HOBBIES WEEKLY

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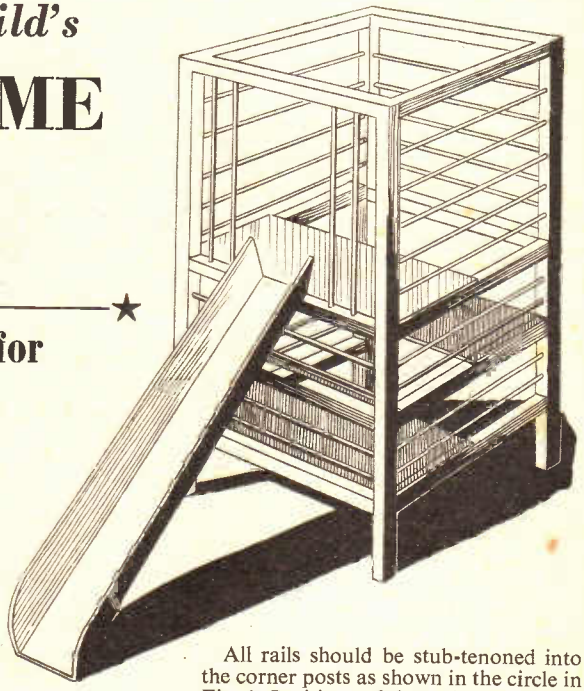
IN THIS ISSUE

Instructions for making a child's

CLIMBING FRAME AND CHUTE



A project for the young family man

THIS sturdy toy will give the youngsters hours of fun and plenty of exercise. They can climb up from floor to floor and enjoy an exciting slide down when they reach the top. It is quite safe for young children, providing, of course, that the joints are reasonably well made. You will see from a glance at the diagrams that the work involved is well within the scope of the average handyman.

Construction

The frame itself is made up separately and can, of course, be used without the chute. The only addition in this case will be more rods where the chute opening comes. The chute is made up from three separate pieces of wood, strengthened by a metal tie, and is fixed to the frame by means of two angle brackets attached by bolts and wing-nuts. It can then be quickly detached when not required.

The main measurements are given on the diagrams, but these can be modified if a larger model is desired. Try to keep the rods 3ft. in length if possible, to conform to standard sizes.

There are four corner posts, made from 1½ins. or 2ins. square material, and these are held together by rails of similar material. There are three bottom rails, the back being left open for easy entry. On the two other platform levels and the top there are four rails each.

All rails should be stub-tenoned into the corner posts as shown in the circle in Fig. 1. Positions of the rods are marked off and the holes drilled to a depth of about 1in. Use ¼in. or ⅜in. round rod and space them at about 4ins. intervals. Glue should be added when assembling and screws could be inserted in the rails for extra strength.

The platforms consist of pieces of plywood about ½in. thick, or of two or

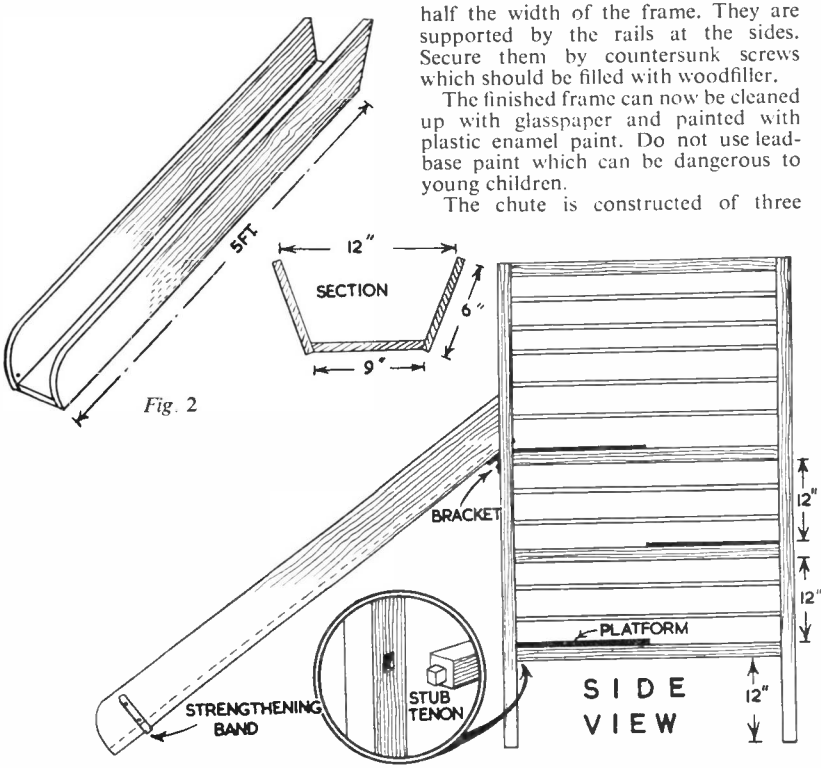


Fig. 1

half the width of the frame. They are supported by the rails at the sides. Secure them by countersunk screws which should be filled with woodfiller.

The finished frame can now be cleaned up with glasspaper and painted with plastic enamel paint. Do not use lead-base paint which can be dangerous to young children.

The chute is constructed of three

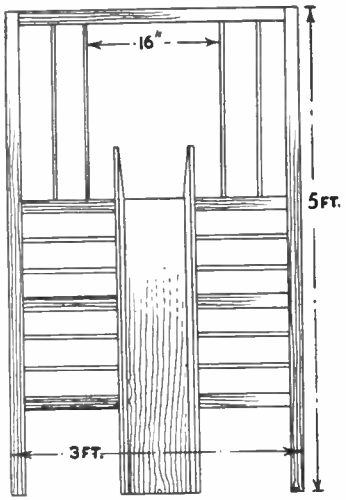


Fig. 3

three pieces of ½in. board butted together to give the required width. Note that the platforms are placed on alternate sides and that they extend to pieces of ½in. board to the measurements shown in Fig. 2. The centre piece is chamfered at the edges to allow the sides to splay outwards. Secure the sides by means of glue and screws. Round the lower end of the chute put a metal band about ¼in. thick to give extra strength. Note that the ends of the side pieces must be shaped as shown in Fig. 1.

Fix the chute centrally as shown in Fig. 3. Screw two angle brackets to the underside and put two bolts through the bracket and the rail, and secure with two wing-nuts. Holes in the rail should be bored slightly oversize.

Finish off the chute with two or three coats of brush polish. Rub down with fine glasspaper and then give two or three coats of wax polish. (M.h.)

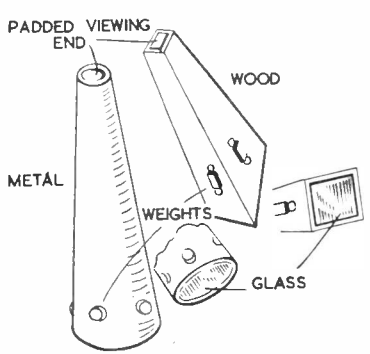
You can see under the water if you

MAKE A WATER TELESCOPE

THAT vast expanse of the world covered by water totals about three-fourths of its area and contains many wonders not seen on land. This article describes how to make an instrument through which can be seen many of those wonders and curiosities of water life in their native haunts.

The water telescope, made of wood or metal, will enable anyone, when one end of it is partly submerged, to see objects in the water that would otherwise be invisible. It is astonishing how water becomes as transparent as air when viewed through these simply made instruments.

If made of tin or zinc, fashion a funnel about 3ft. or 4ft. long, 8ins. or 10ins. diameter at the bottom and wide enough at the top to cover both eyes of an observer. Lead or metal sinkers should be attached to the



bottom to counteract the buoyancy of the air which is contained in the funnel, and they also help to submerge the big end. Paint the inside of the funnel black to prevent the light from being reflected on the bright surface of the tin. Should it be found difficult to insert a circular piece of glass at the bottom, a frame can be fitted to take a square piece instead. Either should be made watertight, of course.

