

Hobbies

WEEKLY

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How to make a FOLDING BOX KITE

MOST readers like to enjoy the sport of flying a kite, so why not make one yourself? The varieties of kite design are numerous, from the simple diamond pattern every chap knows, to the complicated man-lifting design. A good all-round pattern is that known as the box kite, so this is now to be dealt with. A picture of it is given here in use.

A side and end elevation of the kite are shown at Fig. 1, with some suitable dimensions. For the sticks a piece of straight grained deal will be suitable. From this saw and plane four, measuring 3ft. long each and of $\frac{3}{8}$ in. square section.

Suitable Material

Take care by careful selection that no knots or stakes are present in the wood before cutting. When sawn and planed, rub lightly over with fine glasspaper to smooth the sharp corner angles.

For the stretchers, which keep the kite in shape and the material taut, cut four pieces of $\frac{1}{2}$ in. wood, to $\frac{3}{8}$ in. width and 1ft. 9ins. long, as at (A) in Fig. 2. Any thin tough wood will serve for making these, the tougher the better, as they have to stand some strain.

Fitting in Pairs

These are fixed together in pairs, with a single round-headed screw at their centres, as at (C). The screws should be tightened sufficiently for the stretchers to open out and close rather stiffly. As these will have to fit up against the long sticks, cut a right-angled notch in the ends of each, as at (B).

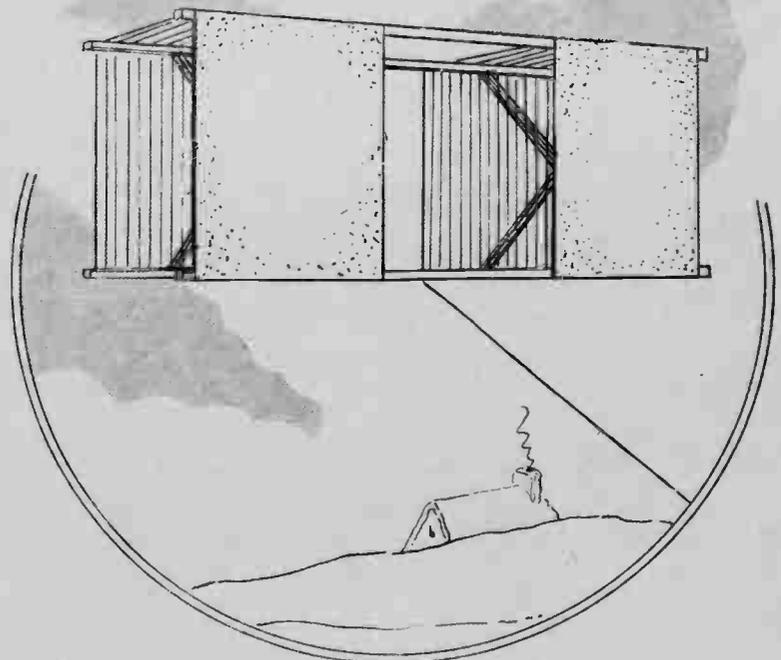
The sticks must now be well secured to

the stretchers with glue and a single fine fretwork nail, at a distance from each end of $6\frac{1}{2}$ ins., so that they will extend the sticks at the centres of the material bands, which act as the planes, by which the kite can fly. By this arrangement the framework can close up for ease of transport. Mind the stretchers are firmly fixed to the sticks, or the strain of a strong wind may cause a breakage.

For the bands at each end it will be wisest to choose a fine but strong material, instead of paper, as usually used for the cheaper article. There is ample choice nowadays in material but, perhaps, a piece of parachute silk or cotton would serve as well, if not better than most.

Paper Patterns

Make a paper pattern of the dimensions



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given in Fig. 4 (D), from some stiff brown or cartridge paper, pin this to the material (doubled for two to be cut at once) and cut out carefully.

A $\frac{1}{2}$ in. of each long side is folded over and stitched for a hem, then the stuff, hemmed side outwards, is drawn over the sticks and the ends pinned together, as shown in detail at Fig. 3. The stretchers should not be quite opened out, as they will be when the kite is ready for flying, but just a little more than halfway. Then, when fully out, the material bands will be stretched taut, as they should be. Remove the bands, and sew the ends together on the line of the pins.

Cut off any surplus material to $\frac{1}{2}$ in. from the sewn line, double this over and

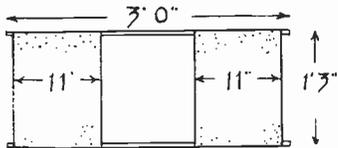


Fig. 1—A side and end elevation of the kite

to be inside the bands, and replace on the sticks, the bands being positioned at 1 in from each end. The stretchers should then be approximately in the centres of the bands. If the sticks are now opened out the bands should be rendered taut.

Fixed Bands

Fix these bands to two of the sticks with tapes. The position of these, or some of them, is shown in Fig. 3. Sew one each side of the stretchers, where it joins its stick, wrapping the tape round the stick and sewing it to the material, as at (a).

A similar attachment is also made at (b), diagonally from (a).

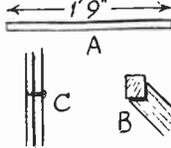


Fig. 2—Stretcher detail

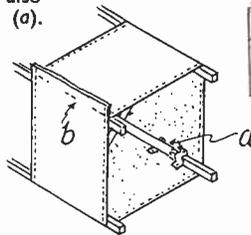


Fig. 3—Fitting the sticks

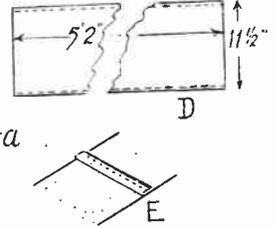


Fig. 4—Details of covering

sew a second time through the doubled hem and covering as well. The detail (E) in Fig. 4, will explain this. It may not be necessary to add, perhaps, but if a lady friend is able to stitch it with a machine, some tedious work can be avoided. Few fellows care much about the feminine job of sewing.

Now turn the material for the hems

No other fixing is made to the other corners, as when the framework is going to be shut up, well it won't.

For carrying purposes the kite can now be folded, the surplus material, caused by the folding, being neatly tucked inside. A bridle line can be made with strong twine, tied across to the lower pair of sticks, the string being

attached to this line in the place found to be best by experience. A good quality kite line, which can be bought at most toyshops is safest to use for flying.

Paper Substitute

If the reader prefers to use paper instead of material for the bands, almost any kind can be employed if thin and tough enough. That quality known as bank paper is about the best, and if two different colours are used, a better effect is obtained so far as appearance is concerned, than one colour for both.

Paper, however, is more liable to tear than material, and it should be

strengthened to stand up better to the strain induced when the stretchers are open. The edges should be pasted over, and in the hems a strong thread should be inserted, before pasting, of course, to add some additional strength to the paper at the places where it is most likely to fracture.

CYCLE CAMPING HINTS—

CYCLE camping is a popular form of holidaymaking with young folk. Again this year hundreds of enthusiasts will go forth equipped with tents and enjoy all the benefits of living and sleeping out-of-doors. This form of camping affords a delightful week-end break from more conventional ways, and, provided the sun smiles benignantly, nothing pleasanter can be desired.

Hints to Remember

Much has been written on the subject, but there is room for further remarks, and a few hints here on what to do with your machine when in camp may not come amiss.

After arriving at the camp site and having decided to make a stay of a few days on the spot, do you just lay your bicycle on the turf, to collect damp and rust, and, maybe, to be tripped over by someone, who might possibly put his foot through the spokes of a wheel? Or do you prop it against the hedge, where the tyres are likely to collect thorns? Well, it is not unusual to see cycles treated that way, instead of being properly 'parked'.

Use a Guy-line

It is an easy matter to take due care of the cycle in camp. If a solo camper, then you may use a guy-line to hold up your machine, and this is far better than dumping it on the grass.

When you arrive on the site it is a wise plan first to secure your machine in an upright position. This may be accomplished by a simple contrivance. An S hook tied in the centre of a length of rope or strong cord about 12ft. long, with a peg fastened securely at each end, is all you require.

Fasten the hook under the saddle, then knock one peg into the ground with your free hand. Paying out line you then peg down the other side. The machine is thus securely guyed, and should stand firm either with a load or without. Be sure the pegs are thrust in the ground properly, as you do with an ordinary tent peg.

Sharing the Load

If you have a chum, then the two machines, after being unloaded on arrival, can be neatly 'stacked' by placing the saddles together, leaning the cycles against each other. Turn the front wheel outwards until the machines are firm and well-balanced. An old groundsheet or piece of canvas will protect them from dew at night or rain.

A small party of campers may house their cycles under a fly-sheet. This extra sheet with poles and guys adds little additional weight to the camp outfit and when three or four share the dunnage among them, it is no drawback. Say, four friends are on tour with tent and baggage, etc., this should be made up

into parcels and distributed as evenly as possible among them. In such a case an extra fly-sheet is worth while carrying, for it will afford a good shelter for the machines.

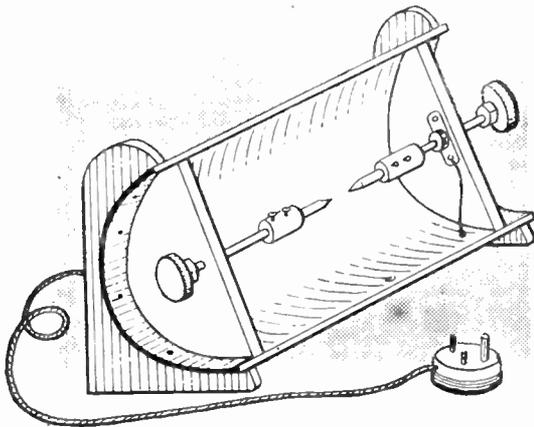
Fly sheet Shelter

It is quickly erected on its two poles and should be well guyed, especially if a strong wind is blowing. The cycles are 'stacked' beneath it, and are well protected, whilst you are in camp. In a permanent camp a rack can be made from suitable timber, to hold the machines. Then anyone needing his cycle to run down to the nearest shop or elsewhere, can easily take it out without disturbing the other machines.

The easiest way of storing cycles, of course, is where the camp site is attached to a farm or country inn, with a spare outhouse, stable or shed available. If such an outhouse can be locked at night, before you all turn in, all the better. At the Youth Hostels accommodation is usually provided for members' bicycles.

Remember, it is unwise to leave a bicycle exposed to rain and dew night after night. If there has been rain—or just a passing shower—on your journey up to camp, give the machine a rub down as soon as you can. By taking care of your 'steed' you will find it will wear longer, and keep its good appearance.

Provide your own sun-ray treatment with a home-made ELECTRIC ARC LAMP



AN electric arc lamp such as that shown is generally used for artificial sun-ray treatment. When operating, it produces a brilliant hot, white flame rich in ultra-violet and similar radiations. It gives a very vivid light, but this aspect is not of much practical utility, though similar to the cinema-projector arc-lamps most frequently seen in apparatus of the older type.

Practical Details

A front view of the lamp is shown in Fig. 1. The source of supply is connected to the screwed rods, to which the carbon rods are fixed. Insulated knobs provide a means of adjusting the distance between the points where the arc is struck. The whole is supported in a curved metal reflector, this being earthed to the mains plug, as with

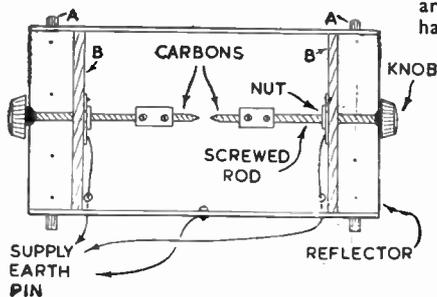


Fig. 1—Front view of lamp

electric irons and similar apparatus, to avoid danger of shocks.

For the carbons, it is possible to use the rods which will be found in exhausted dry batteries such as those used in torches and hand-lamps. These can easily be filed to a point at one end, using a fairly coarse file. During a period of use, the carbons will be burned away, thus increasing the gap, and this is compensated for by adjusting the knobs to bring the points closer together again.

The reflector is made from a sheet of thin polished aluminium 10ins. by 12ins. The correct curve can easily be obtained by bending the metal round a large tin-can, or some similar object.

A piece of $\frac{1}{2}$ in. thick wood 6ins. by 6ins. is now taken and a circle about $3\frac{1}{2}$ ins. in diameter drawn in the exact centre. The wood is then sawn diagonally, thus forming two triangular pieces. The corners are then rounded and the semicircles sawn out with a thin pad saw, leaving two pieces similar

to those indicated in Fig. 2. (Here, the difference in diameter of the circular portions has been exaggerated to show how the aluminium sheet fits between).

The two outside portions, indicated by (A) in Figs. 1 and 2, are now screwed in position round the back of the reflector, forming the stand upon which the completed lamp will rest.

The smaller semicircular pieces are now screwed in place, the screws passing from the back, this time. These pieces are shown at (B) and will have to be a little farther from the reflector edges than pieces (A).

Holes should be drilled in the aluminium sheet for the screws to pass, and about four screws should be used to each piece. The reflector will then be held in correct shape.

Screw Adjustment

Two lengths of 2 B.A. screwed rod are used, passing through nuts which have been soldered to a small metal

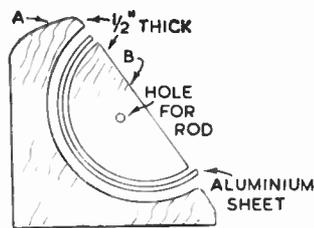


Fig. 2—How reflector is made

strip, as illustrated in Fig. 3. These metal strips are screwed on the inside of pieces (B) as shown. From each strip one of the supply leads is taken, loops being formed at the ends of the wires so that they can be held under a washer placed on the lower securing screws.

A fairly large insulated ebonite knob is screwed to the outer ends of the rods. Good quality radio receiver type knobs can be used. Wooden or other makeshift knobs are not recommended, as it will be seen that the mains supply is

taken to the rods.

Bushes with set screws hold the carbons in position, as shown in Fig. 3. These bushes, with $\frac{1}{4}$ in. diameter centre hole, can easily be bought and torch-lamp carbons will fit them well.

The rods should screw in and out smoothly and accurately, the points of the carbons coming into actual contact when the rods are screwed right in. If the nuts are a loose fit and the rods wobble, a fairly strong compression spring should be placed between each bush and the nut.

Wiring Up

Stout flex should be used and one lead is taken from a bolt passing through the reflector to the earth pin on the mains supply plug. If this lead cannot be arranged due to the presence of old-type two-pin power points, the reflector should not be touched while the lamp is plugged into the mains.

The leads which pass down from the strips should be of well-insulated flex and rubber grommets may be inserted in the holes in the reflector. If insulation is frayed through so that the bared wire touches the reflector, shocks may be felt when handling the latter if no earthing wire is used. If both leads fray, the lamp will be shorted and good quality material is, therefore, essential.

Limiting Resistance

If the carbons are at all close together the current flowing will be very heavy and the power-point house fuse will blow. To avoid this, a resistance is wired in series with one of the leads to the carbons, being of such a value that even when the latter are completely short-circuited the current flowing does not exceed the power-point maximum (normally 15 amps.).

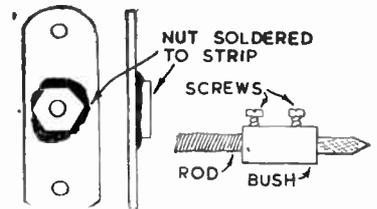


Fig. 3—Screw arrangement and holders

The easiest method to provide for this resistance is to wire an adapter in one of the leads. The limiting element can then be wired to a plug which can be inserted in this adapter.

For the resistance, an ordinary 3,000 watt electric fire can be used, and if the adapter mentioned is of suitable type it will only be necessary to insert the plug connected to the fire into the adapter. Lamps or fires of less wattage

(Continued foot of page 148)

Your seaside visits will be more interesting by undertaking SEAWEED COLLECTING

WHY not you start a seaweed collection this year? It is a most fascinating hobby and you will be amazed at the different varieties you can find just at the high and low tide marks and in the little rock pools. For the actual gathering of the weeds, all you need are a good knife, a stick with a handle (to hook some of the bigger specimens towards you) and a bucket or jar.

Be sure to wear rubber plimsolls, too, for some of the rocks are rough and tear your feet. And do not forget to cover the back of your neck, for bending over and peering into the pools will mean that the sun is beating straight on to your head and shoulders.

There are four distinct groups of seaweed into which specimens may be divided which are recognisable by their colourings. They are blue-green, pure green, olive-brown and red. The first two groups like shallow water, the olive-brown prefers to be a little deeper and the fourth group chooses the very deep sea. There are, of course, exceptions but that is the general rule.

The coarser and bigger weeds become detached and are brought in by the sea and abandoned at the high or low water marks. For the lovely fine delicate weeds you must search the pools. Much of the seaweed which, in the water, looks dull and unattractive, is beautiful when mounted. The tiny weeds should be popped into the jar of water immediately you gather them from the pool. The bigger, coarser weeds may be dried in the air if you are not going to mount them at once.

Actually, collecting seaweeds need not necessarily be confined to the sea. There are many of the green weeds, mainly like tiny threads, nets or webs, in fresh water, too, and these will add real beauty to your collection.

The red and the brown seaweeds, however, belong exclusively to the sea. The former are very light and delicate and often almost transparent, ex-

quisitely shaped like ferns or moss or even sometimes like coral. The olive-brown are nearly always large and coarse and in some foreign seas are almost like floating trees.

When you have finished searching (it is better not to collect too many at a time), and return home, your small seaweeds in the jar should be tipped gently into a bowl of sea water. Fresh water is no use for the small seaweeds, as they would start decomposing almost at once. The bowl should preferably be white, as your plants will be much clearer to you. When you have very gently shaken them around in the water they should be transferred to another bowl of sea water that has been filtered through muslin.

Now for the actual mounting. Cartridge paper is the most suitable for this. Place a sheet over a piece of thin wood or zinc which has already been punctured with holes for the water to drain through. Submerge this under the water and edge the weed gently on to it with an ordinary paint brush and arrange it in a suitable position for mounting while it is still under the water. Lift it out of the bowl and allow to drain off.

Next thing to do is slip the cartridge paper and specimen off the wood on to a piece of muslin that has previously been laid over several sheets of blotting paper.

Pop off any surplus blobs of water that are still clinging to the cartridge paper with a sponge and place another piece of muslin right over the specimen, then several sheets of blotting paper and lastly three or four large heavy books. The latter must be placed carefully so that the specimens are not damaged.

After two or three hours the blotting paper should be replaced with new sheets but the muslin must not be touched. Then replace the books and leave for another 12 hours. Again change the blotting paper and repeat the process every 12 to 14 hours for four days.

Now at last the material may be removed and the specimen transferred to

a new dry sheet of cartridge paper and, if necessary, again pressed.

The specimens will probably stick to the paper on their own, but if they do not do so, there is a very simple way of making them. Boil a little milk and remove the skin. Moisten the cartridge paper with the boiled milk and place the specimen on top. You will find the seaweed will stick quite firmly after you have pressed it again for a little while.

We have been referring to the small delicate seaweeds but for the thicker variety you must make a slight alteration in the method of washing. They should be cleaned in fresh water to remove the salt and then dried between towels before being pressed in the same manner as the delicate ones.

As has been said before, the thick coarse seaweeds may be dried in the air if it is not convenient to mount them immediately. In this case, however, when you are ready to mount them, they should be soaked in boiling water for 20 minutes, then washed in fresh water and pressed in the same way.

The sticky seaweeds, after being washed and arranged on the paper, should be left to dry before being pressed, otherwise they will stick to the material and be torn and broken when you try to disentangle them.

Naming the specimens is no easy matter. In any case, if you knew the names you would probably not be able to spell them! The best method, perhaps, is just to divide your specimens into the blue, green, olive-brown and red groups. During the summer, at least, collecting seaweeds will keep you too busy to worry about their names.

Then, during the winter, you can spend the long, dark evenings searching out the scientific names of the specimens you have collected during the long summer days.

There is a number of illustrated books on the subject, which you can probably borrow from the local library, and will help you to identify your specimens. (161)

Arc Lamp—(Continued from page 147)

can, of course, be used, but each reduction in the current flowing will cause a corresponding reduction in the strength of the arc.

How to Operate the Lamp

In view of the extremely vivid, hard light produced the arc must not be watched with the naked eye. Dark 'sun-ray treatment' glasses can be obtained, or some other form of effective shade may be devised.

Set the carbons about $\frac{1}{2}$ in. apart and connect up as described. Lighting circuit points should not be used unless the current is to be confined to a maximum of 5 amps. (e.g., approximately 1,000 watts).

Upon slowly screwing the carbons

together a point will be reached where the arc will be struck. This causes ionization of the air between the carbons, with a consequent reduction in electrical resistance, so that the carbons can be screwed apart to some extent without the arc collapsing. In view of the possibility of the arc ceasing, when of any length, during the periods when the direction of current changes in A.C. supplies, direct-current is preferable.

At the beginning, when the arc is small, there will be a heavy current across it, but little voltage drop, and the fire resistance will heat up. With a longer arcing distance between the carbons, however, the current will drop and the fire drop in turn to a lower temperature.

As with all mains-operated equipment, no bare parts should be touched when the apparatus is connected to the mains. It is advisable to adjust one knob only, using one hand at a time, to avoid any shocks which might be felt should both knobs be held simultaneously and the insulation be of poor quality.

Actually, if the user is standing on a carpet insulating him from earth, no shocks are likely to be felt even if the rods are touched. But it is always best to be on the safe side, and not to use both hands together. Remember that a shock can be obtained in two ways—by touching two objects at different potential simultaneously, or by touching an object which is at a different potential than earth.

Add to your comfort and cosiness with these CARAVAN FITTINGS

READERS who have built for themselves one of the caravans described in a previous number of *Hobbies*, or, perhaps, have bought one ready made, will probably find the fittings to be described most useful. The first item is a folding table and cupboard combined.

Figs. 1 and 2 show a side and front view of this arrangement, and the small space it occupies when folded up. It is of simple construction, and can be made from deal, say, $\frac{1}{2}$ in. thickness. Nothing too heavy is desirable, owing to the necessity of avoiding weight. Sizes and dimensions given will be found about right but, of course, can be amended to suit the shape of the caravan, if necessary.

Framework

Cut the sides and top board, also the two shelves. These shelves are housed in the sides, $\frac{1}{4}$ in. deep, as at (A) and the tops of the sides similarly housed in the top board, as at (B). Take particular note that the middle shelf extends beyond the sides $\frac{1}{2}$ in., the fall table resting upon it, when down. No back is provided to the cupboard part, the wall of the caravan taking its place to economise wood.

It may be necessary here to cut away notches in the rear edges of side and top board, to clear the framing of the caravan. This will be seen at once, when fitting it in position.

The fall table will need two boards glued together to make up the width. At each end of this, glue and nail a $1\frac{1}{2}$ in. wide batten, underneath, to prevent warping. Hinge the table to the top

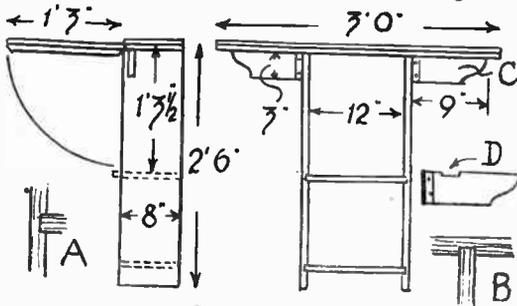
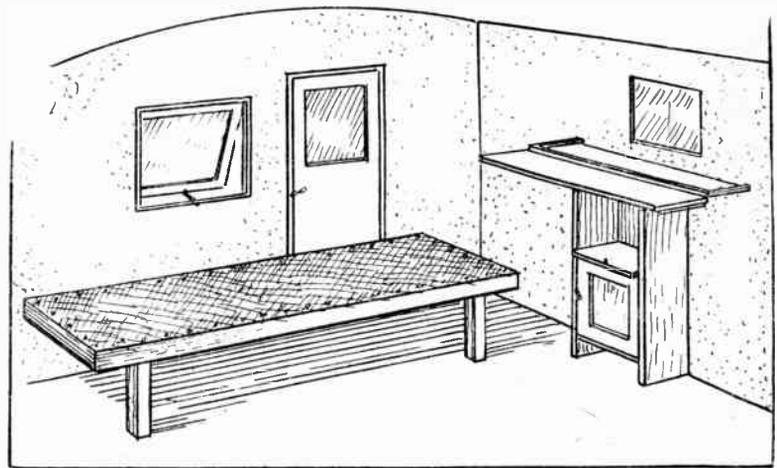


Fig. 1—End view with flap top

Fig. 2—Front view and detail of shelf joints

Fig. 3—Construction of the camp bed seat

Fig. 4—Fitting the legs



board with 2in. backflap hinges, placed about 10ins. from each end. To support the table, when in the 'up' position, cut and fix a wood bracket each side, as shown at (C). These might be cut from thicker wood than the rest, say, $\frac{3}{4}$ in. stuff.

The Door

They are hinged to the sides with 3in. iron butt hinges, about 1in. back from the front edges of the cupboard sides. It will be seen that notches must be cut out of these, as seen at (D) in Fig. 2, to clear the hinges of the table.

The whole arrangement is now provided with a door for the lower half of the cupboard (the table itself providing the door for the upper half) and a wood edging to ends and front of the top board to prevent articles being shaken off during travel.

White enamel the fitting, and screw it to the front of the caravan, just below the window. A small metal button, screwed to the middle shelf, will keep the table from flapping, when in the down position. A similar button would suffice

to keep the door fastened as well.

The second fitting is the provision of a couple of bed frames, as sleeping on the floor is not to be recommended on account of draughts. Both these frames are capable of being lifted out, a necessary arrangement where the door of the

TIMBER FOR MAKING

For table—one 12ft. and one 6ft. board of $\frac{1}{2}$ in. by 8in. deal
For bed frames (4)—1 $\frac{1}{2}$ ins. by 2 $\frac{1}{2}$ ins. by 6ft. 3ins.
For bed frames (2)—1 $\frac{1}{2}$ ins. by 2 $\frac{1}{2}$ ins. by 2ft.
For bed frames (2)—1 $\frac{1}{2}$ ins. by 2 $\frac{1}{2}$ ins. by 2ft. 2ins.
Legs (4)—2ins. by 2ins. by 1ft.

caravan is to one side. Fig. 3 shows one of the frames. Make up from good quality timber of 1 $\frac{1}{2}$ ins. by 2 $\frac{1}{2}$ ins. section.

The corner joints are rebated ones, as in detail (E), strengthened inside the angles with triangular blocks, as shown. In the middle, screw across a stiffening bar, as at (F).

Frame Fitting

The second frame should be similarly made, but is just 2 $\frac{1}{2}$ ins. wider, for reasons mentioned later on. The legs (G) Fig. 4, are cut from 2in. wood, and cut away at the top where they are screwed to the frames. Fix these legs, approximately where shown in the view at Fig. 3.

For fixing the frames to the walls of the caravan, simple metal fittings are suggested, made from $\frac{1}{2}$ in. by 1in. iron bar. These are shown at (H) Fig. 4. Three will be needed for each frame, screwed to the rear of each, and the sockets screwed to the walls of the caravan at the right height.

It will be seen that the removal of either from their position is just a matter of lifting up free

(Continued foot of page 151)

For general use or for camping you should know about CORDS AND ROPES

It is safe to say that a good number of readers will be spending some of the summer under canvas and be trying out a little pioneering. Both in ordinary camping and pioneer work ropes and cords play an important part, so let us consider a few points about them.

Strong as they are these useful lengths are but made up of many fine fibres twisted together, generally fibres of sisal or manilla hemp, although cotton is often used. Starting at the beginning, 'yarn' is made by twisting fibres loosely together. 'Thread' is the result of twisting together several thin yarns. 'String' is the same, but using larger yarns. Several 'threads' twisted together form cords, while two or more large yarns form a strand and a number of strands twisted together make a rope.

Hold a rope up and the spiral of the twist usually runs from the bottom left-hand side to the top right-hand. The twisting of the strands together is known as the 'lay' and in the kind just mentioned has a right-handed lay. Cords and thin ropes can have a left-hand lay, or be plaited, when the word 'lay' does not apply. Three strands laid up together, right-handed, form what is known as 'hawser-laid rope'.

Measurements and Yarns

Ropes and cords are measured by their circumference, not diameter. Anything less than 1 in. circumference is known as cord, above that the name rope is generally applied, but there is some looseness in the matter.

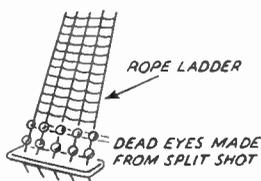
Below the 1 in., this circumference way of describing ceases, the material then being classed by the number of yarns, i.e., six, nine, twelve, etc.

Puncture Mending

WHEN repairing inner-tube punctures, if you find that you have no french chalk, try a little starch, as this will answer your purpose very well.

Deadeyes

WHEN making small scale ship models, lead fishing weights make



excellent deadeyes if nipped neatly on to the rigging. They are quite cheap to purchase, and are known as split shot.

In the making of anything from string to a ship's cable the main aim is to make the fibres take the tension equally, and anything which prevents this detracts from the strength. Thus we see why kinks should always be taken out of cordage, as they put more strain on one side than the other.

For Strength

New ropes often are full of bends, but these can be got out by dragging them backwards and forwards over the ground. This helps the strands to fall easily and without stress into their natural lay.

As equal tension is necessary for maximum strength, it is not hard to see that knots, etc., cause weakness, as they distribute the load over the fibres unequally. Thus it has been calculated that the ordinary reef knot weakens a cord or rope by 50 per cent.

All cordage should be kept as dry as possible and never be put away damp, as it mildews quickly, which causes rot to set in. Wet cordage should be laid in the shade to dry or be hung up under cover and not coiled till it is quite dry.

To Make Pliable

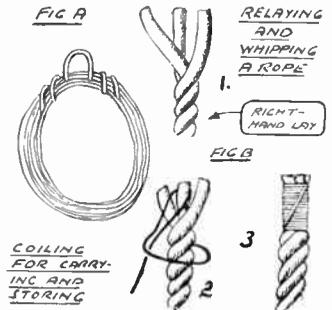
New cords and thin ropes are often stiff and unyielding. This trouble can be overcome by placing in water which is brought to the boil, after which they are laid out to dry. The 'boiling' makes them soft and pliable.

Ropes should always be coiled in their lay. Thus, right-handed material must be coiled clockwise, while 'cable-laid' rope, which has a left-handed twist, should be coiled in an anti-clockwise direction.

When coiling, drag the length straight out on the ground. Then stand with your back to it and bring the rope

round in front from the right, dropping it at your feet in a not too large circle as you do so. Drop coil upon coil with an easy action, which will allow the rope to take a comfortable unstrained position. When finished, bind the coils together at three points on the circle with some small diameter material, using a readily unfastened knot of the slip type.

Short lengths of cordage can be



wound by twisting over the outstretched thumb and elbow. Run the free hand down the cord before making a coil, as this helps to shake it into its right 'lay'.

To secure the coils, pull out an inside turn, take it over the complete bundle and push through the middle of the turns. This holds everything quite tight and also gives a loop to hang by (see Fig. A).

Frayed Ends

After using for some time a rope often becomes untwisted at the end. Then it needs relaying and whipping. To do this, separate the strands and taking one at a time, twist the fibres tightly back into position as (1).

Then take the strands and twist these back to their natural lay. Now take the whipping material—'sailmakers yarn' is good, but strong thread is all right for thin cordage—and putting an end between the strands as (2), bind tightly with the turns close up together (3). Finish by giving the binder a twist round a single strand and getting out the other end from the strands, make a tight reef knot. Finally, cut neatly the tops of the strands beyond the whipping.

For Entertainment

Ropes and cords are interesting things beyond their use for guylines, lashings and the like. Rope spinning for entertainment can become quite an art, an accomplished artist being able to make a rope act almost like a live thing in the air and form gyrating circles as solid as though made of bands of steel, through which he can jump with the utmost accuracy. The lariat is too well known to need description, but the things that can be done with it give some idea of the tremendous control of a rope that can be secured.

Screws In Hard Wood

TO prevent screws splitting hard or thin wood, file a flat on one side of a screw, and use it to cut a thread in the wood. Then remove and replace with an ordinary screw of the same size.

Stamp Hint

STAMP collectors who wish to keep the stamps clean should cut out pieces of Cellophane the size of the pages of the album, and when a page is full, stick it on.

Paint Remover

TO remove paint from doors, furniture, etc., take 1 oz. of common washing soda and $\frac{1}{2}$ pint water. Mix the two and add soda until a jelly is formed. Then put on the article to be treated, and leave for half an hour before wiping away.

