ovals of scrap balsa to assist cementing to parts G and H and to maintain the oval shape.

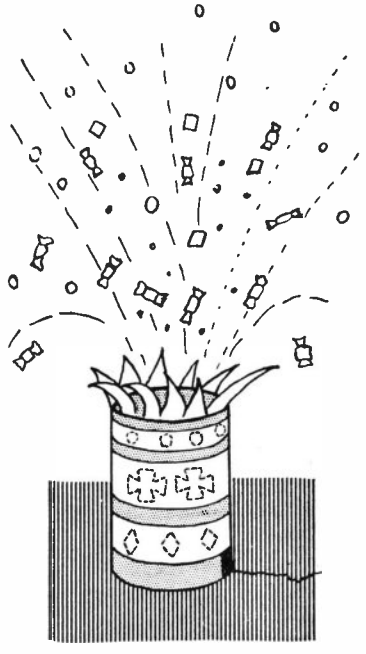
The same $\frac{3}{4}$ in. dowel is used for the gun turrets (part N). Do not cut each unit to length yet, but work as follows. Ensure that the end is sawn and glasspapered quite square, lightly file a chamfer round the edge. Carefully mark and chisel the twin cutouts for the guns (the long length will permit the dowel to be held in a vice or in the hand.) When the correct shape is obtained, cut off the turret and start on the next one. The guns are shown in Fig. 13, ten are required and are 1 in. lengths of $\frac{1}{16}$ in. diameter dowel sanded to a slight taper. They are bound with two turns of $\frac{1}{8}$ in. wide gum strip as shown, and will fit into $\frac{1}{16}$ in. diameter holes ($\frac{1}{8}$ in. deep) in the gun turrets. The range finders O and P are fabricated from $\frac{1}{4}$ in. and $\frac{1}{2}$ in. diameter dowel and rebated to fit parts C and I respectively.

The torpedo tubes are made from $1\frac{1}{4}$ in. lengths of $\frac{1}{8}$ in. diameter dowel tapered as shown in the drawing (M). Boats are carved from scrap balsa and the breakwater, K, from card.

The masts are made up from $\frac{1}{16}$ in. diameter dowel and thin card as shown in Fig. 11. Glasspaper the dowels before assembly, as it would prove difficult to do so later. The armour belt is shown in Fig. 12, and two are cut from card to the given dimensions. Two are required and are cemented to either side of the hull as shown in the general arrangement drawing on the plan.

Good paintwork requires careful preparation; this is particularly so with balsa, which has a fairly open grain. Use a cellulose undercoat and rub down with 'wet or dry' abrasive paper between coats, until a fine finish is obtained. Since the model is not of any particular ship the colour scheme may be a personal one. Light or medium grey or even an Arctic zig-zag camouflage. Paint the underwater part black or brick red, use adhesive tape as masking strip to obtain a fine sharp dividing line. The decks may be a pale stone colour, they need not be lined to simulate planking as the lines would be too close together.

Test the model in the bath and screw ballast (metal strip, etc.) to the hull bottom until the model floats on the water line. When sailing the model at the pond, experiment with rudder settings, allowing the model to turn downwind, until you are able to judge the right amount of rudder for a particular course.



MAKE THIS 'BOMBSHELL' FOR PARTY THRILLS

CHILDREN love a novelty, and a 'sweet bomb' is calculated to win the approval of any gathering of little ones.

It is not difficult to construct, and quite harmless, while providing a gratifying shower of sweets for a children's party. Basically it is a vertical catapult. Release is effected by burning through a strong thread, which controls the 'mechanism'.

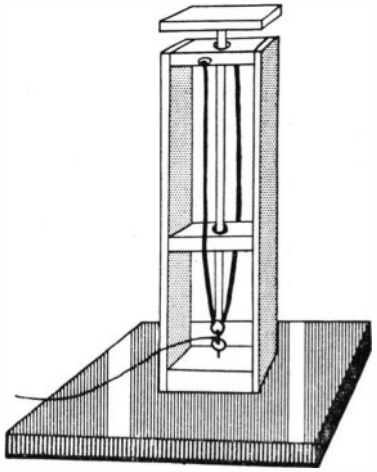
Two pieces of 1 in. lath about 7 in. long can form the vertical sides. These are joined together at three points by spacing pieces of wood, as shown. The two upper spacers have holes to accommodate a dowel piston, which should work smoothly in them. The bottom piece is screwed to a base about 3 in. square.

The top end of the dowel is set into a small platform of ply. On this platform the sweets will be mounted. Into the bottom end of the dowel is inserted a screw-eye. Immediately below this screw-eye another is inserted into the bottom spacer. The two screw-eyes will be fastened together with strong thread when 'loading' the catapult.

