

A Strongly-made Compost Box

A COMPOST heap can look very untidy and can sprawl over a considerable area in the course of time. Often there is not the requisite heat in parts of the heap through insufficient depth. There is no need to allow your composting activities to disfigure the garden.

Restraint

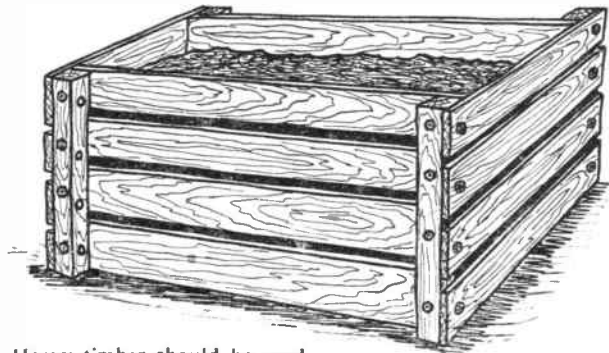
One solution is to construct a composting box or compound, which will retain the material and restrain its spreading tendencies, besides ensuring a good even depth.

There is no hard and fast rule governing the construction or size of a compost box. It should, however, be 3ft. deep and of sufficient size to accommodate all the material you can get. A good size is about 4ft. by 3ft. or 5ft. by 4ft., with a depth of 3ft.

Avoid Concrete

Concrete blocks may be used, but many of us dislike concrete in the garden unless unavoidable. It is too permanent.

Although of more limited life, timber is quite satisfactory and it will last many seasons if well creosoted, tarred or



painted. Heavy timber should be used if obtainable, and the planks should be spaced 1in. or so apart—not touching. Railway sleepers would do admirably, and a bolted construction would justify the extra expense, as the box could easily be taken apart and reassembled. Four stout corner posts will be necessary and it is better to have these on the outside of the box.

In the preliminary stages of building the heap only the bottom planks need be

bolted in place and as the heap rises the others can be added. The bolts should be well greased before use to ensure easy removal.

Moving On

When the heap is complete and the box filled with settled compost, the box should be removed and rebuilt in a new position. The heap will stand compact for easy disposal. (L.J.B.)

General Purpose Chair

(Continued from page 147)

The form of the tubular fitment is detailed in Fig. 5. This should be bent from $\frac{3}{8}$ in. diameter duralumin tube with a wall thickness of around $\frac{1}{16}$ in. No difficulty should be experienced in bending this tube, if care is taken to grasp one part firmly, e.g., in a vice. The front right-angled bends are largely hidden in the finished assembly and so can be 'kinked', especially as they take little or no load. The obtuse angled bends should, however, be made without kinking the tube. To do this, fill the tube with sand and plug the ends before attempting to bend. The sand will resist crushing when the bends are made and prevent the tube from crushing. When the bends have been completed, unplug the ends of the tube and pour out the sand.

The leg layout dimensions and leg construction is summarised in Fig. 6. Two leg patterns are required, cut from $\frac{3}{8}$ in. ply of good quality and appearance. Grain direction is largely unimportant. When the ply leg patterns have been cut accurately to shape, cut false legs to shape from $\frac{1}{2}$ in. thick stock to be glued inside the leg pattern, as shown in the

detail sketch. These false legs are slotted at the top to receive the deep leg beams, by means of which the leg assembly is joined.

The spacers or rails stiffening the lower part of the leg assembly are lengths of $\frac{1}{2}$ in. diameter dowel, glued into holes drilled in the 'false legs' only. These dowels, in other words, do not protrude through the ply outer leg panels. The leg assembly is completed and finished as a unit and the top then squared off accurately to be perfectly flat and horizontal. The bottom of the legs are similarly trimmed to be a flush fit on a flat surface. To improve the appearance, round off the inside edges of the false legs and finish all parts perfectly smooth.

The next job to tackle is assembly. Drill three $\frac{3}{8}$ in. diameter holes equispaced along each 'leg' of the metal tube assembly which fits under the seat, clamp the tube in place temporarily and use the drilled tube as a jig to drill corresponding holes through the seat panel. The position of the screws for securing the leg beams can also be marked and started with a bradawl or

by drilling an undersize hole.

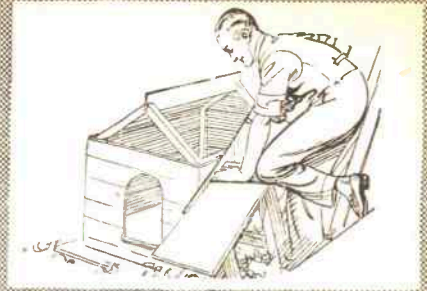
The tubular frame is now secured permanently to the seat with short $\frac{3}{8}$ in. diameter bolts. Use countersunk heads sunk flush with the top of the seat and, preferably, lock nuts on the underside. Failing locknuts, lock the ordinary nuts in place by means of a spring washer. The seat with frame attached can now be mounted on the leg assembly and screwed in place, the tubular frame locating the leg assembly both fore and aft and laterally.

Now screw the ply back rest to the two back braces, starting at the centre and working outwards. This will reduce the ply to the required curved form. Finish off perfectly smooth and then slide the backrest assembly over the top of the metal tubes. If you prefer, you can make this assembly permanent by using self-tapping screws through the top brace into the tube.

The final stage in assembly consists of springing and upholstering the seat. Before this is done the woodwork should be finished by staining and polishing, as preferred. The seat 'spring' is a cushion of foam rubber about 1in. thick, cut to shape and cemented to the ply seat with rubber cement. Any suitable material can then be used to cover the complete seat, securing down around the edges with round headed brass upholstery tacks. (R.H.W.)

Hobbies

WEEKLY



VOL. 116

NUMBER 3005

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Full details for making a TWIN-FLOAT RACING HYDROPLANE

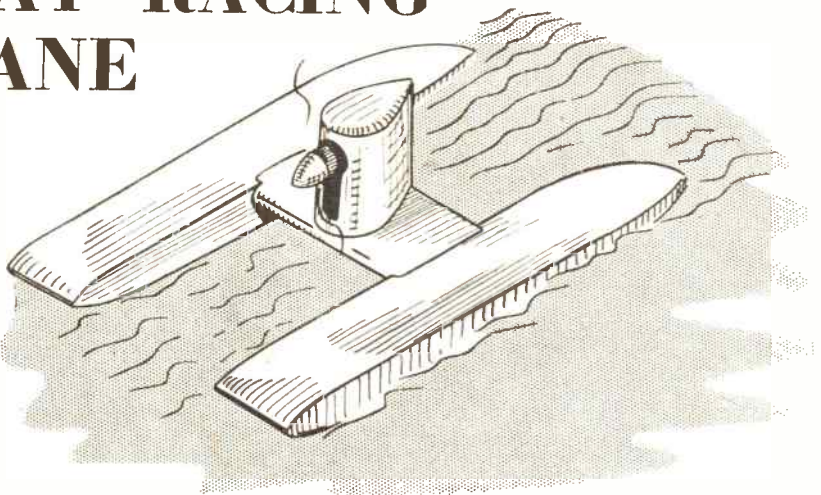
★ Scale Plans on
page 159 ★

AN unusual layout for a speed-boat, perhaps, but this is a type of model which is capable of very high speeds. By using an airscrew, too, instead of a water propeller the complications of the stern tube and propeller shaft assembly are avoided. Another great advantage is that the motor can be started and adjusted for best running without fear of it slowing down and, perhaps, being out of adjustment when launched. This is a feature which will be much appreciated with smaller engines which are, at times, a trifle 'tricky' on running settings.

Not Difficult

There is nothing difficult about the construction of this model. The page plans are reproduced one third full size and can easily be scaled up. Alternatively full size plans are available, if you prefer. The step-by-step constructional sketches cover the main points of assembly.