Now is the season to watch for and eradicate WORM IN WOOD

MANY readers are acquainted to their cost with the destructive effects of the woodworm, and have wondered, perhaps, what kind of insect it is that can penetrate even the hardest wood with such apparent ease.

The months round July are when they are most evident and some notes on the subject will be interesting and helpful.

The trouble begins with the wood beetle, quite a tiny insect, about $\frac{3}{16}$ in. long. This can often be seen walking up the window pane, and when noticed is a timely reminder to examine the surrounding woodwork. Small as the beetle is, its powerful jaws enable it to bore into wood, mainly it would seem to find a place in which it can deposit its eggs. Beech, strangely enough, is its favourite wood, but spruce, oak, elm and walnut may all be welcome to this destructive pest.

The Life Cycle

Once securely housed in the wood of its choice, the beetle lays its eggs and these, in time turn into small maggots, $\frac{3}{16}$ in. long and half curled. The maggot is lazy in its habits, and lives entirely on the wood, tunnelling its way in every direction, with dire results to the furniture housing it. Its destructive effect is astonishing, as it can, and often does, reduce the whole interior of the wood to the consistency of powder.

The writer quite recently noticed a piece of furniture having a foot apparently fallen off. On closer examination, the foot, a 4 in. diameter one of beech, was literally but a shell, filled with a brown powder, and had dropped to pieces. The other feet were also affected, though not so badly, but strange to say, the body of the article made of deal and walnut was uninjured.

The maggots in due time change into beetles. Then they emerge, and quite possibly attack something else. Though slow in movement, they can fly, having tiny wings concealed in wing cases on their bodies. The presence of both

beetles and maggots can always be detected, both by the round entrance holes they make in the wood, and the little pile of whitish powdered wood just outside the holes.

Least Affected Wood

Mahogany and birch rarely seem affected by the pests, possibly they cannot stand the flavour, or there may be some deterrent in the timbers which render them obnoxious to them. Ash, also is rarely affected, and it may be valuable to woodworkers to remember these facts when choosing a wood for their work. Pine and American white-wood are almost immune, also cedar, rosewood, ebony and satinwood, though there is not much of these timbers available to the amateur cabinet maker now.

The articles of furniture most attacked seem to be those enjoying a more or less static existence. Chairs and tables, and such like pieces, frequently in use, and subject to much dusting and polishing, are not troubled with the pest nearly so much. Quite likely the woodworm hates disturbance. It certainly is no lover of polishes and beeswax treatment, and while such treatment may not render them absolutely immune, it certainly acts as a deterrent.

Precautions

Furniture, if not affected too badly, can sometimes be cured by a thorough dusting and frequent beating of its upholstery. Such disturbance is strongly resented by the beetles, who may well quit their holes for a quieter life in something else. Once the presence of woodworm is noticed, a close examination at frequent intervals of the furniture is a valuable precautionary measure, for, as just stated, the beetles may attack elsewhere.

Where a number of pieces of furniture are affected, the quickest remedy is fumigation with sulphur, but such a messy business is unnecessary when only few articles are attacked. One method

is to squirt petrol in the holes, a job to be done in the open air, if possible, and no smoking on it.

Woodworms hate this, and emerge in a hurry when they can be killed. But patience is needed, as several applications may be required, and though the worms hurry out, it must be remembered that they are slow moving insects and take time to reach the outlets. When there are a lot of holes to receive attention, the job may well prove a long and tedious one.

What is considered a good, perhaps, the best of the home remedies, is a camphorated oil. Ordinary paraffin oil is the kind used, and a block of camphor should be crushed and dissolved in a small bottle of the oil. This, squirted in the holes with a fountain pen filler or oilcan, is fatal to the worms, provided it can reach them.

It is a capital remedy, at least in the early stages of the attack, but usually needs to be repeated at intervals of about a month for, say, 6 months period. The oil slowly evaporates, so leaves no mess behind.

Proprietary Remedies

There are several proprietary remedies on the market, which readers, unfortunate enough to suffer from the worms' ravages may employ if they wish. These can be bought at any oilshop or hardware stores, and save trouble making up at home. Among these may be mentioned the products named Cuprinol and Renticol, quite effective it is stated for the job.

Once the pest has been eradicated, the damage done to the furniture can be, if not repaired, at least hidden from view. Plastic wood, which can be bought coloured to match fancy woods, is a good material. The unsightly holes can be filled up with this substance, and if the wood is repolished or varnished, may well render them practically invisible. Putty, coloured with dry colours, to match the article of furniture, could also be employed where the number of holes is excessive.

Caravan Fittings—(Continued from page 149)

from the sockets. Give the frames a coat or two of varnish or paint, as preferred.

Both should now be well webbed, three strands lengthwise, and as many crosswise as necessary to leave them some 5 ins. apart. Strain the webbing to the utmost, as it has to bear the weight of the body. A simple strainer can be bought or made up, as previously described in upholstery articles.

Over this a stout close woven canvas should be drawn taut and well tacked down. This should provide a sufficiently

strong foundation for a sleeping bag or the conventional bed clothing.

If something a little softer is desired for a night's rest, and the extra expense not objected to, a little padding could be added. Flock would serve for this, an even layer of 1 in. thickness being laid over the canvas and covered with American cloth or tapestry. This should, preferably, be buttoned, to keep the padding in its place and from becoming lumpy.

It may be added that tapestry is much warmer for sleeping on than the

American cloth, but not so easy to keep clean. The material is pulled over the sides of the frames and there tacked, or tacked underneath where the tacks are hidden from view.

In the day time, one bed frame is lifted out, for access to the doorway, and is laid upon the other, the two together forming a comfortable lounge. This is the reason for making one frame wider than the other, the wider one resting on the narrow one, its extra width allowing the legs to clear it.

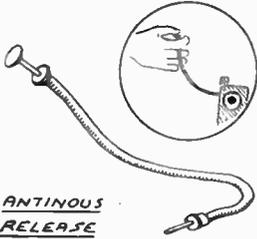
PHOTOGRAPHIC ALPHABET

This is the first of a series of articles which will give you, under the letters of the alphabet, quite a lot of information about photography. Indeed, the series will form almost a glossary to which you will be able to refer for guidance. If read carefully, article by article, the beginner, particularly, will find that he has gained a really good and wide knowledge of his hobby. Putting on one side then the fact that 'A' stands for yourself—the Amateur—let us get right on with the items that fall under the first of our everyday twenty-six.

A for—

ANTINOUS RELEASE

MOST pictures are taken by pressing a trigger, but some cameras can be fitted with what looks like a piece of electric flex with a press-button on top. This is an antinous release and it allows you to stand well away from the camera, which is placed on something firm, while the exposure is made by pressing the top of the release. This quite cuts out the great danger of shaking the camera which comes when pushing down a trigger. A cable release of this sort also helps when holding the camera in the hand for by working the cable, all jabbing action is eliminated.



less and to get those amazing pictures of bubbles bursting that you see in the papers occasionally, special lamps which give exposures hundreds of time less still are used. Action pictures are a very interesting study.

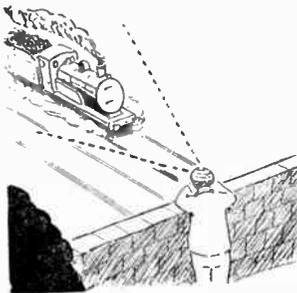
ALBUMS

THESE can be bought in a wide variety of types. There are albums with loose leaves, fixed leaves, slotted leaves where you just slip the prints in and double leaves where the prints go between what is virtually two leaves and appear through an opening in one. On the whole for the ambitious amateur the loose leaf album is the best for this can be added to when more prints come along. The pages can also be taken out and rearranged if desired, or a spoilt leaf discarded without ruining the whole book.

With plain leaf albums (not slotted) it is best to put the prints in with gum stamps. These are small squares of paper with gum on both sides. They are stuck to the four corners of the print, and after being dampened again, the prints are just placed in the desired positions and pressed down. When in the album the stamps are quite invisible.

ACTION PHOTOGRAPHS

THIS is the name given to a class of very interesting photographs where the subjects have been in motion when the trigger was pressed—not stationary as is usually the case. With this type of picture the exposure must be instantaneous, the faster it is the better. The shutters found on 'box' cameras and other less expensive instruments work at about $\frac{1}{30}$ second, which will only arrest very slow movements. For sports, train pictures, motor races, etc., a faster speed is desirable, but much can be done with a slow shutter by choosing



the right position from which to take, the very best position being with the subject coming almost straight towards you. Here the exposure need only be one third of that required with the subject going right across the field of vision to get the same sharpness.

For very exacting action pictures, press photographers use shutters which will give exposures of $\frac{1}{1000}$ second and

B for—

BOX CAMERA

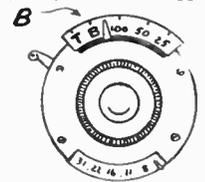
THIS type of camera, as the name suggests, is made just like a box with the lens at one end (with the shutter) and the film at the other. It will not fold up as other kinds do but it has quite a lot of advantages for the beginner. Normally inexpensive, the 'box camera' will stand up to a lot of rough treatment. Focusing is generally 'fixed' so you do not have to worry about this, while the shutter is of the simplest. Cameras of this type are easy to hold and take very bright little snaps. They have one big advantage over the folding camera in that the danger of stray light is practically non-existent. Bellows much easier become faulty and cause fog, through the leather deteriorating and developing minute holes.

Bulk is usually the only trouble with the box camera, though some very small and compact ones are made now-a-days.

BULB

ON the front of many cameras are three letters 'I', 'B' and 'T'. The

'I' means 'instantaneous' and here the shutter just flashes across the lens when you press the trigger, giving an exposure of about $\frac{1}{25}$ th second. 'T' stands for 'time' and in this case when the pointer is set at this and the trigger pressed, the shutter remains open until the trigger is released, that is allowed to come up again. The 'B' stands for 'BULB' and here you press the trigger



and the shutter opens and remains open till the trigger is pressed again. This fitting allows of the taking of a very long time exposure, as, say, in a dark church, when you may have to leave the camera standing for three or four minutes. With 'T' you would have to keep your finger on the trigger, but with 'B' you can press down and then move right away and so eliminate all danger of shaking the instrument. The only thing is you have to be sure that the camera is on something very rigid.

BACKING PAPER

THIS is the name given to the long strip of paper that goes at the back of a film and in which the sensitised length of celluloid (which is the film proper) is tightly wrapped. The paper is of especially fine-grain material and is absolutely opaque. On the outer side are a whole series of numbers and dividing marks which appear through the red inspection window at the back of the camera. The standard 3½ ins. by 2½ ins. film is generally marked to give eight exposures of 3½ ins. by 2½ ins., twelve of 2½ ins. by 2½ ins. or sixteen of 2½ ins. by 1½ ins. So the backing paper allows of the sensitised strip being used on several different cameras.

Backing paper for ordinary film is red in colour but that used for panchromatic material (sensitive to reds) is finished in green. Both are black on the inside.

When the seal on the backing paper has been broken to put a film in the camera, the roll must be held between the fingers to prevent it uncoiling and causing fog. Similarly, when taking a roll out, the backing paper must be wrapped quite tightly before licking down the gummy tab.

Some more Simple Home- made Cements

Quick-setting Iron Cement

IRON borings or filings powdered, 2½lb. powdered sal ammoniac, 1oz. sulphur (in block or flowers), ½oz., together with enough water to moisten the mixture; forms quickly-hardening iron cement. It sets more firmly without the sulphur, and must be used just as soon as mixed, and should be well caulked into the joint or gap in the casting being treated.

Coppersmiths' Cement

POWDERED quicklime mixed with thinned gelatine or glue is used for cementing copper articles without heat.

Dental Cements

THESE are very hard cements used for stopping the cavities of teeth, but will find many ready uses where waterproof fillings are required in which no surface wear takes place. They are mostly composed of various gums and resins in differing proportions, and only the more important ones are noted.

Formula No. 1. Powdered gum sandarac and gum mastic in equal proportions mixed with enough alcohol to form a stiff paste, which must be quickly used.

Formula No. 2. 9 parts of powdered gum mastic solved in 4 parts of ether, and enough alum added to form a workable paste.

Formula No. 3. 12 parts of phosphoric acid crystals mixed with 13 parts of pulverized quicklime. A rapidly-hardening cement.

Formula No. 4. (Silicious). This name is given to a mixture of equal parts of mastic, iron filings, ground kaolin and plaster of Paris.

Formula No. 5. (Metallic Amalgam cement). Melt 2 parts of tin with 1 part of cadmium, run it into sticks and file them to dust. Form the filings into an amalgam with mercury, and squeeze out any excess of quicksilver through a chamois-leather bag. Work up the plastic solid metal in the hands, when it is ready for pressing into the filling.

Cheap Paste for Scenic Modelling, etc.

FOR relief and scenic model work a cheap paste which can be made in bulk can be produced by mixing together 4lbs. ordinary flour, 1lb. alum and 1 gallon of cold water, stirring to make a smooth creamy mass. Then boil 1½ gallons of water and, while boiling add the original mixture, stirring well all the time; and allowing it to continue boiling for five minutes. A teaspoonful of oil of cloves should be added to act as a preservative.

Whittling and carving can provide NOVELTIES IN BONE

THOUGH such wood as oak and such stone as marble are most suited to the carver's needs, many craftsmen have refused to be bound to convention, so that one occasionally meets with freakish media. We have seen carvings in coal, chalk, salt, etc., whilst soap sculpture is quite a recognised craft.

Whilst bone is not exactly an unknown medium for carving (since prehistoric men are known to have scratched patterns on bones) it is sufficiently novel to make a welcome change from wood and metal, whilst its ivory-like appearance is quite pleasing. Moreover, the material is cheap to obtain and easily worked, advantage being taken of natural forms.

Bones, from the smallest to the largest are used, though the most generally employed are large marrow bones from the shank of the animal. Apart from those obtained in one's own kitchen, a supply can be obtained from a butcher.

Novelties to Make

Readers may have seen, in shops selling novelty goods, grotesque figures of bow-legged men made from wish-bones; the bone forming the legs, whilst the body is modelled in plastic wood. One maker of these on a commercial scale obtains his bones from a well-known chicken-paste factory.

The bones have to be cleaned by boiling, to remove the fat, but care should be taken not to overdo this and remove all the natural oils, otherwise the bone may be brittle.

Certain parts will be obviously too porous to use, but the eye will soon perceive useful portions. In Figs. 1 and 2 one sees some methods of cutting bones whereby L-shapes and oval shapes (obtained by cutting on the slant) may, among other shapes, be obtained.

Tools Required

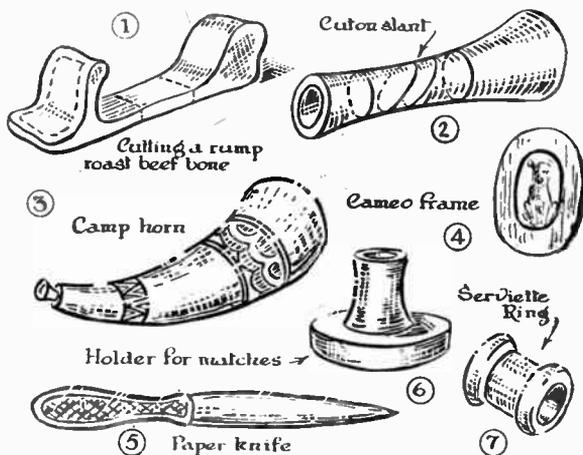
The tools to use are a hacksaw, rasp, files of varying coarseness, fretsaw, mallet and chisel, etc., whilst, for finishing, sandpaper of increasing fineness is used. A final polish is given by rubbing with powdered pumice (on a damp cloth), and then with a mixture of powdered chalk and olive oil.

For most purposes the bone is best left in its natural colour, but in some cases (such as when draughtsmen or

chess pieces have been carved) it is necessary to colour the bone, and aniline dyes may be used.

In the illustrations, a few of the many possibilities of bone carving are shown. Other objects such as carved statuettes, chessmen, etc., can also be made. The cameo frame (4) is made by cutting a hollow bone on the slant, as already mentioned. The camp horn with carved decoration is made from a cow's horn and fitted with a ready-made metal bugle mouthpiece.

If carving in bone (or any other media



for that matter) was undertaken on a commercial scale, a most useful tool to have would be a flexible drill like those used by dentists, and fitted with similar burrs. Larger articles can be fashioned either by jointing pieces together with dowels, much in the same way as wooden articles are assembled, or else by gluing together with cellulose cement or casein glue.

Prisoner Craftsmen

Among the old-time craftsmen in bone we must not forget the unfortunate Napoleonic prisoners-of-war who were sent to this country during the 21 years we were at war with France, from 1793 onwards. They were accommodated in special prisons, of which the one at Dartmoor still stands. There was also another at Norman Cross, near Yaxley, in Northampton.

These poor fellows had heaps of time on their hands, and displayed infinite patience over the work. The amateur craftsman finds more pleasure in the work.

Some of these unfortunate men, with the simplest of tools, carved bones from their meals into intricate models of ships, watch-stands and so on, which they sold, through their warders, in order to obtain a few 'extras' of food. Specimens of their work, and especially that from the Norman Cross prison, can be seen today in the Peterborough Museum. (150)

Here are some practical ideas and hints FOR CAMP OR HIKE

A Simple Map Case

TAKE two sheets of stout straw-board, each about 8½ ins. by 5 ins. and join them, book fashion, with a hinge of stout linen. The cover of an old book trimmed to size might be made to serve. Slip the map into the cover, and hold it there with two strong elastic bands. A thin sheet of celluloid might be placed over each half of the opened map. This arrangement will keep the map flat, avoid 'dog-ears' and also hold the sheet open at the required section.

Keeps Feet Dry

MOST unprepared hikers have known what it is to sit around in bare feet whilst their only pair of stockings, which have got soaked in the rain, are drying before the fire. Slippers can easily be improvised from newspapers, as shown in the diagrams. The whole lot is held by the garter, or, better still, some string. The newspaper is quite warm and not so fragile as one might imagine.

Sheets of newspaper are arranged in a triangular form, as shown in Fig. 2. There should be two or three thicknesses. The front point is then brought up over the instep, as in Fig. 3, and finally the other two corners are brought over, giving the result as at Fig. 4.

Newspaper can also be stuffed up the legs of shorts and also packed into wet shoes to keep their shape.

Camp-Fire Stunt

LOW comedian enters with a plate of flour. 'What's this?' he asks another. 'Flour, of course,' is the reply. 'Sure? Just taste it.' 'It's flour, I tell you.' 'Well, feel it then.' The other does so, and still maintains it's flour. 'Make sure by smelling it,' says the man with the plate. The other bends down to smell it, and whilst his face is near the plate, the comedian blows all the flour in his face. In order to justify this, ethically, the 'straight' man should first have scored off the comedian so the affair is a tit-for-tat.

Sleeping Rough

'SLEEPING rough' may be either a Hobson's Choice or a Fine Art. Even the toughest outdoor men, thoroughly inured to hard living, cannot expect a good night's rest on hard flat ground with no groundsheet or blankets. Yet, with a little discrimination, one may sleep as soundly as a bug in a rug.

Though opinions may vary, the writer's choice is when tentless, for bedding down in a half-demolished

haystack, getting tucked between the haystack wall and the loose hay around it. Sometimes a sheep hurdle can be found and leaned against the haystack. This is then covered with a foot or so of loose hay, making quite a water-tight bunk. Naturally, one should leave the haystack exactly as one found it.

Cold is the worst enemy of a 'rough' sleeper. Some summer nights can be very cold. Cowboys of fiction sleep around a fire, but, in actual fact, to gain any advantage, one has to be dangerously near the glowing embers. Reliance should be placed on a well arranged light blanket. Remember that more cold comes from below than from above, so have more bedding *under* you.

Many rough sleepers swear by a pile of small stones (sand is apt to be damp). After a little wriggling, the pile of stones conforms to the shape of the body. Take care, however, that your groundsheet is not torn.

Try Stencilling

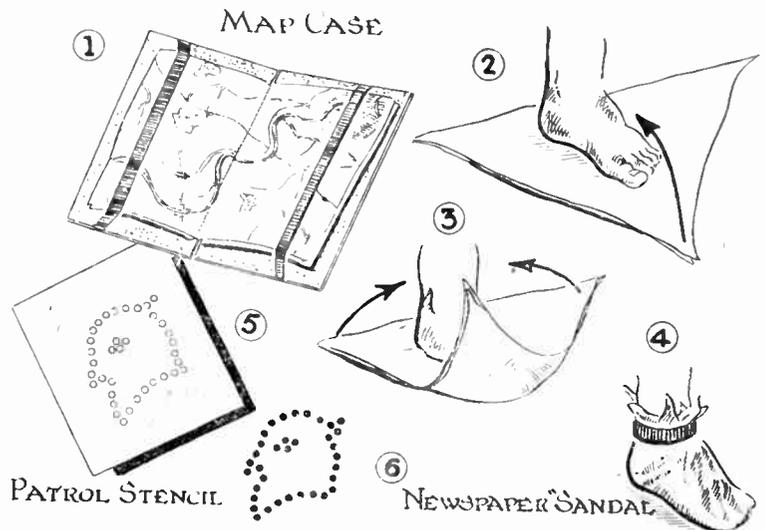
STENCILLING, besides being a quick and useful means of decorating

too wet, or you will spoil everything. It is a wise plan to practise on a spare piece of material first so that you get used to the peculiar stabbing motion required with the brush.

You can make your own stencil plates out of special paper sold for the purpose, or by using thin card and varnishing it well afterwards. Draw your design on the paper and black it in before you cut it out so that you can judge the effect of the finished design. Rest the paper on a sheet of glass and cut with a sharp penknife or a razor blade of the *Star* variety.

A much better plate is made of a thin sheet of metal, copper or zinc for preference. Anyone who can do ordinary fretwork should also be able to cut in metal. The metal is 'sandwiched' between two pieces of wood to stop it vibrating. The three layers are held by small nails driven through the waste parts of the design. A special metal-cutting blade must be used.

Here is a simpler method. Draw your Patrol animal, monogram, or what you will, using a bold outline. Then from an engineering friend or grown-up, borrow a ¼ in. diameter



things, is very handy for marking personal, group or Boy Scout Troop property. Zinc stencil plates of patrol animals can be hired from the Scout Shop, and can be used to give your tents and other gear a distinctive mark.

A large stencil brush must be used, with bristles about 1 in. long. It is a good plan to bind the bristles about half-way down with an elastic band, as this stops them splaying too much.

Most kinds of paint can be used—oil paint, poster colours and indian ink. Pour a little in an old saucer, and whatever you do, do not get the brush

punch. This is an instrument which punches out a neat clean hole, leaving only a slight burr which must be smoothed off with a fine file.

Lay your sheet of metal on a flat piece of soft wood, and punch round the outline, leaving about ¼ in. between the edges of the holes, and there you have a fine stencil.

The same principle can be used in pricking out a design in a sheet of thin cardboard with a pin, and brushing over it like a stencil. The result, however, is not quite so good, owing to the roughness of the holes. (155)

26½ ins. long by 2 ins. wide. When this has been fixed and glued in the housings, the two side runners (D) which might consist of a softer wood such as pine, are run in from the back and also in the housings and screwed similarly to the shelves.

The drawer is made as shown in Fig. 4. The front will be 26 ins. long by 3½ ins. wide by ¾ in. thick. The drawer sides are 12½ ins. long, 3½ ins. wide and ¾ in. thick.

The inner front and the back, pieces (E) and (F) respectively, are 26 ins. long by 3½ ins. wide and ¾ in. thick. The four pieces forming, as it were, the inside frame of the drawer, are lapped together at the angles and glued up, as in the enlarged detail in Fig. 4.

The floor consists of either ½ in. plywood or ¾ in. plain wood made in two or more widths. Shaped blocks

3 ins. long cut from ¾ in. stuff will answer for the drawer pulls.

The falling leaf of the bureau measures 26 ins. long by 13½ ins. wide by ¾ in.

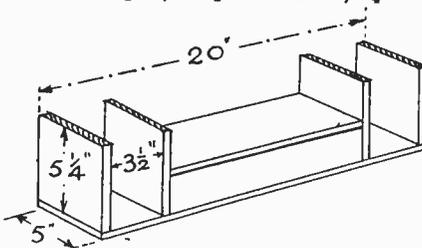


Fig. 5—Detail of interior partitions

thick. This again might be made in two widths and carefully planed up and glued and cramped together. The top edges of the leaf must be planed to a

chamfer to meet the edge of the top shelf. A pair of ordinary brass hinges should make a good connection to the rail.

The fitment to go inside the bureau may be made entirely from ½ in. wood to the outline given in Fig. 5. This fitment is screwed and glued to the main back of the bureau which consists of ½ in. or ¾ in. plywood measuring 26 ins. by 12½ ins.

It is screwed to the back edge of rail (B) and to a small fillet glued along under the top shelf (C). Notches must be cut out of the fillet to allow the upright members of the fitment to be level with the main back.

When the bureau is wanted for use, the drawer is pulled out to about 6 ins. to support the falling leaf upon which might be glued a card frame and blotter.



Framing Tapestry

PLEASE inform me of the correct way to frame tapestry. I find it difficult to get the material to lie flat. (W.G.D.—Aston-on-Trent).

ABOUT the best method to adopt is to first make a deal frame of ¾ in. by 1 in. wood, the size of the tapestry, and on this stretch a covering of black calico or lining, or other strong material. This must be tacked to the back and be quite taut. To the lining, the tapestry is pressed flat, and kept there with a few inconspicuous stitches of black silk. Be careful not to distort the tapestry while pulling it out and tacking down. An outer frame of any narrow black or gold picture frame moulding will suit admirably.

Frosted Light Bulbs

COULD I frost a flashlight bulb for use in a photographer's printing-box? (J.L.—Milford-on-Sea).

A VARNISH for your purpose can be made from a solution of celluloid, with powdered chalk or talcum. A little celluloid varnish would suit. You can make it up yourself in this way. Shake up together one part acetone and half part amyl acetate. In this, place some shredded celluloid and allow the latter to dissolve. Allow enough celluloid to make the varnish the consistency of paint, then add a small proportion of the chalk or talcum powder and paint the bulb of the light with it.

Water Circulator

I HAVE a small tank and wish to improve its circulation by using its own water over and over again without the aid of a pump. (H.W.—Hounslow).

A SELF-CHANGING pumpless water changer can readily be made on the syphon principle. This consists of a bent

tube in the form of a U with one long and one short leg. The long leg is inserted in the tank nearly to the bottom, the short leg should terminate above the water level. To start the action, it is necessary to suck up the water from the short leg until the water commences to flow, after that it will continue indefinitely, or if it stops for any reason, can be restarted in the same way.

Heat Marks on Polish

I RECENTLY french polished a table top, but found that when anything hot was placed upon the surface, there was a nasty ring left on the table. What is the cause of this and the remedy? (W.F.—Newark-on-Trent).

FRENCH polish is subject to marking from contact with hot vessels, and is not a suitable finish for a dining table, or at least the top of it. We suggest you clean off the existing polish with methylated spirit, then coat the surface (top surface only, of course, not rails and legs), with TOTEM, a heat resisting lacquer.

Water-tight Glands

I AM attempting to make my first power-driven model boat. Where the propeller shaft protrudes from the propeller bearing, in the stern, there must surely be some leakage of water. How is this overcome? (K.B.—Salford).

THE easiest and most effective method of preventing leakage of water around the propeller shaft, is to fit a short piece of tube about four times the diameter of the propeller shaft at right-angles to the shaft. Then fill the gap around the shaft with Vaseline.

The piece of tube can be fixed to the hull to form a kind of pot, the stern tube extends from the hull into the after end of the 'pot' and thus there is a good oil or

grease (Vaseline) seal to check the inflow of water.

Polarscope Glass

THE other day I made the toy polariser (Hobbies Weekly No. 2820) and find I can get no results with it at all. (E.G.B.—Bath).

THE failure of your polarscope to work is most likely due to the quality of the glass employed to make the prisms. Certain kinds of glass are useless. About the best is that obtained from old photograph negatives, another is the kind employed for microscope slides. The trouble you mentioned, we have experienced ourselves on making one from window glass—it was a failure. With better glass, no difficulty will be experienced.

Telescope Cleaning

I HAVE a telescope and some of the lenses are dull. Could you tell me of a way to improve them? (A.E.H.—Berkhamsted).

IN all probability the dull appearance of the lenses is due to fatigue and age; should this be the case, there is no cure. Possibly some of the dullness may be due to surface accumulations of grease and dirt. If this is so, the lenses can be cleaned by first washing in warm soapy water, rinsing in clean warm water. Dry carefully, then polish with a silk pad charged with polishing rouge.

Cement for Tin Foil

I HAVE some sheet tin foil which I should like to fix to three-ply. Could you suggest a glue that would stick the two? (J.L.H.—Maidstone).

YOU would probably find Bostik cement sticks metal to plywood, but if large sheets are to be so treated, the cost may be too much, as a small tube will not go far. Why not try shellac varnish? Give the wood a coat of the varnish, and when dry, rub over with fine glasspaper. Then apply a second coat of the varnish, press the tinfoil on and lay a board or box on top, weighted for a few hours. If the foil is not too thin, roughen its surface slightly with coarse emery cloth beforehand, to provide a 'key' for the varnish.



Centenaries of 1950

remember him by his Dr. Jekyll and Mr. Hyde. He died in Samoa, and on the stamps of Western Samoa we have (on the 1935 set) a picture of his house on the 6d. value. His tomb is shown on the 1/- value, while the 1939 set of Samoa, which commemorates the 25th anniversary of New Zealand Control, gives, on the 7d. value, a portrait of Robert Louis Stevenson and is here reproduced.

Philosopher

Our philosopher is Rene Descartes and France celebrates the 300th anniversary of his death this year, for he was born in 1596. Stamp collectors will recall him chiefly by the stamp error that was issued in his honour in 1937. A stamp was issued showing a portrait and an open book. On the book appeared

THOSE collectors who are fond of dates and anniversaries can have quite a 'field day' in 1950 or, should we say, many 'field days'. We can commemorate royalty, statesmen, authors, philosophers, discoverers and composers by seeing portraits of these on the stamps of about half a dozen different countries.

If we start with royalty then we should turn to the stamps of Newfoundland. Strictly, we should now call this country Canada, but as the royal portrait appeared on the stamps issued in 1911 when the island was a separate colony, one can be excused for using the name in force at the time it was issued. Had one said Canada and then quoted the date 1911, readers would never have found the stamp in their catalogues.

The 1911 issue was the Coronation issue—the commemoration of the coronation of King George V.—and it was on the 12c. that the portrait of The Duke of Connaught appeared. When it was first issued the stamp was only worth approximately 6d., but now it is worth about £2. May 1st is the centenary of the birth of the Duke of Connaught, who was the third son of Queen Victoria.

Statesmen

Two statesmen whose centenaries are commemorated on stamps this year are Zachary Taylor and T. G. Masaryk. Zachary was the 12th President of the United States of America and he appears on the 12 cent of the President's set. He died on July 12th, 1850. He became President only in 1849, but earned for himself the title of 'Old Rough-and-Ready'. The Presidential set issued in 1938 of which this stamp is one is a remarkable example of engraving.

Many of the portraits are taken from famous paintings and some from statues, while a few come from coins or medals. Each stamp has the name of the President depicted, with the date he was President. These are arranged in chronological order, starting with the half cent which shows Benjamin Franklin.

T. G. Masaryk is the other statesman commemorated this year; he was born on March 7th, 1850. The illustration is of the stamp which was issued in 1935 on the occasion of Masaryk's 85th birthday. It shows his autograph and also the date of his birth.

Thomas Garrigue Masaryk was the first President of Czechoslovakia, the son of a coachman in the employ of the

Austrian Imperial Family. He became a blacksmith, then studied at Vienna University and later lectured there. In 1882 he was made a professor in the Czech section of the Prague University. He entered the Czech Parliament in 1891, but two years later resigned. He went back in 1907 and attacked Austria and Hungary. In 1914 he went to the United States of America and in 1918 he became President of Czechoslovakia.

Literature

Literature has three centenaries to commemorate this year. Balzac and Pierre Loti are found on French stamps and Robert Louis Stevenson on the stamps of Western Samoa.

Honore de Balzac was born in 1799



The Statesman

The Author

The French Philosopher

The Musician

and died in 1850. He was trained for the law but soon left this for writing. His early efforts were not very successful, neither was his first effort as the head of a printing firm. He fled into the country away from his debts, and it was while living in the country that he wrote his first successful work. Having started, he wrote with a vengeance—no less than 85 novels in 20 years! The detail in his work was a feature equalling that of Charles Dickens.