Screw-eyes are also set on either side of the top spacer. These are anchorages for strong elastic, which comes down and through the screw-eye on the dowel.

Push down the dowel, and tie the two screw-eyes together. Round one side of the thread, and coming from it, put a fuse. This can be string but a more satisfactory fuse is not hard to make. Soak a piece of tissue paper in a solution of saltpetre, and let it dry. Take a strip, and screw it up into a 'rope'. This will give excellent results.

The platform can be loaded as you wish, but experiment to see that the load is not too heavy.

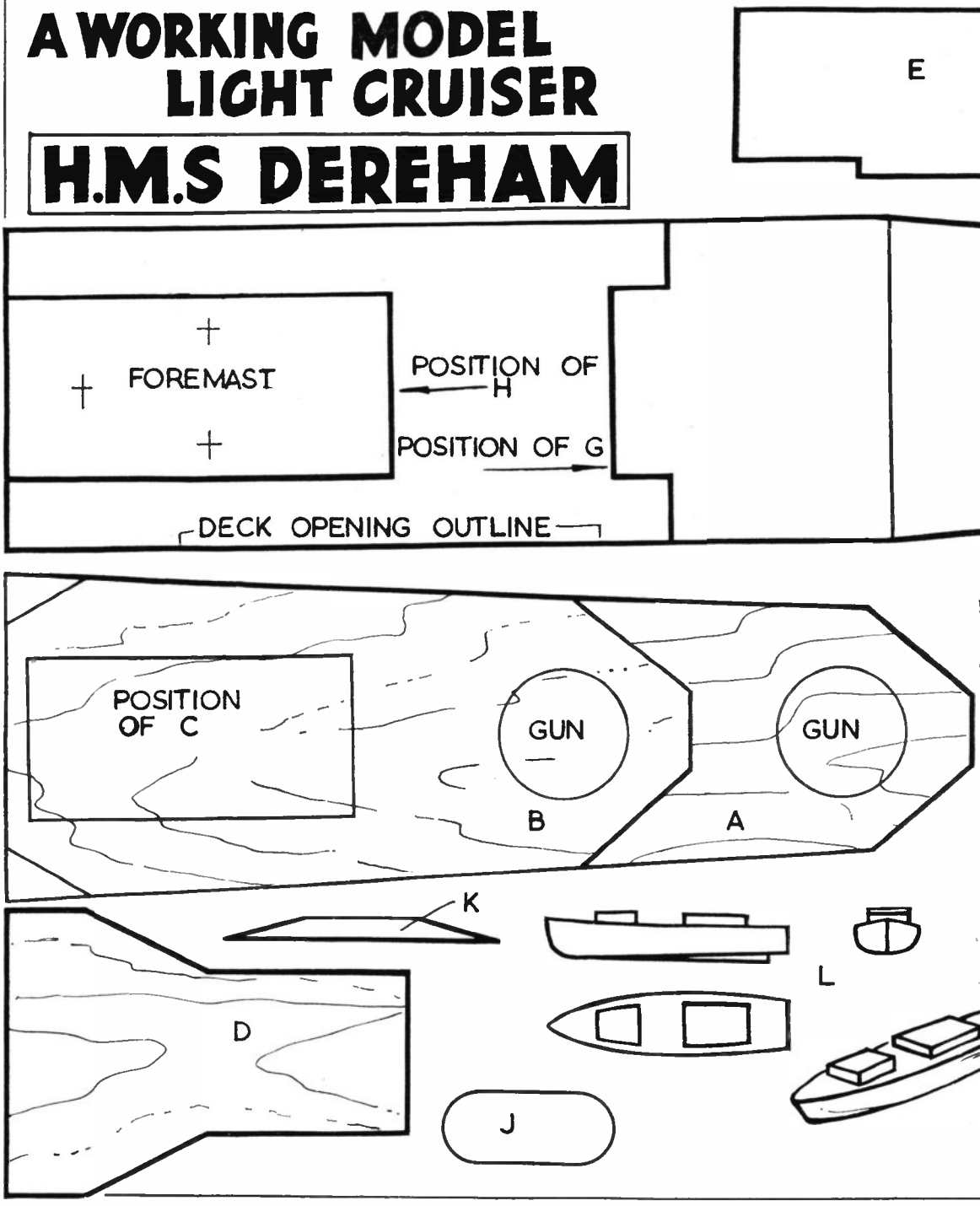


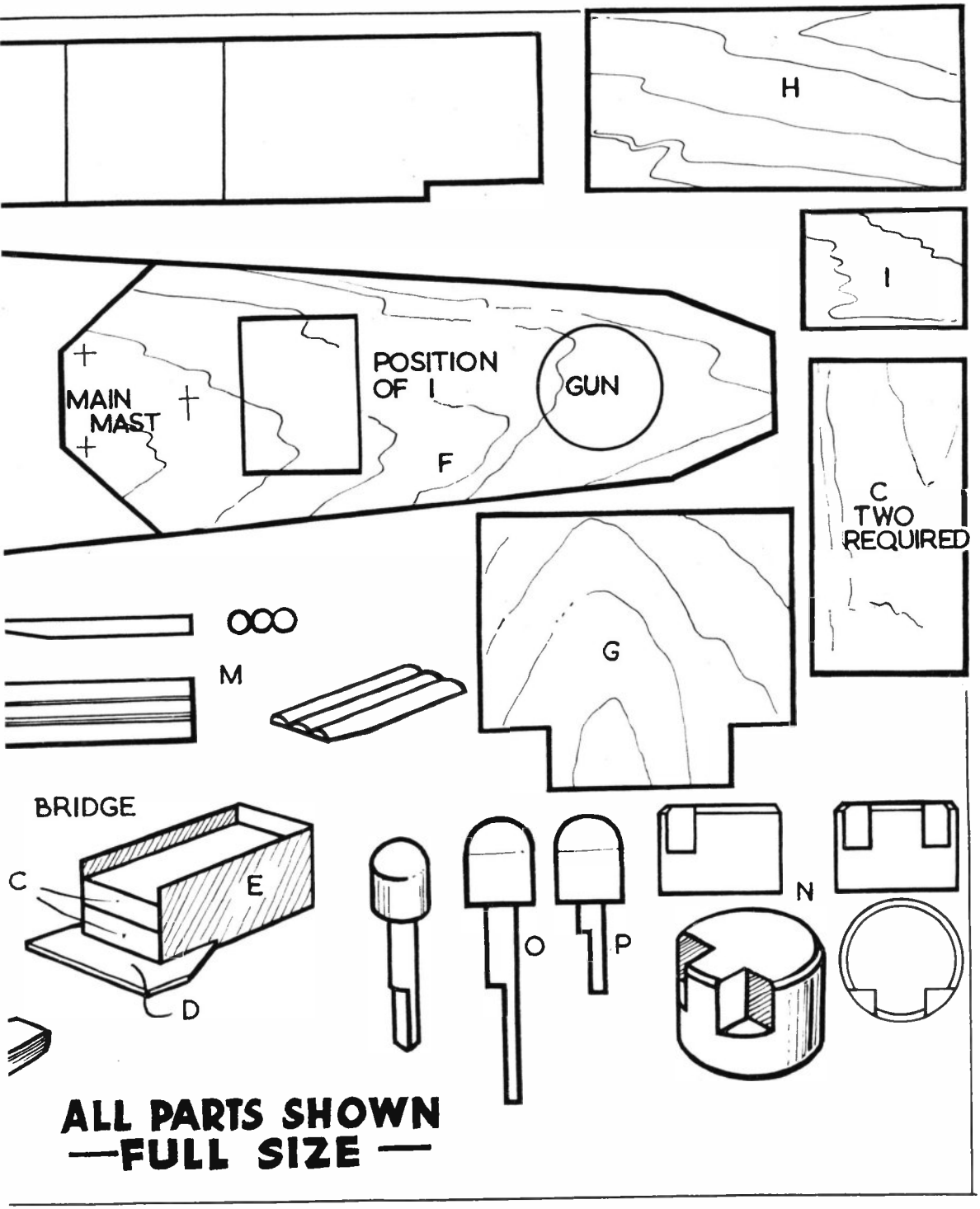