Should it be more convenient to make the telescope of wood, all that is necessary is a long wooden box, approximately the same dimensions as the metal one. Paint the inside black and fix the glass bottom end of the box, cutting the small end to fit comfortably round the eyes.

Whether metal or wood is used, the small or observing end should be padded with a soft material or rubber for ensuring a better fit for the eyes and for comfortable viewing.

A water telescope will add greatly to the interest of a nature study outing, giving a unique feature that is sure to be popular in showing under-water life.

(A.E.C.)

CONCLUDED FROM LAST WEEK

Making an I.F. Signal Generator

By A. Fraser

WHEN the panel is made, the valve-holder, coil and trimmer can be attached. (A hole may have to be made in the side of the spar to accommodate the trimmer.) The panel is now ready for wiring, but some work must now be done on the box.

Holes must be drilled in the bottom of the box through which to fasten the transformer and also the spar of the panel. The plan view of Fig. 3 shows the exact position of these.

At the bottom back corner of the box, two holes are drilled $\frac{3}{8}$in. inside, one $\frac{3}{4}$in. from the bottom, and the other 1$\frac{1}{4}$ins. One is for the earth terminal, the other for output. This latter should be $\frac{5}{16}$in. and a rubber grommet should be inserted. The earth bolt or terminal is eventually connected to the screened output cable, but also holds down a strip of brass bent to form a spring contact to the base of the L.T. cell. (See E in drawings.) At each corner at the back of the box, eye-bolts are fixed to project, and enable the lid or back, with appropriate holes, to be secured with nuts. (See drawings.)

The holes which should be drilled in the front of the box are shown in their proper positions in Fig. 3. These will usually be $\frac{3}{8}$in. diameter.

The assembly and wiring can now be started. The panel, with valveholder, coil and spar attached, must be wired first, before fixing to the box. All wires should be insulated and the ends bared for about $\frac{3}{8}$in.

To facilitate the task of wiring, a numbered system has been adopted. The constructor can, therefore, proceed step by step, crossing off each number as accomplished. In this way work can be stopped and started any time without any confusion. It is a great help, too, if the wires can be the different colours suggested, for this makes the final stages of wiring much easier.

Dealing with the panel, proceed as follows:

1 (Black).	Join tag 4 to tag 2 or 6 on valveholder.
2 (Red).	Join 3$\frac{1}{2}$ins. lead to 4, 2 or 6.
3 (Green).	Join tag 2 to output trimmer on panel.
4 (Yellow).	2$\frac{1}{4}$ins. lead and ·0001 to tag 3.
5 (Brown).	1$\frac{1}{2}$ins. lead to tag 1.

Now deal with the coil connections:

6 (White).	2$\frac{1}{2}$ins. lead to bottom tag on coil.
7 (Pink).	2$\frac{1}{2}$ins. lead to top tag on coil.

Putting aside the panel for the moment, turn to the switch mounted in the box:

8 (Light Blue).	2$\frac{1}{2}$ins. lead to one tag of switch.
9 (Dark Blue).	3ins. lead to other tag of switch.

To the variable resistor mounted in the box, solder:

10 (Green).	2$\frac{1}{2}$ins. lead to one end tag of v. resistor.

Pull the leads from switch and resistor to point forward, with the exception of the dark blue switch lead which must move to the right.

Insert the valve, and leave out the L.T. cell. Fix in the panel to the bottom of the box by means of the screws. The wiring can now be commenced again.

11. Join 8 (Light Blue) switch lead to brass spring contact A on panel.
12. Join 9 (Dark Blue) switch lead to tag 7 on valve.
13. Join 4 (Yellow) to variable resistor centre tag.
14. Join ·0001 end (4) to tag 1 on variable condenser.
15. Join 6 (White) from coil to tag 1 on variable condenser.

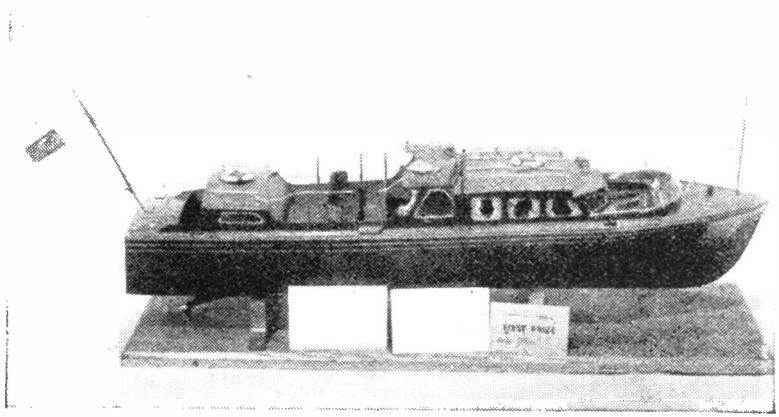
The bracket indicates that these can be soldered together at their common point of connection.

The transformer can now be fixed into the box, then proceed:

16. Join 10 (Green), from v. resistor, to transformer secondary 1.
17. Join transformer secondary 2 to fixing bolt on box bottom. (Earthing bolt K.)
18. Join ·002 condenser, and a 4$\frac{1}{2}$ins. lead, to transformer primary 1.
19. Join other end of ·002 to base bolt (earth).
20. Join remaining lead (18) to a tap on coil, after passing through hole provided in paxolin panel.
21. Join 5 (Brown) lead to earthing bolt.
22. Join 7 (Pink) lead from coil top, to tag 2 on variable condenser.
23. Join flex lead 5ins. long to other earthing bolt of transformer frame, and end it with stud or plug for insertion into H.T. – of battery (Black insulation).

● Continued on page 263

Royal Barge Model



This radio-controlled model of the Royal Barge, two of which are carried on the Royal Yacht 'Britannia', attracted the attention of the Duke of Edinburgh at the British Industries Fair. It was made entirely from Hobbies materials with a Hobbies fretsaw by Mr. G. H. Wilkin of Sheffield. This model has won four first prizes this year in exhibitions for Mr. Wilkin.