Pierre Loti was born the year that Balzac died. His real name was Louis Marie Julien Viaud—Pierre Loti being his pseudonym. His work is particularly noted for its excellent prose style.

Author

Robert Louis Stevenson was also born in 1850, a Scots author who, like Balzac, studied law before he took up writing. He also studied engineering but his ill health prevented his practising either.

One might almost say that we ought to be thankful for his ill health as an engineer. He might have done something of merit, but it is very doubtful if he would have been so well remembered as he is. He travelled widely in Europe and in 1899 went to the South Seas where he died in 1894.

Most boys will remember reading 'Treasure Island', 'Kidnapped' and 'Catriona'; whilst grown-ups will

the words 'Discours sur la methode' but this was wrong, and was very soon corrected to the proper version 'Discours de la methode'.

This is an example of an error which everyone can have in their album, for both the error and the correct version are quite cheap. They cost only sixpence each for the unused, and half that for the used. But if you select the latter, then see you have copies that are cleanly postmarked, so that these do not hide the words.

Musician

Two hundred years ago Johann Sebastian Bach died at the age of 65. Left an orphan when he was ten he had already had lessons on the violin from his father and then his brother taught him the clavicord. All his interest was in music and as he had a very beautiful treble voice, it is not surprising that he was a chorister and then an organist.

He married his first wife in 1707 and the next year went to Weimar as Court organist and stayed for nine years. He lost his first wife in 1718 and married again in 1721. Two years later he went to Leipzig, where he stayed for 27 years and it was here that he composed most of his work. In 1749 he became totally blind, dying the following year at Leipzig. His fame is commemorated on the stamp as seen above.

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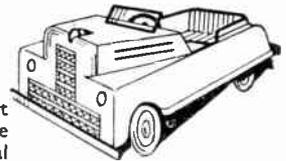


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WEEKLY

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June 14th, 1950

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Bottom First

Make up the bottom of the canoe first. For this a number of $\frac{1}{2}$ in. thick boards will be required, sufficient to make a width of nearly 3ft. and a length of about 9ft. 6ins. If tongued and grooved boards can be got, all the better, otherwise square edged boards must suffice.

Avoid any boards with large knots or shakes. These boards should be laid side by side and the edges luted with a thick lead paint to seal them against the entry of water. The best plan will be to use white lead, ground in oil, with enough boiled linseed oil to make a paint of the consistency of thick cream. To this add a little patent driers.

Lute the edges of the boards close up tightly and keep together with a narrow batten at each end. Run a pencil line down the centre, and on this draw pencil lines across, as in plan view, Fig. 1, to guide the laying of the frame. At each end a stem post will be erected, as at (A). These are 1ft. 6in. lengths of 3in. square wood, planed to a triangular section, with a flat on the narrow end of $\frac{1}{2}$ in.

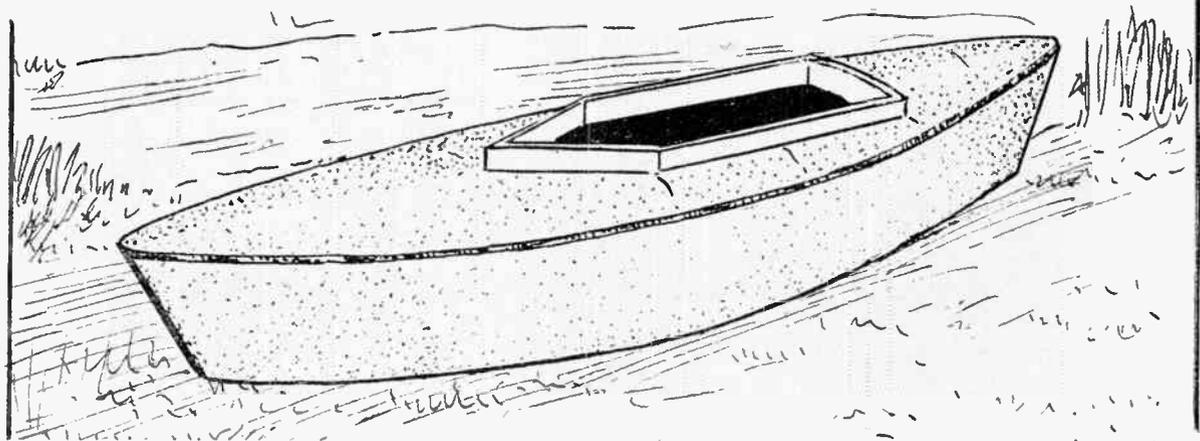
Trim the bottom ends of these to an

angle of 30 degrees, and screw to each end of the bottom, exactly central. When trimming the bottom ends, be sure to saw through quite square with the side faces, as the posts must be truly vertical to better ensure a symmetrical craft.

Frames

Six frames will be needed, and as these are numbered on the plan view and correspondingly numbered in Fig. 2, identification should be easy. Frames 3 and 4 are shown complete, the remainder only half size to economise space. They are made of $\frac{1}{2}$ in. wood, well screwed together. The top pieces are 6ins. wide, side ones 3ins. and bottom ones 2ins.

Frames 3 and 4 have their upper part sawn to the curved shape given in the



All correspondence should be addressed to The Editor, Hobbies Weekly, Dereham, Norfolk.

diagram, the others are not shaped until later on. In the centre of each frame make a pencil mark as a guide to fixing them exactly on the pencil lines drawn across the bottom, and truly central.

Fix these frames on their respective positions with screws, driven in from underneath the bottom. Throughout construction use only brass screws, and where nailing is concerned, copper nails only. Iron nails and screws will rust and be useless. If you have fixed frames and

battens will extend below the bottom at the centres, but this will not matter in the least, as the surplus can be planed off level afterwards.

If the boards used for making the canoe bottom are square edged, not tongued and grooved, the joints should be covered with 1in. wide strips of thin wood, well luted with the paint and nailed over between the frames, as in detail (B). Use plenty of paint so that a surplus squeezes out when the strips are

wood battens of 1in. by 2in. wood, long enough to stretch between frames 2 and 5. Lay them across these frames, with a distance of 1ft. 9ins. between them, and where they cross frames 3 and 4, pencil mark on the frames. Saw the frames on these marks, then nail the battens to frames 2 and 5, and screw them to the side remaining pieces of frames 3 and 4.

The angular placed pieces at the forward end of the cockpit are cut from 1in. thick wood, pieces being about 2ft. long and 5ins. wide. Bevel the ends of these to butt up against frame 2, and to side battens across frame 3.

The Coaming

It will now be seen that the top edges of these pieces must be cut slanting, owing to the upward curve of the frame, to bring the cockpit pieces all level. To these a coaming is to be fitted, which should rise above the cockpit just 2ins.

These parts, cut from 3/4in. board, are shown in Fig. 4, not in proportion, and though lengths are given, owing to possible slight variations in building the canoe, it will be wise to measure for sure

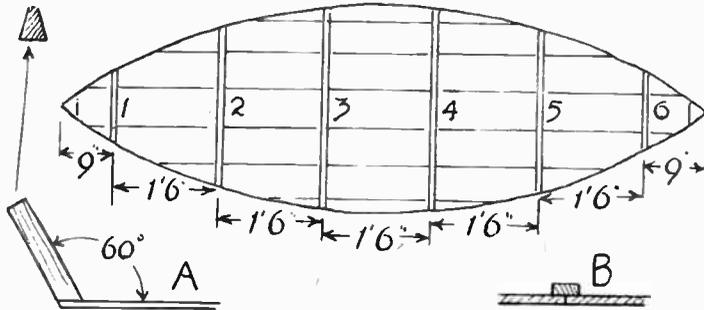


Fig. 1—A plan view of the floor and section of parts

stern posts accurately, a string stretched tightly across the posts should also lie exactly across the centre of each frame, and a well balanced canoe will depend upon this, so some little care and pains should be taken to mark out, and fix accurately.

Fitting the Battens

Now take the top side battens, bend these round the frames and screw them to the posts. See that their upper edges come to where the curve starts on frames 3 and 4, or, in other words at 12ins. up from the bottom. Owing to the slant of the frame sides, these battens will rise a little, about 2ins., at each end. Nail the battens to the frames. Take the bottom side battens and bend these around but do not fix them yet. Hold them in position and draw a pencil round their inner faces to mark the curve of the sides on to the bottom of the canoe.

Now remove the bottom battens and saw the bottom of the canoe to the shape as in Fig. 1. The battens can then be permanently fixed in place, but should cover the edges of the canoe bottom as well. Owing to the rise at each end it will be found that these

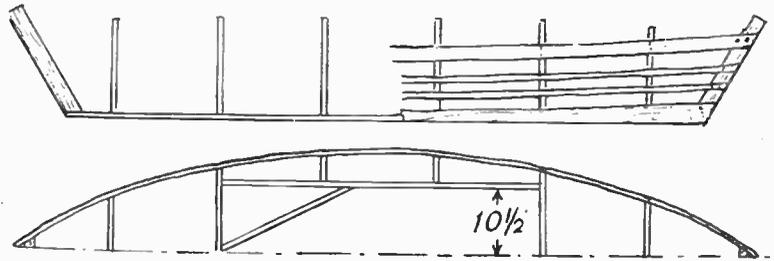


Fig. 3—Side view and plan showing position of frames and battens

pressed down, and nailed. Do not waste this surplus but scrape it off for subsequent re-use.

Now bend the intermediate side batten round and nail and screw them in position. The structure now will be as in Fig. 3, and side view (partly battened only) of the craft. Parts of the stems, sticking up above the battens, should be sawn off level, and the ends of the battens cut off level with the stern posts.

Where the top battens come against frames 1, 2, 5, 6, mark with a pencil, and from these marks curve the tops of the frames as done for frames 3 and 4; this job can be done in situ quite easily with a keyhole saw, without disturbing the frames at all. Now to mark and outline the cockpit of the craft.

Fig. 3 is a half plan of the craft, showing the area of the cockpit. The sides are

the cockpit opening. Parts (C) are bevelled at their forward ends to meet together neatly, and then nailed to the cockpit framing. Let them stand above the framing 2ins. The rear part (E) is fitted across next, then the two side pieces (D). The rear part can have its top corners rounded off or the whole top edge curved to correspond with the curve of the frame 5.

Covering

This completes the carcase, as we may call it, hull would be, perhaps, a better term. Go over all sharp corners where the canvas will come with glasspaper to remove roughness and splinters. Give the whole, inside and out, two coats of best quality lead coloured paint, and let both coats thoroughly dry before proceeding further.

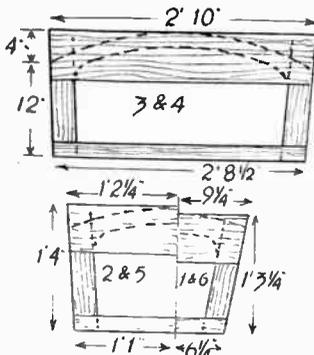


Fig. 2—Detail of frames

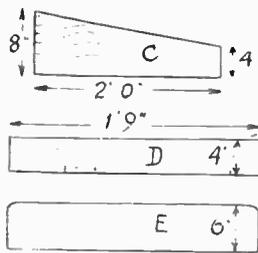


Fig. 4—Cockpit coaming parts

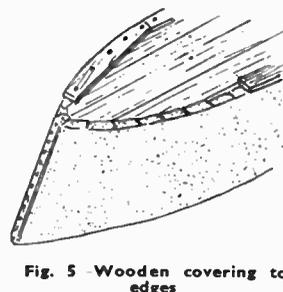


Fig. 5—Wooden covering to edges

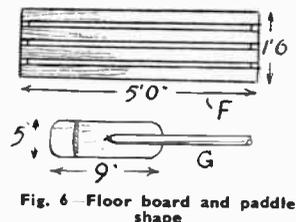


Fig. 6—Floor board and paddle shape

About 5½yds. of 48in. canvas will be required for covering. Let this be of strong, close woven stuff; tarpaulin quality is excellent for the purpose. Tack this lightly to the inside of the top side battens, then stretch over the sides and tack to the bottom, at about 1in. from the edges. Do not drive these tacks fully in just yet.

Stretch the canvas as tacking proceeds, to avoid creases. Cut off the surplus at ½in. from the tacks, at top and bottom, and leave just a surplus of 1in. at each end. The end surpluses are neatly folded together and close tacked to the edges of the stern posts.

Painting

Turn the boat upside-down. Now remove the tacks, a few at a time, and snip the canvas where necessary, so that it lies flat on the bottom and not creased up at all. These snips should not extend right to the edge, but stop short by about a ¼in. Lute the wood with the paint, press the canvas down, and tack along.

Cut a number of strips of wood, from waste, and saw one side to the curve of the boat. Lute these well with paint and nail and screw over the tacked canvas edges, as in detail, Fig. 5, to completely

seal the joints. The ends are similarly sealed, this time with triangular pieces of the wood, cut to the shape.

As these end pieces will cover the parts of canvas folded over from the sterns, and tacked down, to allow the parts to bed down well over the extra thickness, chisel out a shallow recess for the canvas to lie in. Turn the boat right side up and finish tacking the stuff to the top battens inside.

CUTTING LIST

Bottom (6) — ½in. by 5½ins. by 9ft. 6ins.
 Top side battens (2) — ½in. by 3ins. by 11ft.
 Intermediate battens (4) — ½in. by 1in. by 11ft.
 Bottom battens (2) — ½in. by 3ins. by 10ft.
 Stem posts (2) — 3ins. by 3ins. by 1ft. 6ins.
 Frames — ½in. by 6ins. by 13ft. run.
 Frames — ½in. by 3ins. by 20ft. run.
 Frames — ½in. by 2ins. by 12ft. run.
 Cockpit — 1in. by 2ins. by 14ft. run.
 Coaming — ½in. by 8ins. by 4ft. run.
 Coaming — ½in. by 4ins. by 6ft. run.
 Coaming — ½in. by 6ins. by 2ft. run.
 Flooring — ½in. by 3ins. by 20ft. run.
 Remaining items from scrap.

Cut two narrow strips of the canvas and tack these to the sides of the coaming and over to the sides of the canoe, at ½in. down from the top edges. Finish this job by covering the re-

mainder, fore and aft of the cockpit. Cut off any surplus at the edges of the canoe, just below the line of tacks, and to cover the cut edges of the stuff, and hide the tacks, screw or nail a length of ½in. by ½in. wood all round. This completes the work of construction.

Give the canvas two coats of boiled linseed oil, to which a little driers has been added, then paint any desired colour, 2 coats. The coaming and side strips can well be painted a contrasting colour to impart a pleasing, and less monotonous effect.

A floor, of ½in. by 3in. strips of wood, nailed to a batten at each end, as at (F) in Fig. 6, can be put together to make a seat. This rests upon the bottom rails of the frames inside. A rubber cushion on these will add to personal comfort.

The Paddle

A paddle can be bought, but any reader desiring to make his own can do so easily enough. A good tough wood, ¾in. thick, is needed for the blade, shaved down at the edges to ½in. A handle of ash will complete, as at (G). Plane a flat to the handle and screw to the blade. A single paddle should be about 5ft. long, and a double one 7ft. 6ins. (131)

The worker with plastics can easily make this TOOTH-BRUSH HOLDER

THIS tooth-brush holder which will accommodate three brushes is made from a piece of Perspex 6ins. by 5ins. and 5mm. thick. The model is made to screw to some convenient woodwork in the bathroom.

This holder can easily be wiped, and it cannot be damaged by water. It is light but very strong, and is simple to fix to any wooden support. It is designed to allow the air to reach all the brushes, and will support a tube of toothpaste placed behind the brush heads.

In Two Parts

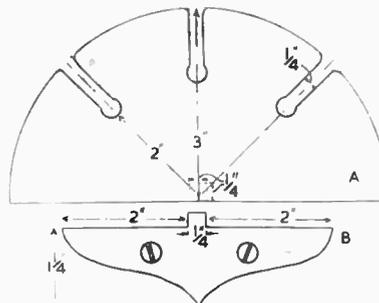
The diagram shows the model to be made of two parts (A) and (B). You can make part (A) in either of two ways. The first is to draw a template from the diagram on some gummed modelling paper, and then to stick it on the Perspex.

When the paper is dry, saw along the circumference of the semi-circle to release the shape from the Perspex piece. Now saw out the slots for the brushes, and just inside the ½in. contour lines of the slot for the pin of the support (B).

The other way is to describe the semi-circle with a pair of dividers, using the centre of a base-line on the Perspex. Then mark out the slots with a scriber. With this method it is most important to mark with the scriber only

those parts of the Perspex which will be cut out as waste.

Drill out the ½in. holes for the tooth-brush heads. If you do the drilling either by hand or machine, use a piece of waste soft wood under the Perspex to serve as a base. You can secure the Perspex between two battens nailed to the waste wood with panel pins.



Shape and dimensions of parts

When part (A) has been prepared, the sharp corners of the slots should be removed with a 3in. half-round smooth file, and the sharp edges of the circumference should be rounded by rubbing with glasspaper No. 1 and No. 00.

To prepare part (B) use the template method. Make the pin ½in. tall so it is slightly higher than the 5mm. thickness of the material. Drill out, and counter-

sink the screwholes which are to accommodate wood-screws. It is very important to keep the shoulders each side of the pin, perfectly square. Test frequently with your little square as you file.

Fusion of Parts

When both parts are finished, make a trial fitting. It is better for the pin to be a little too wide than too small. You can always file or glasspaper to a tight fit. Now, with a No. 3 paint brush, or a new Gloy brush, smear on the sides of the pin and on the shoulders of part (B) a layer of concentrated (glacial) acetic acid, and fuse the two parts together. If your pin fits really well into the slot there will be no need for any external pressure. The model should then be left for 24 hours.

When you resume work, fix the holder in a smooth-jawed vice, and cross-file down the slight protrusion of the pin above the surface of part (A). You should have a very clean joint here when you clean the surface up with glasspaper.

Glass Surface

To give your model a perfect glass-like finish, remove all scratches with No. 1 glasspaper, then vigorously smooth down with No. 00 glasspaper, and finally rub the Perspex with a piece of old stocking soaked with Silvo. Now rub off the thin film of white Silvo with a piece of clean silk, and your model will be ready to fix in the bathroom. (140)

The home handyman can easily make this CORNER UMBRELLA STAND

IN the Corner Umbrella Stand, shown at Fig. 1 we have another example of a plain, light and useful piece of furniture. Such a stand as this would prove most useful in the small hall or a moderately wide passage where a corner occurs. A few ordinary household tools and the fretsaw will complete the job, and the actual wood used should not be found an expensive item.

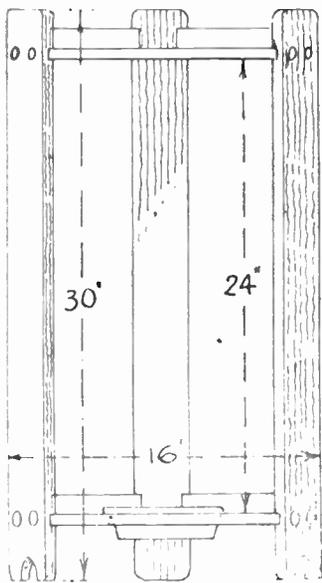
The stand is triangular in shape, and has three legs joined to the top and bottom board. The general dimensions are shown in the front view in Fig. 2, while the plan of the lower board and the upper board is given in Figs. 3 and 4 respectively. The wood selected should be good flat planed stuff $\frac{1}{2}$ in. thick, the choice being left to the worker.

The Timber

To commence work upon the stand we require wood for the top and bottom boards. These two pieces measure 16 ins. by $8\frac{1}{2}$ ins. Then wood for the three legs, each measuring 30 ins. by 3 ins., and four rails 9 ins. long by $\frac{1}{2}$ in. wide.

Setting out the parts is really a most important part of the work, for on its accuracy the success of the job largely depends. The outlines of the top and bottom boards should be carefully copied from Figs. 3 and 4.

Notice that there is a 3 in. flat bearing at the back edge for the back leg. The back edges, too, are cut to form an angle of ninety degrees so the stand will fit into a corner. The surfaces for the front legs also stand at ninety degrees from the back edges. Having set out one of the boards, cut and clean up and use as a pattern for marking the outline of the other.



2—Front view with dimensions

In the top board a triangular opening is cut as shown at Fig. 4, while in the bottom board an opening must be cut for the draining tray.

Draining Tray

A draining tray—generally made of black-japanned metal about 6 ins. by $4\frac{1}{2}$ ins. should first be obtained before cutting is carried out so a proper fit may result. The wired and rolled top edge of the draining tray must rest on top of the board as seen in Fig. 2.

The legs are marked to the dimensions shown in Fig. 5, and two grooves $\frac{1}{2}$ in. wide and $\frac{1}{2}$ in. deep are marked across, each as shown in this illustration and in detail in Fig. 6. The lines of the grooves are cut across with a tenon saw and the waste wood afterwards cleaned away with a $\frac{1}{4}$ in. chisel. The fretsaw will be used to shape the parts including those at the lower end of the legs, measurements for which are given in Fig. 5.

Leg Fixing

The legs are next fitted to the boards. This done, the parts are finally cleaned off and all raw and rough edges smoothed. In fixing the legs to the boards, the joints should be glued and screwed. The heads of the screws are countersunk and afterwards filled with a mixture of sawdust and glue or wood filler pressed in and levelled off.

If desired the heads of the screws might be covered by gluing on small turned wood buttons as seen in the sectional diagram Fig. 7. There is no reason, however, why ordinary round-head brass screws should not be used, this makes a neat and workmanlike job, providing, of course, the slots in the heads of the screws are not injured.

Finally, the four rails which are screwed above—on top of the two boards—are glued and screwed in place (see Fig. 8). The rails must be shaped to an angle of 45 degrees where they meet the back leg and the top edges of them rounded

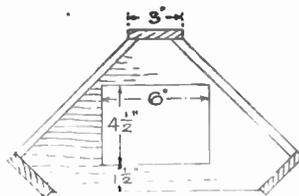


Fig. 3—Shape of lower shelf and tray opening

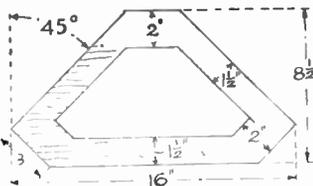


Fig. 4—The top flat frame

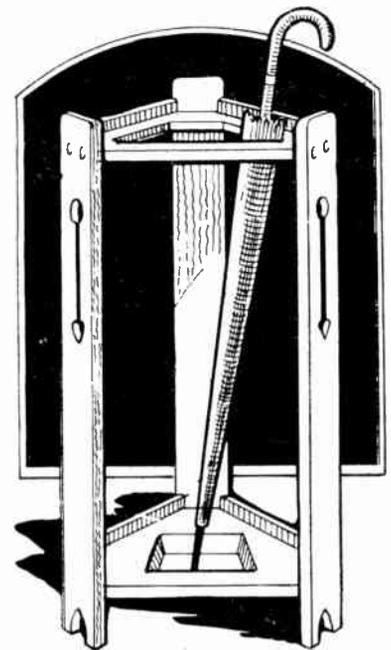


Fig. 1—A practical stand for the home

off neatly. It will be found that these four edge rails greatly help to strengthen the boards.

Some additional strips of wood about $\frac{1}{2}$ in. or so wide by $\frac{1}{2}$ in. thick might be glued along underneath the side edges of the boards as additional stiffening. These are seen at A, Fig. 8.

If the worker desires to add a touch of ornamentation to his work, he can easily do so by cutting a simple open fret to each front leg as shown in Fig. 1. The fret should be kept narrow, and must of course be cut before the legs are fixed to the top and bottom boards.

A suitable finish should be applied to the wood, after it has been cleaned with fine glasspaper. Stain and wax would

look well for oak, and rich dark stain with french polish for mahogany.

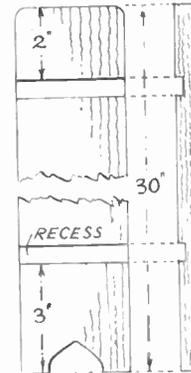


Fig. 5—Leg details

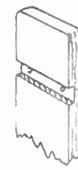


Fig. 6—Rail grooves

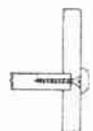


Fig. 7—Screw covering



Fig. 8—Strip blocks

A mechanical garden novelty to make is this POLICEMAN WINDVANE

A WORKING figure windvane is an amusing feature of any garden, interesting, too, as it shows the direction of the wind as well. The 'Policeman' specimen illustrated is a fairly good example of such novelties, the officer working his arm most energetically to indicate the way of the wind. Full size patterns of the policeman are printed on page 175.

A plan and side view of the windvane are given in Fig. 1, the figure and rotary vanes being omitted. The base is a length of hardwood, oak or beech. This should be planed up to dimensions given. At the centre, a plate of stout sheet brass (A) is screwed across 1in. wide.

Extension

An extension piece of the wood (B) is cut to size and shape shown and screwed and glued underneath the base, exactly at the centre. This piece measures just 1in. across at its bottom, and here a second brass plate is screwed across.

Piece (B) may not be able to be cut from the solid wood, in which case two or more pieces can be glued together to make it up. Centre the top plate (A) and there drill a $\frac{1}{4}$ in. hole through it, going well down into the wood as well. Centre the bottom plate and drill that the same, and take great care to get these holes truly in line.

Now remove the plates, and continue the hole in the wood right through. An auger or spoon bit may be necessary here, as the hole is too long for a centre or drill bit. Enlarge the hole a little with a round file, then replace the brass plates. The base should now swing easily round on a $\frac{1}{4}$ in. metal rod, as a pivot.

Rocker Motion

A rocker (C) is now required; this is set in motion by the rotary windvane and actuates the figure's arm. The rocker is composed of two pieces of stout brass rod, $\frac{1}{2}$ in. wide, illustrated at (D) and (E) in Fig. 2. Cut these to length. Bend (D) across the dotted lines to make the shape shown at (F). Part (E) has also the short piece at the

left end bent at the dotted lines to right-angles. The remainder is drilled at its centre for a stout $\frac{1}{2}$ in. roundheaded brass screw. Part (D) is soldered to the straight end of (E), as seen in detail (F), which shows the completed rocker.

Take the base part in hand once more, and run a pencil line along the centre of it, lengthwise. Touching this line, at the place indicated in the side view, cut the slot shown, making it $\frac{3}{8}$ in. wide and 1in. long. Now fit the rocker with the screw to part (B) at 2 $\frac{1}{2}$ ins. down from the top, and in such position that the bent end (not part (D)) is just under the centre of the slot. A washer should be placed between the base and rocker to lessen friction.

On the bent brass end make a mark directly under the centre of the slot. Remove rocker, and on this mark, solder a piece of wire twisted to make an eye, to which the connecting rod, which conveys motion to the moving arm of the figure, can be hooked. Now replace the rocker.

Rotary Disc

To impart motion to the rocker, the rotary windvane carries a cam-shaped metal disc. This is shown in Fig. 3. Cut the disc from stout sheet brass, mark its exact centre and from there make a second mark with a punch just $\frac{1}{8}$ in. away. Here drill a $\frac{1}{4}$ in. hole. Over this solder a brass collar, with set-screw. Fix the cam to the end of a 4 $\frac{1}{2}$ in. length of $\frac{1}{2}$ in. round steel rod, the axle of the windvanes.

To carry the rod a pair of metal bearings will be needed. These are cut from $\frac{1}{2}$ in. wide brass rod to the length at (G). Drill the bearing holes, also two holes for fixing screws, and bend at

right-angles across the dotted line. Screw these to the underside of the wood base, approximately where shown in Fig. 1.

Adjustment can come afterwards. Now slip the axle rod in its bearings, set the cam piece on and see it comes in the centre of part (D). Give the rod a twist with the fingers, and this should set the rocker moving up and down.

For the rotary windvanes, cut a disc of stout tin, or thin sheet brass, to size at (H), in Fig. 4. Centre this, drill a $\frac{1}{4}$ in. hole, and over the hole solder another brass collar, with screw. It may be mentioned that the collars and rod can be Meccano parts, and so solve the difficulty of both fitting the discs on, and trouble in obtaining the materials. To this disc the 6 vanes will be fixed, at equal distances apart, as shown by the dotted outlines.

A pattern for the vanes, drawn over 1in. squares, is given at (I). Copy this full size on thin paper and stick down with gum to a suitably sized piece of (Continued on page 175)

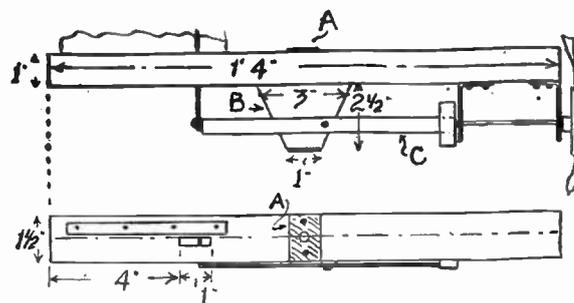


Fig. 1—Side view and plan with measurements

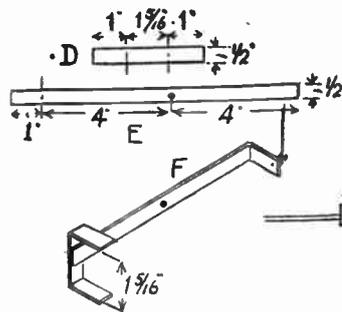


Fig. 2—Details of metal rocker
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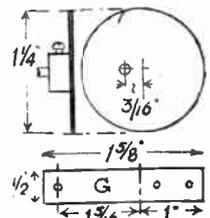


Fig. 3—The disc

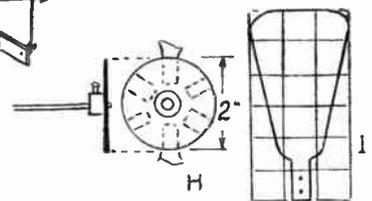


Fig. 4 Vane disc and shape



Damp Walls

WOULD you tell me how I could stop dampness from coming through the walls of my workshop? (F.H.—Athlone).

YOU do not state what the walls are made of, but if brick, a rendering of cement to a height of 18 ins. may help, and a coating of tar over the rest. You can purchase a special compound for this from a builder's merchant. If the walls are of wood, a coating of creosote is sometimes helpful. In both cases, the inside floor should be of concrete and some ventilation is advisable to help dry out the atmosphere.

Rexine Renovator

THE Rexine of some furniture of mine has become sticky, with the result that it marks easily where people sit. Could you suggest a remedy for this? (J.N.—Wednesbury).

THE trouble you mention often occurs where furniture is kept in a damp room, also through using inferior polish. It can usually be cured by rubbing very gently over the surface with pure turpentine on a clean rag. Use only enough of the turpentine to clear away the stickiness and change the rag as it becomes dirty. Polish the Rexine after treatment, with a clean soft duster. Use no furniture polish, only the duster itself. Repeat this after a few days if necessary.

Photographic Faults

I HAVE just started making my own I prints from negatives. With some I get very good results, but with others I get a brown stain. (G.E.G.—Burnham).

THERE are three main causes for stains on gaslight or bromide prints. (1) Keeping the print too long after developing before plunging it into the fixing bath. (2) Omitting to completely immerse the print in the fixing bath and moving it about while under the surface. (3) Using a fixing bath that has become exhausted through passing too many prints through it.

Luminous Paint

COULD you supply me with information on making luminous paint? (J.D.H.—Bristol).

LUMINOUS paint can be made as follows:—

Mix 20 parts by weight of calcium oxide (burnt lime)
6 parts sulphur, 2 parts starch
1 part of a 1/2 per cent solution of bismuth nitrate
0.15 part potassium chloride, and 0.15 part sodium chloride. Mix thoroughly in a crucible, then heat in a furnace to a temperature of 1,300

centigrade. The resultant powder can be mixed with clear varnish, and used as a paint.

'Dead' Table Tennis Table

OUR tennis table is 'dead'; there is no bounce at all, and I would like to know if there is any cure. (W.R.H.—M.E.L.F.)

THE plywood covering is too thin, and of too poor a quality. Good stuff of 3/4 in. thickness, glued to an

underframing of deal battens would serve you better. Solid wood not less than 1/2 in. thickness can be used, batted underneath for rigidity. The joints should be close and well glued, and afterwards planed smooth for a flat surface.

Rusty Ice Skates

I HAVE a pair of ice skates. Although the chromium plating is quite good, rust is beginning to show gradually in spite of my careful drying and smearing with oil after use. (G.K.—Hendon).

IT is inevitable that with the passing of time, chromium plating should begin to show rusty places. There is nothing that can be done about it, except to clean the spots and apply a metallic (silver) paint or have the skates properly replated.