A colourful exterior to the 'bomb' can be quickly made from a cylinder of fairly stiff paper. Cut V-shaped 'petals' round the top edge, and bend these inwards to conceal the mechanism. Allow the fuse to come out through a hole in the bottom.

There will be great interest as the fuse burns — and greater when the sweets shower out of the top! (W.J.S.)

A WORKING MODEL LIGHT CRUISER

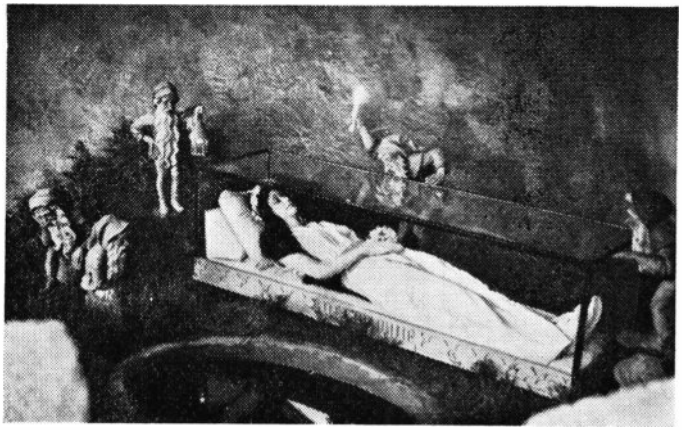
H.M.S DEREHAM





TOPICS FOR COLLECTORS

THE MESSAGE OF CARDS



A 'Snow White' card from Holland

MARCO POLO, Christopher Columbus, and Daniel Boone had one thing in common — none of them had to send back post cards from their travels saying: 'Having a wonderful time — wish you were here.' This was a wonderful advantage. It left their minds free to enjoy their journeys.