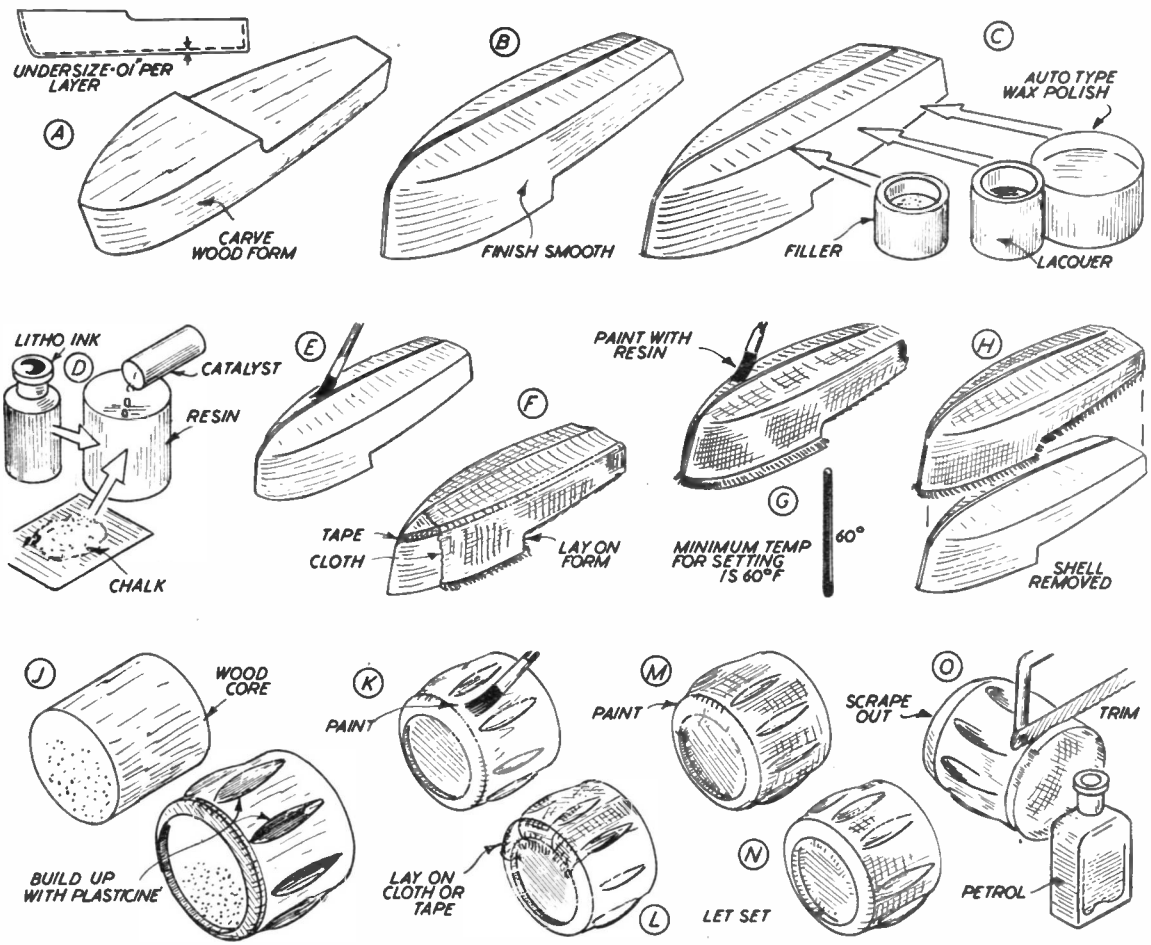
WORKING WITH FIBREGLASS

By R. H. Warring

GLASS plastic or fibreglass is an amazingly versatile material for modelling. The basic material is glass fibre, woven in the form of cloth, tape, etc., which is a flexible, 'mouldable' material which can be formed to a variety of shapes. On its own, of course, it is quite floppy, but if coated with a polyester resin, resin and glass combine to set as a hard plastic moulding with a strength comparable to that of mild steel. It is a thermoset plastic, which means that it will not soften or distort when heated. In other words, once 'set', it is set for good. It can only be worked by treating like a metal, such as filing, drilling, sawing, etc.

Glass plastic can be used in so many ways that it is only possible here to describe some of the basic methods of applying it to modelling. Moulded shapes cannot be formed on their own. That is to say, some form of master pattern must be prepared first, over which the glass material is laid and 'set'. It is equally suitable for repetition or one-off jobs and the master patterns can be made from such simple materials as card, wood, plaster of paris, Plasticine, etc.

A wood pattern is a good starting-point, because wood is easy to carve and finish smooth. Thus to make a fibreglass model boat hull, we start by carving a wooden hull of the size and shape required (A). The shape actually represents the inside of the hull, so a small allowance may have to be made for the thickness of the material. Using the standard thickness of glass cloth supplied for model work, one layer works out at about ·01in. This will be strong enough for small hulls, but larger hulls (say, 18ins. and above) will benefit from using two or more layers of cloth. Pattern size is, therefore, adjusted accordingly, if overall size is critical.



It is important that the pattern be finished quite smooth, otherwise snags may arise in removing the moulded shell (B). Sand smooth first and then use several coats of grain filler to get a really good surface. A coat or two of cellulose acetate lacquer should then be applied, if the mould is required for making several shells, followed by a good coating and polish with automobile-type wax polish. This is to

provide the pattern with a non-stick surface. Simoniz wax polish is about the best polish for this job, although a good wax furniture polish will probably do as well (C).

The resin itself is a fairly stable liquid which will only harden very slowly on its own. Thus it can be kept in store for a reasonable time. To give it quick-setting properties when required for use it is mixed with a chemical hardener or catalyst, in proportions as specified by the suppliers. Once the catalyst is added to the resin, hardening immediately starts to take place and within half an hour to an hour or more (depending on the type of hardener and the temperature), the whole lot will set solid. Once started there is nothing to stop this action. Hence since the resin and catalyst are relatively expensive, never mix up more than is required for a particular job, otherwise the rest will be waste. Have the whole job ready, glass cloth or tape cut to length, and then mix up the amount of resin and hardener required.

Other materials can be added to the mixture (D). To give more 'body' and opacity, precipitated chalk can be mixed in up to a proportion of one-half of the volume of the resin. Also the resin can be coloured by the addition of litho inks or similar colouring media. If you do use colours, however, check with a small test piece first that the ink or dye you intend to use does not react with the resin. Some inks and colours interfere with the setting action of the resin and cannot be used on this account. Always apply colouring before the hardener. Whatever mixture you employ, stir well and then apply an even coating to the waxed form (E).

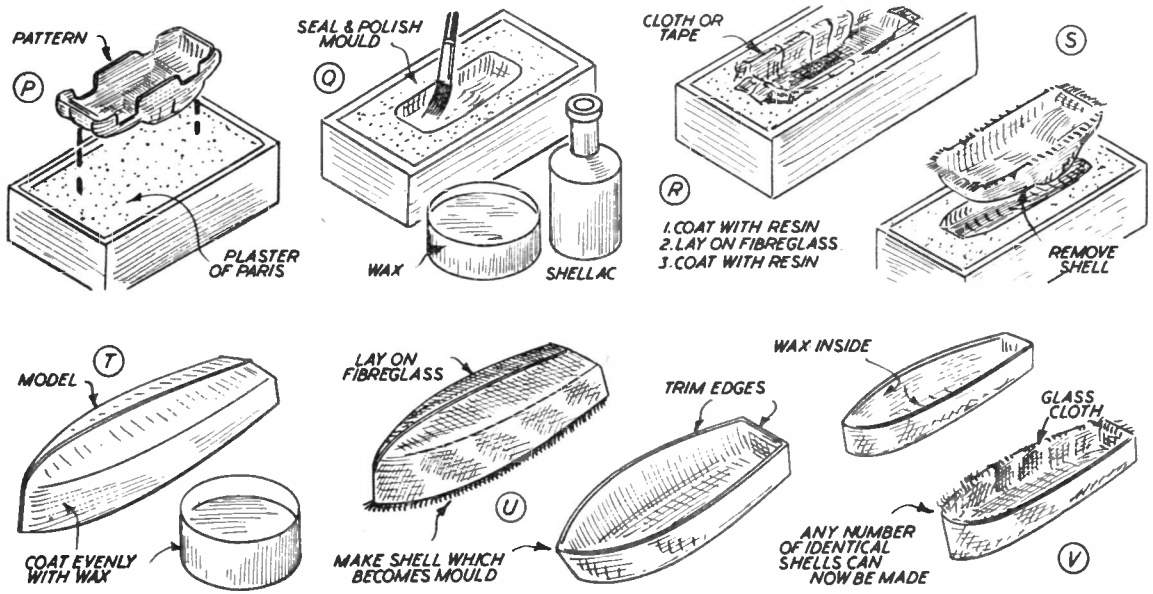
Straight away, lay on the glass cloth strips or tape, pressing down to the shape of the mould (F). Where sharp corners are encountered, a strip of tape laid on first will provide reinforcement. If necessary, pin down or tuck the edges around the pattern so that the whole covering is in proper contact with the mould surface. Work as quickly as you can for the resin will have started setting and getting more jelly-like every minute.

The cloth layer is then given an overall coating of resin and left to set (G). Setting time depends on temperature and is greatly speeded (and, incidentally, the strength of the moulding increased) by drying with moderate heat, such as in front of a fire. If the air temperature is below 60 degrees F., the setting time will be extremely long. So never work in an atmosphere cooler than this. Once the shell has set quite hard it can be prised off the mould and is ready for final working, such as trimming off the edges with tinsnips and filing down, etc. (H). Always paint on resin over the limits of the shell so that the stray edges to be removed have also set hard, when they are much easier to work.