Marking your Tennis Balls

MARKING tennis balls in the usual way with indelible pencil is very tedious and unsatisfactory.

When the balls become soiled it is necessary to examine them minutely to decipher the marks. Marking one's balls is a necessary job. Why not do it properly with a stencil? The cost is almost negligible and the time taken is not great considering that the stencil will last many years.

The Mould

Start by taking a sheet of newspaper and a sheet of brown paper and tearing each into small pieces, about 1 in. square. Put the two varieties of paper separately in a bowl of water until they are well soaked, and then lay them on a board to drain off.

Prepare also, some thin paste by pouring boiling water on flour and stirring well. Take an old tennis ball and cover the top half with 'silver paper' to stop the wet sticky paper about to be applied from sticking to the ball.

Take pieces of newspaper and cover the top half of the ball with them. Brush paste over them, and apply a second layer of brown paper and continue thus. The idea of using two sorts of paper alternately is that it is easy to ascertain that the thickness is being built up evenly and not too much in one part. It will usually be found that the paper will not cling closely at the open end.

In this case, take a strip of gummed paper, and apply it all round the 'equator'. Build up about a dozen thicknesses in this way, pressing down

well, and using plenty of paste.

The paper must be allowed to dry thoroughly, and not hurriedly. When really dry, remove it from the ball and trim the ragged open edge. Glasspaper lightly. A stencilled design must now be cut in the top with a sharp penknife or razor blade of the Ever-Ready type. This design need not be complicated, or contain fine detail or thin 'ties'. The drawing shows a conventionalised W.A.B., but it is not necessary to use initials.

Simple Shapes

Simple designs such as diamonds, squares, stars, hexagons, etc., can be used. When the design is cut, the stencil is given two or three coats of shellac varnish (made by dissolving shellac in methylated spirit).

A stencil brush of the type illustrated can be obtained at any artists' shop very cheaply. For 'ink', oil paint can be used,



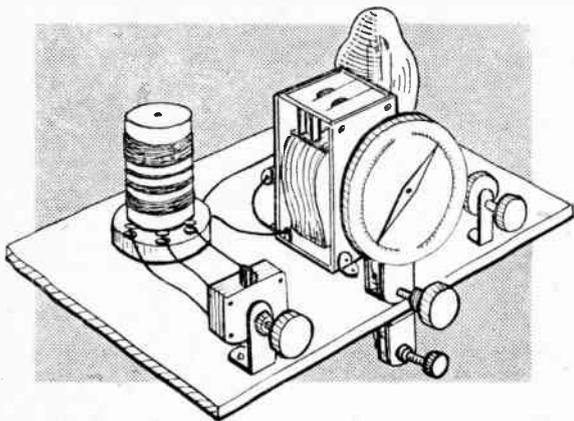
Stencil of paper mache being made on finished stencil applied.

as it is waterproof. Pour a little in a saucer and apply with a stabbing motion of the brush.

Once the stencil is made, the marking is done very quickly and distinctively. Should it wear off it can be equally quickly put on again.

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Increase the use of your amplifier by adding A GRAM-RADIO UNIT



CONSTRUCTORS who have made an amplifier for record playing can extend its field of usefulness by adding a unit which will also enable radio stations to be tuned in. A switch can be added so that radio or gram operation can be selected at will, and the many advantages of this will become immediately apparent.

Various circuits can be employed in the radio unit, and the simplest type requires very few parts. Units may be made up for use with either battery or mains operated amplifiers.

Practical Arrangement

The location of the tuning dial and other controls will depend on the type of cabinet already in use for the gram amplifier. If this cabinet is of the opening type, complete with turntable, there may be sufficient space beside the latter for a tuning dial. With other cabinets it may be necessary to mount the tuning dial and other controls on the side or front.

The space required for the simpler type of radio unit is very small. A separate cabinet is not recommended because this only introduces wiring difficulties, besides being much less compact and convenient.

and leak necessary for detection. Reaction is added to increase volume and range, and the unit enables the first valve already in the amplifier to act as detector.

With many amplifiers, this is sufficient. By adding this unit, 2 and 3 valve amplifiers will become 2 and 3 valve receivers, and so on. These will give good speaker volume on the majority of nearer B.B.C. stations, with some foreign stations in addition, if used with a good aerial and earth.

In this, and also in the following circuits, the leads marked 'Filament' are taken to the filament sockets of one of the valveholders in the amplifier. If an earth is used, join it to the negative lead here. A wire is also taken from the coil to the anode of the first valve in the amplifier.

A switch is shown with two positions marked 'R' and 'G' for Radio and Gram

operation. When in the 'G' position the pick-up is connected in the usual way. Turning the switch to 'R' connects the tuned circuit, for radio reception, and this switch can be mounted in any convenient point, possibly near the gram turntable.

All the leads mentioned are left unchanged, of course, so that once the unit has been fitted, it is only necessary to operate the switch to set everything ready for radio or gram operation.

For preference, the grid and anode leads should not be longer than necessary. However, no trouble is likely to arise here if the unit is in the same cabinet as the amplifier.

Long and Medium

Complete details for winding tuning coils for Long and Medium Wave operation have been given in past issues of 'Hobbies Weekly' and it is not proposed to repeat these here. If a ready-made coil is to be purchased, any dual-range coil with reaction winding will be suitable. These are obtainable with tag and terminal connections, or with coloured leads, in some cases, and the connecting instructions provided by the manufacturer should be followed so that the various windings are wired up in the correct manner.

Separate Detector

If additional range and volume is wanted on radio, then a new valve, especially for detection, should be added, as shown in Fig. 2. The tuning arrangements remain exactly as already described. In addition, a few extra parts are required to couple the new valve to the gram amplifier, as shown.

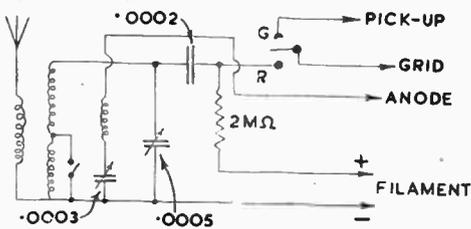


Fig. 1—Circuit including gram radio unit

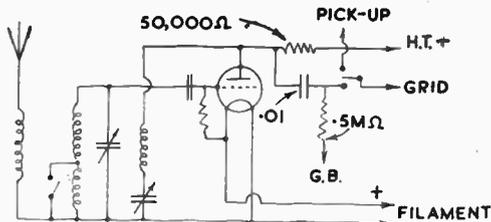


Fig. 2—Circuit with detector valve

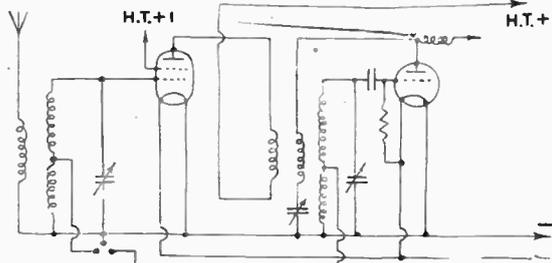


Fig. 3—Circuit with high frequency stage

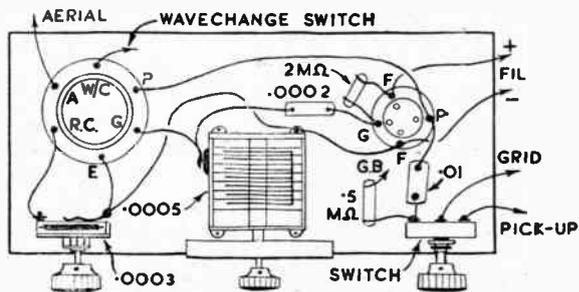


Fig. 4—Layout for circuit shown in Fig. 3

The two-way switch operates in the same manner as before; if current economy is important, a double pole switch can be used and this can be connected so that one filament lead is interrupted when the unit is set for gram reproduction. The extra valve will then be switched off.

Some amplifiers already have a volume control potentiometer connected from the first valve grid to grid bias; if so, the .5 megohm leak in Fig. 2 can be omitted.

The tuning condenser and associated component values are not given because they are the same as in Fig. 1.

This circuit is particularly useful where the amplifier is a small one using only one or two valves, but it is scarcely necessary with three or more valves, when the circuit in Fig. 1 is sufficient.

High Frequency Stage

Where good radio range and selectivity are particularly important, the circuit in Fig. 3 can be used. The detector (second valve) is the same as shown in Fig. 2, but a screen grid or high-frequency pentode is added before it.

A two gang tuning condenser should be used, with two matched coils. The range of reception will then be considerably increased, the whole, in conjunction with the amplifier section already in use, forming a three, four, or five valve receiver, according to the number of valves present in the amplifier.

The radiogram switching is not shown, being the same as already described. As with the circuit shown in Fig. 2, a short wave range can be added, if required.

Practical Layout

Little difficulty in construction should arise, but a wiring plan of the circuit shown in Fig. 3 is given in Fig. 4. All the parts can be mounted on a piece of wood, as shown in the illustration. When the unit is completed, it can then be inserted in the cabinet, tuning dial and control spindles coming opposite holes cut in the appropriate positions.

If the circuit in Fig. 1 is being used, the valveholder and coupling components will be omitted, the other parts remaining as shown. The second contact of the wavechange switch, which may be mounted below the tuning knob, is taken to the filament negative line. Alternatively, it may be desired to mount this switch to the right, and place the radiogram switch near the turntable.

Mains Operation

The same circuits can be used and will be found satisfactory, but a few minor modifications will be necessary because of the different valve types used in mains receivers.

In Fig. 1, the leads marked 'Filament' should be omitted. Wire the 2 megohm grid leak across the .0002 mfd. fixed condenser and connect the negative wire indicated to the H.T. negative line of the amplifier (which will usually be the metal chassis).

In Fig. 2, the leak should also be in parallel with the fixed condenser, as explained. In addition, keep the valve filament (or heater) connections separate from other leads, and take them to the filament circuit in the amplifier. The circuit in Fig. 3 should be similarly treated.

Power Supplies

The unit in Fig. 1 requires no power supplies. The others take their current from the same batteries as are already in use to operate the amplifier. By connecting to the filament circuit as shown, the extra valve or valves will be switched on and off when the switch controlling the amplifier itself is operated.

With mains receivers, the current will be taken from the amplifier power-supply section, as described. Normally, there will be sufficient power to operate the extra valve or so which has been added without difficulty. Do not overlook the usual precautions necessary when dealing with mains apparatus; employ well-insulated connections, and do not touch joints or metal parts

which are connected to the mains.

Valves to Use

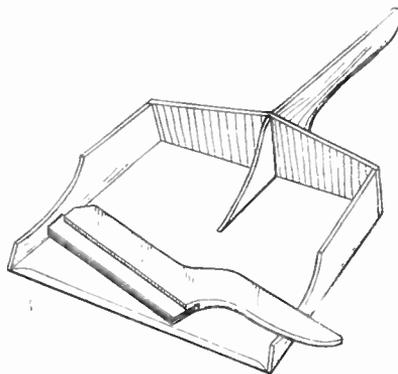
For the battery circuits, a valve such as the Osram HL2, Cossor 210HF, Mazda HL2, Micromesh HLB1, or Mullard PM1HL or PM2HL can be used, or any of its equivalents. The circuit in Fig. 3 will require a screen-grid or H.F. pentode such as the Osram VP21, Cossor 210VPT, Mazda VP215, Mullard VP2, or any of its equivalents. These are pentodes; screen-grid valves such as the Cossor 220SG, 215SG or its equivalents can be used also.

Mains valves depend upon the heater voltage. Four volt valves are extensively used, types such as the Osram MH4 or Cossor 41MHF or its equivalents being suitable for detection. For high-frequency amplification, Osram VMS4, Cossor MVSG or equivalents can be used. In some receivers, however, other heater voltages will be used and to obtain suitable valves for use with these the valve type numbers in the receiver should be checked against a valve list.

A Simple Crumb Tray

A BRUSH and crumb tray set can easily be made by the handyman, and will be very acceptable to any housewife. The set shown in the diagrams, was made from $\frac{1}{8}$ in. ply, with a few strips of felt about $\frac{1}{8}$ in. thickness.

Commence by cutting the parts for the tray from $\frac{1}{8}$ in. ply, to the sizes and shapes shown in Fig. 1. Rub down all edges and surfaces with glasspaper, chamfering the front edge of the tray to a sharp edge. Now glue the handle to the back, slotting the two together as seen in Fig. 3. Glue the back and handle, and the sides, to the base, thus completing the tray.



Cut two pieces of $\frac{1}{8}$ in. ply to the size and shape shown in Fig. 2, and rebate the bottom edge of each piece, by removing one layer of ply from each. These must be removed from opposing faces of the two parts, so that when stuck together, the parts will leave a groove along the bottom.

Before gluing these two brush parts together, cut several layers of felt, $\frac{3}{8}$ in. deep and 5 ins. long, to fill the groove completely, and glue them well in at their top edges. The second half of the brush can now be glued on, and the handle shaped with glasspaper to a comfortable grip. All other surfaces should be made smooth.

The completed articles will now appear as above, and can be either stained and polished, or painted. A medium or dark stain, finished with a wax polish is recommended, and will make this useful set quite attractive.

(128)

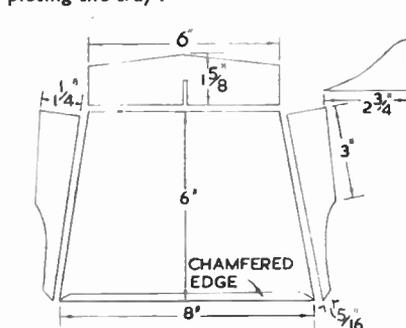


Fig. 1—Outline of parts

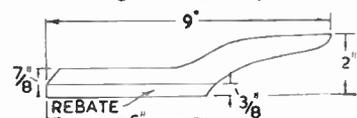


Fig. 2—Shape of scoop

Enjoy the sunshine in comfort in A GARDEN LOUNGE

WE are giving this week instructions and working details for the making of the sunshine lounge shown in our illustration, Fig. 1. This can be used in the garden on the lawn, or at the seaside and it is portable and, therefore, easily carried down to the sea.

It would, perhaps, be more appropriate to call it a chair, for it can be well used as such, as its low position provides for sitting and lounging comfortably on the raised back.

As will be seen from the plan and side view, the chair is made up of a number of frames held together strongly by cross rails or bars. The large bottom frame is covered with stout canvas, and is supported by two leg frames which fold up flush inside the main frame, as the side view in Fig. 2 shows.

Strong and Compact

It will be seen from this diagram how these leg frames are hinged and are held at their required angle by contact with the cross rails. It will be necessary, therefore, to determine very carefully the position of the screws or the bolts which hold the leg frames to the main frame. The head frame is also covered with the canvas which should be secured to both the cross rails and allowed to come down apron-wise over the canvas of the main frame. Like this, all draughts are excluded and a continuous canvas support thus made.

The head frame is made removable for ease in folding or packing by the simple method of attaching a light iron bracket to each side rail. The forward end of the iron bracket is formed into a type of hook which goes through an eye screwed into the top edge of the main frame rails.

Then at the back of the iron bracket,

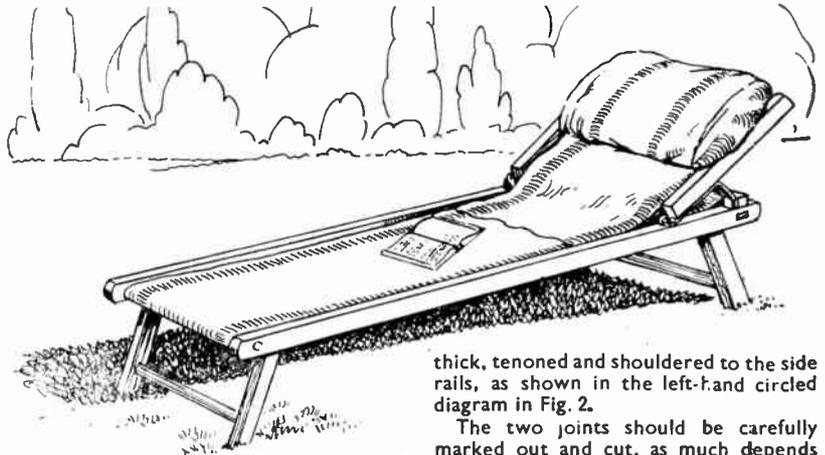


Fig. 1—Just the thing for a lazy afternoon

on the upright part, there is a projecting lug which fits into a corresponding sinking made in the side rails. A detail of one of the brackets is shown in Fig. 3, with the holes drilled for the fixing to the head frame.

It will be seen that to get the head frame in place on the main frame, it is first held in a more or less vertical position with the hooks just level with the eyes. Then when the frame is lowered backwards the hooks fall into place and the bracket lugs thus also fall into place in their respective holes in the frame. Quite a simple operation if the various parts are made up accurately.

The Canvas

The main frame and, indeed, all the frames including the legs, should be made of hardwood, and the canvas be of striped chair canvas of heavy make 18ins. wide. Two side rails 54ins. long by 2ins. by $\frac{3}{4}$ in. will be cut and cleaned and the ends rounded, as seen in the side view in Fig. 2. Then, one end of the frame—the head end—is held by a cross rail (A). This consists of wood 22ins. long by 3ins. wide by $\frac{3}{4}$ in.

thick, tenoned and shouldered to the side rails, as shown in the left-hand circled diagram in Fig. 2.

The two joints should be carefully marked out and cut, as much depends upon the rigidity of the finished frame. As an extra fixing, if this is found to be necessary, two iron angle plates may be screwed to the cross rail and to the projecting ends of the side rails, see the dotted lines in the view Fig. 2.

Foot Rail

The rail at the foot of the frame consists of a 1in. diameter rod 22ins. long. This rod is shouldered down to $\frac{3}{4}$ in. diameter and let into corresponding holes in the side rails, as seen in the right-hand circled diagram in Fig. 2. When the ends of the rod have been driven into place a nail may be inserted through the rails to pass through the ends of the rod, thus making a very secure fixing. The heads of the nails should be well driven into the rails to prevent damage to fingers and dress.

The make-up of the head frame is simply explained in Fig. 4. Two side rails measuring 18ins. long by $1\frac{1}{2}$ ins. by $\frac{3}{4}$ in. are connected by a square lower rail $1\frac{1}{2}$ ins. by $\frac{3}{4}$ in. and 22ins. long and a top rail of 1in. diameter rod also 22ins. long. The fixing of the rails is shown in the enlarged detail Fig. 4, both tenons being accurately cut to make a tight fixing. Nails again may be inserted through the tenons.

Each frame consists of two side rails 10ins. long by $1\frac{1}{2}$ ins. by $\frac{3}{4}$ in. connected

(Continued foot of page 170)

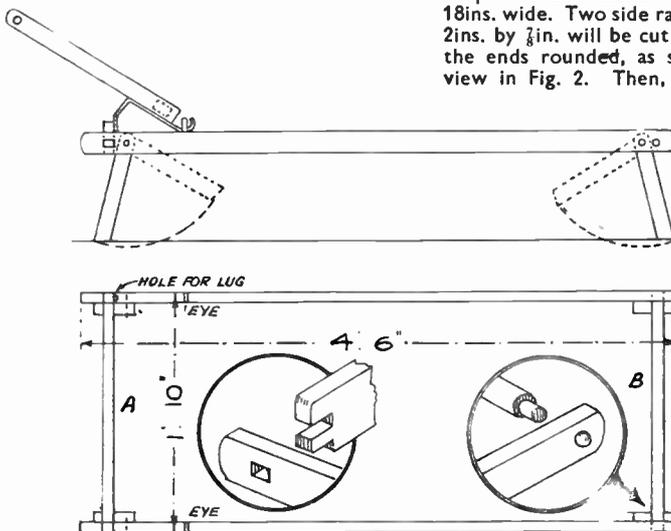


Fig. 2—Side view and plan with details of joints



Fig. 3—The retaining lug shape

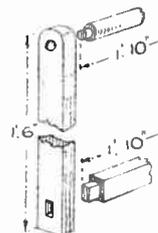


Fig. 5—Joint details

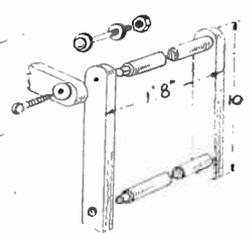


Fig. 4—Headframe construction

During the summer is the time to undertake these SHED REPAIRS

WITH timber scarce it will be a good plan this year to repair your shed during the summer months. You will then have a chance to do this when you are certain that the wood of the existing roof is dry. To put roofing felt over damp boards is just asking for trouble.

Roofing felt in several well-known brands is now available and one roll contains, as a rule 108 sq. ft. in either heavy-weight or standard. As the roof is the main part which gets so neglected, we will deal with this in the best way possible.

Roof Covering

You must have a proper foundation for any refelting process. In fixing it you must consider the position regarding rain and wind. Before re-felting you should consider whether you have sufficient rafters (see Fig. 1). Too few of these will mean a bumpy roof and consequent splitting of the felt. One

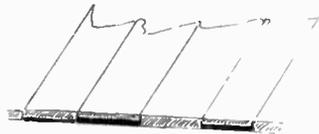


Fig. 1—A level surface

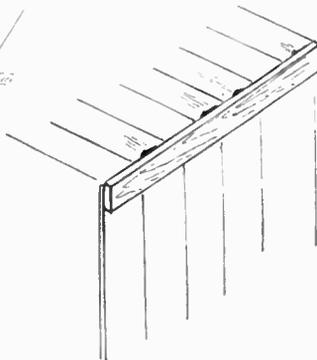


Fig. 3—An end board for strength

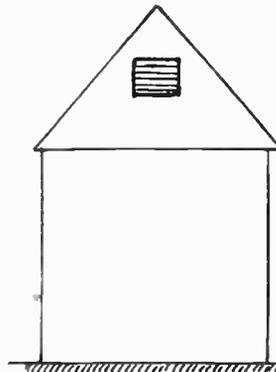


Fig. 5—A high ventilator

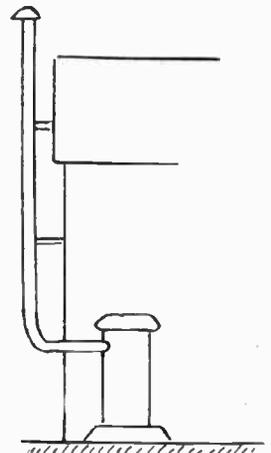


Fig. 4—Section showing stove fixing

See nails are well driven home. Do not, under any circumstances, leave nails sticking up or bent over.

It may pay you to rip off the old roof this year and rebuild it to get the best coverage from the materials you have. If you do this and add a gutter (which is always wise) be sure to give a good overhanging section, as shown in Fig. 2. This will ensure any surplus water dropping clear of the shed.

Should the boards be a little decayed at the ends and so causing gaps under the felt, it would be best to cut straight along as shown in Fig. 3 and add a fascia board. Small holes can then be filled in with pieces of wood cut to fit. Do this rather than leave even a small 'pot-hole'.

Many workers are lucky to have a stove in their workshop or, perhaps, they are planning one for the future. In fixing this take the flue pipes through the side and not the roof. The best position is shown in Fig. 4.

You may spend a lot of time in your shed and, therefore, a most important

Use the correct nails, which are known as 'clouts', having large heads and are galvanized. Do not use nails that will penetrate the boards; for instance, use a $\frac{1}{2}$ in. nail on a $\frac{3}{4}$ in. board.

Fixing Hints

Start fixing at the eaves. Bend the felt over about 2 ins., so that it hangs to prevent the ends of the boards getting rotten. All cross vertical joints should be lapped 12 ins., and well nailed at 2 in. centres. You must protect your top ridge well. To form a capping for this, cut a strip of felt 12 ins. wide and fit over each side for 6 ins.

If the roof is fairly large and you are likely to expect damage from winds—such as you would in an exposed position—you can reinforce the job by adding wood battens. It is a good plan to screw these and run them from eaves to top of roof. If you fit these over the rafters,

split and the water is in. Here is a simple guide. For $\frac{1}{2}$ in. boarding rafters 2 ft. centres, but with $\frac{3}{4}$ in. boarding have 3 ft. centres or 1 in. boards 3 ft. 6 in. centres.

Next, check up the thickness of the boards. It is most essential to have the boards of equal depth. In the sketch you will note this is shown by packing with thin stripwood or lath.

point is ventilation. You should always put the ventilation in at the highest point, as shown in Fig. 5.

Do not spoil or damage your felt before you use it. Unroll it on a smooth surface, free from sharp stones and do not walk over it. Be sure the wind cannot blow it about. A lino knife is a good cutting tool used with a batten as a straight edge.

they will add to the strength of the roof. Nails should always be about 2 ins. apart.

Should your roof be large and inclined to be springy, then you will do well to add some additional cross braces inside. The first cause of leaky roofs is often the sagging of the boards due to insufficient support. Attend to this before anything else. (129)

Lounge—(Continued from page 169)

by 1 in. diameter rods shouldered down and let into the uprights, as shown in the detail Fig. 5. Now, if the leg frames are to be connected to the main frame by screws running through them into the tops of the leg frames, the top cross rod of same will remain. If, however, it is decided to fix the leg frames to the main frame by means of bolts and nuts, then this top round rod can be dispensed with. The bolt, nut and washers are given in the detail Fig. 4.

The leg frames go inside the main frame, see plan Fig. 2 and also side view. The dotted lines in the side view show how the legs fold up, and when open are held by the cross rails of the main frame. The canvas, in being put on, is first turned over the top rail twice and firmly and closely nailed. Then it is carried down and brought over the foot rail twice so that the weight is distributed over the lap of the canvas, and here again firmly nailed.

Some lengths of 2 in. wide strong webbing may be added as desired to give uplift to the canvas covering crossways, if found necessary. Also an additional round rod may be put midway between the two side rails of the main frame.

Two coats of clear varnish may be given to the cleaned-up wood, or the whole thing painted with two coats of suitable paint in bright colours. (178)

Add to your comfort by erecting these CAMP WIND-BREAKS

GOOD campers never go to camp to be uncomfortable. Indeed, they do all they can to make the alfresco life as easy and cosy as possible, and have absolutely no time for the tenderfoot type who thinks he must of necessity suffer the utmost limits of discomfort when living in a canvas home.

Certain more spartan conditions have to be put up with, of course, but the old pioneer never believes in being cold when a little ingenuity will make him warm, or lying on a hard bed when a softer one can be made.

A beginner has to be a tenderfoot at first, but he should quickly grow out of this stage and bring his inventive faculty to work in the making of helpful items. Fighting nature is half the fun of camping.

Simple Barriers

The comfort-producing gadgets that old-timers can turn out are almost without end and one of the most useful is the 'wind-break'. This can be anything from just a low barrier behind which you sit, to a larger protection, say, for the camp fire. But a 'wind-break' is not a hut and its purpose is just to put something between yourself and a steady wind that may come sweeping across the camping ground for days on end.

Such winds are not necessarily cold, but they can be a nuisance, blowing about any papers you are holding, or in the case of the cookhouse, blowing leaves and bits of grass into the food. So a 'break' is really very handy.

The simplest wind-breaks are made of bracken which is usually plentiful during the camping months. A good amount is required and the collecting should be generous. The fronds are pulled as low down as possible and care must be taken while bringing in to prevent the tops from becoming broken. Crushed limp bracken is useless for the purpose in hand.

For Sitting

Fig. 1 shows a low wind break for sitting behind. Required are four stakes which are placed as shown, driven into the ground. The bracken is then interwoven in strands (two or three pieces together) alternately passing behind and in front of the uprights. The main thing is not to have the uprights too far apart and to be liberal with the bracken. Press each alternate 'strand' well down on to the one below before putting in the next.

By adding supporting pieces as seen in the inset, this wind-break can also become a back rest, the whole gadget becoming a tight and very cosy retreat behind which to read and enjoy the sun without the nuisance of the breeze.

A similar but much taller 'break' can be made for the camp fire (as Fig. 2). Here quite long stakes are required, nearly as big as a person standing, and a cross-bar is lashed on top as (a). It is best, too, to put up guy lines to give full rigidity against the blast.

Quite a lot of bracken is required here and the good camper will not think it beneath his dignity or lowering to his pride if, should there be an odd ground sheet about, he uses this for part of the filling.

It cannot be stressed too much that the old-timer uses whatever he can to attain his purpose, and is not tied down to set rules, but the good pioneer also finds that generally he can get all he wants in nature's store-house if he looks far enough, and that he has seldom to solicit the aid of commercial items.

A more elaborate 'wind-break' for the cooking fire is shown in Fig. 3. Here we fit a roof also, which is a second framework made quite separately, with a cross bar at the top and bottom, thinner bars going in between. There will not be much strain at the intersections and the lashings can be of quite a simple type. The 'binder' need be no thicker than strong string.

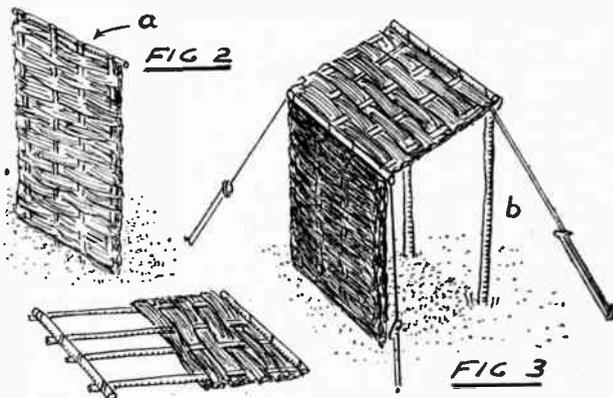
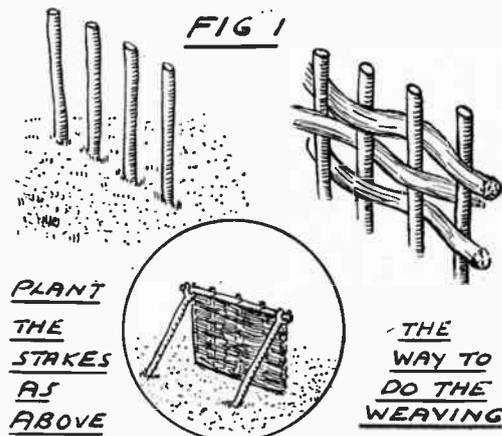
Lash the Roof

Required also are two further stakes (b) slightly taller than those at the back. The roof is placed on top of the break already erected and lashed, the front end thus being held by the two taller uprights. The arrangement is now complete, and if well erected and the stakes sunk a little distance, it will stand quite nicely, but final rigidity is best given by four guy-lines attached as shown and set out at a slight angle.

In making a roofed break like this, do not fall into the common error of making it just too low, which means

continual stooping.

The best of shelters of the kind described is that once the frame is up you can keep improving this with little trouble, even to the day that camp is broken. Then the 'breaks' should be taken carefully apart, the bracken



either burnt or buried, and the stakes put away out of sight, for nothing looks worse than a camping ground with derelict and broken-down gadgets lying about.

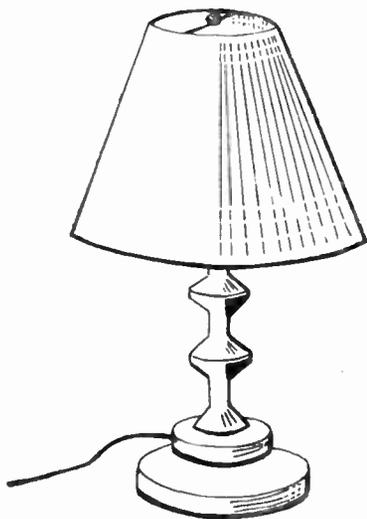
Safe Storage

If you will be using the ground again, the stakes could be stored somewhere and retrieved for further use later on. Should the ground be used by you as a week-end patch, then there is no doubt that the owner would let the wind-breaks stay in position during the intervening days, but see the owner of the ground about this.

Also make sure that the breaks are really solid and that they will not scatter bits all over the place should a really extra strong wind happen along.

Careful selection in the first place will prevent this likelihood.

A few odds and ends can be converted into another COTTON REEL TABLE LAMP



WHILE materials are scarce, and finished articles expensive, an accessory to the home which one can make at a low cost, is well worth the time spent on it. Indeed, this table lamp can be made from odds and ends which are quite easy to obtain, with a minimum of time and trouble. The author made one himself for a few shillings, and is proud that no visitors

ever remark on its being made from bobbins.

In order to commence making the stand, cut out the base from $\frac{1}{2}$ in. wood or five-ply, clean up with glasspaper, and bevel off the top edge. The size depends entirely upon the size of the tobacco tin and bobbins. The tobacco tin should be a little larger than the base of the bobbins, and the wooden base about 2 ins. larger in diameter than the tin.