The post card today has become the world's most widespread art form. In some people, the mere sight of a post card brings out the mute, inglorious Milton, the hidden Shakespeare. Their hands begin to shake when they see one. They are post card addicts.

A friend of mine told me only the other day that he spends much of his time during the holidays looking for, and sending suitable cards to his many friends who collect cards.

Post cards generally fall into four classes: The lyrical, the obligatory, the humorous and the practical.

The lyrical writer is a frustrated author. Whatever he sees, he is stunned by the wonder of it all. He feels a compulsion to record his impressions in 1,000 words of lush prose, and so crowded that you have to read it through a magnifying glass.

This is in itself a nuisance, but the worst trouble with getting lyrical post cards is this: When you have read one amateur description of Niagara Falls or The Houses of Parliament, you have read them all — but with all that it's great fun getting these cards.

The obligatory post card is written through a sense of duty. A typical message is: 'Shall be arriving about midnight Saturday — take a loaf and pint of milk for me — all news then.'

The humorous post card demonstrates the forced labour of remembrance. It often shows a picture in colour of a snake den or a cage full of monkeys. On the back is waggishly inscribed: 'How's the old office gang? Everybody up to their old tricks?'.

The practical post card gets down to the bare essentials. It has a picture of some hotel and a terse, hurriedly scribbled message, such as: 'Had one flat tyre so far. Made 650 miles today. Should make 675 tomorrow with luck'.

There is another type of post card which is the most disheartening of all to get. It announces: 'Lost my wallet with all my money and papers. Stuck here. Please send me £5 as soon as possible.

Women are usually best at writing post cards. My wife and self divide the work — she writes them — I lick the stamps. (R.L.C.)

'COULD you please repeat my pen friend request of two years ago: I like making models of horse drawn buses and stage coaches. I would like to write to people in Switzerland, a married couple if possible.' ALAN STOKES, 12A, Craighurst Road, Woolton, Liverpool, 25.

'I would welcome friendship with some family in Russia interested in stamp collecting and various hobbies.' R. J. MILES, Box 366, Bonavista, Newfoundland, Canada.

'My biggest interests are wood carvings and curios from all over the world', writes F. HALLOWS of 381, Bolton Road, Small Heath, Birmingham 10. He also collects postcards and cigarette cards and would like pen friends in all parts of the world, especially Germany and Japan. A *Hobbies Weekly* reader for many years, Mr Hallows has a big stack of Hobbies designs, some of them dating back to before the war.

'I would like a pen-pal of any nationality' writes 17 year old MONICA TAYLOR of 'Tara', Rosenhill, Carysfort Ave., Blackrock, Co. Dublin. Hobbies are swimming, judo, and reading, and a student of English, Irish, Latin, French and Spanish languages.

PEN FRIENDS

A tribute to the value of *Hobbies Weekly* for its useful articles, particularly on the making of toys, comes from D. P. DES. SAMARASEKERA, Ratgama, Dodanduwa, Ceylon. He has been a regular reader for many years and would like penfriends from any other countries, his hobbies being stamps, picture cards and magazines.

Here is a list of hobbyists in the U.S.A. who would like to correspond, and exchange letters and discuss their various hobbies, etc, with hobby penfriends in this country or other countries as well. They are all interested in the various hobbies and topics covered by this magazine, collecting, labels, stamps, handicrafts, etc, whilst many are also interested in railways, locomotives, and transport topics.

MISS ANNIE ADAMS (age 16), Route 1, Traphill, N.C., U.S.A.

AVROM BASSETT (age 16), Box 83, Willow-Bunch, Sask., Canada. Interested in railways and locos.

WALLACE BECK, 534 N, 2nd St., Quincy, Illinois, U.S.A.

RON BELZER (age 16), Route 1, Excello, Missouri, U.S.A.

MARION BRASHER ('railfanette'), 109 St. Paul, Spring-Valley, Illinois, 61362, U.S.A. Collects transport badges, uniform buttons, lapel pins, etc.

KEN CHEATHAM, Route 1, Box 35, Springhill, La, U.S.A. Desires teenage hobby pen friends.

Illustrated on front page

Breakfast or Dining Corner

THIS space-saving fitment is intended for use in the kitchen, but could well be adapted for use in the modern combined lounge and dining room. Seats and back-rest are movable, and, therefore, present no obstacle when painting and decorating. They are intended to be used with a small kitchen table or folding table.