Start by making a pair of hulls. The deck plan is marked out on $\frac{3}{8}$ in. hard balsa sheet and cut to the rounded end. All the necessary formers are then glued in their respective positions,



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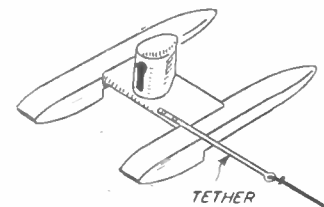
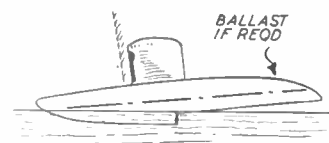
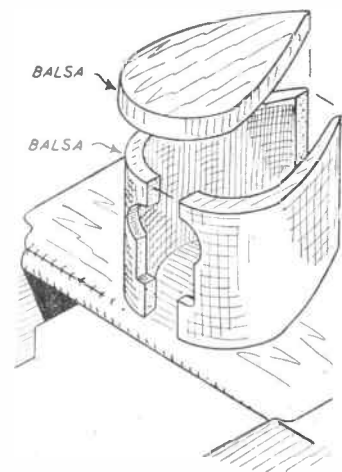
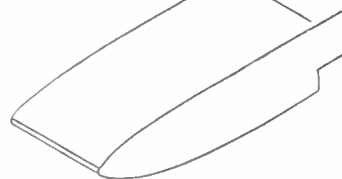
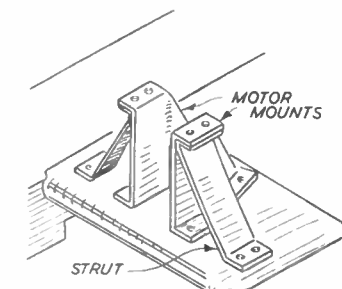
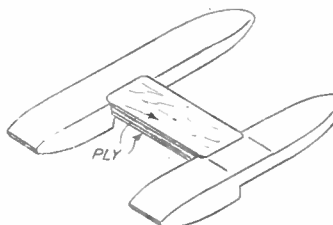
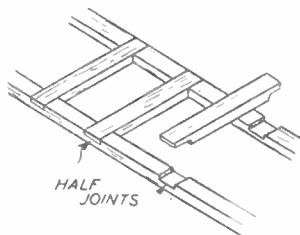
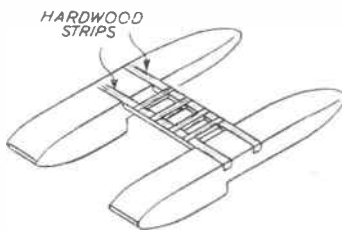
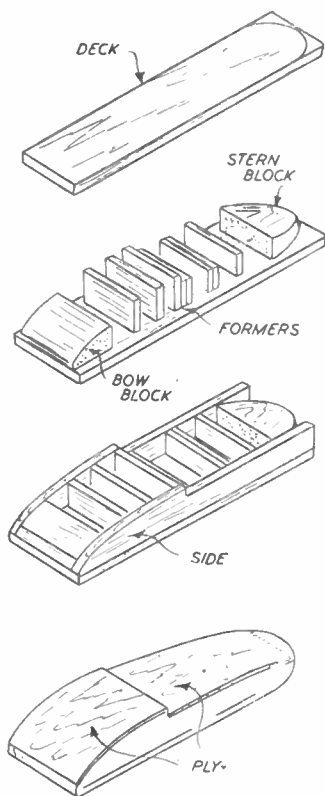
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together with the partly shaped bow and stern blocks. These blocks are also cut from balsa. The sides are cut next from medium hard $\frac{1}{4}$ in. sheet balsa and also cemented in place. Check that everything lines up accurately and then add the bottom skinning of thin ply. Ply of thickness $\frac{1}{16}$ in. is shown on the plan but thinner ply can be used, if you prefer. The thicker ply will make a very strong robust job, but the model will be heavier. The lighter the model the

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THE MAGAZINE FOR MODELLERS,
FRETWORKERS & HOME CRAFTSMEN

4^p



better its ultimate performance will be.

When the two hulls are finished, glasspaper down perfectly smooth and cover with silk or nylon. Use only the thinnest covering material and apply with photographic paste, smoothing out all wrinkles. Both these covering materials are best applied in the damp state as they are then easier to pull to shape. When dry give each hull about six or eight coats of model dope, clear or coloured, as desired.

The Hardwood Beams

The hulls are joined by $\frac{1}{4}$ in. by $\frac{1}{4}$ in. hardwood beams, as shown in the detail sketches. A number of cross members of the same material are half-jointed into these beams, as indicated and the whole centre section is finally covered with thin ply, top and bottom. Note that the hulls have to be notched to accommodate these beams which can extend through to the outer sides or finish flush with the inner edge of the outer side, as desired. The finished centre section should be glasspapered smooth and the ends rounded. This also will benefit from a covering of thin silk or nylon and again should be well doped.

The remainder of the work is quite straightforward. The motor is mounted over the centre section on dural brackets, cut to appropriate shape and size. Any

motor of about 1 c.c. capacity can be used to power this model and the dimensions of the motor mount should be adjusted accordingly. Propeller diameter is $6\frac{1}{2}$ ins. and the height of the motor should be such that the bottom of the propeller arc comes just below the bottom of the centre section. The motor should be mounted inverted, both for improved appearance and to keep the weight low down.

To stabilise the motor mount, dural struts must be used, as shown. These are attached to the top of the motor mount with the same bolts that hold the engine in place and the other end screwed down to one of the cross beams in the centre section. If a fairing is to be added around the motor, make and shape this fairing first before mounting the struts in place. Slots will then have to be cut in the fairing to clear the struts, extending down to the bottom if the fairing is to be detachable.

Carved Fairing

The fairing itself is carved from block balsa. Mount the motor temporarily and then hollow out two balsa blocks so that these will close together and clear the motor. Then shape these blocks to finished outside contour. The two blocks can then be cemented together and the top, cut from sheet balsa,

added. Glasspaper down perfectly smooth and dope both inside and out. Note the cut-out portions in the front to clear the propeller shaft of the engine and also allow cooling air to enter. A similar but narrower slot should be cut
(Continued on page 154)

A General Purpose Chair

Of simple construction, yet pleasing lines, this chair design is equally suited for home or office use. A set of such chairs would not be out of place for a modern dining room or, less lavishly covered, for the kitchen or the 'den'. Cost is relatively low since materials used are a minimum, without sacrificing strength or appearance.

denoting the position of the fixing screws securing legs and metal frame. Finished appearance of this ply panel is largely unimportant since it will be completely covered, except for the underside, when the chair is finished. Choose the best face of the ply for the underside, in fact.

The bent back is cut from $\frac{3}{8}$ in. ply, preferably with the grain running across the shortest width. This will make the back easier to bend to shape, although this is not very important. The radius of bend required is well within the normal limits for ply of this thickness, so if you prefer an end to end grain on the panel it will not matter. As suggested in the design this back rest is left in natural wood, so appearance of this ply panel is important. However, it can equally well be covered to match the seat, when appearance of the wood is not important.

The top and bottom back braces—Figs. 3 and 4—are best cut from blocks of wood, rather than attempting to steam bend from strip stock. This ensures that the shape can be fashioned accurately and will be retained permanently. The respective block sizes required are 12ins. by 3½ins. by 1in. and 10ins. by 2½ins. by ½in.



Note that the $\frac{3}{8}$ in. diameter holes to take the tubular fitment are drilled first. These come near the edges of the finished back rests and the cut line can be taken accurately to the edges of drilled holes, whereas drilling after cutting to circular shape would almost certainly result in the drill 'running'. Note, also, that the holes drilled in the top back rest are made from one side only and extend to a depth of $\frac{1}{2}$ in. only.

(Continued on page 149)

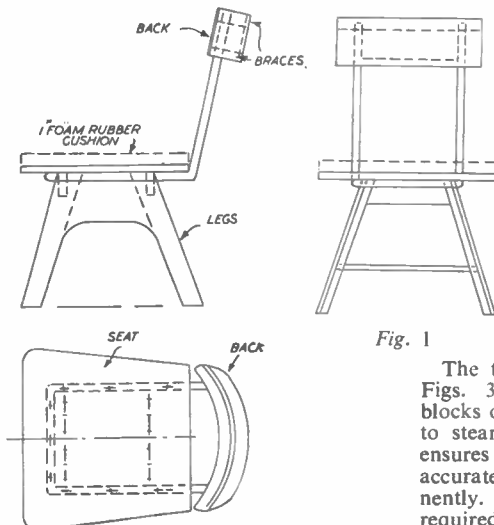


Fig. 1

A three-view general arrangement drawing of the completed, but uncovered chair is shown in Fig. 1. It will be noticed that the legs, seat and back are patterned from ply and that metal tubing is used to 'hang' the backrest. Legs are stiffened by the use of $\frac{1}{2}$ in. wood stock on the inside, rounded off to improve the appearance. Dowels or turned rod are used for leg spacers to give further rigidity. The wide spread of the legs ensures ample stability without making the article appear clumsy.