Tin Lid

Take the bottom part of the tobacco tin and pierce a hole in the middle, large enough for the flex to pass through, and two smaller holes on each side of this to take screws. Then, make a hole in the side of the tin for the flex to pass out and screw the tin to one of the bobbins. Smooth the edges of the flex holes so there are no sharp edges.

Next, cut the top from $\frac{1}{2}$ in. wood—the same diameter as the bobbins—and drill a hole through the middle to take the flex. Then drill out a larger piece to a depth of about $\frac{1}{2}$ in. for the lamp-holder to sink into. Screw this piece on to another bobbin, and then glue the three bobbins firmly together, making sure the holes are opposite each other. A good plan is to insert a piece of dowelling or a thick knitting needle to ensure they are correctly in place.

Base Fitting

Now take the lid of the tin, pierce two holes for screws and screw this on to the base, making sure it is correctly centred. Pass the flex through the holes in the tin and the bobbins, and wire up to the lamp-holder. Draw the flex tight and push the lamp-holder into its socket in the top of the stand. Now fix on the base by simply putting the tin together, and the stand is complete.

Two coats of enamel—cream is very attractive—will transform this from a mixture of bobbins, tobacco tin and wood, into an attractive lamp-stand, and few people will notice the fact that it has been made up from these everyday articles. A circular piece of baize or felt glued to the bottom will prevent any scratches to furniture, upon which it may be placed.

When buying the lamp-holder, a good plan is to choose one with a switch combined. Alternatively, a small switch can be wired into the flex near to the base of the lamp.

Fittings

Suitable lamp shade fittings can be bought quite cheaply in most large stores, or can be fashioned from strong

wire. The top and bottom rings are made first, the top one being about 4 to 5 ins. in diameter and the bottom 12 to 14 ins. The two pieces of wire will need to be approximately 18 ins. and 40 ins. long, to allow enough wire for joining. A pair of pliers will be the only tool necessary for this.

Support Frame

The next step is to make the supporting wires. Cut two pieces about 24 ins. long, put the two pieces together, and

REQUIREMENTS

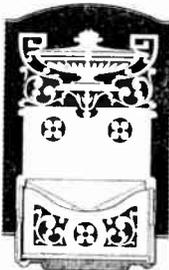
- 3 large bobbins—your local shoemaker or sewing-machine shop may be able to help you out here.
- 1 flat round tobacco tin, with tight-fitting lid.
- 2 circular pieces of wood.
- 1 lamp-holder fitting.
- x plug.
- A length of flex.

start with the centre-ring first—that is, the part which fits over the lamp-holder. Then twist them together and bend into shape, fastening them finally to the top ring. Make sure all the joints are tight by nipping them with the pliers. The bottom ring is loose, and fastened directly on to the shade.

Lamp Shades

If the shade is not bought, attractive ones can be made from oiled paper, imitation vellum, or plastic material which is on the market now. It is merely a question of deciding what depth and shape to cut for, and then gluing up or stitching. Holes should be punched for sewing on the bottom wire

A LETTER HOLDER



The design sheet for this is given with this week's issue. The Kit of wood (No. 2850) is obtainable from *Hobbies Branches* for 3/4 or (postage 9d.) from Dereham, Norfolk.

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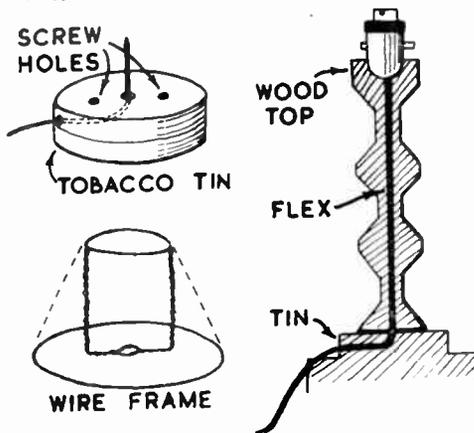
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ring, with narrow ribbon, thonging or some such substitute which will adequately serve the same purpose.

The only thing left to do is to fit a lamp into position and switch on. If one has been painstaking enough, the effect will delight the heart of any home-loving person. (175)

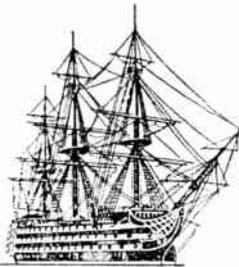
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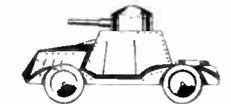
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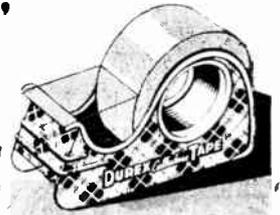
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FROM HOBBIES BRANCHES OR HOBBIES LTD., DEREHAM, NORFOLK.

Windvane—(Continued from page 165) stout tin plate or sheet metal. Cut out, then soak off the paper pattern. The vane can be used as a template for scribing round on the tin the remainder of the vanes. These vanes can be soldered to the disc or riveted.

Make a good firm job of this. Then twist each vane at 45 degrees angle to the disc. Fit it to the free end of the

axle rod, and see that as it rotates (give it a trial twist with the fingers) it does not catch the end of the wood base. If it does, bevel off the corners of the base until the vanes swing free.

At this stage it is as well to test the action. The windvane will be fitted to a pole, either long or short, depending on whether the pole is to stand by itself, or be attached to the roof of a shed, or outhouse.

In the top of the pole drive the $\frac{1}{2}$ in. metal rod, the pivot on which the windvane will swing. Twist the vanes to face the wind, when they should rotate freely and the rocker work. A touch of oil to the bearings will help. Place a thick metal washer over the pivot, for the windvane to rotate on; this will lessen friction. All being satisfactory, the moving figure of the policeman can be made.

A full size pattern for this is provided. This should be gummed to a sheet of stout tin plate, or if it is not desired to mutilate the copy of Hobbies, trace copy of it on to thin paper and gum that on. Cut out the shape, also the moving arm. The strip at the bottom of the figure should be bent at right-angles, and punched for fixing screws. The fitting of the moving arm is arranged in this manner.

Punch a hole for the pivot, also a second hole in the moving arm, and see

these holes just suit the thickness of wire used for the pivot. File the burrs, made by punching, level. At the back of the hole in the figure solder a stout piece of brass, or a thickish washer, and continue the hole through this. In fact, if plain brass, not a washer, is soldered, the necessary hole could be drilled through tin and brass at one go.

Take a short piece of brass wire, form a small eye at one end, and at $\frac{1}{2}$ in. from the centre of the eye, bend the remainder of the wire to right-angles. Fit this in the hole from the rear. On the end sticking out on the face side fit on the arm. Between arm and figure insert a stout scrap of paper, then solder the end of the wire to the arm, then remove paper; this should ensure a loose joint.

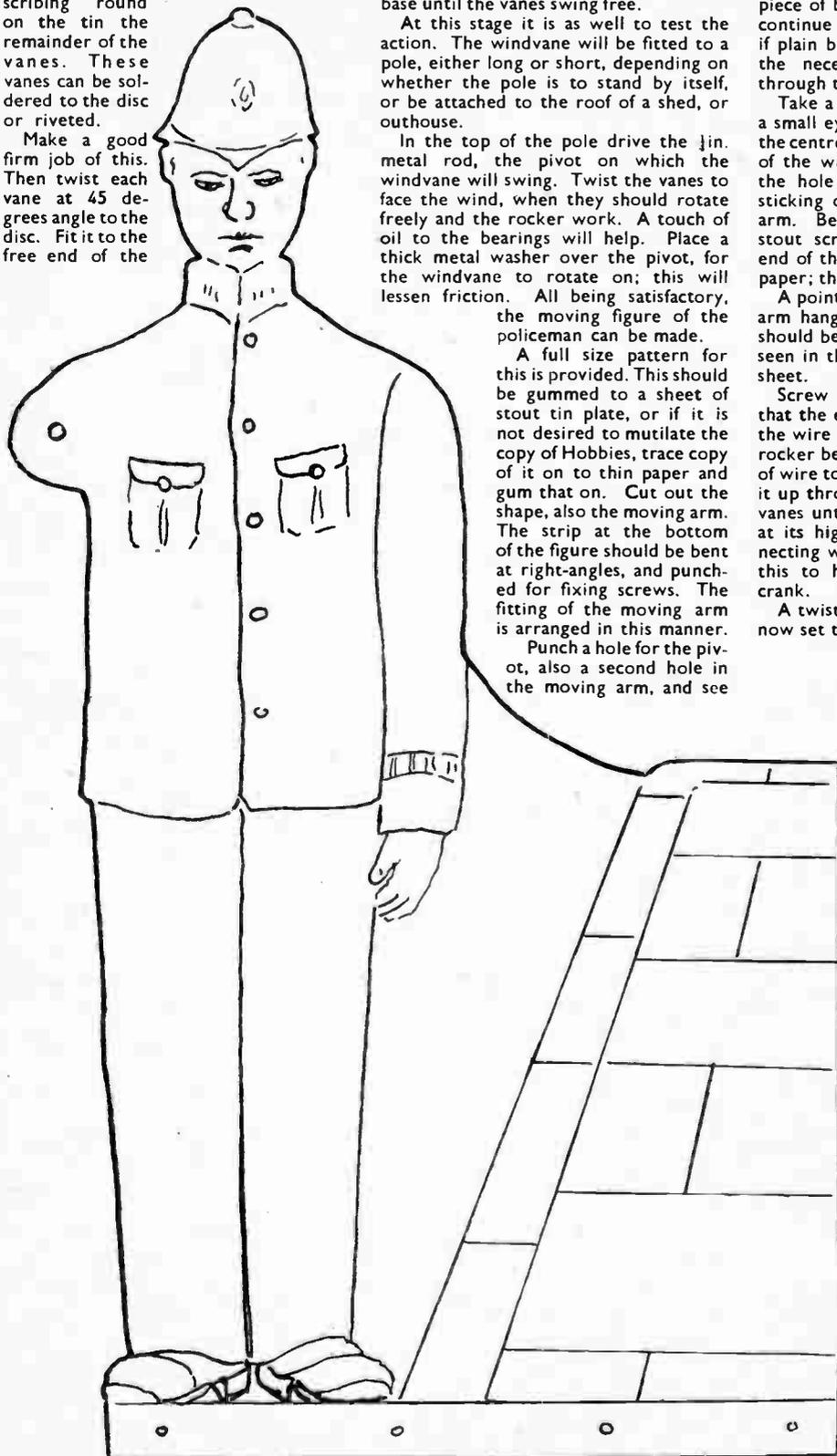
A point to notice here is that when the arm hangs down, the crank at the rear should be up, and at 45 degrees angle, as seen in the detail sketch on the pattern sheet.

Screw the figure to the base, seeing that the eye on the crank is in line with the wire eye, soldered to the end of the rocker below the slot. Connect a length of wire to the eye on the rocker and pass it up through the slot. Turn the rotary vanes until the rear end of rocker is up at its highest point, then cut the connecting wire $\frac{1}{2}$ in. above the crank, bend this to hook shape, and fit it in the crank.

A twist of the rotary windvane should now set the figure working. Freedom of

motion is essential if the windvane is to act well; this applies, in fact, to all these moving figure vanes.

Complete the job by painting. It will be as well to paint certain parts as made, if they are difficult to deal with afterwards. The wood can be attractively enamelled, and the figure painted, with the detail lines put in with a fine brush and black paint.





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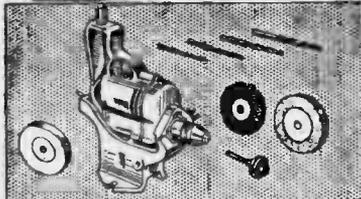
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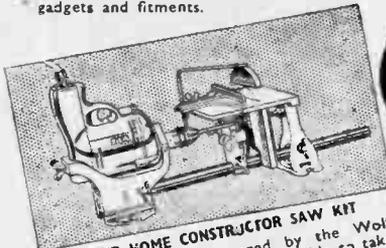
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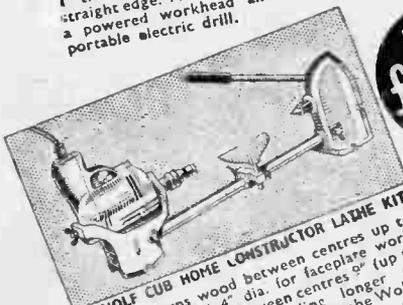
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Hobbies

WEEKLY

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June 21st, 1950

Price Fourpence

Vol. 110 No. 2851

A HOME-MADE CYCLE CAMPING TRAILER

CYCLING readers, who love a camping holiday, would find the trailer illustrated of great use in helping to convey their equipment without trouble. It is of fairly capacious dimensions, large enough to hold most of the things likely to be needed, and space on the top can be utilised to carry a light tent and, perhaps, a sleeping bag as well. Construction is light but strong, and there should be little strain on the cyclist pulling it.

The trailer is built as a framework of strong wood, covered with plywood or a good substitute. A side view of the framework is given in Fig. 1, and a rear view in Fig. 2.

Sides

Make the sides first, with 1in. by 4in. wood for the top rail, 1in. by 2ins. for the ends and 1in. square for the bottom rail. These can be joined together with a simple halved joint, well glued and screwed together. It will be seen that the top edges for 9ins. are left straight, then tapered downwards for the rest.

When the glue is hard, go over the outer surfaces with a smoothing plane to make all level for the plywood covering. The crossbars, joining the sides together are all of 1in. by 2in. stuff. Their position is indicated in Fig. 1 by shaded lines.

These crossbars should be carefully sawn across at their

ends to be square with their face sides, then they are glued and screwed across. Take care to get the whole framework square all over. At the centre of the bottom, a fifth crossbar is secured across, to this the axle of the wheels will be afterwards screwed.

The Floor

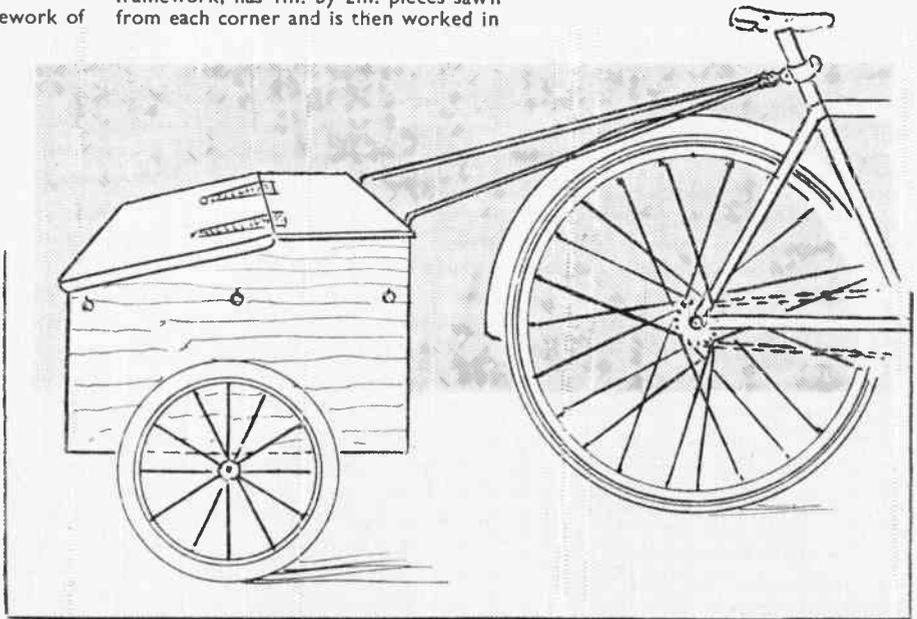
The bottom of the trailer can well be of plywood or good composition board. It is cut to the full dimensions of the framework, has 1in. by 2in. pieces sawn from each corner and is then worked in

and nailed to the bottom rails and crossbars.

Covering

The sides and ends can now be covered with the plywood. Cover the ends first, and trim their side edges level! The sides can then be cut to cover these edges as well as the framework, and make a neat job of the whole.

Small flat headed nails can be used for fixing the plywood, and the ground



All correspondence should be addressed to The Editor, Hobbies Weekly, Dereham, Norfolk.

work should be covered with thin hot glue to assist a close adhesion everywhere. Let the glue get hard then, with smoothing plane, trim the top and end edges of the plywood level with the framework all round.

MATERIALS NEEDED

For framework—1in. by 4ins., 4ft. 1in. by 2ins., 1ft. 1in. square, 4ft. Plywood panels (2)—1ft. 3ins. by 1ft. by 2ft. 0½in. (1) 1ft. 3ins. by 1ft. 3ins. (1) 1ft. 3ins. by 1ft. (1) 1ft. 3ins. by 2ft. Matchboarding for top and lid—¾in. by 4½ins., 8ft.

Where some of the thin aluminium sheeting is available, the question of using this in place of plywood might be considered. It is both light and strong, and is easily fixed, either with nails or small round-headed screws. It would be better to cut and fix the sides first, allowing ½in. extra at each end to bend over the ends of the trailer, where it should be well flattened down. The end pieces should be cut exact size, and be well screwed and flattened down over the overlapping parts of the sides.

The top and lid of the trailer can be cut from ¾in. wood, preferably of the tongued and grooved kind. Matchboarding would suit quite well. The straight portion of the top is covered in first, the wood being long enough to overhang the side by a full ¾in., but be cut level with the back. Screw the wood down to the framework.

The remainder of the top covering forms the lid. Join the boards together with side strips of ¾in. by 1in. wood, as seen at Fig. 3, and glue and nail the whole securely. Fix the lid to open up with a pair of iron T hinges, as shown, and to the front of the lid fix a hasp to accommodate a padlock fastener.

Painting

The whole job should now receive at least two coats of good quality outdoor paint, to render the trailer waterproof. Additional help here will be to provide a tarpaulin cover for keeping the contents of the trailer dry in very wet weather.

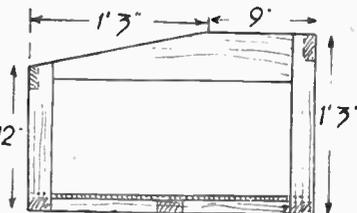


Fig. 1—Side view of framework

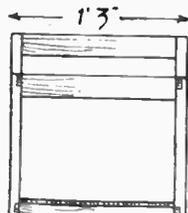


Fig. 2—Rear view of frame

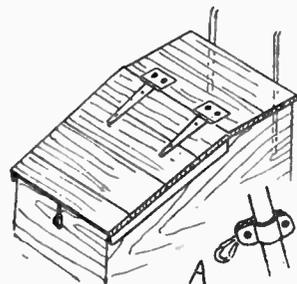


Fig. 3—Details of top and fixing

A helpful addition, also, is a number of brass rings, say, three at each side and two at each end, for helping to securely rope a tent or other paraphernalia, on top of the trailer, when touring.

For the wheels, a pair of 16in. ones from an old pram or similar vehicle will suit as well as anything. You need not be tied down to that size, doubtless other sizes within reason, could be

utilised. The axle will be screwed to the centre bar, underneath the trailer. It should be noted here that the length of the axle may necessitate some suitable amendment, perhaps, in the width of the trailer, but that matter can be easily dealt with. If a pair of old but serviceable mudguards can be picked up, by all means add them to the outfit. For towing, a length of ¾in. round iron rod could be used. This should be doubled at its centre to make a small loop, and be bent and screwed to the fore-end of the trailer, as in the general view of the completed article. A simple form of attachment, to be fitted to the seat pillar of the bicycle, is shown at (A) in Fig. 3. To this is secured a large size dog-hook, which can engage the loop on the towing bar and form a safe connection. Do make sure it is quite safe with no chance of slipping.

From the Editor's Notebook—

A LITTLE time ago I had a picture of a reader who put miniature ships in aspirin bottles, and imagined it was unique! Now I hear from Mr. C. H. Griffiths of Newell Hill, Tenby, that the hobby is nothing new because he has been putting ships in bottles for nearly two years. He has completed over 100 and has (or had when he wrote to me) another 68 to do. They have been sent all over the world, some as far as Texas, in the U.S.A. Any more people doing this sort of thing?

* * *

SINCE my notes on matchbox collecting seem to have created much interest I am having an article written on the subject, which is apparently widespread and seems to be competing with stamp collecting. Recently, for instance, a reader found a matchbox which he thought must be quite old. From his description, I found it could have been 23 to 40 years ago since it was manufactured because that was the time when that particular type was about. But, please, do not all send me your matchboxes and ask me to identify them. Wait for the coming article which will tell you all about it.

A DENTAL mechanic, Mr. F. Hartley, of Eccleshill, Bradford, has spent 18 years perfecting a single model. It should be good—and is. From an early age Mr. Hartley was fascinated by trams and collected, in course of time 2,000 pictures of them from every part of Britain. (Our young readers should remember that trams were once the mode of transport in every town and city!). Then he commenced to build a model of one of the Bradford trams—and now it is a show piece, complete in every detail. It will be of even more interest later, for Bradford is going to dispense with its trams this year—so the model will become a worth-while museum piece.

* * *

I WAS afraid when I printed in the Issue of May 10th, a picture of a magnificent Pagoda in fretwork, that readers would promptly write in for details of the design. How right I was! Unfortunately, on this occasion I could not help them. The design was published about 40 years ago, when paper and wood were obtainable in larger and cheaper quantities than they are now. Supplement designs measuring 30ins. by

40ins. could provide patterns for something really worth while. But not now. Progress (!) made has brought us backwards to quite small sheets and comparatively little wood—a situation we lament as much as anyone. Proof of the still big demand for really large and intricate pieces of fretwork is always shown by the number of letters I receive whenever a picture of one of these old time masterpieces is printed. Perhaps one day we shall be able to offer supplement sheets and material large enough to please everyone. We hope so sincerely, but see no prospect of it at present.

* * *

HERE is an early note about a future Hobbies Exhibition to be held in the Birmingham area. It is being arranged by the local Rotary Club members who are organising one to take place in October next at Stourbridge Town Hall. Readers in the district should keep their eyes open for later announcements, and be ready with something to support it.

The Editor

Fun for the garden or beach can be provided by A TOY SAND YACHT

THE little yacht, here illustrated in Fig. 1, is a toy which will, we feel sure, please the youngster. He can 'sail' it anywhere except on the water, and that is why such fun can be had with it in the garden and on the lawn. On the sands, too, it can be called a sand yacht to be acted upon by the wind.

The yacht can be guided to sail in circles or to keep a straight course by the simple use of a steering cord connected to the fore axle. This will be described later in this article.

When not in use the toy can be dismantled just as easy as it is erected, and all the parts can be home-made with the fretsaw and a few ordinary tools.

Before commencing work study the side view of the yacht, Fig. 2, which provide all necessary dimensions for the sails and spars, and give a good idea as to position of most parts.

The size of the toy overall is 18ins. long and 18ins. high, while the width to the outside of each pair of wheels is about 9ins.

The Deck

For the deck we shall require a piece of $\frac{1}{2}$ in. wood, one of Hobbies MD8 panels is just the thing, and Fig. 3 shows how to mark in a number of oblongs 1in. by $\frac{1}{2}$ in. for enlarging to full size from the plan given. Follow the half plan, and run the outer thick line through the lines of each oblong. Then trace this off on to thin transparent paper and turn it over and transfer the curved outline direct to the wood and to a common centre line previously drawn on the wood.

Cut round the finished outline with the fretsaw and afterwards clean up the edges with glasspaper. Next, bore holes in the deck, one 2ins. from the point of the bow $\frac{1}{2}$ in. diameter, another hole $5\frac{1}{2}$ ins. also from the bow but $\frac{1}{2}$ in. diameter, and a third hole, $\frac{1}{2}$ in. diameter 4ins. in from the stern.

Mast Holder

As a substantial base for the mast, cut out a piece of $\frac{1}{2}$ in. wood to the shape shown at (A) on plan Fig. 4. This should measure 2 $\frac{1}{2}$ ins. long by 1in. wide and a $\frac{1}{2}$ in. diameter hole must be made in it for the mast which, as will be noted, runs down through the hole made in the deck. Nail the piece to the deck with two 1in. long wire nails.

Now take in hand the making of the steering arrangement, details of which are shown in Fig. 5. First cut a piece of $\frac{1}{2}$ in. round rod (A), 1 $\frac{1}{2}$ ins. long, and on the lower end glue the grooved wheel (B). This may be 1in. diameter and the groove round the edge can be cut in with a rat-tail file.

Push the round rod through the hole in the deck from below and lay over it the thin disc (C) consisting of felt or rubber. Then again, above this, glue on the plain $\frac{1}{2}$ in. disc (D) to form a kind of knob for turning. Thus, when a fine piece of cord is attached to the front cross axle and brought back and carried round in a double loop as seen in Fig. 5, round the grooved

The axles are identical in length, and cut from $\frac{1}{2}$ in. thick wood $\frac{1}{2}$ in. wide. The front axle will be pivoted by running a round-head screw up loosely through the deck and into the axle. The back axle will be fixed to the stern of the yacht by means of wire nails and glue. Insert two brass or copper screw-eyes into the side of the front axle, as shown in Fig. 4, for the attachment of the steering cord.

Mast and Spars

The mast, spars and bowsprit are all made from $\frac{1}{2}$ in. round rod and shaped up, as shown in Fig. 2. The length of spars are as shown in Fig. 2. That of the bowsprit is 7 $\frac{1}{2}$ ins., which is pinned to the deck and let into the front of the mast block, as seen by the dotted lines in Fig. 2.

The sails may be cut to the shapes shown, using fine white linen, suitable hems being made in the mainsail to accommodate the two spars. The jib sail could be hemmed with the cord

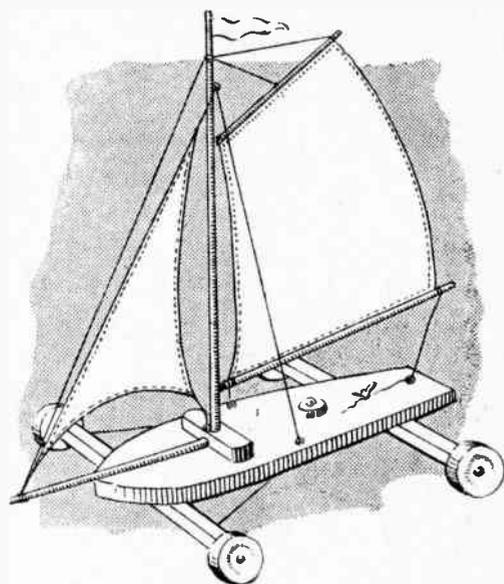


Fig. 1—The completed article in use

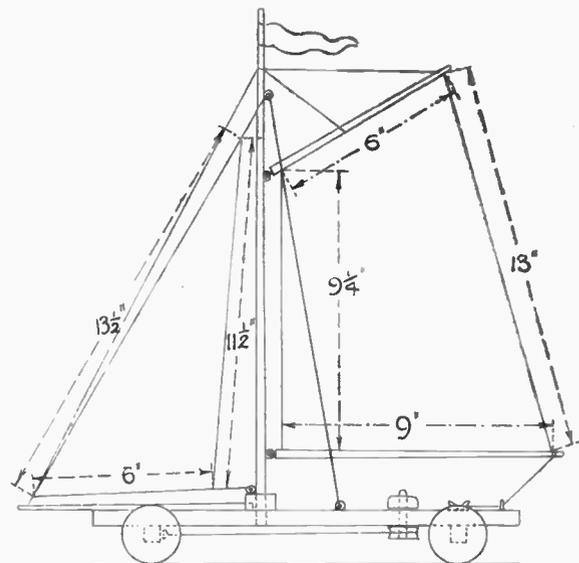


Fig. 2—Side elevation with details of sails

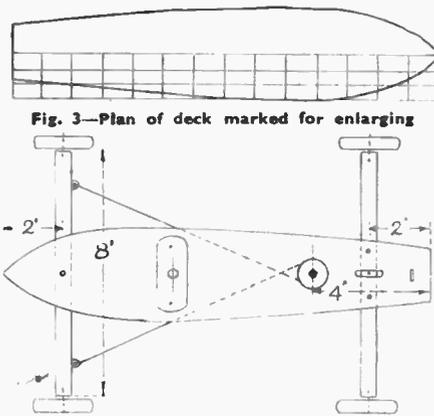
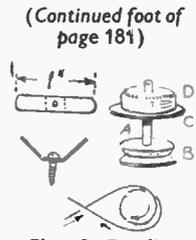


Fig. 3—Plan of deck marked for enlarging

Fig. 4—Plan of deck, wheels, axles, etc.



(Continued foot of page 181)

Fig. 5—Details of small fittings

An expert tells how to go to work to PRESERVE DEAD BIRDS

A READER who wrote recently for information on this matter touched upon a subject with a much wider appeal. For the art of mounting birds, stuffing birds, of 'taxidermy' as it is named, makes an interesting hobby for the sportsman, and it is also interesting to preserve your pet parrot, canary or budgerigar in this way. The hobby requires skill, patience and a fairly simple routine.

First the tools. You need a sharp penknife, some strong galvanised wire and pliers for cutting it, a blunt knife or 'scraper' and some alum or taxidermist's arsenical soap, for preserving the skin. You may, of course, buy a box of taxidermist's tools from a dealer in London or Manchester if you intend to make a regular hobby of preserving birds.

How to Skin

Do not leave the dead bird to rot before you start to mount it, or it will not be suitable. First skin it by making an incision on the breast or stomach, carefully parting the feathers and making a slit of a few inches, as this has to be sewn neatly afterwards. By gently prising the skin away from the underlining flesh with the blunt knife, and avoiding puncturing the skin with the knife it will be possible to make a large space under this cut.



Through this remove the entrails and internal organs carefully without breaking blood vessels or anything else to soil the plumage. Slowly turn the legs, wings and neck back through the hole, to remove their flesh, and then scrape the skin clean of fat or flesh which rots. Leave the skull in the head, remove and wash out the brain and eye sockets. Now treat the inside of the skin with a preservative like arsenical soap; or pepper, salt, and alum, glycerine, etc., then dry it in a warm place (e.g., before the fire). The brain can be taken out through the mouth. The pepper, salt and alum will dry the moisture off the skin, and can then be removed.

Packing the Body

Now start packing the bird's body with a soft substance like cotton-wool or tow, making sure that it is sterilized of all pests. Cotton-wool will not attract clothes moths like ordinary wool.

In order to arrange the bird as you wish it to remain for final mounting, the wire is now used for support. Pass a strong wire through the body so that one end protrudes from the anus just under the tail and the other end at the nostrils. Cut these off so that the ends are not visible.

Wire Support

To this fix wires which pass inside the legs and emerge with 2 or 3 ins. through the sole of the foot. These extensions are used to fix it to a perch. Finally fix across the body the wire to support the wings, protruding 1 in. or 2 ins. into the wing or the ends of the cut bones, according to whether or not the wing is to be raised or folded. The thickness of the wire depends upon the kind of bird, of course.

Having made the bird as natural as possible for position of wing and tail, fatness of body, etc., carefully sew up the slit made in the belly or chest, so that the feathers, folded over, do not reveal the cut. Then with a little cornflower, warm bran or something similar worked carefully into the plumage to restore its cleanliness, the bird is trussed up in bandages of paper or rag, or criss-crossed with thread, so the plumage feathers lie in position and the body is kept in its natural shape. The model is then set aside in a cool dry place for about a month to fix itself, when the covering may be removed and the specimen fitted in to its glass case.

Touching Up

Sometimes the soft parts of a bird like its beak, legs and eyelids may need touching up with their natural colours which fade, or a little white shellac is needed on the beak to keep its gloss. The artificial eyes may be purchased; or, providing they are the correct colour, small hatpin heads sometimes serve for eyes for small birds. Place some moist plaster of paris in the eye-socket before inserting the glass eye.

As arsenic is dangerous to handle, you may like to make a non-poisonous skin preserving paste as follows: 1½ lb. of whiting or chalk and ½ lb. of white curd soap boiled up in a pint of water until the soap is dissolved, and then stir in ½ oz. of finely powdered chloride of lime, and add ½ oz. of tincture of musk as it cools. Do not inhale these fumes, and apply the paste as a thick cream. A non-poisonous preservative powder can be made from 1 oz. pure tannin, 1 oz. red pepper, 1 oz. camphor and 8 ozs. burnt alum.

White Madras wax is good for the bills and legs, or beeswax with a little resin. Dirty, bloody feathers after mounting may be sponged with salty water. A mixture of benzoline and plaster of paris will remove grease.

Another Method

If you are mounting the bird sideways



A Little Auk mounted by the author in the way described

on, it may be better to start by making the incision into its body under the wing on the 'wrong' side of the breast. The skin on the back is thin and easily damaged.