Study the diagrams in Fig. 1 for the measurements. The seats are 18 in. wide, 5 ft. long overall, and 17 in. high. The back-rests are made in two separate pieces 56 in. long, spaced about 5 in. above the seats. Wall hangers are used for the back-rests.

The material used for the construction can be ¾ in. plywood or suitable ¾ in. boards battened together to form the required width. If the finish is to be paint, planed deal or obechi would be suitable, but for a stained and polished finish any hardwood with an attractive colour and grain will suffice.

The first part of the construction is shown in Fig. 2. The ends are shaped to fit skirting boards if necessary. The rails of 1½ in. by 1 in. wood are fixed in the position shown. These will serve to support the seat. All parts can be screwed together, using countersunk screws. Where these appear on the outside, the heads can be filled with plastic wood, and sanded flush.

The seats are cut from ¾ in. plywood, and are screwed down to the framework as indicated in Fig. 3. Note that these pieces overlap a little at each end.

The back-rests each consist of a single piece of wood 56 in. by 8 in. by ¾ in. These are seen in Fig. 4, and a section shows how they are finished off. Use strips of ¾ in. thick polyether foam, and back with kapok or cotton wool to give a sloping surface as shown. The whole is covered with material which is drawn tight and tacked in place at the back. Use brass upholstery tacks for this purpose. Fix brass wall hangers after the covering material has been tacked in place.

The seats should be finished by painting or polishing before fixing the seat covering. Clean up all round with glasspaper and, if necessary, fill the grain with woodfiller. If painting, give an undercoat, followed by a light sanding, then a finishing coat of high gloss. For a polished surface, to reveal the natural beauty of the wood, use polyurethane varnish, giving two or three coats if necessary. Wood may be darkened or coloured to match existing furniture by using suitable stains. A really professional finish can be obtained by using Furniglass home French polish.

The seats can now be padded with polyether foam 1½ in. thick, which may be in two pieces or may consist of a number of pieces butted together. Cover with material, tacking on the underside as already described for the back-rests. Alternatively the seat can be left plain, and cushions provided for comfort. These can, of course, match the covering on the back-rest. (M.h.)