A start can be made by cutting the seat from $\frac{1}{2}$ in. ply to the dimensions shown in Fig. 2. Round off the front corners smoothly and mark the lines

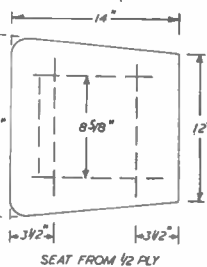


Fig. 2

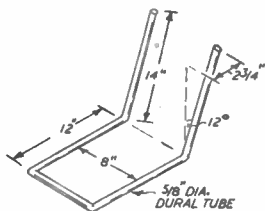


Fig. 5

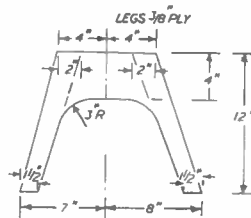


Fig. 6

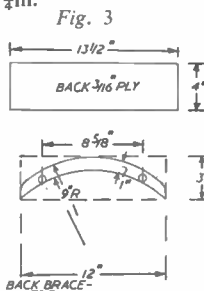


Fig. 3

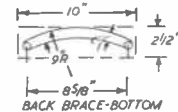
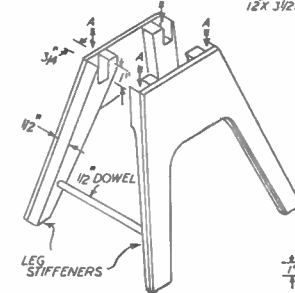
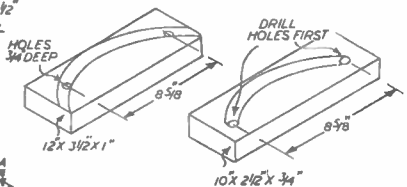
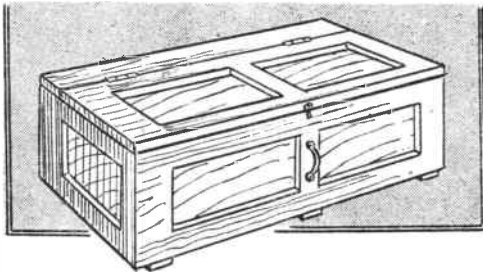


Fig. 4



A Useful Under-Bed Wardrobe



Just the thing
for the small
home

WHERE drawer space is limited, the underbed wardrobe is a valuable article of furniture for storing sheets and blankets, and articles of clothing. It is out of sight, yet easily accessible when needed. The construction, being of the framed variety, is easy on timber, and quite within the scope of the handy wood-worker.

Four Frames

A front view is given in Fig. 1, and a side section in Fig. 2. From these diagrams dimensions can be obtained, and a general idea of the construction. Sizes of timber, which can be good quality deal, are given in the cutting list at the end of the article, so need not be repeated here. Make up the long side frames with a simple tenon and mortise joint, tenons 1in. long being sufficient, and $\frac{1}{2}$ in. thick. The middle bars are also tenoned in, but in this case short tenons, say, $\frac{1}{2}$ in. long, are quite suitable. Readers who prefer a more simple joint can employ the lap dovetail if they like, but the laps should not extend longer than 1 $\frac{1}{2}$ ins.

The ends are similarly jointed, then the four frames are glued and nailed together to form the carcass with a rebated corner joint, as shown in the detail sketch, Fig. 3. To make these joints, rebate the ends of the long sides $\frac{1}{4}$ in. deep and $\frac{1}{2}$ in. wide, and be careful, when cutting the wood for the end parts of the wardrobe, to allow $\frac{1}{2}$ in. extra for entering the rebates to keep the total depth of the article to the given dimensions.

Trim the Corners

Let the glue set hard, then trim up the corners of the box, and punch well down all nail heads. The inside is now to be lined with plywood or plywood substitute. Cut the long sides first, make them a close interior fit, and fix in with plenty of hot glue and panel pins. Follow on with the lining pieces for the

ends. Finish this part of the work by hammering all the nails quite flat, to avoid any heads sticking up, and possibly scratching the hands, then plane the top and bottom edges quite level with the frames.

Leaving the fitting on of the bottom of the box to later on, prepare the lid. The sectional view, Fig. 2, shows the lid is made 4ins. shorter than the full depth, being hinged to a 4ins. wide board, fitted across at the rear. This board is just nailed and glued across.

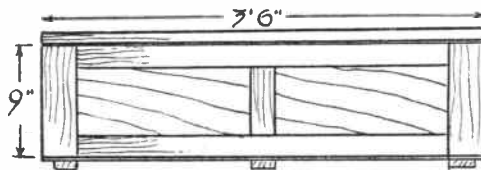


Fig. 1

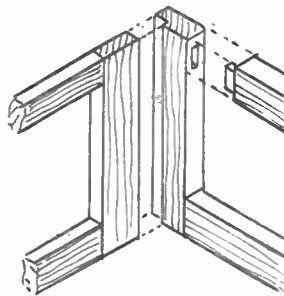


Fig. 3

Make up a frame for the lid on similar lines to the side frames, then hinge it to the fixed board with 3ins. iron butt hinges. It will be found convenient to fit these hinges to the board before the latter is fixed across the box possibly.

Having hinged the lid, turn the whole upside down and run a pencil along the sides and ends of the box to outline their dimensions on the lid. Now cut a plywood lining for the lid, slightly

within these dimensions, and glue and pin it to the underside of the lid. Use the pencil lines as a guide to fitting here, as the lining must not tend to catch the interior of the box as the lid shuts down—it won't do, of course, if accurately cut and fitted.

The bottom of the box can now be fixed on. This also can be plywood, at least $\frac{1}{2}$ in. thick. It should be glued and screwed in place to hold well. Trim up the edges level with the box with a smoothing plane. To this bottom, three runners of wood are to be fixed. One in the middle and the others at 1in. in from each end. Glue and nail them to the long sides of the box, and drive screws into them through the plywood bottom inside. To the runners either fit drawer rollers or furniture domes, to facilitate drawing the wardrobe over the floor.

A suitable metal handle should be securely screwed to the centre of the wardrobe, and a hook and eye fastener could be fitted to the front to keep the

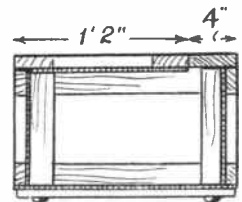


Fig. 2

lid close shut. The interior of the wardrobe might well be left plain wood; the exterior would look much better if stained and varnished to match existing furniture in the bedroom. (W.J.E.)

CUTTING LIST

Long sides.	(4).	3ft. 2ins. by 2ins. by $\frac{1}{2}$ in.
Long sides.	(4).	9ins. by 3ins. by $\frac{1}{2}$ in.
Long sides.	(2).	5 $\frac{1}{2}$ ins. by 2ins. by $\frac{1}{2}$ in.
Ends.	(4).	1ft. 2 $\frac{1}{2}$ ins. by 2ins. by $\frac{1}{2}$ in.
Ends.	(4).	9ins. by 2ins. by $\frac{1}{2}$ in.
Lid.	(2).	3ft. 2ins. by 2ins. by $\frac{1}{2}$ in.
Lid.	(2).	1ft. 2ins. by 3ins. by $\frac{1}{2}$ in.
Lid.	(1).	10 $\frac{1}{2}$ ins. by 2ins. by $\frac{1}{2}$ in.
Hinge board.	(1).	3ft. 6ins. by 4ins. by $\frac{1}{2}$ in.
Runners.	(3).	1ft. 5ins. by 2ins. by $\frac{1}{2}$ in.

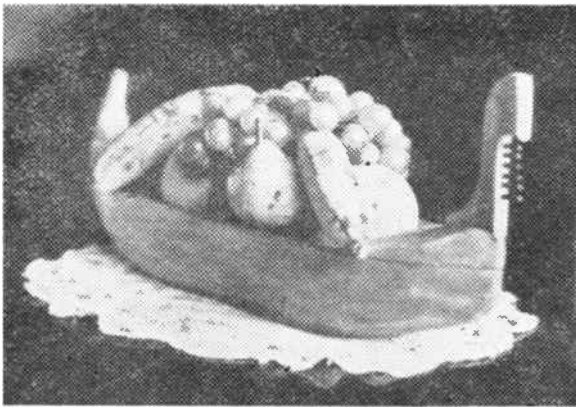
PLYWOOD PANELS (APPROX.)

2—3ft. 4 $\frac{1}{2}$ ins. by 9ins.
2—1ft. 4 $\frac{1}{2}$ ins. by 9ins.
1—3ft. 6ins. by 18ins.
1—3ft. 4 $\frac{1}{2}$ ins. by 13ins.

Fittings

1 pair 3in. iron butt hinges.
1 Hook and eye fastener.
6 Furniture domes.
1 Metal pull handle.