After making the initial cut, insert the knife and start to separate the skin from the flesh, working down to the leg and loosening the skin of the back, inserting a layer of wadding to keep the feathers off it. Gradually work the skin back over the neck, legs and wings, cutting the bones away with pliers. Scrape round the tail end, do not puncture the internal organs as they will spoil the feathers, and trim all the flesh from the severed parts.

Do not forget to remove the tongue and the windpipe. Chopped tow thinly mixed with soft clay (2 ozs. Japan wax and 1 oz. plaster of paris) is also useful for padding to make the shape of the head. Fill the hollow base of the wings over the bones, also the thighs. Fill the neck with tow and clay, likewise wings and tail. Insert the eyes after the skin dries or the orbits will contract and look unnatural. If the mouth is shown open when finished, do not forget to wax the inside. A good book on taxidermy (in case you wish to make a long hobby of it) is written by the late Montagu Brown. (165)

Dart Tip

HERE is a tip for a darts enthusiast who finds that feather flights have become split. Obtain a candle and light it; put the dart in vice with the injured feather horizontal. Hold the candle over the flight and let the grease drip on. Then smooth it out with the finger and thumb until it hardens.

You will find it convenient and handy to make A GARDEN BASKET

THERE are quite a number of items the handyman can make for the garden, but one of the most useful is a garden basket. These containers are very convenient, for they will do anything from holding small tools or setting-out plants to collecting produce.

Two types of basket are shown here and both make quite satisfying jobs, as they are solid and look well when completed. The dimensions given in each case are optional as larger or smaller baskets could be made according to personal choice. Generally speaking the bigger the garden, the bigger the basket that would be useful—especially as a bringer-in of crops later in the season.

The Parts Required

To take the basket shown in Fig. 1 first. Parts required are the sides, base and handle uprights with crossbar. The sides are from two pieces of $\frac{3}{8}$ in. material, 1ft. 4ins. by 9ins. curved on the underside as indicated in the squared diagram. Care must be taken to get both

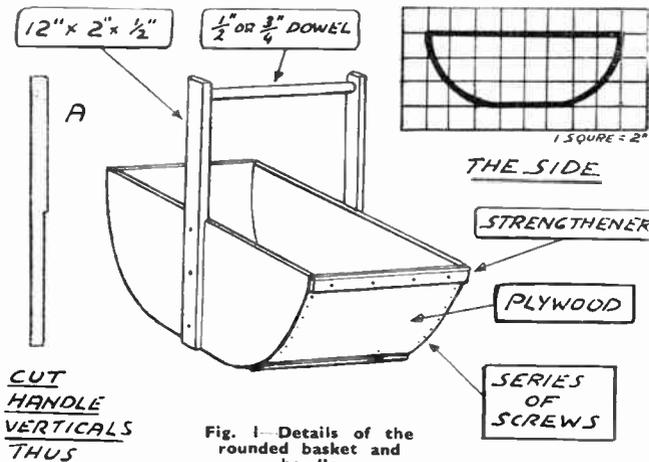


Fig. 1—Details of the rounded basket and handle

of the sides the same shape exactly; this is important or the base will not fit well.

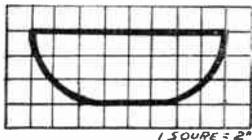
Now procure a strip of thin plywood, 9ins. wide and of sufficient length to go round the curved underside of the parts

just made. Or several smaller pieces will do, 9ins. wide and together summing up to the desired length. Drill holes at 1in. intervals along the edges of the piece (or pieces) and fit to the sides with a small screw at each hole. Short nails can be used, but the best job is made by employing small-diameter $\frac{1}{8}$ in. screws.

The curving of the wood must be done with some care. Work round hole by hole, following the bend of the sides. This can be done with greater ease using screws, which can be taken gradually up to their maximum tightness.

Once in position add the cross-strengtheners. There are four of these and they are 9ins. by 1in. by $\frac{1}{2}$ in. Two go across from side to side at the top lip and two are fitted down near the lower part of the curve and so located that they help the basket to stand firmly when on a level surface. It helps neatness of finish if the two lower strengtheners are triangular in cross section.

To complete things we must now put on the handle. This consists of the two uprights (A) which are 1ft. long and about 2ins. by $\frac{1}{2}$ in. in section. It makes the job firmer if the part of the uprights



THE SIDE

STRENGTHENER

PLYWOOD

SERIES OF SCREWS

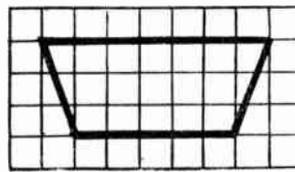
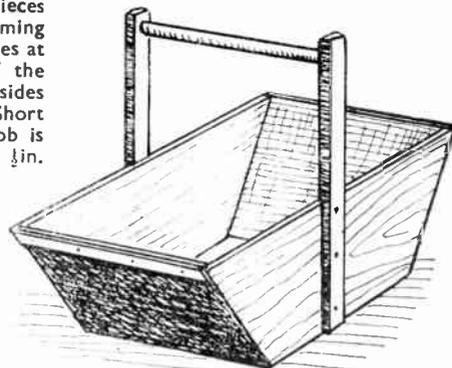


Fig. 2—Straight ends shape in 2in. squares



length of dowel (about $\frac{1}{2}$ in. diameter) which forms the grip.

An Alternative Type

If well put together the dowel will hold without any further securing. If there be any doubt, however, run a screw through the uprights into the ends.

Should you like a quick-made basket, without the trouble of curving the underside, then the same general design can be used. The sides in this case are cut to the simple trapezium as shown in Fig. 2. Here three pieces of material for the base and sloping ends will be required. The base will be 12ins. by 9ins. and can be a $\frac{3}{8}$ in. thick rectangle of any ordinary wood—not three-ply.

It is again held by a series of screws along its outer edges. The ends are thin plywood. A single stiffener is added along the top edges, but there is no need in this case to have any stiffeners down below. The handle fittings are exactly as for

the first basket.

While garden baskets look nice in plain untouched wood, they last all the longer if given a coat or two of one of the several damp-resisting preparations there are about.

Sand Yacht—(Continued from page 179)

inside the fold or just tied to the three corners. The mainsail at the stern is held down by a cord attached to the spar and run through eyes in the deck. From here it is fastened by being wound on a cleat or bollard, formed up from a small length of brass strip holed in the middle and bent up and screwed to the deck. The detail of the cleat is given in Fig. 5.

The four 2in. diameter wheels could be cut from $\frac{3}{8}$ in. or $\frac{1}{2}$ in. deal, or they may be bought ready turned and nicely finished from Hobbies Ltd. Brass screws and thin washers are used for the attachment of the wheels. The washers must go between the ends of the axles and the wheels, and a drip or two of oil may be added to make for free running.

A little pennant or flag may be made

from stout paper folded double, cut to shape, bent round the mast and glued on. The rigging is of fine twine and attached by small brass or copper screw-eyes.

As a finish to the wood, the deck surface should be varnished after being lined up in pencil to represent the deck battening. The edges of the deck should be painted or enamelled and the mast and spars varnished or left untouched.

Conversion to portable radio receivers necessitates MAKING FRAME AERIALS

PORTABLE receivers are quite popular and it is clear that many constructors would welcome information on the winding of frame-aerials. Such aerials make the usual external aerial or earth unnecessary so that the receiver may be carried about and used without difficulty wherever desired.

Frame aerials of many different sizes can be made, either for use with an existing non-portable receiver, or as a basis around which a new set will be built.

How a Frame Aerial Works

A proper frame aerial does not merely consist of a length of aerial wire wound round inside some suitable containing case, and such an arrangement would be inefficient. Instead, it consists of a winding which replaces the usual tuning coil and signals are induced in it by

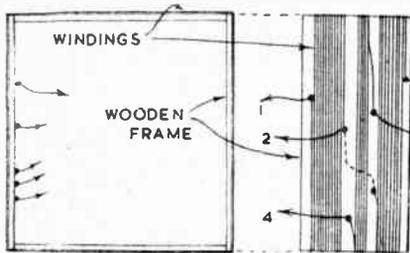


Fig. 1—A dual-wave frame aerial

passing wireless waves. These signals are fed to a detector, then amplified in the usual way.

Because of the way in which such an aerial operates signal pick-up is almost zero from any station in line with the axis of the frame aerial. This does not cause difficulties, however, as it is merely necessary to turn the receiver a little one way or the other to assure some required station is not being lost.

The signal pick-up from such an aerial is naturally less than that from a large external aerial. As a guide, it will usually be found that one valve will give good earphone reception. Two valves in an efficient circuit will give sufficient volume for average speaker listening with the more powerful stations, while three or four may be used for increased volume and range.

Dimensions of Aerial

A frame aerial wound on a large former, with fairly thick wire and a small space between turns will provide the best pick-up of all. However, space is often an important consideration, and quite small aerials will give satisfactory results.

Most small one, two or three valve sets with dry batteries can be made in a cabinet with a perimeter of about 3ft. (e.g., with sides each about 9ins. long).

Very compact receivers can be smaller, while bigger receivers will require larger cabinets, and any convenient dimensions will prove satisfactory.

There is no need for the frame aerial to be square, or for dimensions in any particular direction to be of a certain figure. Usually, therefore, the size and shape of the frame aerial will depend upon the receiver itself. But even with midget sets frames smaller than about 4ins. square should be avoided as the signal pick-up is reduced.

Making the Frame

It is possible to wind the aerial on the outside of the cabinet itself but for the sake of appearances some internal arrangement is usually employed. The simplest arrangement which will enable a good aerial to be wound is to cut four pieces of plywood as shown in Fig. 1.

These pieces are of such dimensions that the frame thus formed will slip

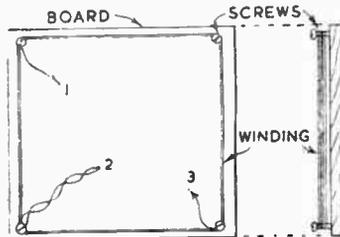


Fig. 2—Simplified form of construction

inside the cabinet with $\frac{1}{2}$ in. or so free space all round. The aerial is wound on this frame, which is then slipped inside the cabinet. The ends of the various windings may be brought through small holes and plugged to hold them secure. Connecting up to the various parts inside will then prove quite straightforward.

Calculating Turns

Referring to Fig. 1, the medium wave winding is between points 1 and 2, and approximately 75ft. of wire should be used. By measuring the perimeter of the frame the number of turns can easily be found. For example, a frame 1ft. by 1ft. would require 18 turns. A frame 8ins. by 10ins. would need 25 turns, and a frame 1ft. 6ins. by 2ft. only 11 turns.

The exact number of turns is not critical, but if it is found that high wavelength stations cannot be reached,

then a turn or two will require to be added, while if low wavelength stations cannot be tuned, a turn or so should be removed. With very small frames the increased inductance makes less wire necessary and under about 8ins. by 8ins. 60ft. of wire will be sufficient.

If there is sufficient space use fairly thick wire—about 22 S.W.G. enamelled or cotton-covered and space the turns about $\frac{1}{16}$ in. from each other. If space is limited thinner wire can be used and turns may be side by side, but wire thinner than about 32 S.W.G. should not be used here.

Reaction Winding

Leave a space of about $\frac{1}{2}$ in. and wind on the reaction section, which consists of between a third and half the number of turns on the M.W. section already mentioned. If all turns are in the same direction, as in Fig. 1, four will go to reaction condenser and five to detector anode.

With midget sets using small voltages

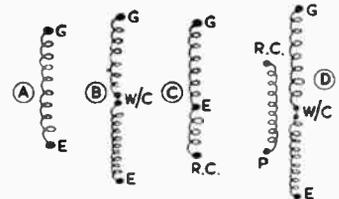


Fig. 3—Frame aerial circuits

reaction may be weak. If so, add a turn or two to the reaction winding or move the turns nearer the M.W. winding. Usually, however, satisfactory results will be obtained at once. Any insulated wire of about 34 to 26 S.W.G. can be used and turns are close side by side.

Long Wave Section

If the receiver is for M.W. only this will not be necessary; point 2 will, therefore, go to the 'Earth' (L.T. negative) line of the receiver. Where L.W. reception is also desired this point is taken to a wavechange switch. Also connect the beginning of the L.W. winding, which ends up at point 3.

This section consists of approximately 200ft. of thin (about 32 S.W.G.) wire, turns close wound, for frames about 4ft. and over in perimeter. For smaller frames, about 160ft. of wire will be sufficient. The winding is close to the reaction section already described.

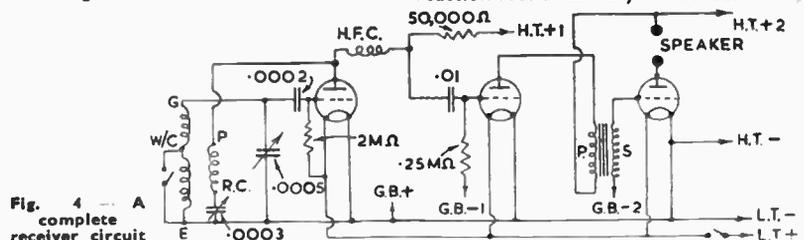


Fig. 4—A complete receiver circuit

In Fig. 1, point 1 goes to the fixed plates of the tuning condenser (e.g., detector grid condenser).

A Flat Aerial

A simplified form of construction can be attained by driving four screws into a flat board (possibly the back of the receiver cabinet) and winding the aerial on these (see Fig. 2). If enamel-covered wire is used tape should be bound round the screws before winding.

This form of construction does not give quite so much signal pick-up as that already described.

If it is desired to use medium waves only, and the reaction condenser is connected between detector anode and frame, instead of between frame and L.T. negative, then only three leads will be necessary. This is shown in Fig. 1. Point 1 goes to detector grid condenser, point 2 (the tapping on the complete winding) to L.T. negative, and point 3 to reaction condenser. This is also shown at (C) in Fig. 3.

Because the turns are close together

this type of aerial will require rather less wire than that for the previous type, about 50ft. usually being ample.

Types of Winding

Different arrangements may be employed, and Fig. 3 should make these clear. Type D is that for Long and Medium Waves, with separate reaction, first described in detail and shown in Fig. 1.

Type A consists of a single winding and this can be used in superhet receivers with a high frequency stage as no reaction winding is then required. Type B is for the same type of circuit but has long waves in addition, and this would be similar to the aerial shown in Fig. 1 with reaction omitted.

Type C is that shown in Fig. 2, where the reaction section is a continuation of the main winding. This type of aerial can be wound on a wooden frame of the type shown in Fig. 1 and is very convenient and efficient, but suitable for medium waves only.

In Fig. 3, 'G' denotes detector grid

condenser lead and 'E' earth line or L.T. negative. The connection to the wave-change switch is denoted by 'W/C' and 'R.C.' and 'P' show reaction condenser and detector plate (or anode) connections respectively.

Receiver Circuits

As mentioned, any circuit may be used in conjunction with a frame aerial, but as a guide a complete 3 valve circuit is shown in Fig. 4. This is quite straightforward and will give good speaker reproduction, especially if a 120 volt H.T. battery is provided and the frame winding is as efficient as possible, as described.

There is no reason why transformer coupling should not be used between the first two valves, if preferred, and a pentode output valve could also be used.

With all frame aerial receivers (excluding superhets) the reaction control should be used to build up volume. Careful tuning is also necessary, as a frame aerial is much more selective than a tuning coil.

Prevent likelihood of damage by making this twin TENNIS RACKET BRACKET

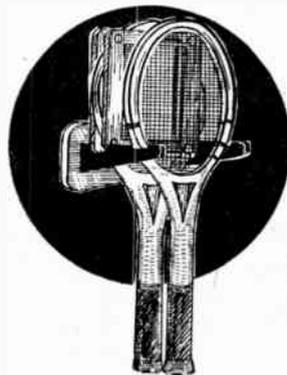
TENNIS is now a practically all-the-year-round sport although, of course, most is played in the summer months on account of the light evenings and there being less chance of half a gale blowing to deflect the ball.

For a keen tennis 'fan' who always wants his racket ready to hand instead of delving into some dark and crowded cupboard for it, the tennis racket bracket here described should prove very useful.

For Wall Fixing

As the illustration that heads this article shows, the bracket is intended for fixing on the wall, and holds two rackets. For convenience of illustration, one of the rackets is shown without any press or cover, but the other shows how the bracket is so designed to take a racket in a wooden press.

Practically any wood can be used, since if such good wood as oak is used, the bracket can be left in a natural colour, intensified with, say, wax polish,



certainly makes the strongest job. It is possible to leave out the mortises and tenons and screw the brackets on with a long screw from behind, but this is not particularly recommended.

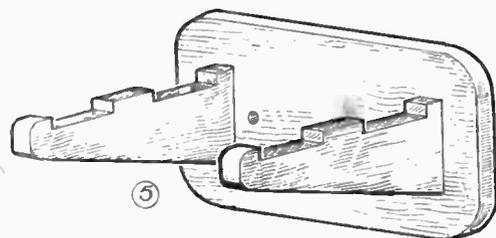
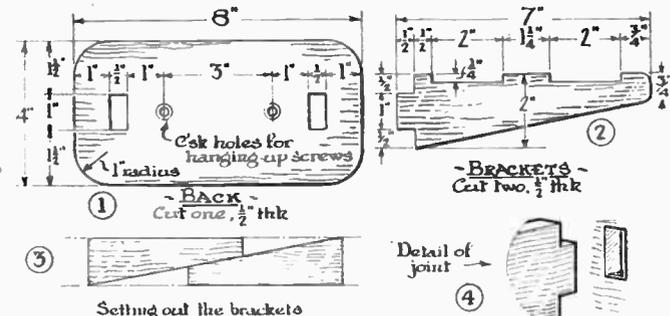
The best way to start clearing out the mortise holes is to bore two $\frac{3}{16}$ in. diameter holes right through and then clean the corners with a chisel. Whilst the brace and bit is handy, drill the holes for the hanging-up screws. These, incidentally, will be driven into the wall into which proprietary wall plugs have been fitted.

Brackets

The brackets are fully detailed and dimensioned in Fig. 2. At Fig. 3, we see an economical way of setting out the brackets to avoid waste. Naturally we have to cut a bit oversize to allow for trimming.

When the brackets have been cut, they are glued into the back, care being taken that the recesses are in line with each other. This simple job can be done in an evening, particularly if the two bracket pieces are shaped up together.

(152)



Some helpful suggestions and hints for undertaking A WALKING HOLIDAY

EACH county in Britain has its special appeal to the hiker, and many books have been written on the attractions, scenic and popular, the varied associations past and present, and the folk and their characteristics. The hiker, therefore, anxious to learn all he can of the districts he hopes to visit, should consult the many excellent guide books.

So baffling and almost bewildering by their great variety are the walks and tours available to the holiday maker strong of limb and keenly enthusiastic that it is often difficult for a beginner to decide. Provided he is not a 'mile-eater' and is out to get the most enjoyment and interest as he tramps along, he can map out tours, long and short, in any English, Welsh or Scottish county, and find both scenery and delightful associations.

Week-end Walks

You may plan a long time ahead; often it is a wise thing. At least, it is well to have one or two ideas in mind, with alternatives if necessary. Week-ends should be made the most of, and in this connection careful planning is essential. You cannot get far on a Saturday—Monday trip, and, therefore, your week-ending must be spent within comfortable reach of home.

Even so, you will doubtless discover that much of the open countryside within a radius of 20 miles is as strange to you as any far-away region. The author lives in a village set in an area of beautiful country, and for years has hiked daily round about. But he keeps finding new vistas and nooks that are as refreshing to see as the daisies in spring.

Curiously enough, with all this lovely corner of an inland county surrounding their very doors, there are inhabitants who rarely stray a mile from home, but prefer to take the local 'bus to town. What a lot they miss! Do not neglect the country round about your home, just because it is not some boosted touring district many miles away.

Selecting Your Routes

With such a vast number of attractive districts for hiking holidays, it is advisable to bear in mind the kind of country you desire to explore, and to concentrate on planning for your hikes. Holiday-time will soon be here, and you cannot get your plans made too soon.

Suppose, for instance, you wish to try your luck in mountainous country or hill ranges, you may make a list of such regions, and then finally decide on one, or more alternatives.

Such a list could include Black Mountains: Cheviot Hills: Chiltern Hills: Derbyshire Peak: Malvern Hills: Pennines: Quantock Hills: The Cotswolds: The Lake District: The Trossachs:

West Highlands: Wester Ross and Sutherland: the Cairngorms: and in Wales there are the Snowdon Range and the Berwyn Range.

Forests and Woodland Country

Again, if you wish to spend your week-ends and holidays hiking in well-wooded countryside, the under-mentioned areas may give you some ideas for your planning. New Forest (Hampshire), Sherwood Forest (Notts.), Windsor Forest (Berks.), Ashdown Forest (Sussex), Epping Forest (Essex), Exmoor Forest (Devon), Charnwood Forest (Leics.), Forest of Dean (Glos.), Forest of Bowland (Lancs.), Gilderdale Forest (Cumberland), Savernake Forest (Wilts.), Radnor Forest (Radnorshire). Many areas in Scotland, as Deeside, Loch Lomondside, the Tweed Valley, and West Highlands, are magnificently timbered, despite the raids made on the trees during the wars.

Coast Walks

If you live inland, then a coastal tramp may well appeal, by its complete change. Few tramps beat the tour along the coast from Lynmouth to Ilfracombe, Devon, though the walking is not easy, the paths being narrow and often tricky. But the view of the rollers breaking at the foot of the cliffs is more than compensating.

The North Cornish coast, an area that includes Tintagel and King Arthur's Castle, will take you 'far from the madding crowd' without doubt. Switching to the opposite side of England, few walks beside the sea rival that from Tyne to Tweed, with a fine stretch of coastline with headlands, cliffs, black rocks, sand dunes, and stretches of golden sands. There are attractive old castles and many delightful old-world fishing villages, whilst the marine views over to the Farne Islands are superb.

The Yorkshire coast is also well worth touring, especially from Flamborough Head to the charming village of Staithes. Along the Sussex coast the walks are very fine, starting from Bognor and

carrying on east as far as you can within the limits of your time and tramping ability. With plenty of time you may carry on right round to Kent as far as Deal or Ramsgate.

Inland Tours are so many we can only suggest a very few—including East Anglia, with the Norfolk Broads, the Suffolk villages, and the river estuaries. The home counties also provide excellent tramping grounds for those who live in London. You can enjoy lovely walks in leafy Bucks. and in Berkshire and Surrey. And what of Kent, the 'Garden of England'?

Farther afield we have the Cotswolds and Shakespeare's Country round Stratford-on-Avon—providing a tour of quiet charm and serene loveliness, with Warwick Castle as a gem of romantic history.

Shropshire, around the Wrekin and Wenlock Edge, and Mary Webb's countryside, with its hills and its charming villages nestling in their folds, is most attractive to the walker. You get hill scenery without too much strenuous work. The walks and scenes described in H. W. Timperley's book 'The Shropshire Hills', should set any reader longing to explore them.

The Wessex Country

The Wessex of Thomas Hardy is ideal tramping country, much of it immortalised by the great novelist of the Wessex novels. Dorchester or Wareham afford likely H.Q.'s from which to explore Dorsetshire.

The Wye Valley is so good that you can make the trip many times, and still long to go again. The beauties of this famous river cannot be over-praised. Then, switching right away from the Welsh border to the Midlands we think of Robin Hood's Land, which includes much of old Sherwood Forest and the Dukeries; no woodland tract has such romantic links, and traditions of Merrie outlaws.

Joys of the Forest

Gone may be the 'twanging bow' and 'ivory shrill', but the shades of Robin, gallant Robin, and all the Sherwood clan still haunt the forest paths. Here, too, in the old forest are ancient oaks and the famous Russian Log Hut; unhappily, much of this forest land is still closed to the public; ammunition dumps not yet cleared.

The above are merely a few suggestions to help you decide on your hiking tours this year or sometime in the future. There is also much fun and unique fascination in the 'discovery' of your native land. Hills, dales, forests, mountains, moors and fells; fenlands, lovely river valleys; old-world villages, thatched cottages, stately homes and manor houses, lakes and canals—they are all to be found in Britain. (170)

Brightening Copper

WHEN oxidised copper finger plates and door handles get dingy, rub them first with a cloth dipped in turpentine, then rub with a cloth dipped in olive oil.

Soldering Tip

WHEN you are putting a soldering iron in the fire, put it in a brass tube to prevent it from getting dirty.

Every user of the fretsaw will find something in these NOTES OF INTEREST

INCLUDED in the large daily mail-bag we receive, are a number of standard queries which seem to arise in connection with our designs, and which cover points of general interest to all readers. For that reason, if we deal with some of them here the matter will probably be of interest to a wider range than we imagine. Those who have been reading our pages and making the various pieces of work and models, become experienced and so find all the work straightforward.

We may be apt, therefore, to overlook the beginner who has not yet had that experience, and who may find some of the matters rather a problem. One of the points particularly is in the matter of chamfering or shaping certain parts in the patterns shown on the sheet, and it surprises us how many omit to undertake this work, although it is pointed out to them on the plans.

Reasons for Chamfering

This chamfering or shaping—there are different processes—is suggested for several reasons. For instance, if you are building a base of three or four pieces of wood, the whole thing will look much more attractive if the edge of one or two of the pieces is chamfered to an angle. This reduces the apparent thickness, and gives a much lighter appearance to the whole thing.

On the other hand, the chamfer may be introduced into the inside edge of a surrounding piece to a photo frame. These photo surrounds, you will remember, overlap the actual opening in the frame, and serve to hold the actual picture and glass in place. If this overlay is left with a plain straight edge, the picture is apt to look too much sunken into the work. The chamfer all round the edge, gradually reduces the thickness and so makes the picture or photograph stand out in much greater relief.

Operating Hints

The chamfering, of course, is the straight angle which is introduced on to the edge of the wood whilst the operation of shaping produces a rounded or beaded effect mainly used for decorative purposes. Chamfering is not one of the easiest of operations, and should be done always with the wood in as large a piece as possible. If, for instance, you are doing the inside opening to a photo frame, you should undertake the chamfering part before the actual outline or shape is cut. This will provide a larger piece of wood to handle, and so reduce the likelihood of damage.

If the chamfering is done on the outside edge of a piece of wood, then one of the small fretwork planes is useful. Hold the board flat down to the table and against a suitable stop fixed in the bench. This may be a couple of screws

driven almost into the bench, but with their heads projecting just sufficiently to provide a stop for the wood when held flat.

Plane and File

The plane should never be run the extreme width of the wood if it is travelling across the grain. If you do, the far end will become broken and ragged. Work from both ends with the plane and so overcome this difficulty. You might think it easier to try and get the angle with the chisel, but this is not to be recommended.

You can use a coarse file, finishing with a smoother grade. In this case it is essential to keep the tool perfectly flat and work along the edge of the wood at the angle required. The file should be long enough to hold in both hands, and the wood can be held down to the bench with some of those light cramps like the ones which hold the ordinary work table. Keep the file at the correct

angle and gradually work across to the point required.

It is always wise to mark off the actual width of the chamfer required before you start. This angle is usually shown on the patterns, and a ruler should be used to mark a pencil line at the exact distance to which you are finishing. If the wood is thick, you can probably cut it down slightly at an angle with a small tenon saw, finishing off with the plane or file, as previously mentioned.

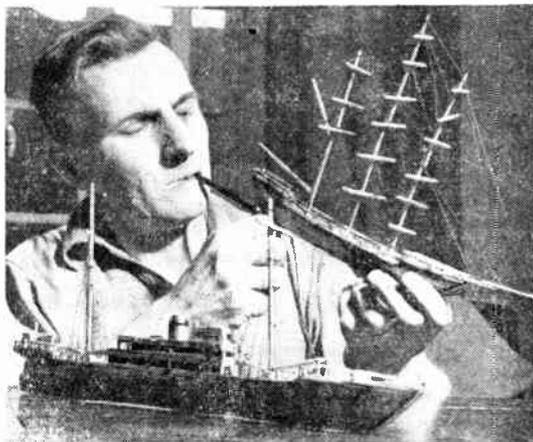
The Chamfer is Shown

It does not seem to occur to every worker that the exact degree of chamfer required is always shown by the shaded portion on the design pattern concerned. This shaded portion is an imaginary view of the thickness of the wood, and shows where the chamfer is to end, and the angle at which it is required. You see the same sort of thing where it is intended to have the edges shaped.

More Models from Matches

LOOK at these two examples of clever craftsmen who make ships with matchsticks. The two at the top were by Mr. Fred Dickens of Pill, Somerses (whom you see) and who collected 750 matchsticks for the purpose.

The lower model is being held by Mr. L. P. Underhill of Ellacombe, Devon, who used 11,000 matches in the construction of the *Santa Maria*. It is the famous ship of which so many have been made from our design and kit (No. 2668). Mr. Underhill undertook the work as the outcome of a bet by his wife. Now the model is enshrined in a glass case also home-made. The making of ship models with matchsticks seems to be becoming popular, but we still think it an easier job from our designs and wood with the fretsaw!



Photograph by courtesy of "The Torquay Times"

In this case, the part is rounded more either on both edges of the wood, or on one edge only. Some bases, for instance, have a semi-circle edge to them, but where two or three foundation parts are concerned, it may be that the second or third upper base of the plinth is rounded on one edge only. We mean, of course, the upper edge carried all the way round the base and not just one end of the wood.

Rounded Work

This rounding can usually be done with glasspapering, but if the wood is thick, a small plane will take one or two shavings off first, or the file can be used to come roughly down to the shape needed. The finishing, however, must be done with glasspaper, completing the operation with a fine grade to leave a perfectly smooth surface. Here again, the work must be carried out with clean, sweeping movements, so that the curve of the part will be the same the whole length of the wood. In rounding end grain, the work is a little harder, but at the same time you are less likely to overrun the mark or to get a wavy surface.

Before shaping these edges, as in the case of chamfering, you should mark the exact distance to which the shape has to extend. A light pencil mark can be drawn along the wood, and this can afterwards be glasspapered off in the general cleaning up. If the shaping is carried along two or even more edges, then see that the join at the corner is true. It should be exactly the same as in a mitred joint, where the distinct angle of 45 degrees can be seen where the chamfer or shape turns the corner.

Line Cutting

Another point arises, which some readers are apt to overlook, and that is the question of the actual line of cutting. Obviously, if the pattern line is thin, and you use a coarse saw along it, then the actual size of the finished part will be smaller than intended. A fine or medium fretsaw should be used wherever possible, and observation made of whether it is advisable to cut slightly on the outside of the line, or on the line itself.

In some cases, of course, it does not matter if the part is a shade smaller, but in the case of models or similar parts which fit together and have to be dead true, then the thickness of the sawcut will make all the difference. As a general rule, it is wiser to cut so that the sawblade travels along the outer edge of the design pattern marking. The wood may be a little larger than required, but remember, you can always reduce the part, whereas you cannot increase it if cut too small in the first instance.

You can realize what a difference it would make, for instance, in the four sides of a box, if each were cut slightly larger than the others. You would never get a good fit or a satisfactory glued joint. Get into the habit of using a pair of dividers or compasses to test out the pieces as cut, or even beforehand. If one piece has been cut slightly larger,

then the similar companion piece can sometimes be cut exactly the same size without any trouble arising. The four sides of the box, to quote the same example, will then be all the same size even if a little larger—or even smaller than originally intended.

Too many readers are apt to cut parts in a hurry in order to see what the finish looks like, and how it is 'coming on'. In this hurry, they have, perhaps, cut the joint badly, or one part too small, and in consequence, double work is involved or the worker becomes tired and gives up irritably. So much can be saved by careful testing to ensure accuracy, one part with another, and to fit pieces together as the work proceeds.

Matter of Joints

This is particularly essential in work where mortise and tenon joints are used. Imagine, again, the four sides of a box which are tenoned together. You may get two of them satisfactory, only to find that the tenon on a fourth side is very slightly out of true. This means that the whole thing will either have to be cut again, or the part 'fiddled' to get it to fit. If this is done, then there will be an obvious mistake showing in the finished article—a result which will not please any really keen craftsman.

Fretsaw Grades

We have previously mentioned the question of using a suitable fretsaw, and would impress this on all workers. Fretsaw blades are now made by Hobbies Ltd. in various grades, from fine (00) to coarse (No. 6). It thus behoves all workers to use the one most suitable for the job in hand. If they are undertaking $\frac{1}{16}$ in. wood, say, for a substantial toy, then, obviously, the coarse blade is quite satisfactory, but surely it is unwise to use a similar blade for the delicate and tiny work found in some of the fretwork patterns.