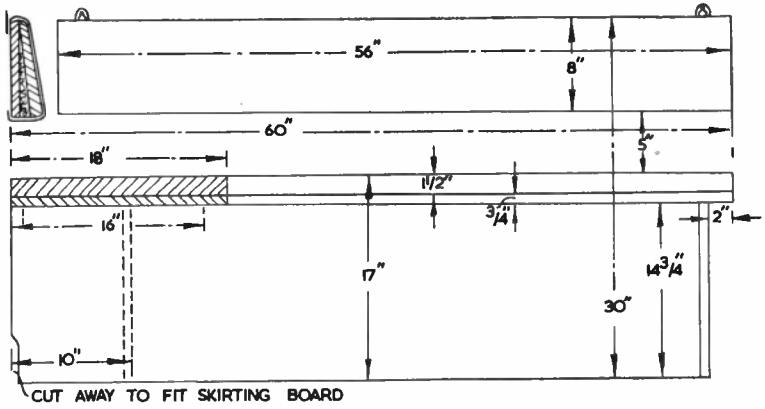


Fig. 1

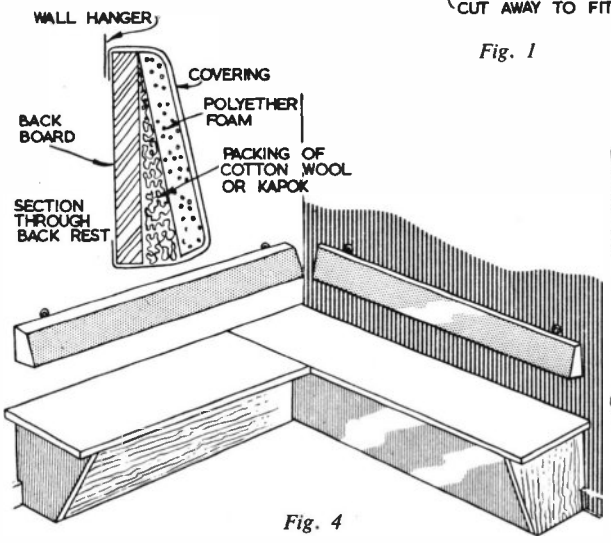


Fig. 4

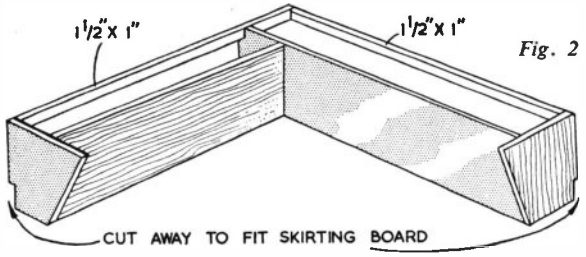


Fig. 2

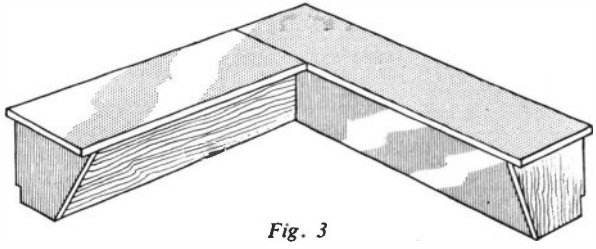


Fig. 3

Take your camera to market

'*Making her pension spin out*'

Human expressions can make interesting pictures for the amateur photographer; the open-air market place is as good a place as any to begin looking for such pictures.

By C. Robinson

THE many constantly changing expressions of the human face can make very interesting pictures. It is, in fact, one theme which the amateur photographer can use again and again, and still have variety in his work; all that is necessary is a change in location.

One of my favourite places in which to shoot such pictures is in the open-air markets, be they held on a piece of waste ground in the poorer parts of our cities or with all the pageantry of days gone by, around the market cross of a picturesque country town.

There is nothing difficult, technically, about taking such pictures; perhaps the major obstacle to be overcome is one's self-consciousness about using the camera in a public place. But today, when the camera is becoming more and more of a common place object, carried by a larger proportion of the general public than ever before, this feeling is gradually being dispersed.

Don't fuss around

The best advice which I can give about overcoming this is to learn to use your camera almost automatically, without having to fuss around focusing, taking meter readings etc, and to go out determined to take pictures and ignore others around you. You will soon find, especially in the market place where there is much else requiring attention, that a man with a camera will soon be forgotten. Then, of course, is the best time to take your pictures, thus ensuring that they will be natural and quite unposed.

Almost any type of camera will suffice for this kind of work. The 35 mm. is, perhaps, the more convenient, being easy to handle unobtrusively. It will often accept a variety of different focal length lenses, and is able to take 36 pictures without the necessity of reloading.

A medium telephoto lens, while not essential, can be a most useful asset too, enabling one to retire further from the scene and still obtain a reasonably sized image of a person on the negative.

Use high speed film

Regarding film, perhaps the best choice is one of the high speed group. This enables a high shutter speed to be used, which is useful in helping to avoid camera shake, especially if using a telephoto lens, which is apt to make one more prone to this. It will also arrest any slight movement of the subject at the time of exposure.

'*Cor blimey luv, course me bananas is ripe!*'

The faster film also allows a smaller aperture to be used, which means a greater depth of field is obtained, a useful factor for covering any slight error in focusing, often unavoidable when shooting in a hurry.

Have patience

When taking my pictures I prefer to concentrate upon individuals and small groups rather than the general scene which, I feel, always appears to be rather muddled when viewed as a finished print. In such close-ups it is the expression, of course, which makes the picture, and one must have patience to wait until just the right moment to expose to obtain the best in this respect. Another point is that it often pays to shoot more than one frame of each subject. This ensures you have something in reserve, for often it is only the tiniest fault, discovered after developing the film, which spoils a picture.

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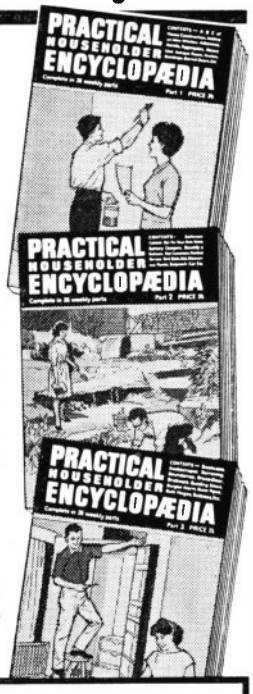

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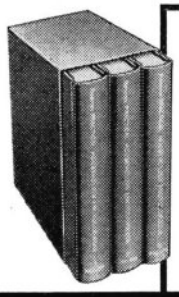

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PRACTICAL HOUSEHOLDER ENCYCLOPÆDIA 3/6 WEEKLY

PLACE A REGULAR ORDER WITH YOUR NEWSAGENT

THE THREE BELLS

THREE charming young ladies who are hoping to put Britain on the map as far as girl vocal groups are concerned are The Three Bells who hail from Liverpool.

It was the persistence of friend and recording star Barry St. John that earned them a recording contract. She sent a photo of them to recording manager John Burgess. He wrote back asking for a tape and was so impressed that he signed them immediately.