Plasticine Mould

It is not necessary to use a wooden mould. For one-off jobs the mould can be Plasticine, or built up from wood and Plasticine, etc., as in (J). If the whole of the mould surface is Plasticine, then there is no need to wax it. The resin can be painted straight on (K), the cloth or tape laid in place (L), a final coat of resin added (M), and left to set (N). If additional thickness is required, simply add another layer of glass cloth after the second resin coat, and a final coat over that, repeating as necessary.

In this case the mould will be trapped within the shell and the only way to remove it will be to break it up and scrape it out. Some Plasticine will remain adhering to the inside of the shell, but this can be washed out with petrol (O). This job is not very difficult,



and the fact that a mould or pattern can be made so simply for one-off jobs is a great attraction.

One disadvantage of both the methods described, however, is that the outer surface of the moulded shell is rather rough. It will need a fair amount of rubbing or grinding down before it is really smooth. The inside of the shell, though, will be as smooth as the surface of the pattern.

We can utilise this principle to produce a smooth outer surface and a rough inner surface on the shell by making a female mould from the master pattern first. Suppose we want to duplicate a cast-metal model car body (P). This pattern is pressed into a mould box filled with plaster of paris to produce the desired female mould. When set, the plaster is sealed by giving several coats of shellac and then well waxed (Q). The glass cloth is now laid inside the mould, following the same order as before—a coat of resin, lay-on the fibreglass, follow with a coat of resin (R). When set, the shell can be lifted out (S).

The outer surface of the shell should now be quite smooth and 'polished' in appearance, provided the original mould was smooth and properly sealed and waxed. Such a mould can be used several times over although for a one-off

● **Continued on page 266**

A Holiday with Bicycle and Tent

Some Practical Hints and Advice

By Arthur Sharp

TO obtain the maximum of pleasure out of your bicycle, you should go on a tour taking along a lightweight camping outfit. A great increase in the number of cyclist-campers in recent years points to the joys one can get from such an interesting holiday in summer. It is not really expensive compared with more conventional ways of holidaymaking, and it is clean, health-promoting, with all the benefits of the open air. It is advisable to join with a friend, or two other campers, who are willing to share the trip and also the expenses.

Plan Carefully

Before setting out, make your plans carefully, to obtain the fullest advantages. Take with you only the right things, and do not clutter yourself with unnecessary items. If you intend to camp on a different site each night, be sure and get a tent that is easily and quickly erected, a tent with easy-fitting poles and not too many guy ropes. It must be a lightweight tent, with plenty of head room. There is a wide choice of one-man or two-men types. Manufacturers these days offer a good range of highly suitable shelters which are comfortable and weatherproof.

A sleeping-bag, a kit-bag for your personal belongings, a billy-can for cooking and a mess-tin, a canvas bucket, a ground-sheet, cooking stove and solid fuel in place of liquid 'meth.', which you can obtain in tablet form, for starting up the paraffin which is the usual fuel for a primus. Do not omit to take a few extra prickers, for a choked jet can be annoying when you wish to keep the stove going well. Don't overlook a tin-opener. Mugs and plates should be of unbreakable ware. A kettle-teapot with an infuser fitted in the lid, a frying-pan, a few items of cutlery, a camp mallet and hatchet, and an electric torch and spare batteries will about complete your equipment. All sorts of gadgets can be made, such as clothes-hangers, shoe-racks, towel rail, etc., by lashing together suitable pieces of sticks with string. This improvising adds fun to camping. Another thing, take a good waterproof cape, which can be used to cover your machine at night.

Sounds rather a load when collected together, but when there are two or three campers sharing, the matter is easily solved by dividing the main outfit as equally as possible.

Types of lightweight tents

Choose a camping site near a water supply if possible, and in a spot where fires are allowed. But pitch the tent away from trees, and facing south, with its back to the wind. Do your cooking on the stove, but not *inside* the tent. If you need a fire, dig a walled-in trench in a position where the prevailing wind will blow down it and not across. Line the fireplace with dry stones, or an old tin lid.

Simple Routine

Keep to a routine in camp; this makes a lot of difference. The work should be shared by the members of your party—whilst the cook sees to breakfast preparations, one other member should be squaring up the tent and putting out the bedding to air, etc., whilst the third—presuming there are three of you—fetches the morning milk or any needed provisions. And so on right through the day the chores should be equally distributed. When staying for a night only one camper should get breakfast ready while the others tidy up the camp site and destroy all litter. After breakfast all the party set about packing the outfit after washing the utensils. Keep to a system and things will go much smoother.

When staying in camp for a few days (it is often advisable to make a short stay in one spot in order to explore the neighbourhood, if noted for its scenery or historical associations), bundle all the bedding out into the sunshine each morning. If the tent has walls, brail them up, in order to keep the tent well ventilated.

In hot weather keep all such foods as butter well protected against dust, pollen, flies, midges, wasps and other creepy, crawly things. If gnats and midges are very troublesome light a 'smudge' fire near by the food store, but not in such a position that the smelly smoke given off will fill the tent you will be sleeping in. Pine needles make a good smudge fire, or any timber such as elder that smoulders.

Use a Fly-sheet

On hot days you can keep the tent cool by using a fly-sheet—the little extra cost and the bit of weight of it are mere trifles, but the advantages of a fly-sheet are many. It keeps the tent cool during a heat-wave, it keeps the roof dry in wet weather, and makes for general comfort!

In a sudden storm of wind and rain, it is better to keep the guy lines fairly taut, to prevent the fabric from being

● **Continued on page 268**

COSTS ONLY 7/6

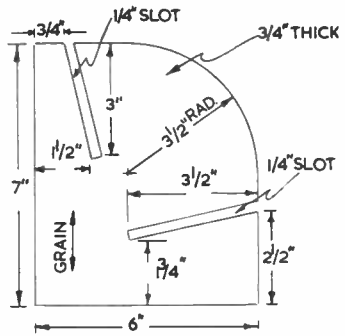
A MODERN BOOK TROUGH

By R. F. Mackie

MOST houses seem to suffer from an over-abundance of books accompanied by a lack of bookshelves, resulting in untidy rooms. A book trough, as well as keeping the books together in one place, transforms them into part of the decoration of the room.

The one described here has been simply designed to allow anyone with a tenon saw and file to make it in an evening at a cost of about 7/6, without much bother, but it is no less attractive because of this. It utilises two glass shelves which can be obtained from any Woolworth's branch at a cost of 2/8 each, already bevelled and polished.

For the ends it is advisable to buy a good piece of hardwood, and while this can be chosen to match the furniture in the room, it is most attractive in a light-coloured wood such as oak. All that is required is 15ins. of 6ins. by ¾in. plank, which may be found to have been left over from some previous job, otherwise it can be obtained for about 2/-, from a local dealer, ready planed.



The wood should be marked out to give two parts of the dimensions detailed in the diagram. These parts should be cut out carefully, paying special attention to the squareness of the shelf slots, so as to ensure that the glass shelves will be at right angles to the ends. It will be noted that the shelf slots are cut right through. This allows the trough length to be adjusted to suit the number of books, and adds substantially to the general appearance.

The curved edges can be cut approximately to shape with a tenon saw and finished off with a spokeshave or file. The ends can be cleaned up with glass-paper and then finished by any of the usual methods, probably the simplest being to give them two or three coats of clear lacquer preceded, if desired, by a stain.

The shelves should just fit snugly into the ends and should require no fixing in place. Being 18ins. long in all, the trough has a useful length up to 16ins., which can stow quite a number of books. The 'feet' should have small pieces of green baize glued on, to eliminate scratch.

● **Continued from page 259**

An I.F. Signal Generator

24. Join flex lead 4ins. long to transformer primary No. 1. End it with plug or stud for insertion into H.T.+. (Make this Red insulation.)