A Gondola Fruit Bowl



Companion to
last week's
Canoe Cruet

the bows and stern the boat narrows considerably, according to the templates shown (Fig. 4).
On the top of the hull, the central portion, which is to be gouged out, is drawn. Much of the waste can be removed with a brace and bit, finishing with gouges and smoothing with glasspaper. The depth to which the wood is

A FASCINATING fruit bowl to make is after the style of a gondola. To accommodate a good supply of fruit, it is simplified and made a little wider in proportion to its length. On a block of wood, 18ins. long by 2½ins. deep by 4½ins. wide, the shape of the main part of the hull is marked on the top and the sides. The block is then sawn in straight lines, following the markings on the sides. Similarly, the bows and stern are shaped according to the plan marked on the top of the block. With plane, spokeshave and glasspaper, the hull is smoothed off in gentle curves (Fig. 3).

The hull is rounded at the sides and underneath, except for the central portion, where the sides are kept fairly straight, although inclining inwards towards the bottom. Here they curve sharply inwards for about ½in. each side. This will enable a good width to be gouged out inside the boat to hold the fruit. It will also give a large flat base to allow the boat to stand firm. Towards



Fig. 1

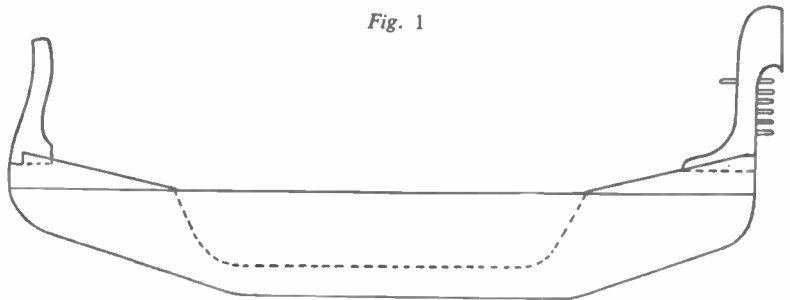


Fig. 2



Fig. 3a



Fig. 4a



Fig. 4b

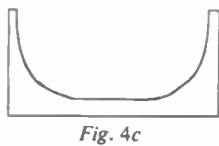


Fig. 4c



Fig. 4d

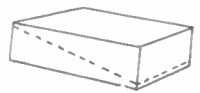


Fig. 5a



Fig. 3b

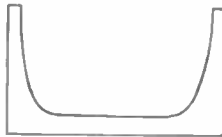


Fig. 4e

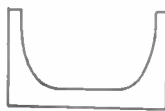


Fig. 4f

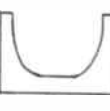


Fig. 4g

See next page for key to illustrations



Fig. 5b



Fig. 3c



Fig. 6a



Fig. 6b



Fig. 6c



Fig. 6d



Fig. 6e



Fig. 6f



Fig. 5c



Fig. 3d



Fig. 5d

removed can be judged by the outer measurements, keeping the sides at least $\frac{3}{8}$ in. thick for strength. Care must be used not to drill the bit too low, thus making holes with the centre of the bit below the desired level (Figs. 1 and 2).

At each end on the top of the main part of the hull, two sloping pieces are added. These gradually raise the line of the hull at bows and stern. These are glued, after all the sections have been made and fitted, and if carefully done and after shaping, they should blend in with the rest. As an alternative, the complete hull could be cut out of a block by using wood thicker by 1 in. This would avoid the join, but such a thickness may be unwieldy. If made separately, the two end pieces can be cut from a piece $4\frac{1}{2}$ ins. wide, 1 in. deep, and 4 ins. long. This is sawn diagonally across, not to the corners, but $\frac{1}{2}$ in. below the top at one end, to $\frac{1}{8}$ in. above the bottom at the opposite end (Fig. 5a).

The shape of the bows and stern are marked and cut away from each end piece, and grooves are made to receive the decorative upright ends. The groove at the bows is $\frac{1}{2}$ in. deep, $\frac{3}{8}$ in. in width and $1\frac{1}{2}$ ins. in length. The stern groove is $\frac{1}{2}$ in. in width, recedes back 1 in., and is $\frac{3}{8}$ in. in depth (Figs. 5b, c and d).

It should be noticed that, when finished, the bows and stern are not curved to a point each end, either in the main portion of the hull, or in the end pieces. They are finally shaped so that blunt ends follow round from where the base of the hull rises, round the end curves to meet the bow and stern uprights.

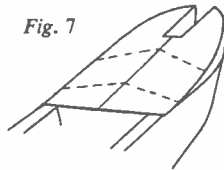
The upright at the bows is cut from $\frac{3}{8}$ in. thick wood and is 4 ins. high. The sharp edges are rounded off with glass-paper. Seven thin strips $\frac{1}{2}$ in. long are inserted and glued in holes prepared for them, six in the front and one at the back (Fig. 2).

The stern upright is cut from a small block $1\frac{1}{2}$ ins. wide by 3 ins. deep and 1 in. thick. The cross section is marked

and cut out. On the sides the curves are marked and cut, also the lower corner where it fits into the groove provided on the top of the hull. This shape is then worked on to follow the shape of the stern, and the lower parts of the sides will need shaving off to fit in the groove (Fig. 6a to f).

The end pieces are now glued to the main part of the hull, glasspapered flush at the sides, and shaped at the side edges so that the deck is higher in the middle (Fig. 7). The inner edges, where the inside of the hull is gouged out, is glasspapered to make a neat joint.

Both upright pieces are then glued in the grooves provided at stern and bows. The whole is varnished and, when filled with fruit, provides a colourful decoration for the table. (D.Y.G.)



KEY TO ILLUSTRATIONS

- Fig. 1. Plan of gondola hull. Dotted line represents area to be hollowed out.
 Fig. 2. Side view of gondola. Dotted line represents area to be hollowed out.
 Fig. 3. The cutting out of the main part of the hull.
 3a. The block is marked on top and sides.
 3b. The block is cut in straight lines according to the markings on the sides.
 3c. The plan is cut out giving shape of hull in straight lines.
 3d. The sharp corners are rounded off.
 Fig. 4. Sectional shapes of the gondola. Templates—a guide to the outer shape of the hull.
 4a. $1\frac{1}{2}$ ins. from stern. 4c. 4 ins. from stern. 4e. 4 ins. from bows.
 4b. 2 ins. from stern. 4d. centre. 4f. 2 ins. from bows.
 4g. 1 in. from bows.
 Fig. 5a. The two end pieces sawn from one block.
 5b. Shape of bows and stern marked on each end piece.
 5c. Groove in bows is made. $\frac{1}{2}$ in. deep at point.
 5d. Stern end and groove $\frac{3}{8}$ in. in depth at point.
 Fig. 6a. Shape of stern upright seen from back. (Side of stern upright shown in Fig. 2).
 6b. Stern upright is marked according to shape shown in 6a.
 6c. Stern upright cut out according to 6b, and is marked on side to shape shown in Fig. 2.
 Note:—A is not cut right across, but only as far as the groove—see Fig. 6f.
 6d. On base of 6d, shape of stern is marked and cut away.
 6e. Finished stern piece.
 6f. Diagram showing base of stern upright. B fits into groove.
 Fig. 7. Dotted lines show end piece shaped higher in middle than at sides.



REPLIES OF INTEREST



Repairing Hedge Clippers

I HAVE a pair of hedge clippers whose handles are loose and often leave the tang of the blades. I would like to remedy this fault, and shall be glad of information how to rectify same, also how are such clippers sharpened? (J.R.—Billinge).

YOU should mix a small quantity of Casco glue, and into it add $1\frac{1}{2}$ parts fine sawdust, $\frac{1}{2}$ part flour and $\frac{1}{2}$ part whitening. Spread this generously on the tangs of the clippers, and tap them in the handle. Leave to set. You can make tool handles of the above composition, mixing it to a stiff putty consistency and moulding it round the bare tangs, afterwards filing it to shape. A strong pair of handles will result, with a firm

setting. Clippers can be sharpened with a special carborundum stone, obtainable at tool shops, or with a file, just like scissors sharpening.

Locating Beams in the Ceiling

I HAVE the task of fixing a clothes rack. This is to be suspended from the ceiling in the kitchen. My problem is to locate the beams into which I must screw the pulleys. Can you suggest a method? (W.A.—Liverpool).

TO locate the beams, tap gently over the ceiling—you will notice that when a beam is above, the sound will be much deader than elsewhere. Then probe on the spot with a bradawl to

find the centre of each beam, and screw or nail home. Use screws for preference, to avoid danger of cracking the plaster.