It is surely worth the small amount of trouble in changing a sawblade to obtain a more satisfactory result. The coarser saws, too, make the work of cleaning longer, because they are more likely to leave a burr on the back of the wood which will, in turn, demand cleaning with glasspaper. A fine sawblade should be used for thin wood and delicate work. The ordinary medium blade—say, size 2 or 3—can be put in the frame or machine for use on most general cutting.

We cannot say too often, that bad tension of the saw is a frequent cause of the number of breakages, particularly amongst beginners. A loose-fitting saw bends backwards as you proceed through the wood, and so breaks. A saw with the correct tension—that is, quite taut—will cut its way through the wood without bending, unless, that is, the saw is forced through the material at too hard a pace, when, of course, no sawblade on earth would stand up to the strain.

The blade has to cut its way through, and will do this job quite satisfactorily providing the speed of movement is sufficient, and the pressure forcing it

through is not too great. About $\frac{1}{16}$ in. of each end of the blade should be put into the cramps, and when the tension has been made, it should be possible to 'twang' the blade like a violin string when it is plucked between finger and thumb.

This is where the better type of handframe comes in, because it obtains the tension quite easily merely by the reversing movement of the eccentric lever at the top.

Pasting Down Patterns

A point sometimes raised by readers is that as the printed instructions are on the back of the pattern sheet, it is impossible to paste the paper down of the part concerned, and still be able to refer to the constructional details. The point is that it is very seldom really necessary to paste the actual pattern down for plain shapes such as squares, rectangles, etc. They are easily marked direct through a piece of carbon paper underneath on to the wood itself.

Another Method

Another plan for this is to lay the pattern on the wood, prick a hole at angles and corners, take the paper away and link up the pin holes with a pencil line, thus forming the shape required. Here again, a test of accuracy should be made with compasses or dividers. Even with more shapely parts, a tracing can be taken and transferred to the wood by pasting the tracing paper itself down, or duplicating it on to the board. In the case of intricate fretted patterns, of course, the outline must be carefully drawn, but here again, it can be done through carbon paper either direct on to the wood, or to another piece of paper which in turn can be pasted to the board.

Fretted Parts

Wherever possible we have these fretted pieces on the pattern sheet away from the constructional matter, in order to allow the part to be pasted down if you so desire. The experienced craftsman, however, seldom cuts or uses his pattern sheet on the wood, because not only are the instructions on the back for reference, but also he needs the sheet by him to which to refer as he proceeds with the actual work of building or putting together.

Wherever possible, therefore, you should use the patterns on the sheet to mark off on to the wood, but seldom to cut out the patterns themselves to paste down. All experienced workers, and certainly professional craftsmen, keep the original 'blue print' as a guide, and would not have it damaged if they could help it.

One final point—those who have suggested the designs given with these issues being printed in black, should remember that the green which we have at present, is for their own benefit. After considerable experience and experiment, we found it the most restful for the eyes, combined with accuracy of outline and detail. You can work with it for long periods without eyestrain.

Valuable hints in hiking, cycling or camping with the CAMERA ON TOUR

On many occasions Hobbies Weekly has hinted in these photographic articles that amateurs should encourage a genuine purpose in their hobby. The reason being that it will have the effect of rather more consideration being given in the selection of subject and arrangement of it and, also, to the exposure. Such consideration will, undoubtedly, result in better negatives and, of course, better prints. Without a purpose our work must become very haphazard and prove not only expensive but most uninteresting.

That paragraph has been specially written as a 'lead-off' to this article on Camping, Hiking and Cycling, because it is very doubtful whether any other subject would serve to illustrate the value of having a 'purpose' more than this. As the season is with us when there is the urge to get out-of-doors a few practical hints will not be out of place.

Make it a Story

Whether you are a serious worker or just a 'button pusher' most of the exposures you make are records of something you have seen or experiences which you wish to memorise and, in a way, they all serve as illustrations to something that is in the nature of a short story.

Assuming that a number of readers are Scouts or members of a hiking club



A pleasing picture of a party

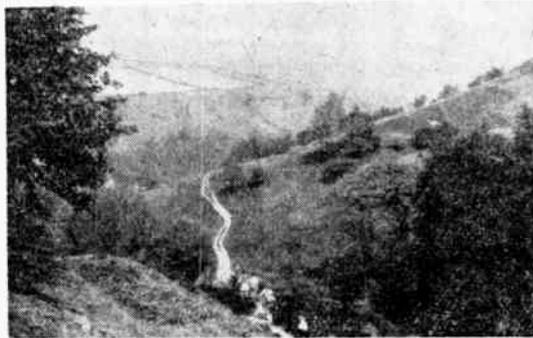
and are shortly leaving for a Camping Holiday. Why not get the camera ready to take one or two shots of the group preparation? Such as 'Packing the Kitbags on to the Trolley or Scout Truck', 'The Starting Off from the Hall', 'The Arrival at the Station and the Unpacking of the Truck'. Then 'The Troop arriving at the Country Station' and 'The Tramp to the Site of the Camp', 'The First Meal and The Evening Parade'. Such preliminary incidents make the foundation for a really good story or record of the holiday.

There are, obviously, plenty of other items that will be worth while taking during each day's programme. Such as

the games and sports, camp fire, church parade, picnics on the beach or in the woods, arrival of the mail, local places of interest like old buildings, and beauty spots. This group of photographs will fill up the main body of the story. For the final chapters, there will be the last breakfast and the dismantling of the main marquee and the smaller tents and again the loading of kitbags with the tramp to the station on the homeward journey.

For Entertainment

In reading those suggestions of items to be snapped it must be very clear to you what the author is driving at in asking you to have a purpose in your



Notice the party on the foreground path

work and how a print of each of these and similar subjects will prove not only interesting to the individual but to the whole troop. They can be used as an item one evening when parents are invited to a Scouts Entertainment.

Hiking, rambling or walking, call it what you will, is without any question one of the healthiest of all recreations; for it has a beneficial effect on both mind and body. Unfortunately it seems that a large number of trampers appear to consider it only so far as the body is concerned. Do you notice that when a question is put to a group of hikers or even to a single person as to what sort of a day they have spent, the response is 'Oh, we have done 15 or 18 miles and it has been rough going'?

Enjoyment, not Mileage

Why do these folks measure the enjoyment of their hobby by mileage? Probably if one of the group could be taken aside and encouraged to give a detailed account of the walk it might be possible to gain quite a list of interesting items that had been seen by the party. But in quite a number of instances these items can only be brought to the surface by the enquirer, who happens to have done the same journey previously, mentioning them in the form of questions.

If, however, you are hiking, surely the

camera will be hanging on the shoulder and your eyes wandering here, there and everywhere for the best view of that old farmhouse or cottage. That pretty bit of landscape with the old parish church in the middle distance, those charming reflections in the pond or stream, or that pastoral scene with the cattle and those delightful trees.

Look Back

You must not hesitate to turn round and have a good look the other way. It is possible that the rearward look makes a much better view than that which has been facing you the last few minutes. The light is, perhaps, better or the sun in the right position for a shot.

In hiking parties there is always the possibility of too much talking with your neighbour and so losing sight of a pleasing scene or object suitable for the making of a picture. This does not mean that conversations are to be barred.

It is necessary to be friendly and join in, but do not allow such incidentals to cause you to lose opportunities for making use of your other hobby. In the end you will probably be



For pleasant memories

the best qualified member of the party to describe the hike and its many attractions.

Cycling is another recreation that is bound up with 'mileage'. Doubtless many of your friends will sum up a good day in the country or to the seaside as a splendid day; 'we did 35 miles with wind at our back coming home and not a spot of rain all day'. Some even forget to say the name of the place to which the run was made.

Well, such an outing is not so easy for the amateur photographer as the hike. Nevertheless records of some of the interesting places on the run should be got if the enjoyment is to be memorised

Take the camera with you and keep a

watch ahead for the subjects worth while. Obviously you cannot keep looking back, but you can anticipate a possible view and if it turns out to be a picture, then dismount and see what you can make of it. If you are on a club run there is sure to be one or two other members who will stop and enjoy the scene for a few minutes. The Captain of the run will realise why you are stopping and will, perhaps, be influenced to make a break of five or ten minutes for everyone's benefit.

Learn Some Facts

Now there is one very valuable hint which must be passed on to everyone whether camper, hiker or cyclist. You should know well beforehand where the camp is to be and what places of interest there are in the near neighbourhood. Or to what spot the hike or cycle-run is rendezvous and what places are to be passed before reaching there. If time permits go to your local library and select the guide book of the county in which the camp is to be held, or through which you will hike or cycle, and read up all you can about the particular district.

Such a course of self-instruction will more than repay you for the time spent. You will find considerably more interest and you will be surprised how much more enjoyment you can impart to your companions. To you, as a photographer, it will mean the saving of time by being able to go direct to the spots you

particularly desire to see. It will supply the historical or other interesting data for your photographic record. And what is of first importance, it will prove that you are encouraging a definite purpose in your hobby and are making good use of it in connection with your other hobbies or recreations.

Pictures of Friends

Here is a hint which should not be omitted from such a subject. Amateurs are frequently asked to take a snap of their friends when out on these excursions and there is no reason why such snaps should not be made. But do try to introduce a little originality into them.

For instance, when two cycling companions want to be taken, let one of them be pumping up a tyre and the other looking on. If they are hiking chums ask one to be pulling a map or some other object out of the rucka and the other showing signs of impatience. These sort of snaps are much more interesting than the stereotype ones of two persons staring straight into the lens, and further, they illustrate a small incident of the day.

Carriage and Protection

It would be very unwise and unkind if this article finished without giving a very strong note of warning to all camera-hikers and it very definitely applies to camera-cyclists. What means do you employ, or how do you propose to carry

the camera to protect it from dust, dirt and wet?

This matter is purposely put in the form of a question because it is one which must be answered by you as an individual and while you are actually reading the article. The majority will, undoubtedly, make the remark that your camera is quite alright, for it is always carried in a proper camera case and slung over the shoulder, so that it is resting on the back.

Well, that is good so far as it goes, but let us first consider the point about the case. Some of these are made of canvas while others are of American cloth and the posh ones of leather. The last two are much preferable to the canvas which is a very bad dust holder compared with the leather or American cloth. Dust and dirt are the two items which we amateurs most avoid whenever possible.

Leather Case Best

Although the leather case usually costs more, yet it is better made for protecting the camera. It does not lose its shape and is a better fit in every respect to either the others. Now a word about the carrying. If you are only out for a jaunt, no harm, or at any rate very little, can occur by slinging the camera over to your back.

When hiking or cycling, however, it is advisable to give a little more thought to it. If you are carrying a rucka, then try to find room for your camera in that. Place it in a position where you can easily get at it when you wish to make an exposure and, believe it or believe it not, you will be surprised how the rucka seems to shout at you to replace the camera in it again.

Many, many times when the author has been out with a party someone has forgotten their camera, but it has never been known to happen with a person carrying it in a rucka. Further, this method of carrying serves as another means of avoiding dust and prevents to a large extent the continual jolting which must occur when cycling and when it is slung loosely over the shoulder and on the back.

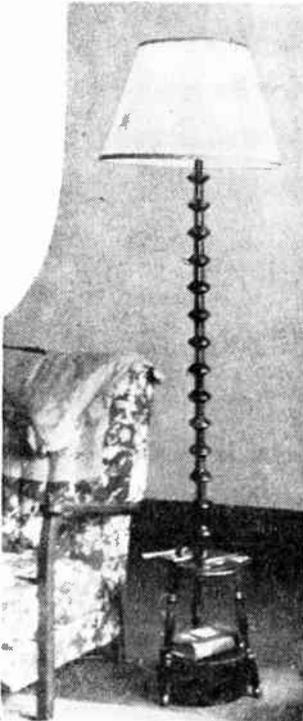
Treat it Carefully

If the camera is an expensive one with several gadgets, continuous shaking and jolting does not do it any good. Even with an ordinary box or folding type it is just as well to treat it kindly. You have probably seen folks walking along in conversation with a friend and, quite thoughtlessly, swinging their camera by its strap. That is not the way to use it, for it only requires one good smack against a wall or tree trunk to damage it and make it no longer light proof.

If you have a really good instrument you will be well advised never to remove the strap from your shoulders when out for a day's walk, even when having a meal or in a train. It is most surprising how many cameras are lost and, unfortunately, only a very few are recovered. Knowing that we are all at times subject to acts of forgetfulness, you can also have cameras insured against loss.

A Reader's Own Standard Lamp

THESE pages are always full of interesting things to make and do, but they also provide thought for ingenious people to fit such suggestions to their own needs and materials. Even if they cannot carry out the work as shown, they find ideas for fitting up their own 'bits and pieces' to form some practical and useful object, of which they can proudly say 'I made that!' Here is a case in point as sent in by Sydney W. Sanders of King's Rd., Bury St. Edmunds. He sends us the picture and writes 'Some weeks ago I saw an illustration in *Hobbies Weekly* of a Standard Lamp which had been partly constructed from empty cotton reels. That gave me an idea, and as I possessed a number of empty reels, I decided to 'have a go'. You will see by the photograph that for the base I have adopted an original idea. For the top table I used a bread-board. The lower table cunningly conceals a heavy weight, which admirably affords the necessary balance. I am the proud possessor of an AI machine, which has been most useful to me on numerous occasions'. Our congratulations to Mr. Sanders, not only for the excellent piece of craftsmanship, but for the ingenuity which led to its completion. Definitely an idea which other readers may like to copy.



For Fetes or Garden Parties do the best with your EXHIBITION STANDS

MOST model-makers and hobby enthusiasts find themselves involved or taking part in some form of function during the outdoor season.

If you are taking part, then have an understanding with the promoters so you can provide your own stand and dress it your way. Some of these suggestions will also be most helpful when you have a bazaar or exhibition.

Nothing looks more disjointed than to see the legs of the table or the trestles showing underneath. Cover them up. We cannot expect curtains but we can paste together some sheets of brown or other coloured wrapping paper. Even if it has been used it will not matter.

It will go right round (see Fig. 1) and

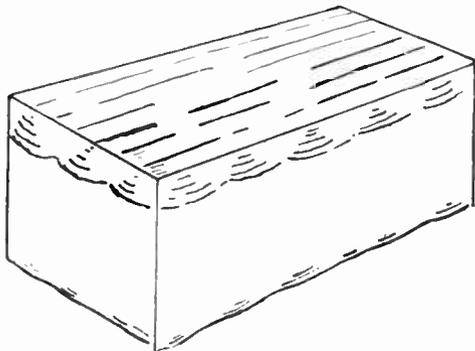


Fig. 1—Drape round the sides of your table

you can store your boxes and hide up the 'works' if you have something moving. Having fixed this, purchase some sheets of crepe paper. This is now most plentiful in a range of over 25 shades. It costs round about a 1/- for 12ft. 20ins. wide. For a model stand choose something in fawn or beige. Other shades will detract from the display. Vandyke brown would be a good shade with fawn or sand shade on the table.

Sometimes you may use trestles tables and at others ordinary domestic tables. Both are good foundations and you can completely disguise them with a little imagination. Having covered in the space below the table, you can hang exhibits suited to this position from the table edge. They will look much better with the backing.

Probably you will find that you have too many exhibits and not sufficient

room. You can overcome this by putting two tables together, as shown. You will then be able to make a fancy canopy for the stand by lashing together some ordinary garden canes to bend over from corner to corner and fixing at the centre (see Fig. 2).

These canes can be covered with strips of brown crepe paper 3ins. wide. You can then arrange a shelf along the back fixing to the struts and thus giving you ample space. Keep the large items at the back. This arrangement will also allow you to suspend some smaller lines.

In Fig. 3 you will see a very useful stand made from a trestle table which is most attractive and will allow you

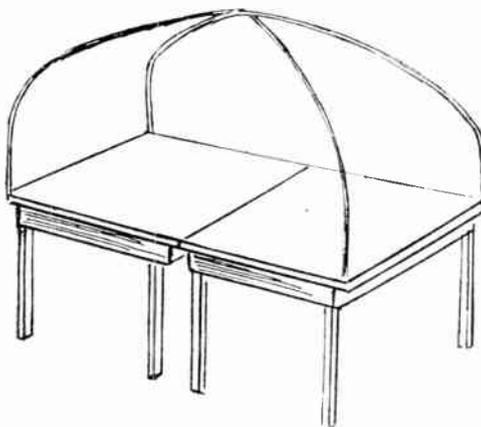


Fig. 2—Two tables close with a canopy top

table with the cloth over it affair which is always so common. The framework is covered in 3ins. wide crepe paper and if you wish some cut-out birds from the hobby range will give a very charming finish. Use care in taking the stall to pieces so you can keep all the materials for another time.

If you are running the toy stall at some local function or other—here is your chance to shine in some up-to-date display work. Try and get the best and strongest table available and dress it round the base as suggested already. Fix two uprights to a height of 5½ft. from the front corners. Two more will be required at the back and up to 6ft.

Now connect up with a cross batten at back and front and two on the sides as shown at Fig. 4. Two sloping battens will then finish off this simple arrangement.

This will, as you note give far more space for display than the ordinary flat table. Cover the uprights with green crepe paper in strips and also the crossbars. The top is covered with strips of

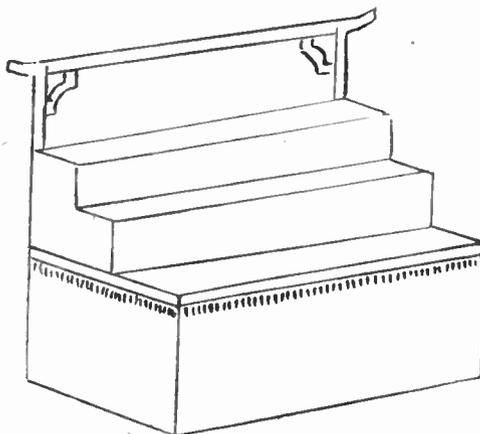


Fig. 3—A suitable three-tier effect

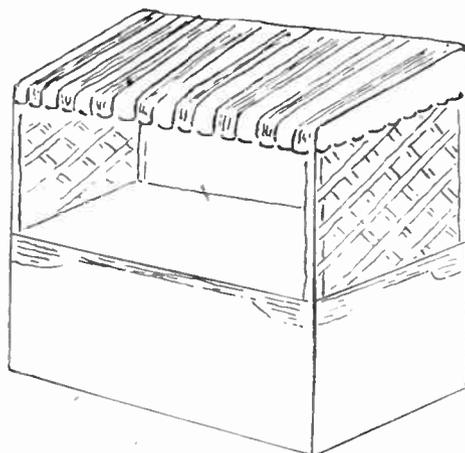


Fig. 3—An attractive stand with lattice ends

to build up your display on two tiers of cardboard boxes or planks of wood. Failing this, if you are near a school you can do it with the low forms. From the decorated overhead section you will be able to arrange Club Notices or other articles of interest.

The design and structure generally will be much admired and certainly bring you more supporters than the

alternating white and red paper about 6ins. wide and extending 3ins. over the front and cut in scallops. The side is finished to match.

The lattice effect is made by using fawn or beige crepe in 3in. strips and turned inwards to make like a bar. This is then fitted criss-cross as shown. Do not forget plenty of balloons to brighten it up.

(197)

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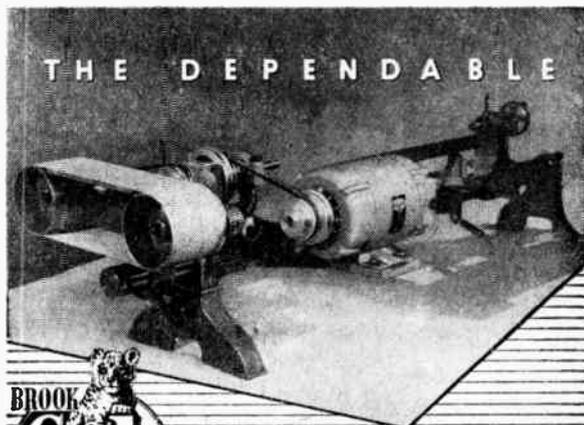
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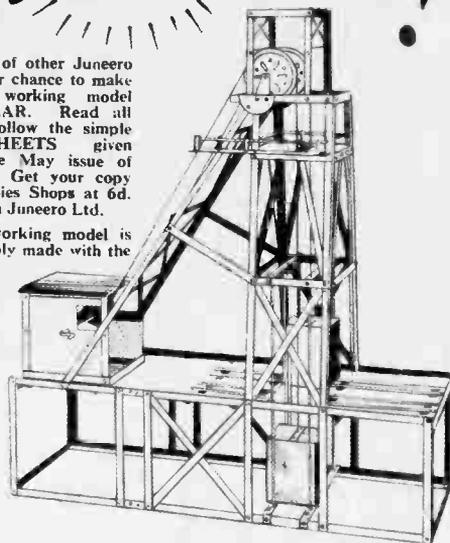
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Hobbies

WEEKLY

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FREE DESIGN SHEET OF
THE TREASURE ISLAND
SHIP "HISPANIOLA"

June 28th, 1950

Price Fourpence

Vol. 110 No. 2852

READERS interested in bee-keeping and wishing to start in the business, can quite easily make for themselves a satisfactory hive. It is just an ordinary job of woodwork. A decent quality of sound deal will be good enough timber for the job, with a thickness of $\frac{3}{8}$ in. The measurements given are suitable for wood of that thickness, but as long as the interior dimensions of the hive are adhered to, any other thickness can be used.

A front elevation of the hive, less stand, is given in Fig. 1 and a side elevation in Fig. 2. From these drawings the general dimensions can be taken. The hive is in three parts (A), (B) and (C), parts (B)

and (C) fitting one on another, and part (A) itself fitting on a stand.

As a common butt joint is not too good for such an article, having to stand the stress of weather, a rebated joint is suggested, as shown in detail sketch (D).

A STANDARD SIZE BEEHIVE

For this the front and back pieces of the hive are rebated $\frac{1}{4}$ in. by $\frac{3}{8}$ in. for the sides to enter.

It is very important, considering the parts sit one on another, for (A) and (B) to be exactly the same size, so these parts should be marked out together and be accurately rebated. Part (C) fits over (B), so its interior dimensions should just equal the outside dimensions of (B). Put these parts together with glue and nails, and it will be a good plan to use one of the waterproof casein glues now on the market, instead of the ordinary kind.

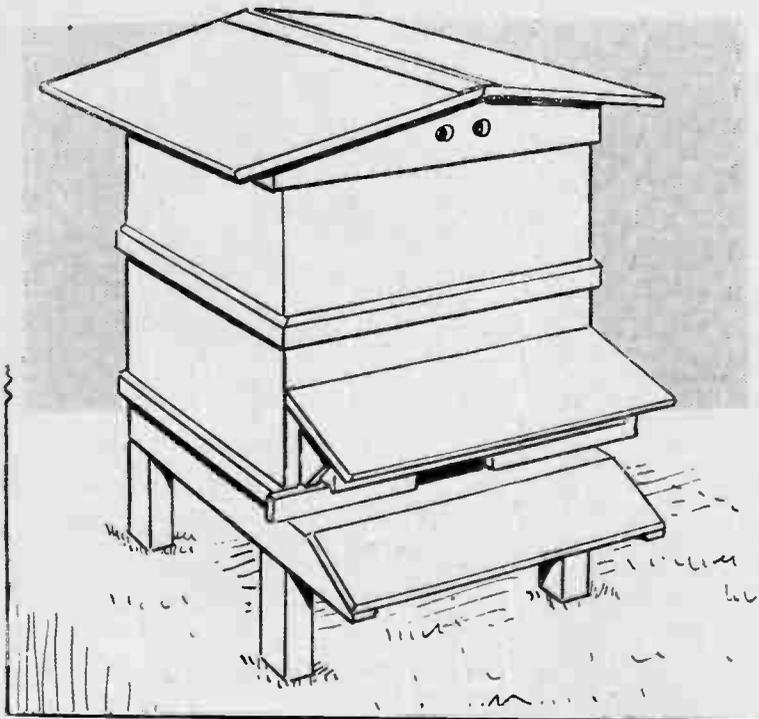
Assembly

To keep the parts in place, strips of $1\frac{1}{2}$ in. wide wood are glued and nailed to (A) and (B), to overlap forming a kind of rim. These extend to all four sides of (B), but only the sides and back of (A), as the entrance to the hive, at the bottom, must not be obstructed. To keep the roof section (C) in position, a fillet of wood is nailed along each side, as at (E), just $\frac{1}{2}$ in. up from the bottom edges.

To this section the roof boards are nailed, and should well overlap the sides and front. Bevel these where they meet at the ridge, and cover the joint with a strip of zinc bent over and nailed down.

Weatherproof Boards

If possible use one board each side of the ridge, but if two or more have to be used, employ a tongued and grooved boarding for the job, to avoid any wet seeping through. In the front and back of this section bore a couple of 1 in.



All correspondence should be addressed to The Editor, Hobbies Weekly, Dereham, Norfolk.

ventilation holes, and cover these on the inside with wire gauze or perforated zinc to keep out unwanted intruders.

To support the porch, covering the entrance to the hive, cut a pair of brackets, as shown at (F), and screw these to the front of the hive, where shown, just $\frac{3}{8}$ in. from the bottom edge. These should be screwed from the inside of part (A), so are placed about 1 in. from the sides. The porch cover can be fitted on later.

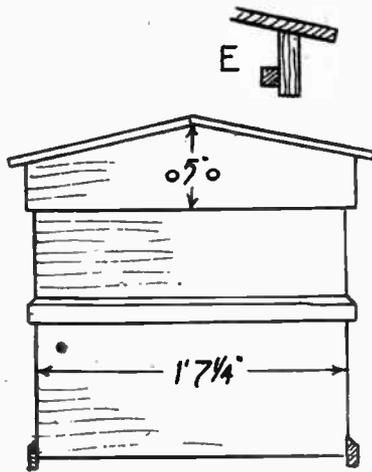


Fig. 1—Front elevation of hive

All parts should now be tried for fit, and if inclined to be stiff, eased with a little glasspapering. It may be added that the top edges of the rim pieces are best bevelled, as seen in the drawings, to throw off any water that may trickle down, and a good plan, also, is to paint the inner faces of them with thick paint to seal the joints as they are nailed on.

The Stand

Fig. 3 shows the stand which supports the hive. The side pieces of these (G) are cut from thick wood, stuff of $1\frac{1}{2}$ ins. by $2\frac{1}{2}$ ins. size would do nicely. It will be seen that 8 ins. of this are reduced to $1\frac{3}{8}$ ins., so that if wood of $\frac{3}{8}$ in. thickness is nailed across it, it will come level with the rest. If wood of thicker stuff be used, the reduction must be amended to suit. For instance, if $\frac{1}{2}$ in. board is employed,

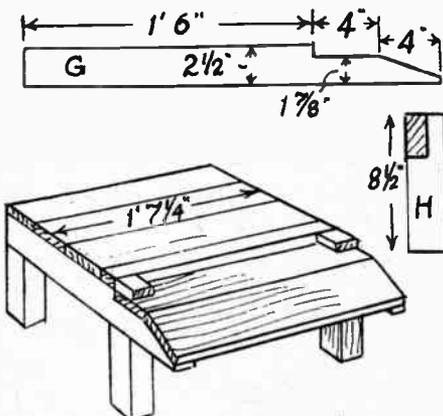


Fig. 3—The support stand

then the reduction in width will be $1\frac{3}{8}$ ins.

Cut the floor boards from tongued and grooved wood, and nail across the side pieces, then across the reduced part and over the sloping portion. The board across this latter part must have its inside edge bevelled to butt up against the rest. At the two front corners, glue and nail 2 in. squares of the wood, as in the diagram.

Four legs will be required, cut from

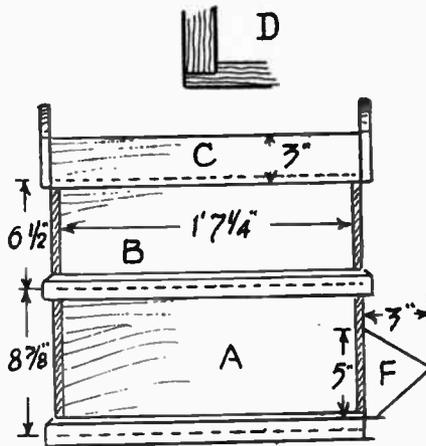


Fig. 2—Side elevation

across the porch brackets to cover the porch.

To complete the hive, a brood box must be made next. This is drawn complete in Fig. 5, and is quite a simple affair. The sides are cut from $\frac{3}{8}$ in. wood and the ends from $\frac{1}{2}$ in. wood.

These ends are fitted between the sides, just $\frac{3}{8}$ in. from the edges. It will be seen that the ends are less in height than the sides, and to them a $\frac{3}{8}$ in. square strip is nailed along. To complete this part, strips of $\frac{1}{2}$ in. wood $1\frac{1}{2}$ ins. wide, are nailed across to close the ends, as shown. The brood nest stands in the hive.

Cleaning and Painting

Clean up the work and punch nail heads down. Stop all holes level, and glasspaper the stopping, to leave no unsightly lumps. The outside of the hive and stand should receive three coats of best quality exterior paint. Do not be tempted to use any cheap stuff, as the chances are it will, under stress of wind and rain, just crumble off.

A real lead paint is best and gives longer service. The legs, especially the bottoms which stand on wet ground, should be painted or creosoted, as preferred.

Accessories for the hive, such as the sections which hold the honey, are better bought than made, and can be purchased

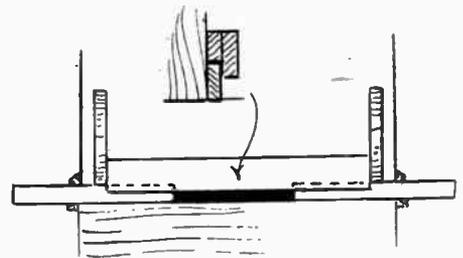


Fig. 4—Opening arrangements

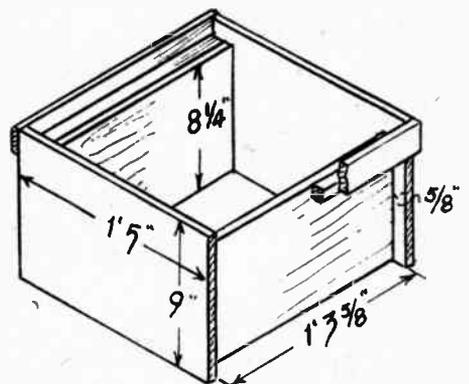


Fig. 5—Details of brood box

2 in. square wood. These are reduced at their tops to fit inside the side pieces at the stand, as at (H) and be there firmly screwed. The (A) portion of the hive can now be tested on the stand and should fit neatly on, its front resting on the corner blocks and leaving a narrow opening between for the bees to enter.

The length of the opening must be capable of adjustment, so two pieces of 1 in. wide wood, 10 ins. long each, are provided. These are seen in Fig. 4. To enable them to be pushed along to lessen the opening, a strip of wood is nailed to the front of the hive, above the strips, and a second piece nailed to that, wide enough to overlap the movable strips and keep them from falling forward. Now nail a board

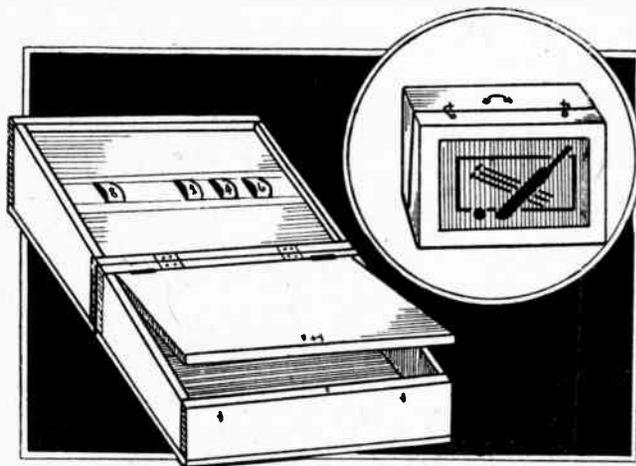
reasonably at any shops stocking bee-keeping accessories.

Keeping bees is a most fascinating and interesting occupation, apart from the production of honey. The lives and activities of the insects are amazingly intelligent and of great educational value to follow. Numerous books are obtainable by those interested in the hobby.