Manfred Mann vocalist Paul Jones was also impressed by the sound of the girls and asked if he could play harmonica on their first disc. And so the wailing harmonica accompaniment heard on *Softly in the night* (Columbia DB7399) by The Three Bells comes from none other than Paul Jones.

IN THE BOOKSHOPS

ELECTRICITY IN YOUR HOME

By Milward Scott

AN invaluable reference book for all house owners. Items covered include wiring for lights, power, cookers, etc. Fixing and checking circuits, distribution, fuses, and control.

Easy to follow details show how to add all those little extras which the householder usually wishes to instal.

Publishers W. & G. Foyle Ltd, 119–125 Charing Cross Road, London, W.C.2. Price 4s. 0d.

WOODWORKERS ANNUAL

(*Volume* 68)

FOR the man interested in making furniture and other items at home and in the small professional workshop this is the ideal book.

How to make a living room suite is carefully explained, as well as many other items such as arm chair, Jardiniere, tea-trolley, kitchen furniture, desk, extending table, bedside table, standard lamp, record cabinet, writing desk, convertible bed-settee, etc.

There are a host of other home requirements given, such as, shelves, sewing companion, salt and pepper pots, stools, etc.

There is also a large section of craft features — wood turning, wood carving, picture framing, pyrography, etc. Special features on the history of the saw, work of the colleges, electric routers, double glazing, are also given.

Published by Evans Brothers Ltd. Montague House, Russell Square, London, E.C.1. Price 18s. 0d.

THE FIRST BOOK OF PUPPETS

By Moritz Jagendorf

PUPPETRY is an enchanted world which offers hours of pleasure. The clearly written instructions in this book make it easy for even beginners to create and manage the actors, make stage and costumes, plan the performance and write the plays.

Animals and people, push-puppets, rod and finger puppets, shadow figures, glove puppets and marionettes are all specially dealt with. On every page there are drawings, more than half in full colour.

Published by Edmund Ward, 200, Bishopgate, London, E.C.2. Price 10s. 6d.

COARSE FISHING

By Clive Gammon

THIS book begins with a general survey of coarse fishing water in Britain and moves on to a detailed consideration of fishing tackle. Advice is given on the selection of rods, reels, line floats, spinners, lures and hooks, and a thorough discussion on baits.

The book is well illustrated, and contains a comprehensive index.

Published by Collins. 144 Cathedral Street, Glasgow. Price 5s. 0d.

DESIGN AND BUILD A CARAVAN

By Peter Arkwright

THE author has been associated with various branches of the woodworking industry for over a quarter of a century, and in this book passes on the valuable lessons he learned in building his own caravan.

Although this may not be the ideal caravan to suit all purposes, the basic facts are given, and the reader can tailor the instructions to suit his individual requirements.

There are chapters on the chassis and floor, side frames and roof, the shell, furnishing, lighting and heating.

Published by Arco Publications. 9 Grape Street, London, W.C.2. Price 18s. 0d.

ELECTRICAL HOBBIES

By F. G. Rayer

A FEW hours spent browsing through this book will enable anyone to erect a burglar alarm, install a house telephone, repair his car's electrical system, or amplify a guitar.

The opening chapter is devoted to circuit principles, describing clearly what electricity is, and explaining those commonly known terms — Ohms, Watts and Amperes. This knowledge is then applied to an extraordinary variety of equipment, ranging from flashing lighthouses, doorbells and the heating of aquaria to model radio-control transmitters and receivers.

The text is well illustrated, and a comprehensive index is appended.