Model Boat Fittings

COULD you tell me the method of making miniature 'bumpers' for a 31 in. diesel-powered cabin cruiser? I am familiar with splicing, but cannot improvise anything resembling what I want. I also wish to obtain a flag, which will stand water without colours running. (D.E.—Ogmore Vale).

MINIATURE bumpers for model boats can be built up by first plaiting a length of fine twine or the like, then coiling it up and sewing the adjacent turns to each other, or they can be held by an adhesive. Another way is to get a piece of fine sacking or hessian and wrap it around a ball of cotton wool. Bind the ends together with thread, apply a trace of adhesive and when dry, trim off the unwanted ends. Miniature flags can be had from model supply shops, or made by painting with transparent spirit-base paints.

MAKE A OF DOOR CHIME

By R. H. Warring

THIS is not a simple project, but one which is well worth the time and trouble spent on it. Completed, it makes an impressive hall fitting, useful as well as decorative. The mechanical system, too, whilst essentially straightforward, lends itself to development so that, with very little trouble, you can improve on the original design and get your doorbell chimes to ring a definite tune or 'call'.

Before starting work, we would advise reading through the whole of the article carefully and studying the various diagrams, largely to get the hang of the electro-mechanical system. The wood-working part is relatively straightforward and again lends itself to elaboration. Instead of a plain case, for example, the cabinet can be decorated with scroll work, carved or otherwise patterned. In the sketch of the finished article we have suggested the fitting of a small aneroid barometer or clock in the face, further to improve the usefulness of the project.

How to Start

Starting point of the job is a backboard on which two small shelves and a block are mounted, as in Fig. 1. The back is cut from $\frac{1}{4}$ in. thick material, and the shelves are $\frac{1}{4}$ in. thick. The block is 1 in. square and $3\frac{1}{2}$ ins. long. Locate at the levels shown. The bottom of the backboard can be cut to a scroll outline, or fretted out, as preferred. It is suggested that cut-outs be avoided since the back is largely hidden by the hanging 'chimes' and also relatively inaccessible for dusting.

Before mounting the main shelf, cut slots as shown in Fig. 2 and also a $\frac{1}{8}$ in.

deep groove across the face, 1 in. in from the front edge and passing through the centre of the slots. Now refer to Fig. 3 which shows the main mechanical parts. A small electric motor fitted with a flywheel drives a wooden roller through a worm and gear. A reduction ratio of about 40:1 is desirable so that, with a 2,000 r.p.m. motor, the roller completes one revolution in roughly one second. That is, the chimes are completed in one second. If you wish to modify the mechanism to play a longer chime, adjust your reduction gearing accordingly.

The chimes are played by means of small weighted hammers mounted on metal strips which are pivoted in the groove cut in the main shelf. As the roller rotates, small pegs protruding from the roller catch and push the top of the hammer trips to one side and then release them, allowing the hammer to fall against its respective brass tube or 'chime' and strike a note.

The motor is controlled by a mercury switch which is actuated to complete the motor circuit when the doorbell pressbutton is pushed. After a complete revolution a cam mounted on the end of the roller returns the mercury switch to

its original position, ready to be tripped again by the pressbutton. The flywheel on the motor is necessary to ensure that the motor continues to rotate when the power is cut off for a sufficient time to carry the cam past the mercury switch so that it can fall once more when the pressbutton circuit is closed next time. In this circuit is a switch coil which, on being energised, draws in a pivoted armature which flips up the end of the mercury switch, making it tip to one side, allowing the mercury to flow to the lower end and complete the motor circuit once more.

Two Batteries Best

Dry batteries are used for electric power. A single battery could be used for both circuits, if preferred, although

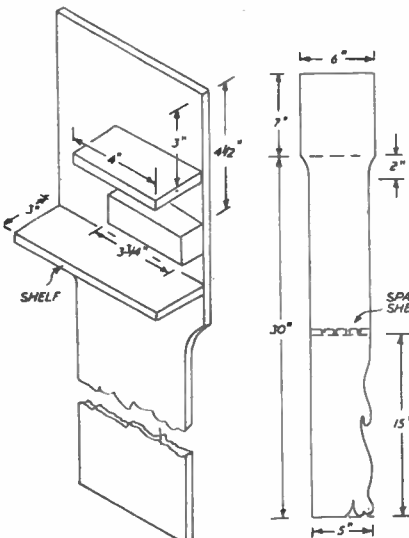


Fig. 1

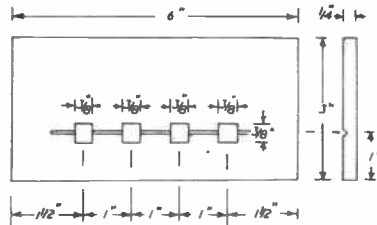


Fig. 2

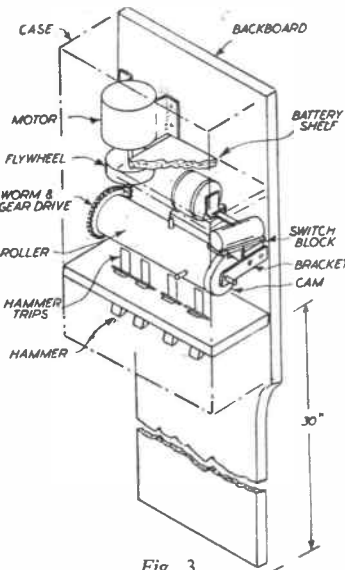


Fig. 3

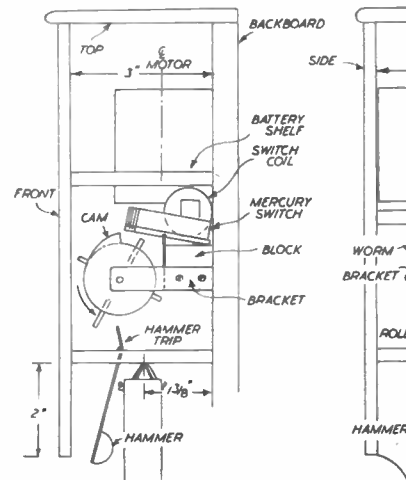


Fig. 4

Fig. 5

SET BELL S

A useful and attractive fitment

in the description separate batteries are shown, for simplicity. The battery or batteries normally rest on the battery shelf beside the motor.

With this general description, and a study of Figs. 3, 4 and 5, the action of the mechanism should be clear. The whole assembly is mounted on the backboard, adjusted and checked for accurate working before the case is completed by the addition on front, sides, and top. The front, when fitted, is hinged for access to the interior, both to

change to battery and to make any necessary adjustments to the mechanism. The various electrical and mechanical parts are detailed in Figs. 6 to 9. Starting with the roller, this is a 4ins. length of 1½ins. diameter wood to one end of which is glued and pinned (or

with equal time intervals the pins are set at 90 degree intervals, as shown. Both the number and timing of the striking pins can be altered, as you prefer, with reference to the four basic notes obtained from the brass tube (Continued Overleaf)

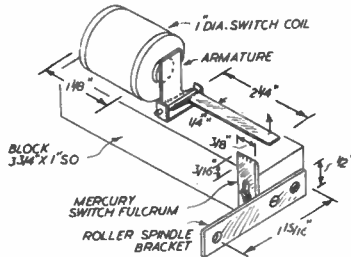
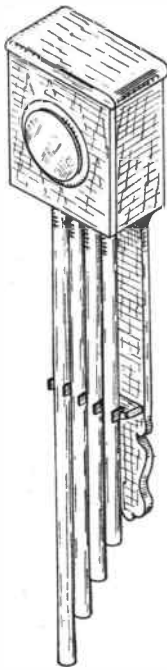