The final connection is to attach one end of some single screened cable to the free end of the output trimmer condenser (30 pfd.) mounted on the edge of the paxolin panel. This is then passed through the grommet at the side of the box. Just before it passes through, four or five turns of bare tinned copper wire are wound round it and joined to the earth terminal. The wire round the screened cable is soldered.

For operational purposes, the screened cable should be about 1½ft. long. A 6ins. length of ebonite tubing can be slipped over the end and secured with insulating tape. A satisfactory home-made clip can be made for connection to the receiver under test. This should be of brass strip about ⅛in. wide and should be soldered to the core of the cable. (The screening should be cut back ½in. for it must not touch the core or clip.) The clip can be set firmly in the ebonite tube by filling the end of the tube with plastic wood.

Another lead of ordinary flex must be attached to the generator's E (earth) terminal, and this is connected, by means of a plug, to the earth socket of the tested receiver.

The generator must now be calibrated to the necessary 465 kcs. intermediate frequency. Before doing this, a dial and pointer must be made.

Roughen the face of the box with fine glasspaper and glue on some white cartridge paper. On this the scale can be drawn in black ink. The pointer can be merely a thin metal one secured to the back of the control knob of the condenser with Durofix. Or a piece of Perspex, or other stiff transparent material, can be fixed on, a thin line being scored and blacked in.

To calibrate the generator, a superhet radio having 465 kcs. I.F. (most radios have) should be used. Plug in the E lead from the generator to the earth socket of the receiver, and join the output cable to the control grid (usually top cap) of the frequency-changer valve.

Switch on generator and set, and turn the generator control knob until the sound of the generator issues from the loudspeaker. The output trimmer will need adjusting, while the best tap on the coil should be selected by trial. The variable resistor controls the magnitude of the signal. If no generator sound is heard, then reverse the leads to the transformer secondary. When satisfactory results and peak adjustment have been obtained, then the position of the pointer on the scale can be marked on the dial as 465 kcs. frequency.

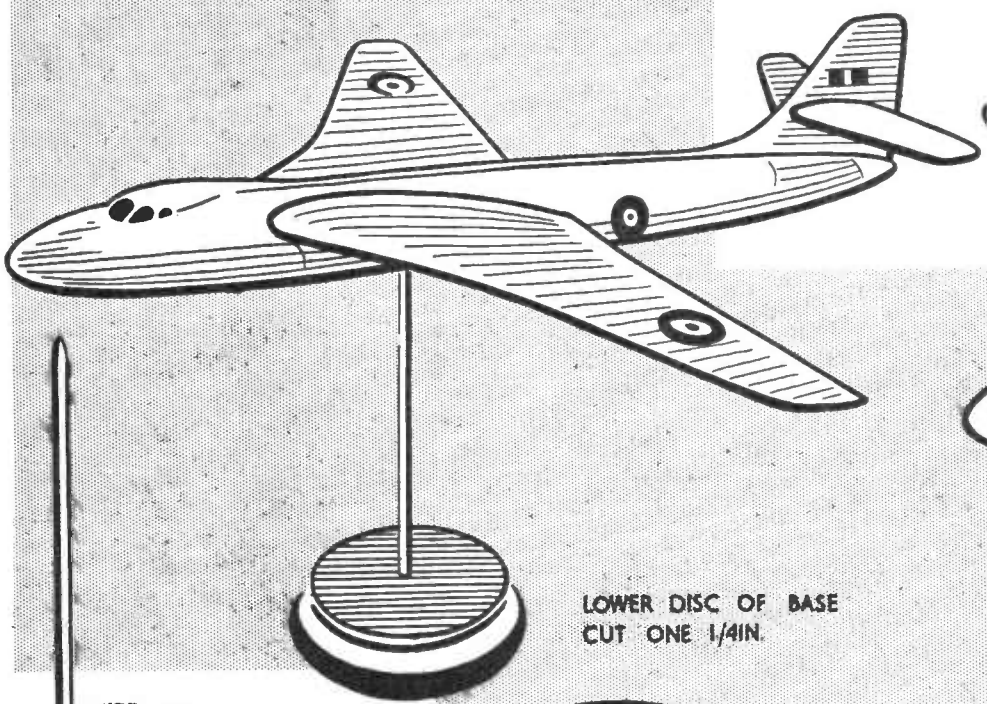
When using the generator for its primary purpose of setting the I.F. transformers of a newly built receiver, the foregoing procedure is adopted in reverse. In other words, connect up set and generator as before, attaching the output lead to the grid of the frequency changer. Switch on generator and set, and allow to warm up for 5 or 10 minutes. Then adjust the trimmers of the I.F. transformers so that the noise of the generator comes out of the loudspeaker at satisfactory volume. Start at the second transformer, working back to the first. Repeat the operation until satisfied.

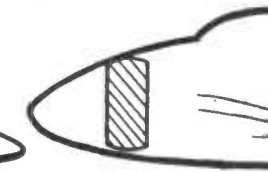
The input must be kept as low as possible by adjusting the generator's variable resistor. It is also advisable to put the oscillator of the frequency changer out of action temporarily by fixing a ·1 mfd. condenser across the grid resistor of the triode section.

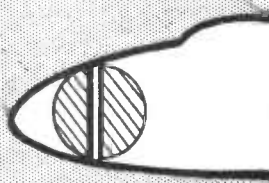
When the tuning of the I.F. transformers has been completed, remove the leads and the ·1 condenser. The remaining alignment of the receiver can then be carried out by using the signals from broadcasting stations.

On the medium waves, the Light programme and the Third programme can be used. The trimmer of the oscillator circuit is adjusted on the Light, while the padder condenser is used for the Third. The tuning is repeated until satisfactory, and finally the trimmer of the aerial coil is adjusted.

HOBBIES PICTORIAL GUIDE TO MAKING Model







PIECES 2&3 CU

LOWER DISC OF BASE
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WIRE OR
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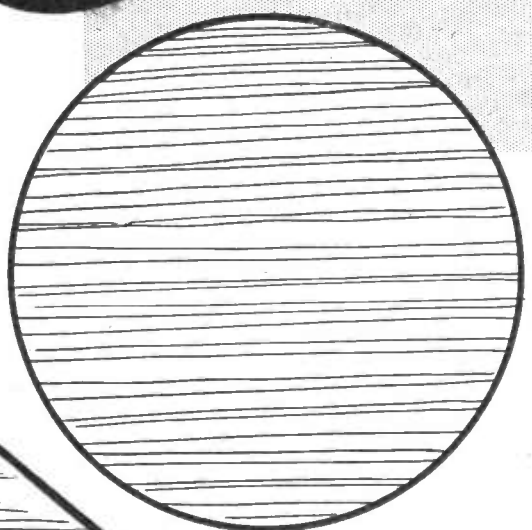

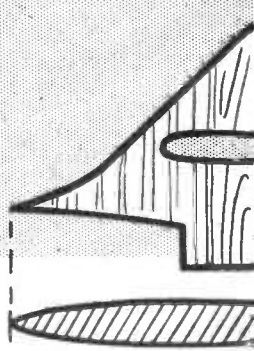

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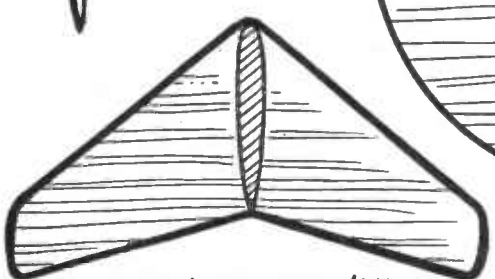
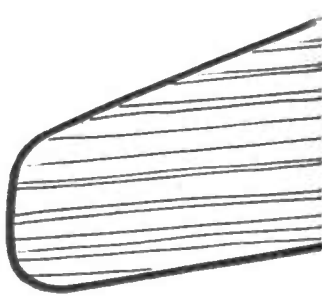
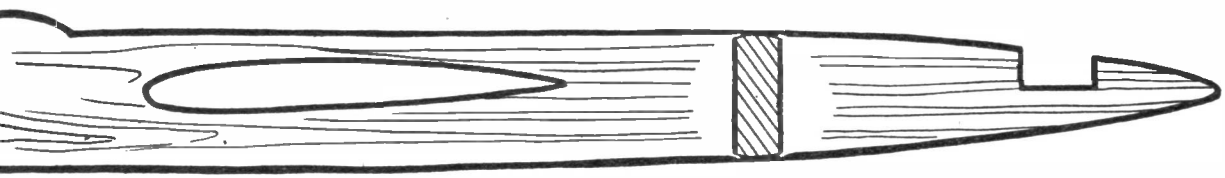