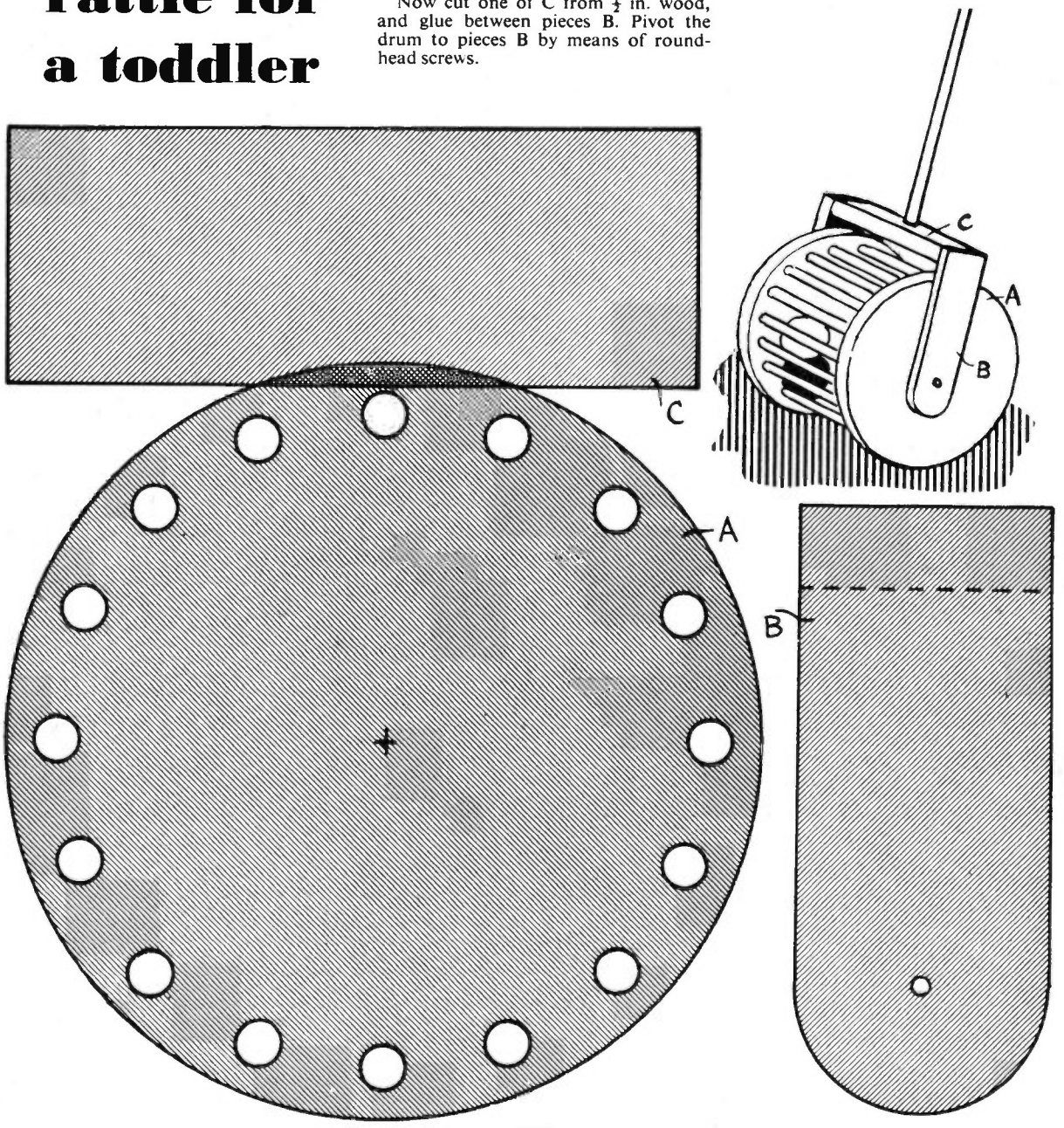
Published by Collins. 144 Cathedral Street, Glasgow, C.4. Price 5s. 0d.

Push-along rattle for a toddler

CUT two pieces A and two B from ¼ in. wood, using a fretsaw. Make the drum from pieces A, and 4 in. lengths of ¼ in. round rod. Enclose two table tennis balls.

Now cut one of C from ½ in. wood, and glue between pieces B. Pivot the drum to pieces B by means of round-head screws.

Drill a slanting hole in piece C, and glue in place a 2 ft. length of ½ in. round rod. Finish off by painting in bright colours, leaving the interior plain. (M.p.)



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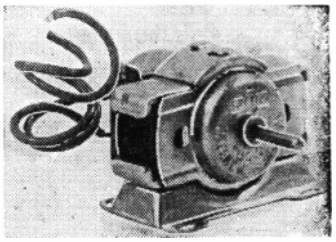

MODEL 'O' Typical of the Handy size range 5/11

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1	1½–3	1⅜ oz.	1"	7/4	4½d.
2	1½–4½	2½ oz.	1⅛"	8/5	6d.
3	1½–4½	2⅞ oz.	1⅜"	10/–	6d.
4	3–6	5 oz.	1½"	18/–	9d.
5	4½–10	11 oz.	1⅝"	37/6	1/-

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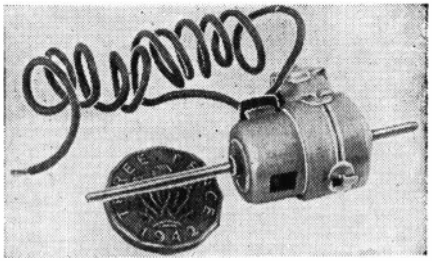

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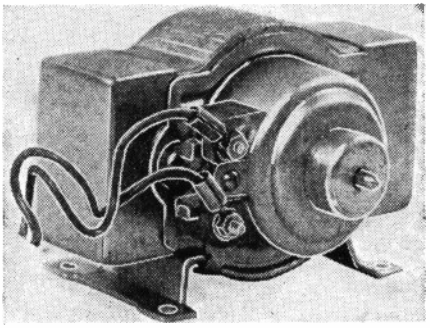

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