Fig. 8

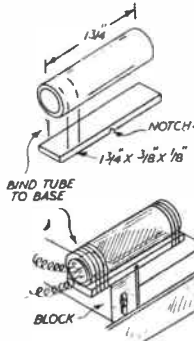


Fig. 7

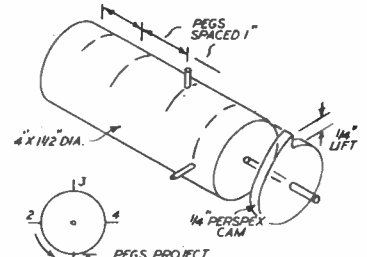


Fig. 6

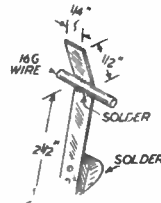


Fig. 9

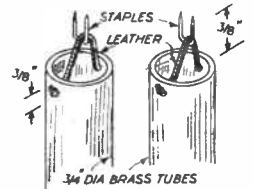


Fig. 12

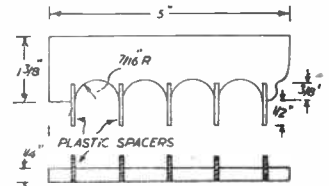


Fig. 13

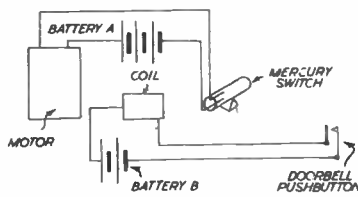
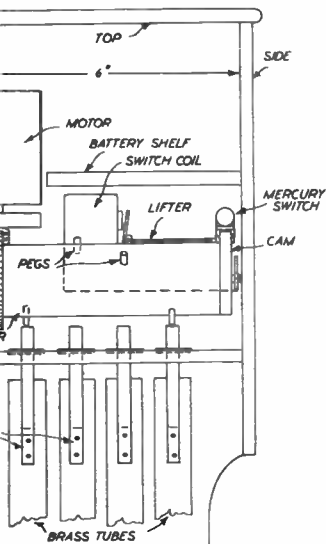


Fig. 10

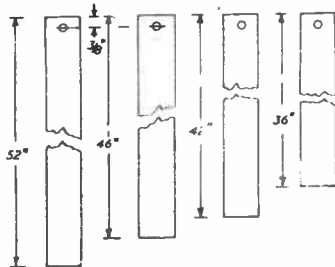


Fig. 11

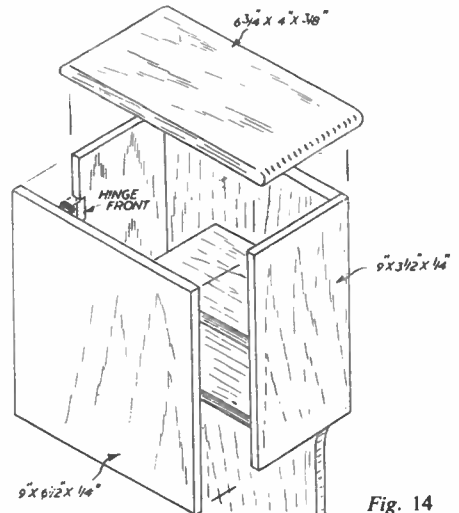


Fig. 14

'chimes'. The tubes are tuned to piano notes and, if you wish to duplicate a simple tune or melody, pick out the appropriate notes on a piano, 'tune' the tubes to these notes, analyse the sequence and timing and position the striking pins accordingly. The pins themselves are short lengths of $\frac{1}{8}$ in. diameter dowel glued into holes drilled in the roller. Each pin should protrude $\frac{3}{8}$ in.

The roller is mounted on a metal bracket secured to the wood block, and with a similar bracket with an angled end screwed to the backboard at the other end. At this end, i.e., opposite to the cam, the geared drive wheel is also secured to the roller. Wire nails or short lengths of steel wire pushed into the roller act as spindles. The roller is detailed in Fig. 6.

The mercury switch which controls the motor is quite simple—Fig. 7. Basis of the switch is a $1\frac{1}{2}$ ins. length of glass or plastic tubing, about $\frac{3}{8}$ in. diameter, two-thirds filled with mercury. Both ends of the tube are sealed and into one end, the outside end, two wires are pushed. With the tube tipped one way and the mercury flowing to that end, the mercury forms a contact between these two wires to complete the electrical circuit. With the tube tipped the other way the mercury flows to the other end and the wires are 'bare' or disconnected.

The tube is bound to a piece of $\frac{1}{8}$ in. thick plastic, notched at its centre. The whole switch rests on a metal plate secured to the wooden block, as in Fig. 8. A slotted hole is drilled in this plate to take the fixing screws so that the height of the fulcrum, and thus the position of the mercury switch tube, can be adjusted with respect to the cam and 'lifter' to provide the best action.

The lifter is simply an extension of the armature of the switch coil. This armature is made from soft iron, pivoted as shown in Fig. 8. The coil itself is made by fitting two lin. diameter card, plastic or wood discs on to an iron nail, spaced about lin. apart and winding to capacity with 30 s.w.g. insulated wire. This coil will provide enough 'pull' on 3 volts to operate the lifter successfully.

How it Works

The action of the switch should now be quite clear. In the normal 'off' position the mercury tube is tipped so that the inside end is resting on the lifter. Refer to the electrical circuit shown in Fig. 10 to associate the electrical and mechanical responses.

When someone presses the doorbell pushbutton the switch circuit coil is completed. This energises the coil, draws in the armature and the upward movement of the lifter tips the mercury tube. Mercury flows to the other end of the tube to short the two wires inserted in that end and complete the motor circuit. The motor starts and continues to run until the cam comes round and lifts the mercury tube past its balance point, when it tips back on to the lifter again and breaks the motor circuit. Movement of the cam past this position under the action of the flywheel leaves the tube free to tip once the lifter is actuated once more. Make whatever adjustments may be necessary to get this electro-mechanical system working satisfactorily before proceeding with the work. It is also necessary to use a motor which 'self-starts' each time.

The hammers and their trips are shown in Fig. 9. Strips of thin steel, $\frac{1}{4}$ in. wide, are ideal for the hammer trips. Solder short lengths of $\frac{1}{8}$ in. diameter wire across, as shown. When dropped through their respective slots

this wire engages in the groove and provides the necessary pivot action. The hammers themselves are cut and filed from solder, screwed to the lower end of the hammer trips.

The chimes are four lengths of $\frac{3}{8}$ in. diameter thin wall brass tubing. Approximate lengths required are shown in Fig. 11. Cut the tubes to these lengths, drill a hole through each $\frac{3}{8}$ in. from the top and fit leather thongs, as shown in Fig. 12. Before stapling in place under the shelf, tune the tubes individually against the notes of a piano. Suspend each tube in turn and strike and compare with a piano note—or simply work by ear. To alter the pitch of the note, cut down the length. When you have got four satisfactorily 'tuned' chimes, polish the brass to a nice bright finish and give a coat or two of clear lacquer to preserve.

When dry, suspend the tubes under the shelf by means of staples and check the hammer or striking action. The steel trips may have to be adjusted for best action and to avoid fouling the front of the case, when fitted. You can adjust both the angle of bend of the hammer trips and the length of the striking pins on the roller, as necessary.

To stabilise the tube assembly, fit a spacer shelf to the base, 15 ins. from the bottom. This shelf is slotted so that $\frac{1}{2}$ in. deep strips of plastic sheet separate the tubes and prevent them from knocking together (Fig. 13). It is important that, normally, the tubes should hang quite free.

Completing the cabinet, and the project, is then quite a simple matter. The backboard merely needs fitting with two sides, a top and a hinged front to hide the 'works', as in Fig. 14. Use good quality wood for this part of the job and round off the front and side edges of the top. The front should be latched by means of a hidden press-button or spring clip. (R.H.W.)

Twin-Float Hydroplane

(Continued from page 146)

in the rear of the fairing to allow air to escape again.

Now give the assembled model a flotation test. If it rests on the water in a bow-down attitude, weight should be added to the stern of both floats to bring the bows up. These weights can be pushed into the stern block. A slight bow-down attitude is acceptable, in fact, desirable.

For 'free' running, water rudders must be fitted. These are cut from thin sheet metal, such as dural and brass, and pushed into the stern block. They are held in place by drilling through and then inserting dowels which have been lightly coated with cement. Bend

the rudders for adjustment. When the model is used for tethered running these rudders may not be necessary.

For tethered running a single tether arm can be used for line attachment. This should be a strip of steel or steel wire, screwed to the front of the centre section. This arm should extend about 8 ins. out from the nearside hull. The exact position of this arm for best running can only be determined by experiment. Bend forwards or backwards as necessary until the craft is 'tracking' true on the end of the line and performing satisfactorily. Then you can really open the motor right up and expect high speed runs. For absolutely

peak performance, try experimenting with different sizes of propellers, keeping the diameters the same but using different pitches. Every engine will have a 'best' propeller for maximum speed.

One word of warning, your craft should be quite stable but if it does overturn for any reason, clean and dry the engine thoroughly before attempting to run it again. Water left in the engine may well ruin it if you try to run it again in that state. (R.H.W.)

One Third full size plans for this model appear on page 159, and should be scaled up. Those who wish can obtain a full size plan, price 2/6, post free, on application to the Editor, Hobbies Weekly, Dereham, Norfolk.