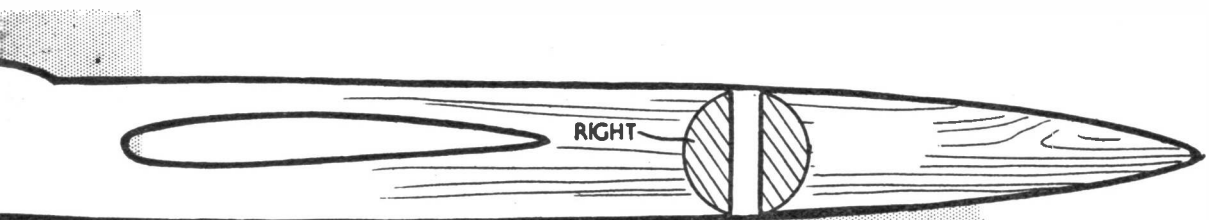
TAIL PLANE 6 CUT ONE 1/8IN.



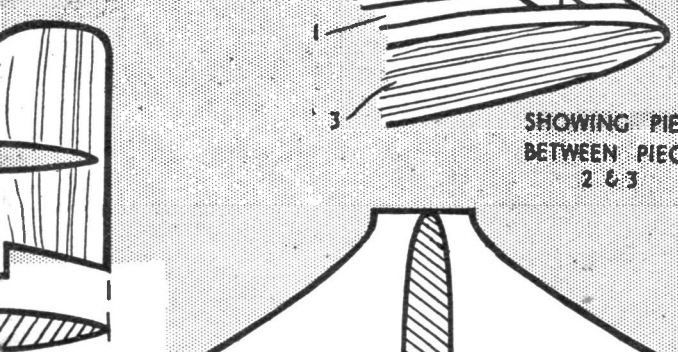
JET AIRCRAFT



PIECE 1 CUT ONE 1/4IN. AND GLUE BETWEEN
PIECES 2&3 SHAPE TO SECTIONS

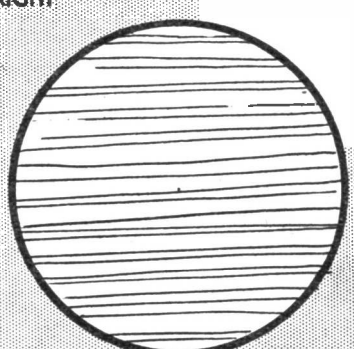


UT ONE OF EACH 1/4IN. SHAPE TO SECTIONS ONE LEFT - ONE RIGHT

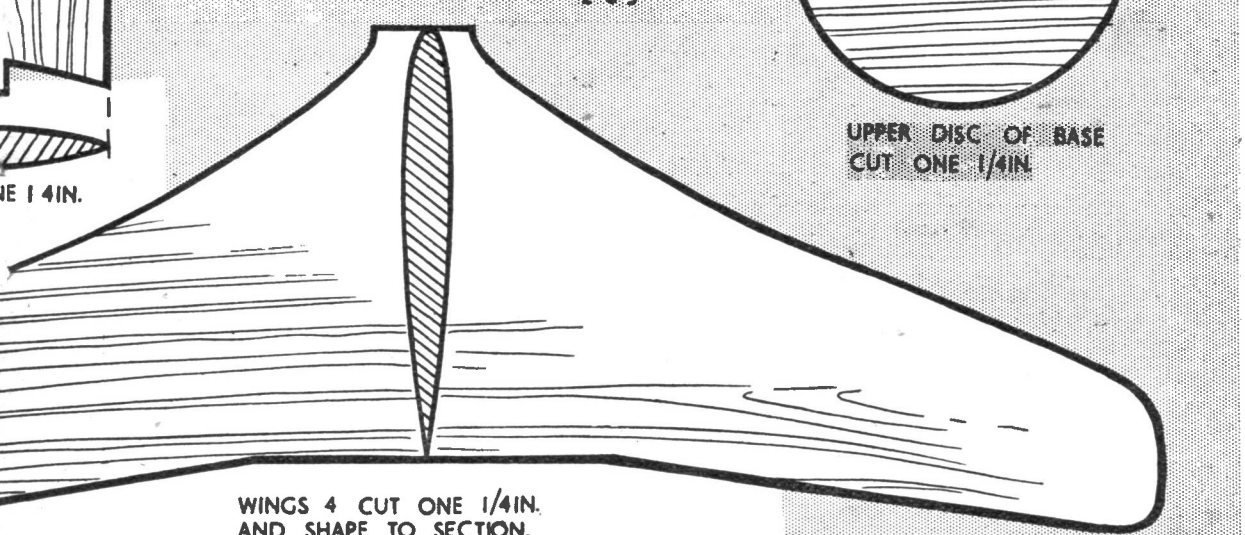


SHOWING PIECE 1
BETWEEN PIECES
2 & 3

NE 1 4IN.



UPPER DISC OF BASE
CUT ONE 1/4IN.



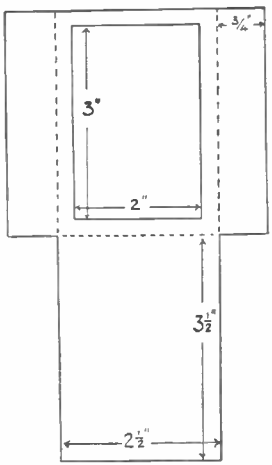
WINGS 4 CUT ONE 1/4IN.
AND SHAPE TO SECTION.

TWO GADGETS FOR PHOTOGRAPHERS

A Single Negative Holder

WHEN a trial or experimental exposure is required it is both inconvenient and expensive to use an entire film. The holder shown is designed for single exposures using a piece of cut film and loaded into the camera. Mention will be made later of a method of cutting film.

The gadget shown is for 2¼ins. by 3¼ins. size, but a slight modification of the opening will make it adaptable to any size. Black, thin card is preferable, shaped according to the measurements, the centre cut out, scoring on the dotted lines. A piece of cut film is placed over the opening, the back turned up to keep in position, and the flaps folded over. This 'slide' is then loaded into the camera. The whole operation, of course, is carried out in the darkroom.



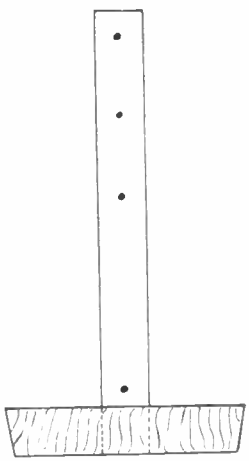
Any orthochromatic film may be cut up to make single negative material, providing adequate precautions are taken to work within a darkroom with a good safelight. Roll out the film on to a table top to that point where the film is attached to the backing paper. Place a weight on the backing paper to keep flat. A cardboard template is required 2¼ins. by 3¼ins. Place the template slightly beyond the joining, cutting off a piece of film *and* backing paper according to your template. Follow this procedure until the film is cut up. Between two slightly larger pieces of card arrange the pieces of film and paper alternately and bind with rubber bands (the paper is for protection). Do not touch the emulsion side of the film with your fingers, but handle by the edges only. Wrap the bundle in black paper, place in an envelope, leaving for a few days under a weight when the films will become quite flat. (S.H.L.)