The Art of Making Lino Cuts

FEW hobbies have such a universal appeal as lino-cutting. For the child, it provides a cheap and safe means by which manual dexterity may be achieved; for the craftsman a hobby of almost unlimited scope either alone or in conjunction with other hobbies, while the artist finds in lino-cutting a means of expression bounded only by the physical limits of the material.

The material used for lino-cutting may be purchased ready prepared from shops which provide art and craft requirements, but it is by no means necessary for this specially-prepared material to be used. Any smooth matt lino, of about $\frac{3}{16}$ in. thickness can be used, provided it is not of the 'inlaid' kind, and there is much to be said for using odd scraps of lino, particularly when embarking on the craft as a novice. One hint, however, may be of help to the beginner and that is to trim the pieces to size and flatten them under a weight until any natural curvature is eliminated.

Technique

The technique of lino-cutting consists of removing from the block all parts of the design which will in the finished print be devoid of ink or whatever colouring agent is used. A glance at the material or, at most, a few moments spent in making one or two experimental cuts, will show that while it is quite an easy matter to remove a thin line of lino—which will in the final print appear uncoloured—it is an entirely different matter to leave a thin line of lino which will produce a thin marked line in the finished print. This is important to remember when choosing a design, otherwise time and effort may be wasted on a design beyond the scope of the material.

Transferring a Design

Having chosen a design, which should be, preferably, of bold contrasts rather than of fine detail, the next stage is the transfer of the design to the block of lino.

The first thing to do is to paint the surface of the lino with flat white paint so that the design may be traced and the lines clearly seen when cutting is commenced. Carbon paper of the kind used when typing is useful for this purpose.

Before starting on the process of cutting out the 'white' parts of the picture, it is advisable to mark the areas to be removed with light pencil shading so that confusion may be avoided.

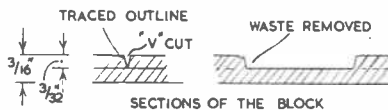
Cutting the Block

There are plenty of special cutting tools on the market but many workers prefer to use a small penknife and to use this tool exclusively. Whatever tools are used, one thing is paramount in importance, and that is that all tools must be kept sharp. If difficulty is found in removing the waste material with a penknife, a $\frac{3}{16}$ in. gouge or similar tool may be of assistance.

Now about the cutting itself. It will usually be found best to make a start by making a V-shaped cut all round the



BLACK & WHITE SKETCH



SECTIONS OF THE BLOCK



LINO - CUT

outline of the design. Take care to keep the arms of the 'V' running along the lines of the design and see that the cut itself is not too deep—half of the thickness of the material is ample. Reference to the sketch will explain this. The cut may be made with a V-shaped cutting tool or by making two cuts with the point of a penknife. When the outline is marked out in this way the waste—or shaded part—must be carefully removed. It is important when doing this to avoid cutting too deep, otherwise fibres from the hessian backing will work through and may spoil the prints.

After cutting, the block should be given a thorough brushing to remove any loose material and finally washed with soap and water to remove grease.

Making the Prints

Oil or water colours, indian or even writing ink, may be used for making the prints. Whichever is used, the object is to apply a *thin* even coat of colour to the 'marking' or raised parts of the block. The means of inking employed will, to some extent, depend on the ink used. If printing ink or oil colour is used, it is common practice to apply the ink (after being spread on a sheet of glass) with a small rubber roller. On the other hand, if writing ink or water colour is used, the colour may be put on with a clean dabbing pad much the same as used for applying french polish.

Practically any kind of paper may be used, but better results will usually be obtained if the paper is slightly dampened before printing takes place.

Paper

The paper should be allowed to fall on to the inked block by its own weight for the last $\frac{1}{4}$ in. or so to avoid the risk of smudging. When the paper has settled and is making contact with the inked portions of the block, a pad consisting of several sheets of dry paper should be carefully placed on top of the printing paper. The whole should be held still and the printing area rubbed with the bowl of a dessert spoon. After rubbing for two or three minutes, the corner of the printing paper may be raised carefully to see the result. The first two or three prints may be on the thin side so far as colouring is concerned and several attempts should always be made before deciding that a particular ink, paper or block is unsuitable.

Prints should be allowed to dry out thoroughly before they are mounted or used in any other way. (V.A.G.)

Wood Bowls and Ash Trays

CAN you tell me how to make small round bowls and ash trays without a lathe, but just with ordinary carpentry tools? (J.D.—Smethwick).

ONE method of doing the job is to employ a circular cutter, such as a tank cutter for example, used in a carpenter's brace. Draw a half section of the bowl, and mark off in 'steps'. Then doing the interior of the bowl first, work the cutter down each 'step', removing the waste wood each time with a gouge or chisel. A carver's gouge should then be employed to cut through and remove the steps, and scraping, followed by glasspapering, should render the interior reasonably satisfactory. Reverse bowl and follow the above procedure for shaping the outside.

A Code for the Young Angler

MANY young anglers will, doubtless be spending their summer holidays angling with rod and line in river, canal, lake, or pond. And a very pleasant way of holidaymaking it is, taking the aspirant into the countryside when the summer is at its best! It makes good fun trying to catch the wary fishes.

Before starting to learn the mysteries of fishing, there are various items the beginner must consider. Just as there is a Highway Code and a Rambler's Code, so also there is the Angler's Code, though much of the latter consists of 'unwritten laws'. However, the Angler's Code is fairly simple, and appeals to one's common sense and thoughtfulness, or should do so. Anglers are a 'mixed flock', just as hikers are, and some, alas, transgress against those unwritten laws. Every true angler deplures the lack of manners; the boorishness, and the discourtesy of some fishermen when they visit the country. Whilst the majority of them are well-behaved, orderly, and really good fellows, there are, unfortunately, others who are the opposite.

Things to Remember

There are quite a number of 'don'ts' to be taken into consideration when you go angling. Remember, nearly every mile of fishing water in this country flows through someone's property. Some waters are strictly private, others in the control of hotels; many are rented by clubs and associations; some are preserved, but tickets for them are issued free or on payment of a small or moderate fee. In some parts farmers and other small landowners may give permission to fish the streams or ponds on their lands, if courteously approached. If you fail to take the necessary precautions to discover whether a water—river, canal, lake, pond or reservoir—is quite free for you to fish, you may well court trouble. Don't, therefore, run any risks of offending anyone, but make sure of all the facts before you wet a line.

If you see a notice 'Private Fishing', don't be tempted to 'have a go' simply because it is in a lonely spot and there seems nobody about. To fish it would be poaching.

Shut All Gates

It is seldom you can approach a fishing water without going through fields. Be sure to shut all gates after you have passed through, lest cattle or sheep should stray into other fields, perhaps

with growing crops, or on to the highway. That would mean trouble for the farmer, and make him feel bitter towards anglers.

Avoid trampling through growing crops of corn, etc., and don't disturb cattle or other animals grazing in pastures. Don't damage trees or shrubs. Make sure that all gates you have to open and pass through to get to the water are securely fastened after you!

Farmers and all country folk hate 'litter fiends'—therefore, after you have lunched or enjoyed your tea by the riverside or wherever you are, don't spoil the beautiful countryside by leaving cartons, paper bags, sandwich wrappings, glass bottles or whatnot lying about. You carried the stuff there, and can just as easily take it away with you on departure, to deposit in the dustbin at home.

Or, if not disposed to carry cumbersome wrappings home, destroy them in some way—push the stuff well down a rabbit hole or bury it in the earth or loose gravel, or put a match to it and burn it up. When taking the latter advice, don't be careless and allow dry grass or undergrowth to catch alight; and don't leave smouldering embers behind you—stamp 'em out!

Another thing—don't throw your litter into the river or pond; a fishing water is *NOT* a dump for empty sardine tins, bottles or paper bags. No good angler ever throws rubbish into a stream or lake; rather would he fish out a lot of the rubbish that other thoughtless folk throw in!

When Fishing

Observe these rules of the Code:—Prior to commencing fishing in fresh waters be sure you have the necessary River Board Licence covering the river or lake you intend to fish. Read the directions on the back of the licence form carefully, as regulations differ in various parts of the country. Remember, a licence does not hold good other than for the rivers, lakes, ponds, etc., in the one particular district for which it is issued.

If fishing in a ticket water—or in a private water—you still need the licence.

Be sure to carry your permit or ticket with you. In some cases these permits and tickets are obtainable from secretaries of angling clubs and associations renting the water, or from owners of fishing rights, and from the estate offices. In others the water bailiff comes round selling the tickets. Mostly you can start fishing straight away on

arrival, and pay for your ticket when the attendant comes along. The Code rule is—Never set out to fish a water without the necessary permission, and your licence. (Some River Boards, by the way, do not issue licences to youngsters under 12 or 14 years of age, as the case may be, and they can fish free, so far as a licence is concerned, but must have permission, wherever necessary).

When fishing, observe all the regulations. The rule that all fish under the size limits are to be returned to the water alive, must be adhered to. And where only a limited number of sizeable fish is allowed to each angler to take away with him, this rule also must be strictly upheld. In some waters *ALL* fish caught must be returned to the water alive; older anglers generally put them in keep-nets lowered into the water near the bank, and then return them to the river when they have done fishing, as in angling competitions.

A Few 'Don'ts'

Don't disturb the birds that nest in the reeds and rushes, or harass any birds that live on and about the water!

Don't, when selecting a spot from which to fish, encroach upon another angler there before you. Give him plenty of room. It is bad manners to swish your line into the water close by his head, or to allow your baited hook and float to work in his swim.

Don't be greedy. Even if there are no restrictions on the number of fish caught by you that you may bring home, don't—if you make a big catch—hang on to the lot. Put the majority back—if you have taken the precaution of keeping them alive in a keep-net—to provide sport for other anglers another day.

Don't forget that the farmers and landowners have the say in allowing you to have access to waters on their lands.

Don't do anything to embitter them; but rather look upon them as your best friends.

Be determined that you will be one of the 'honest' anglers, and remember the Angler's Code. (A.S.)

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Indices for Vol. 115 of Hobbies Weekly are now ready, and can be obtained for 1/- post free from the Editor, Hobbies Weekly, Dereham, Norfolk. Indices for earlier volumes are also obtainable. We can also supply binding cases at 4/6 each, post free.

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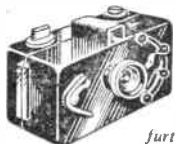
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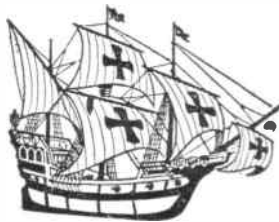
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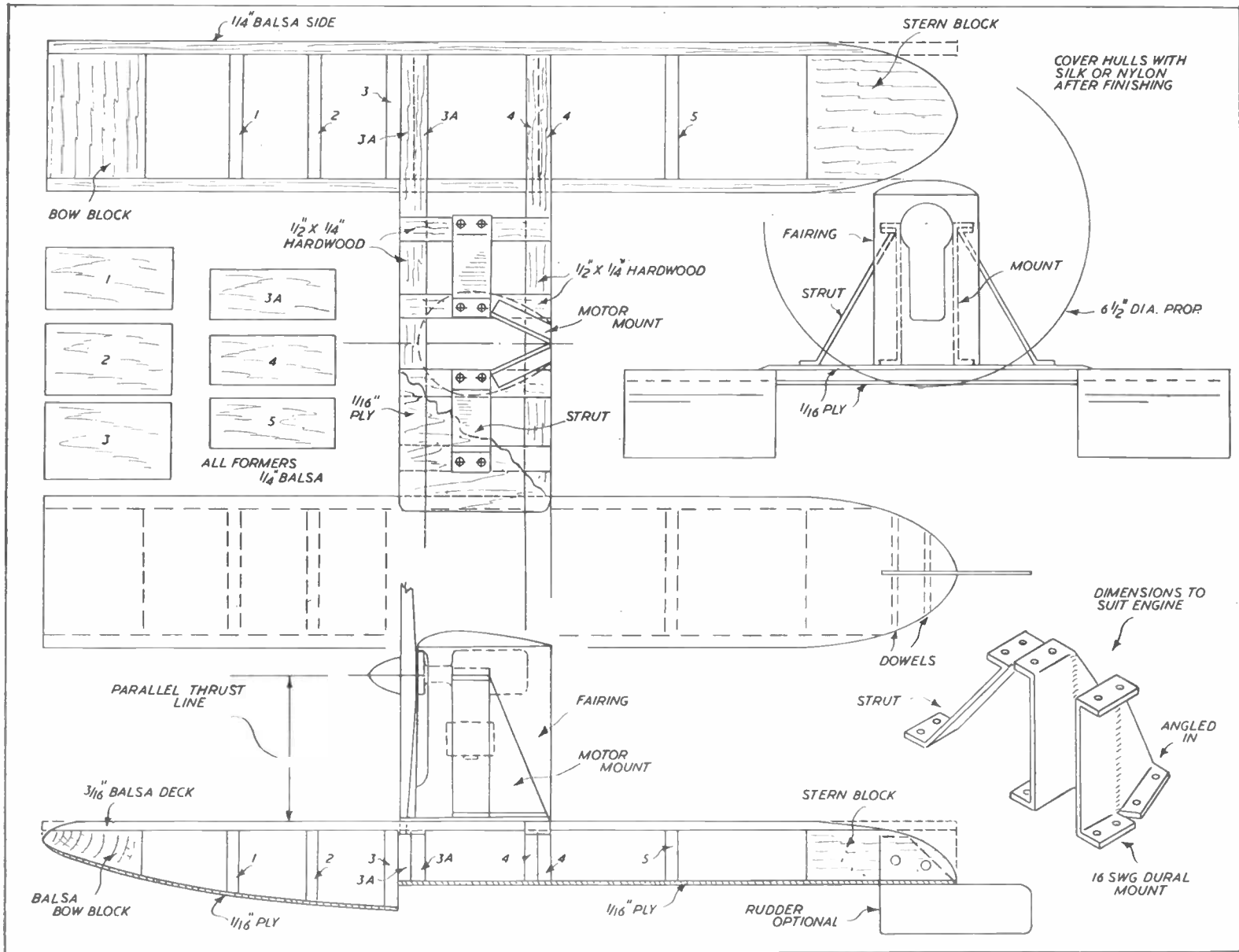
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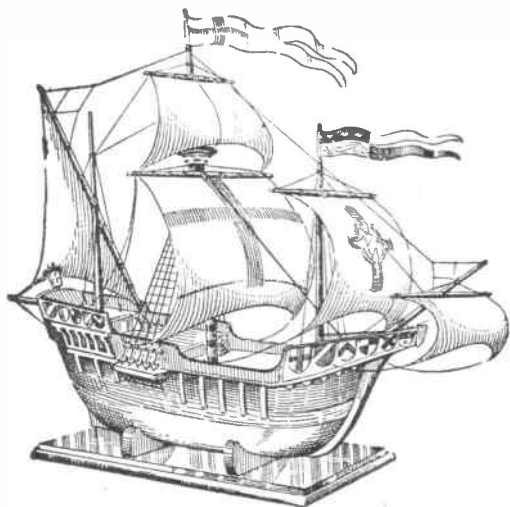
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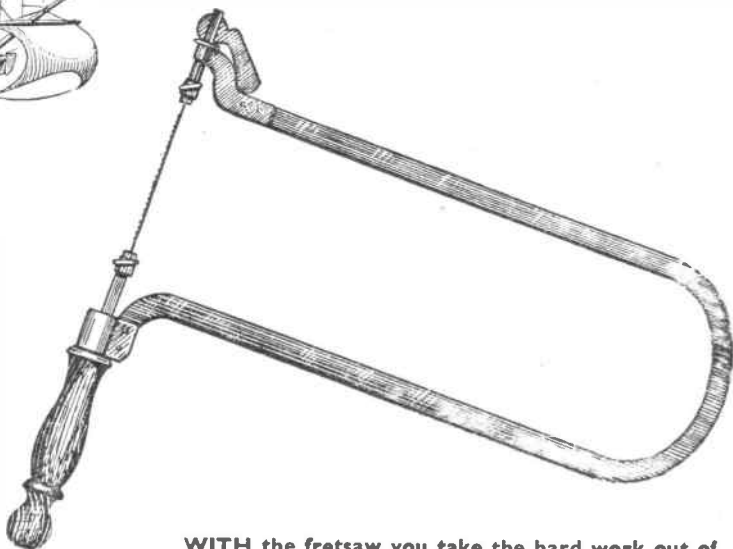
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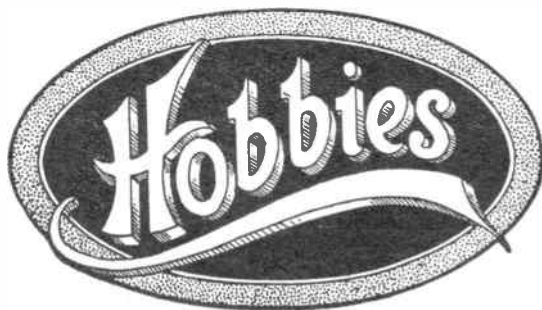
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