Tube for Print Washing

TO regulate the draining of water while washing photographic prints a rubber syphon is often recommended, but a rubber tube used for this purpose will probably be found to kink, and another objection is the fact that it is not rigid. These objections can be remedied by the simple gadget illustrated, which is made from materials which do not corrode or rust.

The base is a wide cork to fit the plug hole of the sink. Such can be obtained at a chemist's shop for about twopence, and are known as chives. They are in many wide diameters, so one should be found to fit. The tube itself is made from a hollow garden cane about ¼in. in diameter.

The chive is drilled to take the tube, and glasspapered smooth to fit snugly in the plug hole. The tube should be about 6ins. to 7ins. long and drilled right through at the base with an ⅛in. bit. This allows the heavy hypo solution



to drain away as soon as washed out of the prints. Other holes are drilled higher up the tube to hasten the drainage as the water rises in the sink. (S.H.L.)

A GOOD cement for fixing stone to wood can be made by melting together four parts of wood pitch and one part of beeswax, then stirring into the mixture 4lbs. of brick dust or chalk. It should be used thinly on the surfaces to be joined and must be warmed beforehand.

(E.M.B.)

● **Continued from page 261**

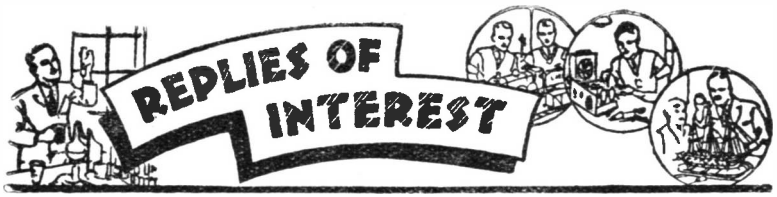
Working with Fibreglass

job, again, you can use Plasticine instead of plaster of paris.

Another method of producing smooth shells is to make the female mould of glass plastic itself. Starting with a master model, such as a carved form or a plastic model (T), wax this thoroughly and proceed to lay-off a glass plastic moulding, building up two or three layers to give rigidity and strength (U). This moulding is now removed, the inside checked for smoothness and the edges trimmed.

This shell is now used as a female mould. The inside and edges are thoroughly waxed and the new shells laid up inside, as in (V). These shells, of course, will be exactly the same size as the original master pattern. The main thing to check here is that the glass plastic mould is thoroughly waxed as if resin can stick to any part of it, it will—permanently! Then you will probably be unable to remove the moulded shell you are forming without damage.

The real secret of working with glass plastic is practical experience. There is no real substitute for finding out for yourself just what can and what cannot be done successfully. Almost certainly in doing the job properly you will get resin on your fingers, but this is easily removed with acetone. On clothing, the same solvent applies, but do not use acetone on rayon fabrics as it may harm them. Also when sawing or filing glass fibre shells, take care not to breathe up the dust produced (which is really powdered glass). If you have a lot of such work to do a simple face mask (even a handkerchief over the mouth and nose) is a wise precaution. And wear plastic 'cuffs' or strap the cuffs of your coat tightly to your wrist to prevent glass dust working up your sleeves. It is not likely to do you any physical harm, but it can be most irritating and may persist for days.



Papering a Partition

I HAVE a tongued and grooved wooden, grained and varnished partition which I would like to paper over. How can I cover the rather wide (⅜in.) joints in the boards (vertical) forming the partition, prior to painting, as I have been told that expansion takes place and breaks the wallpaper unless it has been previously prepared or covered with something strong. And what adhesive should be used in view of the fact that at the moment the surface is grained and varnished? (A.A.—Newport.)

TO prevent the paper breaking at the joints of the woodwork, the whole surface should be covered with a material—canvas, for instance—which is afterwards sized, and the paper pasted to it. The canvas is drawn tightly, and fixed to the woodwork with small tacks, both at the edges and at reasonable distance apart.

* * *

Query About Veneering

COULD you advise the best method of veneering, and the type of glue required? (J.L.—Hyde.)

BRIEFLY, veneering is carried out as follows. The bodyground is slightly toothed to provide a key for the glue. Dampen the veneer, then apply the glue to the bodyground and veneer, in the latter case as a series of dabs all over the underside. Place veneer over the bodyground and go over the surface with a hot domestic iron to heat or melt the glue, then press out surplus glue with a veneering hammer, a tool similar to a squeegee, with a metal strip in place of a rubber one. Cramp up, or lay a heavy box on top of veneer for a few hours, then clean up and polish.

* * *

Rusty Cupboards

THE fitted steel cupboards in our prefab are badly rusted; how can I remedy this trouble? (J.L.—Hereford.)

IT is extremely difficult to eradicate rust once it has started. Painting is almost useless, as the rusting continues and works through the paint. Try the following, as it is recommended to be as good a preventative as can be expected. Purchase a small quantity of newly burned lime from a builder, and make into a cream with water. Paint the rusted surfaces with this, giving two coats. Allow the first coat to dry, and mix a little size to the second to prevent it rubbing off. The rusted surfaces should, of course, be brushed clean before applying the lime wash. Benzine liberally used on a hard scrubber will loosen the rust.

* * *

Modelling Material

PLEASE tell me the name of a waterproof material like putty, which I could use for an out-door model village. (W.B.—Leigh-on-Sea.)

ABOUT the best material for your purpose is Pyruma modelling cement. It is putty-like when mixed, and hardens not too quickly, leaving time for modelling. It can be painted and stands the weather well. You can buy it at any hardware stores or oilshop.

* * *

Flaking Paint

CAN you explain the cause of paint flaking from a hut, and suggest a remedy? (R.T.—Kettering.)

MOST likely the cause of your paint flaking is its not being mixed for outdoor use, and not standing up to the changing conditions due to sun and wind. Remove it with a proprietary brand of paint remover, let dry, then apply a coat of lead paint and follow up with a good quality of outdoor paint of the desired colour. Any paint shop can supply you with a good proprietary brand of outdoor paint, satin or glossy.

* * *

Hand Cream Formula

I WOULD be much obliged if you could let me have a formula and instructions for making a hand cream suitable for cracked and sore hands. (S.P.—Liverpool.)

FOR a good hand cream of the desired type there will be needed:—

(1)	Spermaceti	25 grams
	White wax (bleached beeswax)	24 grams
	Medicinal liquid paraffin	100 grams
(2)	Borax	1 gram
	Water	22 c.c.

Heat 1 and 2 in separate water-baths until the solids have dissolved, and both stand at about 90 degrees Centigrade. Add 2 to 1 very slowly, with rapid stirring. Continue stirring the white emulsion so formed, until it is lukewarm, when it may then be packed into a jar. If perfume is desired, add this when the cream is lukewarm.

* * *

Paste for Varnish Paper

WHAT is the best paste to use on the back of varnish paper? (B.W.—Southampton.)

MIX up ordinary paperhanger's paste as usual, and to it add one-fourth of made-up thin glue. Apply as quickly as possible, and hang without undue delay.

● Continued from page 262

Holiday with Bicycle and Tent

'bellied out'. After the storm has passed, slacken the guys, but don't have them loose. If using a fly-sheet see that it does not 'flap' and knock the roof of the tent. During a prolonged stay in wet weather dig a shallow trench around the tent to catch the drippings from the eaves; don't forget a lead-off channel to carry the water away from the tent during continuous rainfall. Under cold-wet conditions have a camp fire burning if you can. If the ground becomes very soft use two pegs for each guy-rope, the two being knocked into the turf in line about 1ft. or so apart.

Tidiness

Tidiness is a virtue when camping. Always watch this excellent trait when in camp, and again on leaving. Never give farmers, landowners, or other people cause for complaint. All cartons, cardboard containers, paper, etc., should be burned, taking care not to set grasses or hedges ablaze. See that the embers are dead before you leave a fire. Glass bottles, tinware and suchlike should be buried in a hole, afterwards filling in with soil and relaying the turf, before leaving.

Do not forget to carry a tool-kit and first-aid set with you—just in case! And be sure to put your maps and other small things in the saddle-bag before you start out. A cycle repair outfit should also be carried. A supply of matches in a waterproof container is essential, as stoves are remarkably quick in exhausting the stock. For lighting up a tent at night a good torch or cycle-lamp is far safer than a candle.

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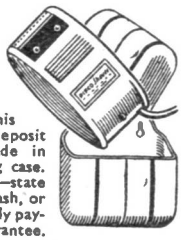

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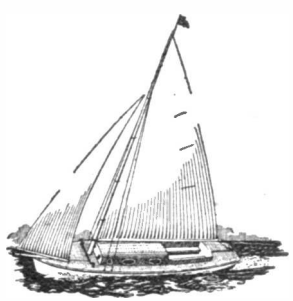

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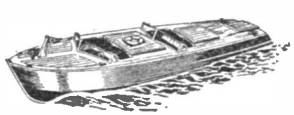

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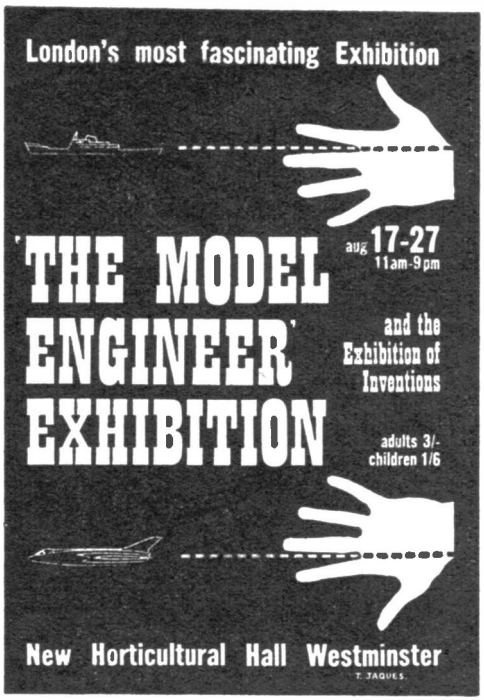

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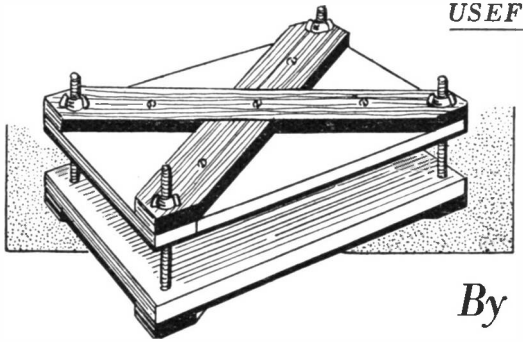

A Workshop Press and Cramp

By W. J. Ellson

FOR many articles of woodwork a press is very necessary. Other crafts also, besides woodwork, need a press at times, and the simple but efficient type illustrated is, therefore, well worth making. The construction of a cheap design of cramp is also included in this article, just the thing for doors and frames generally.

A plan and side view of the press are given in Fig. 1, from which it will be clear how the article is constructed. The dimensions given are suggestions only, as readers may desire to amend these to suit their personal requirements. As will be seen from the drawing, a pair of clamped boards, identical in size and shape, are brought together to exercise pressure over the whole area by means of four screw bolts, one at each corner.

Materials Required

The boards can be cut from 11ins. wide timber, any thickness from $\frac{5}{8}$in. to 1in. The type of board usually known as shelving, $\frac{5}{8}$in. thick, would be stout enough for most jobs, especially when clamped on the back. The clamps could be sawn to the width shown from the board, or bought ready-planed to save labour, as it is not necessary for them to be the same thickness as the boards.

The clamps are halved together diagonally before being fixed. To do this satisfactorily lay them on the boards in the position they will subsequently occupy, and draw a pencil down the sides of the top one to mark its position on the under one. The latter is then grooved to half its thickness on the pencil marks. Fit the top one in the groove so cut, turn over and pencil again to mark the place for grooving the second clamp similarly. Partly screw the clamps to the boards, and trim the ends to the corners of the boards. Unscrew clamps, glue together and to the board, then rescrew tightly up.

Stout screws need to be employed for the work of tightening, well countersunk. Note that one screw is driven in the centre of the joint of the clamps. Near each corner of what will be the bottom board, bore a recess with a suitably sized centre bit to receive the heads of the bolts, as in detail (A) Fig. 2. Place the second board underneath, and taking care that both boards are positioned correctly together, bore a hole through boards and clamps to admit the threaded portion of the bolt.

For most jobs, screw bolts of 4ins. long will serve, but for outsize jobs longer bolts are easily substituted. In

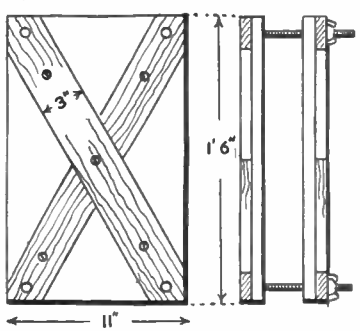

Fig. 1

place of the usual pattern of nut, employ those of the winged variety, they are more quickly tightened, and do not need a spanner—just the fingers. Glasspaper to smoothness, and though not essential, a coat of varnish over all parts, except the meeting faces of the boards, will help to improve appearance and preserve the wood.

Fig. 2 shows a simple, but well-known design of cramp, invaluable for woodwork generally, but rather expensive to purchase nowadays. A pair of these cramps is really essential, and with their aid door frames, table tops, and many other articles of woodwork can be speedily cramped up after gluing.

Cut the bars (one for each cramp) to length given, or as desired, from 1in. thick timber. Run a gauge line down the middle and starting at a distance of 1in. from the top, bore a series of $\frac{5}{8}$in. holes through the bars, at 2ins. centres apart. As the position of these holes should be exactly the same in each bar, a good plan is to cramp or nail the bars together and bore holes through the top one deep enough to partly enter the underneath one. Separated, the partly bored holes in the second bar can then be completed.

At the bottom of each, as shown at (C), screw and glue a strip of 1in. square section wood across. In the centre of this bore a hole for a $\frac{1}{4}$in. by 3ins. screw bolt. In the front of the strip, over the bolt hole, chisel out a recess as a tight fit for a nut, as at (B). Insert bolt, and if the nut shows a tendency to ride out of its recess when the bolt is turned, cure the

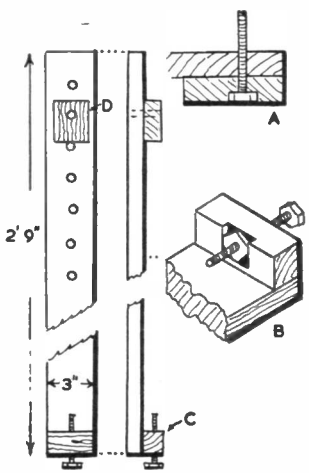

Fig. 2

trouble by driving in a couple of round-headed screws to grip it in place.

Adjustable Stop

An adjustable stop (D) is made for each bar. It is a square of wood of 1in. thickness, with a piece of $\frac{5}{8}$in. round wood rod glued in, the rod to project underneath about 1in. Note the rod (or pin would be a more appropriate name) is not positioned centrally, but about one-third of the way down from the top, so that it can be turned round and reduce the distance between itself and the bolt at the bottom. This is convenient when a frame of awkward size is to be cramped up.

Its use is fairly obvious, the frame, or whatever it may be, being cramped up with a bar at each corner. A spanner, or large pliers, may be needed to turn the bolts for tightening.

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