CUTTING LIST

- Section A (4) — $\frac{3}{8}$ in. by $8\frac{1}{2}$ ins. by 1 ft. $7\frac{1}{2}$ ins.
- Section B (4) — $\frac{3}{8}$ in. by $6\frac{1}{2}$ ins. by 1 ft. $7\frac{1}{2}$ ins.
- Section C (2) — $\frac{3}{8}$ in. by 3 ins. by 1 ft. 9 ins.
- Section D (2) — $\frac{3}{8}$ in. by 5 ins. by 1 ft. 9 ins.
- Roof (2) — $\frac{3}{8}$ in. by 12 ins. by 2 ft. 0 ins.
- Legs (4) — 2 ins. by 2 ins. by $8\frac{1}{2}$ ins.
- Stand sides (2) — $1\frac{1}{2}$ ins. by $2\frac{1}{2}$ ins. by 2 ft. 2 ins.
- Floor — $\frac{3}{8}$ in. by $4\frac{1}{2}$ ins. tongued and grooved board. 12 ft. run
- Rim strips — $\frac{3}{8}$ in. by $1\frac{1}{2}$ ins. 12 ft. run.
- Brood nest sides (2) — $\frac{3}{8}$ in. by 9 ins. by 1 ft. 5 ins.
- Brood nest ends (2) — $\frac{3}{8}$ in. by $8\frac{1}{2}$ ins. by 1 ft. $3\frac{1}{2}$ ins.
- Porch cover — $\frac{3}{8}$ in. by 5 ins. by 1 ft. 7 ins.
- Remainder from scrap wood left over

An automatic scorer fitted into this novel CRICKETER'S CASE



THE Cricket Club Secretary and School Captain will find the little field outfit shown here extremely useful, and it is quite simple to make up with a few pieces of wood and the fretsaw. When opened out it provides a useful book rest for the scorer, and in the lid is incorporated a drum-type score counter. There is a handy compartment for keeping books, pencils, fixture lists, club rules, etc., all safely together, and the whole outfit shuts up into a neat case when not in use.

Of course, although primarily designed for the cricket field, the case can be easily adapted for any other game, by making suitable alterations in the counting device. In the sketch the dimensions have been kept to a minimum, in order not to need any very large pieces of wood. But if bigger pieces can be spared for the job, the size can be increased a few inches with advantage.

Alternatively, the case can be made up quite satisfactorily from stout cardboard, reinforced at the corners with wood strip as necessary. Measurements given allow for wood of $\frac{1}{2}$ in. thickness being used.

The Case

It will be seen that the case consists of two shallow boxes hinged together. The constructional details are quite simple and are shown in Figs. 1 and 2. The lid of the bottom portion forms the book rest, and is hinged to the case, the top surface when closed being flush with the top edge of the box, and resting on thin strips glued to the inside of the case.

The lid of the top portion is fretted, as shown at Fig. 3, to allow a view of the counting discs, and is screwed into position $\frac{1}{2}$ in. below the top edge of this half of the case. It will be seen that the strips forming front and back edges of the boxes are bevelled slightly, to coincide with the slanting sides.

The counting device consists of circular discs, similar to the tuning dials on many radio sets. Four circular pieces are required, $1\frac{1}{2}$ ins. diameter and $\frac{1}{2}$ in. thick. Wooden wheels as used for model making serve quite well if available, and save the work of cutting out the discs. Glued to each side of these discs are circular pieces of thinner wood $\frac{1}{2}$ in. greater in diameter, and the edges of these are serrated with a file to give the finger grip, as shown at Fig. 4.

Disc Spindle

A spindle of $\frac{1}{2}$ in. dowel is held fixed in the lid portion of the case, and these counting discs are bored to revolve on this. It is a good plan to bore the holes slightly smaller than the diameter of the

dowel, and finish off with a round wood-file, so that the discs are finger-tight on the dowel. They are prevented from moving sideways by pins through the dowel, as shown.

Fitting the Dials

It will be seen that three of the dials are placed together and one separate—the three to record the hundreds, tens and units of the score, and the one the number of wickets that have fallen. Glasspaper the discs until they fit the spindle nicely, but do not fix either discs or spindle into the case until the numbering has been done. To do this, first draw out on white paper four strips each $\frac{1}{2}$ in. wide and about $4\frac{1}{2}$ ins. long. Divide these into 10 equal sections, and number the sections 0 to 9 in bold figures with indian ink. Then glue the strips round the edges of the discs.

The spindle, with counter-discs at-

CUTTING LIST		
No. of pieces	Size	Description
2	10" x 7"	Bottom and Top
2	9" x 6"	Inside Lids
1	10" x 1"	Front, bottom half
1	10" x 2"	Back, bottom half
1	10" x 2"	Front, top half
1	10" x 2"	Back, top half
2	6 1/2" x 2"	Sides, bottom half
2	6 1/2" x 2"	Sides, top half
1	9 1/2" x 1/2"	Dowel Spindle
4	1 1/2" diam. x 1/2"	Counter Discs
8	1 1/2" diam. x 1/2"	Counter Discs

tached, is glued into two blocks which are fixed on the inside of the top portion of the case. The measurements given allow for the top of the dials just pro-

(Continued foot of page 198)

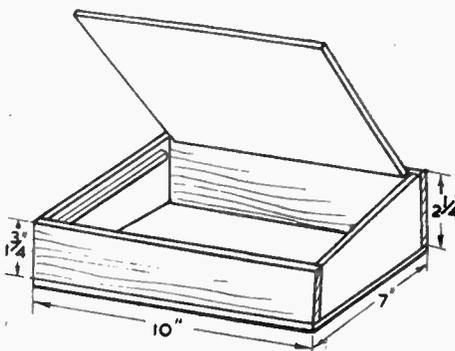


Fig. 1—General construction of box

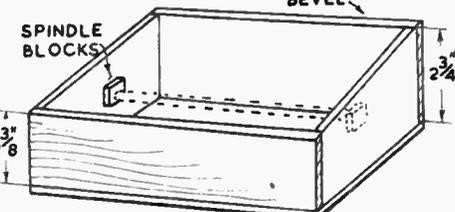


Fig. 2—End blocks for spindle rod

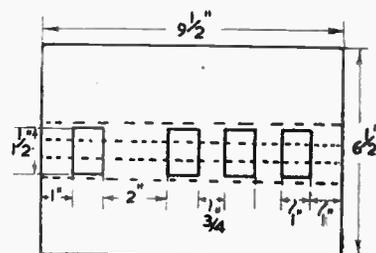


Fig. 3—Holes in top for score figures

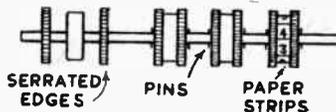


Fig. 4—Discs fitted to spindle

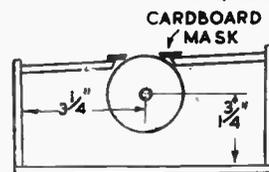


Fig. 5—Section showing position of disc with top

There is much of interest to learn if you make A CATERPILLAR CAGE

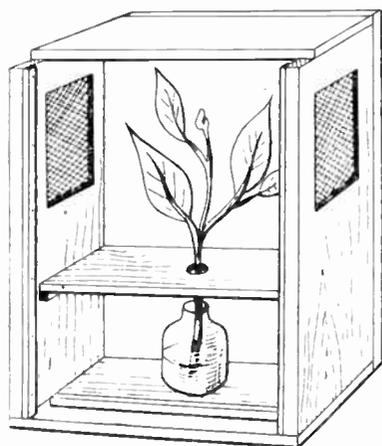


Fig. 1—The cage with glass front

THOSE readers who wish to keep silkworms, stick insects or other caterpillars, will find this cage ideal for the purpose. The glass front allows the habits of the caterpillars to be studied, and, over a month or two, the whole life history can be seen.

Fig. 1 shows the general construction and Fig. 2 the measurements. It can be made quite easily from any scraps of wood, but the sides should be at least $\frac{1}{2}$ in. thick, as the top, bottom and sides have to be nailed to them. If you use plywood you will need corner supports of thick wood, as used in the construction of tea chests.

Box Frame

The top is made $\frac{1}{2}$ in. smaller than the bottom to give room for the sliding glass front. For the front an old picture will yield suitable glass. Measure the inside width of the cage and cut the glass to size. For ease of sliding the glass should be about $\frac{1}{4}$ in. smaller in width than the cage. Next measure the length, leaving $\frac{1}{2}$ in. at the top for easy lifting. After cutting the glass, remove the sharp edges with a small file.

If you are not handy with a glass cutter, you should choose a piece of glass of suitable size, and build the cage to fit these dimensions.

Three small strips of wood are used to keep the glass in place, one on each of the sides and one along the bottom.

To fix the platform, nail on two supports 5 ins. from the bottom. Do not nail the platform itself to these supports, because it will have to be removed occasionally for cleaning purposes. In the centre of the platform bore a hole of $\frac{3}{4}$ in. diameter. The purpose of this hole is illustrated in Fig. 1.

Air and Water

In order to ensure an adequate air supply, cut sections from the sides and cover with perforated zinc, wire gauze or muslin material.

Place a jar containing water 'under the counter'. Insert the bottom of the stalk in water, and the plant will keep quite fresh until completely eaten by the caterpillars. To renew vegetation, remove the old stalk with the caterpillars still clinging to it, insert the new plant through the hole, then leave the old stalk leaning against the new one. The caterpillars will transfer to the new food, when the old stalk can be discarded.

A wad of cotton wool placed round the plant stalk will prevent caterpillars crawling or dropping through the hole.

Suitable Silkworms

Now, having made a nice new cage, you should look round for some victims. Silkworms are popular, and are extremely interesting. You can obtain a supply of eggs quite cheaply, and they will hatch out in a few days into tiny caterpillars. They feed on lettuce or mulberry leaves, which should be spread along the platform of the cage.

Stick Insects

Stick insects are fascinating, too. They are camouflaged by nature to appear like pieces of twig. Privet leaves comprise breakfast, dinner, tea and supper for these caterpillars. If you wish, the Editor can supply you with the address of a firm supplying eggs of silkworms and stick insects.

The budding naturalist will also look for eggs of other caterpillars in the countryside. These will be found either singly or in groups, attached to the underside of the leaves for protection

against enemies and the sun. The whole stalk should be removed and placed in the cage.

Remember, that if you find eggs on a nettle leaf, it is no use trying to make the resultant caterpillars eat potato leaves. A leaf that has been nibbled will tell you that caterpillars are at work—probably well camouflaged, of course.

Moths to Obtain

The largest British moth is the Death's Head Hawk Moth, and is to be found only on the potato plant. A bed of nettles will probably yield specimens of the beautiful Peacock Butterfly caterpillar, which is black and spikey. Caterpillars of Red Admirals enjoy nettles, so do 'Woolly Bears', which later turn into pretty Tiger Moths.

A privet hedge that is not trimmed very frequently (perhaps even your own) may yield the Privet Moth caterpillar. Similarly, the Poplar Moth can be found in poplar trees, whilst the willow provides a home for the Elephant Hawk Moth. These three moths just mentioned have a wing span of more than 3 ins.

Pupation

At a late stage in the life of a caterpillar you will probably see it leave the food plant and wander round the cage. This shows that pupation is going to take place, that is, the caterpillar is going to turn into a butterfly or moth, as the case

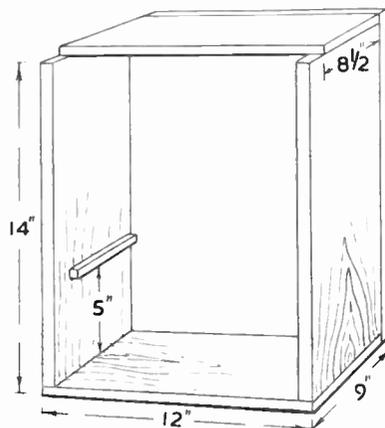


Fig. 2—Dimensions of a suitable box

may be. Since most moths like to pupate under soil, you should place a small tray of soil of sufficient depth in the cage.

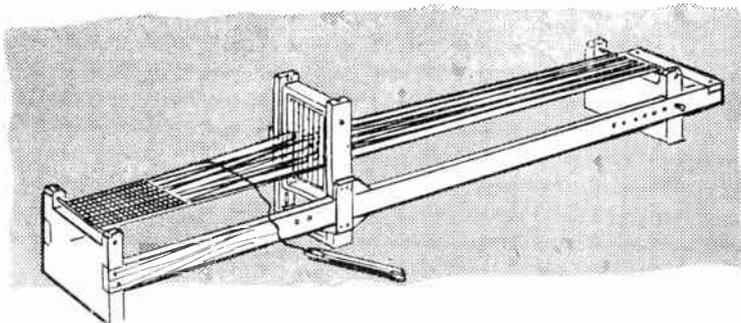
Butterflies pupate either on the floor of the cage or on the plant itself. Silkworms spin for themselves a cocoon of very fine, coloured silk. A silkworm will be grateful to you if you provide a conical, paper bag in which to pupate.

On emerging from the pupa stage, the winged butterfly or moth has but a brief spell of life, then it lays its eggs, and dies, and the cycle begins again. (191)

A Book for Keen Cyclists

The Kuklos Annual is now regarded as essential to touring cyclists as any spare parts, and the value of the 1950 Edition is as great as ever. No reader could help but be a better cyclist after perusal. There are a number of features giving practical advice on the choice of lightweight machines, physical fitness, training, foods, etc. The Foreign Touring section contains some new routes and covers all European countries where cycling is practicable, with the latest currency and other arrangements. With its Resthouse List, Road Records and Gear tables, etc., it is good value for 2/9 post free from the Publishers, whose address is in our advertising pages.

Lengths of stuff up to 3ft. long can be woven on this USEFUL SMALL LOOM



WEAVING being a popular craft now, the small loom, illustrated, may excite some interest. It is capable of weaving anything narrow, up to a limit of 3ft. long, such as ties, dress bands, pyjama cords, and quite a lot of things. It has been designed, however, for two other purposes.

Firstly, as a method of trying out new patterns in simple tabby weaving before attempting such on a larger loom, and secondly, as a source of interesting work to a youngster, who with a ball of wool or yarn, could amuse himself making different patterns and small articles, without undue waste of material.

General Construction

Fig. 1 shows a side and front view of the loom. It consists of two warp carriers (A) and (D) connected together at an arranged distance apart by the horizontal bars (C). Warp carrier (A) is fixed, but carrier (D) is capable of being slid along the bars. Dealing with the warp carriers first, both are alike and are made of $\frac{3}{4}$ in. thick wood to dimensions shown in the front view. In the side edges grooves are cut into which bars (C), which are cut to length from $\frac{1}{2}$ in. by 1in. wood, can fit.

At the top cut out a piece $\frac{1}{2}$ in. deep and $4\frac{1}{2}$ ins. long. In the projecting ends now sticking up bore $\frac{1}{8}$ in. holes through, into which, as a tight fit, $\frac{1}{8}$ in. steel rods can be pushed. On these rods the warp threads are tied. Fix carrier (A) to the bars at the front end with countersunk brass screws.

At the opposite end reduce the bars to $\frac{1}{2}$ in. and fit across a bar (B) to keep them

parallel. Screw this bar across for removal at any time. Fit carrier (D) between the bars, and see it can be slid along fairly easily. To keep it at any desired distance from (A) bore a few $\frac{1}{8}$ in. holes through bars (C) and a similar hole in carrier (D). A pair of mild steel split pins can be pushed through the holes, and should hold the sliding carrier firmly enough.

A few holes are bored at the end rather close together, so that when weaving to the limit of length, should the warp threads become rather too taut, the carrier can be slid to a hole nearer the front to ease it.

Heddle Frame Slides

For the heddle frame a pair of slides are necessary, for it to be raised and lowered, to separate the warp. One of these slides is shown at Fig. 2. It consists of a piece of $\frac{1}{2}$ in. wood, $\frac{3}{4}$ in. wide, with two strips of $\frac{1}{8}$ in. wood glued to its inner face, leaving a central groove in which the heddle pins move.

The slides are fitted with pieces of $\frac{1}{2}$ in. thick wood on their outer faces to move along the bars (C) as required. Note here that the upper of these wood pieces, let us call them guides, is shorter than the lower one, so that it does not interfere with the passing of the shuttle.

Both pieces are bridged by a metal strip, passing over bar (C) to keep the slide in position. Fit these in place, as seen in the side view of the loom, Fig. 1, then join them together across the bottom with a $\frac{1}{2}$ in. by $\frac{3}{4}$ in. piece of wood, with small triangular strengthening fillets in the corners. Fig. 2 shows these items. Now test the slides to see

they move together as one piece along the bars.

Heddle Frame

The heddle frame, Fig. 3 (F) is made to the dimensions given from $\frac{1}{2}$ in. by $\frac{1}{2}$ in. fretwood, glued and nailed together. Make it firm and square at its angles. At $\frac{1}{2}$ in. down from the top and $\frac{1}{2}$ in. up from the bottom bore $\frac{1}{8}$ in. holes for pieces of steel rod to fit across, on which healds, which carry the warp, can be set.

Near the bottom, on the outside, drive in a $\frac{1}{2}$ in. brass screw, partly. File off the head, leaving a pin just a shade under $\frac{1}{2}$ in. long, as at (b). A second and similar pin is fitted higher up at (a), at about $\frac{1}{2}$ in. from the top. Of course, these pins are fitted each side, and should move in the grooves of the slides (E). Try this out.

It will be noticed here that only one heddle frame is provided, but the necessary opening for the shuttle to pass through is provided by pulling the same warp threads up and then pushing them down, and simplify the business. The healds, which carry the warp, are made of fine steel wire, the kind which is sold in small coils for a few pence at hardware stores.

They must all be made alike, so a gauge for the purpose is made, as shown at (G). It is a piece of deal or hardwood, with holes for rods exactly the same distance apart as those in the heddle frame. In the centre of these a groove is sawn and chiselled out of the wood.

The Healds

To make the healds, cut a suitable length of the wire and pass it over and across the rods, twisting the wire ends underneath. Between the wire push a small nail, say, a 1in. wire one, and twist until the heald is formed, as at (H).

Then slide off the rods, and repeat until a sufficient number have been made. The rods in the heddle frame are then partly withdrawn, and the healds threaded on. For each weaving job the number of healds necessary will be just half the number of warp threads. Now for a test of the loom.

Cut a few threads the length of the loom, plus, say, 4ins. for tying. Tie the threads to the rod in carrier (A). The first thread is pushed through the loop

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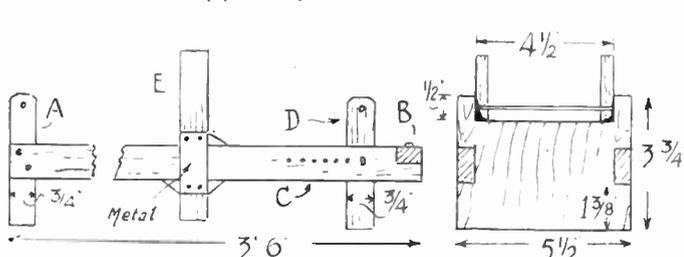


Fig. 1—Front view and end detail of main parts

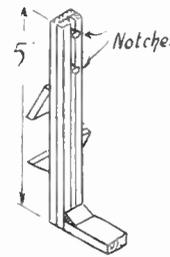


Fig. 2—The slides

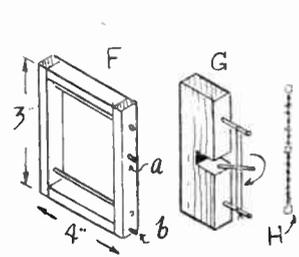


Fig. 3—The heddle frame

For moderately heavy work in model making have this HOME-MADE VICE

It can be truly said that not every model maker boasts the possession of a vice which will really grip small items in a satisfactory way, unless he owns a professionally-made tool. These are usually quite expensive, and would demand a cash outlay which might well be spent on many more spectacular items of modelcraft.

It was the dismemberment of a 3ft. spring mattress which gave the writer the idea outlined in this article, and the whole of the material needed for the construction of the vice is to be found in such a piece of discarded furniture, with the exception of a 4in. steel butt hinge, which then represents the sole outlay.

A Spring

The steel spring was first removed

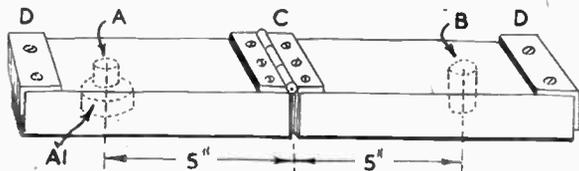


Fig. 1—The tool flat and hinged

from the woodwork of the mattress, and the two tensioning screws extracted—with their nuts from the lower transverse beam of the frame. The nuts can be driven out by hammering on the heads of the bolts.

After the four main wooden members are all free, two 8in. lengths are cut off as shown in Fig. 1, and holes drilled to clear the threads of one of the mattress tensioning bolts. The hole (A A1, Fig. 1) should be recessed on one side to receive one of the nuts. A rough idea of the size of hole required can be formed by looking at the original hole in the bed-frame.

The two 'jaws' of the vice—as the pieces of wood have now become—are joined at their lower extremities by the 4in. hinge (C) and two pieces of angle iron (D-D) are fixed with countersunk wood-screws at the top ends to act as working jaws. In the writer's vice these pieces of angle-iron were cut from Anderson shelter material with a hack-saw and filed truly square in every direction.

A thick washer—also from shelter material—is placed between the head of the bolt and the wood face of the moving jaw (W, Fig. 2) and a piece of ½in. strip mild steel or other material (S) is wrapped around the bolt head to form a handle. This handle is bolted

work bench by the two countersunk wood screws (Fig. 2) which should be not smaller than No. 12's, 4ins. long, round-headed and screwed in with a washer under their heads to stop the wood splitting.

Jaw Protection

A pair of ½in. thick aluminium overlays for the jaws will be found a useful adjunct to the tool, as with them the gripping of threaded and delicate items becomes quite easy, no damage of any kind being done to the threads, even if

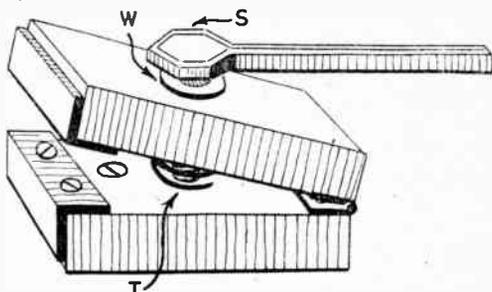


Fig. 2—Closed and in use

together with ¼in. Whitworth bolts as shown.

Lubrication

An old motor car engine valve spring should be inserted where shown (T) if possible, to return the jaws to the open position.

Liberal lubrication of the thread and nut with really heavy motor oil is essential to smooth working, and the tool will be found capable of exerting a really strong grip on items of wood or metal without damaging them in the process.

The tool is fastened to the front of the

latter are of brass or other soft substance.

Hint for Use

If the top angle irons of the jaws are arranged to be perfectly square, both in relation to the frame of the vice and to each other, it will be found possible to file parts to a dead square right-angle by merely sweeping the file across the work till it beds evenly down on to the vice jaws. This is not the orthodox way of filing square, but is a very useful tip for the home model craftsman, who often considers the 'end' rather than the 'means'!

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Cricketer's Case—(Continued from page 195)

jecting through the top piece of wood, when this is added (see Fig. 5).

In order to get them up as high as possible, for easy reading, it is necessary to cut out bigger slits in the top board than is otherwise necessary, and also to taper the edges of the slits a little, as shown. A thin sheet of card, with smaller slits, is then glued over the top, to cover up all but the figures on the dials and the top serrated edges of the drums, for the fingers to push them round.

Assembly

Fix the lid portion to the bottom half with two neat hinges, and add a small fastener at the front to prevent it opening accidentally. A tiny screw acts as a knob for lifting this up to get at the inside of the case. Then hinge the top half to the bottom half.

In doing this it has to be borne in mind that the top half is required to lay

right back flush with the bottom half, and consequently the hinges must be narrow enough to let in on the top edges of the wood, or some other kind of hinging employed, such as gummed tape if the case is made up of cardboard.

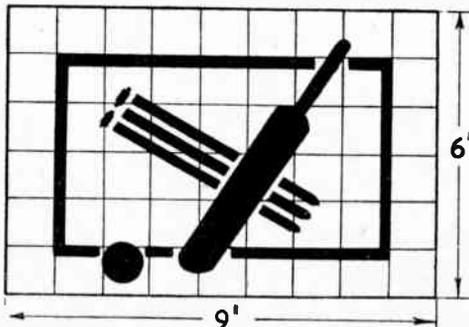


Fig. 6—Suggested design for lid on 1in. squares

Finishing Off

A suitable cricket design for the lid is shown, ruled in 1in. squares (see Fig. 6). This can be either drawn on to the lid and then painted in, or cut as an overlay and glued on, whichever is preferred. Other appropriate designs (such as incorporating the name of the team) will suggest themselves to the handyman with artistic ability, and the more elaborate this can be done the better the finish to the case.

Finally, paint or stain the rest of the case in contrast to the design, add two small fasteners at the front to hold it shut, and a neat handle on the top edge, for carrying. Then you have a splendid case for use at your cricket which will make scoring additionally interesting.

(169)

The craftsman will find it worth knowing about SOME SECRET DRAWERS

THERE is always something thrilling about the words 'secret drawers', and these form the theme of many a romantic story. Those readers who like to make their own furniture may care to incorporate a secret drawer. It is hardly possible to describe, in dimensioned detail, any particular secret drawer, as everything depends on the piece of furniture in question, and no two cases will be quite alike. We can, however, describe secret drawers in general, so that readers, having got the general idea, can plan a secret drawer of their own.

Some call for craftsmanship of a very high order, but others, such as illustrated in Fig. 3, are well within the range of the average reader. But, first of all, what is a 'secret' drawer? The present writer has examined a great number of those drawers and has come to the conclusion that very few are really secret.

Movable Moulding

Take for example, a very well-known case, illustrated in Fig. 1. It will be seen that by pulling a piece of moulding by the stationery racks in a bureau, a thin, upright drawer is revealed, much in the manner of taking a book from a shelf. Since this type of thing was fitted to a great number of bureaux, it can hardly be called a 'secret' drawer. Rather would the writer call it a 'concealed' drawer.

Some cabinet makers were well aware of this, and occasionally one finds a secret drawer within a secret drawer. As Fig. 2 shows, a person might use the concealed drawer for years, without being aware that there was another compartment at the bottom of it.

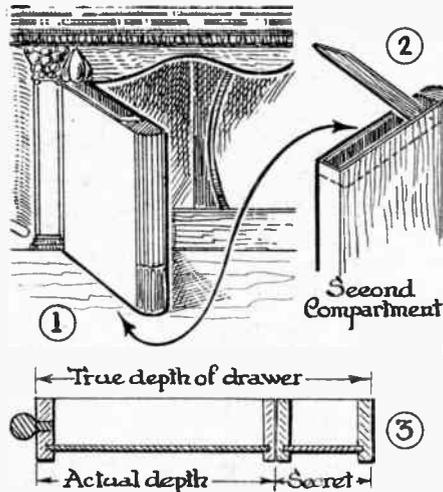
Another example of concealment, rather than of secrecy, is depicted in Fig. 4, where a fine semi-circular ebony pillar can be slid aside to reveal a keyhole.

It would have spoiled the look of the cabinet to have the pillar pierced by a keyhole.

The Simplest Form

Perhaps the simplest of all secret drawers is to place a small drawer behind a large one (Fig. 3). This is obviously the most easily detected, as one has only to compare the depth of the drawer-well with the external depth of the bureau.

Sometimes these drawers were fitted

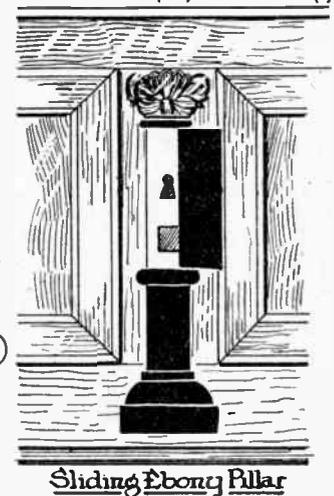


with a little tab of tape, so that they could be withdrawn. This, however, would have declared their presence too readily, so they were often withdrawn by using a pin and a pair of pliers. The pliers pushed the pin in the drawer, and then gently withdrew it. All secret drawers, of course, were made still more secure by being fitted with a secret lock or catch. Others could only be opened from the back, which meant turning the heavy piece of furniture right round.

Fig. 5 shows a secret compartment of a

different type. It is an eighteenth century Dutch wardrobe, and a massive corner can be swung open to reveal a set of four small drawers (Fig. 6).

Another fine piece of work is that of the mahogany drawing table, made about 1770 (Fig. 7). At first sight it would seem that there were five partitions there (lettered a-b-c-d-e in the drawing). As they only extend half the depth of the well, it seems obvious that the space underneath is taken up by the drawer (f).



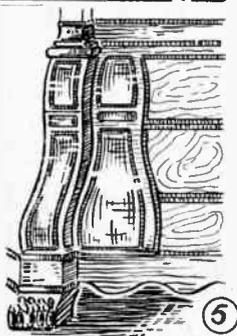
The truth is that this drawer only extends half way. The partition (d) can be swung out through a hole cut neatly in the side. This done, another drawer (g) can be opened.

There is one very great drawback to this otherwise ingenious arrangement. It will be noted that the front edge of (d) is curved. It could not be swung out otherwise. This leaves a most suspicious curved space amid a nest of rectangular compartments.

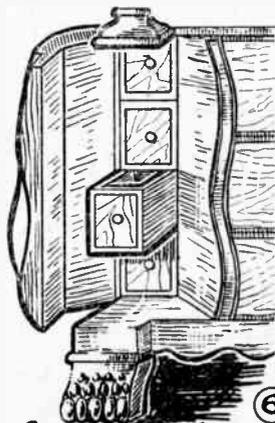
Other places where secret drawers are to be found are in the arched tops of pigeon-holes and other recesses or

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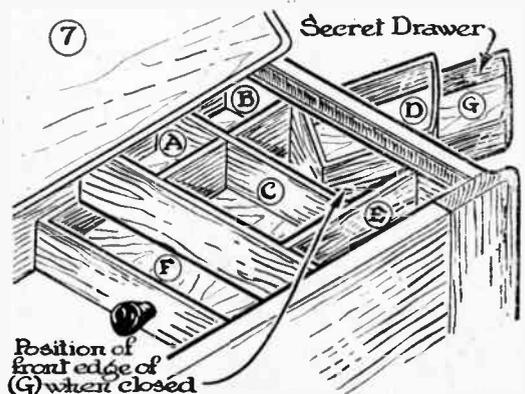
18th century Dutch WARDROBE



Appearance when shut
(Drawn to reduced scale)



Corner swung open to show secret drawers



Position of front edge of (G) when closed

The summer is a good time to undertake CURING DAMP WALLS

MANY of us are too well aware of the hopelessness of painting, distemping or papering a room, the walls of which are damp. A very urgent necessity in such cases is to find out the cause of such dampness and cure it, if possible. When the dampness is apparent only on the ground floor, the upper floors being less affected, have a look at the base of the wall outside.

The damp course may be at fault or, perhaps, the earth against the wall is above the course. In either case remove the earth to below the course, scrape out a little of the mortar between the bricks, and lay on a $\frac{3}{4}$ in. thickness of cement mortar to a height of some 12ins. above ground level.

Double Application

Do not lay on the cement to the whole thickness at one operation, or its weight will tend to pull it away from the wall. A thickness of $\frac{3}{8}$ in. should be applied first, and its surface scored lightly with the tip of the trowel in diagonal lines. Then, when this is hard, the final layer of $\frac{3}{8}$ in. can be laid on. This may effect a cure.

If the dampness is only on the upper parts of the wall, it may be due to the pointing between the bricks having fallen out, or to being exposed to heavy driving rain. In the latter instance, and supposing the pointing to be in good condition, a weather resisting wash will help. Proprietary preparations for this may be bought at the oil shop. Granger's solution for example, or the following simple cheap remedy tried out.

Rub the bricks well down with sandstone, wet with cement and water, then paint them with a solution made up with 1 gal. boiling water in which $\frac{3}{4}$ lb. of mottled soap has been dissolved. After 24 hours, paint over with a second solution of 2 gals. hot water and $\frac{1}{4}$ lb. of alum. Repeat this treatment once each season, for a time, at least.

Defective Pointing

If the pointing is clearly defective, then the job of repointing should be undertaken. This can well be effectively done by an amateur. The only tools needed, bar the trowel, are a simple appliance for holding the mortar, shown at (A), in

Fig. 1, being a 10in. square of board, with a short piece of broomstick nailed to it underneath for a handle; a piece of iron $\frac{1}{2}$ in. wide, with one end bent at right angles and sharpened, as at (B) for scraping the old pointing away between the bricks, and a strip of wood, $1\frac{1}{2}$ ins. wide and $\frac{1}{2}$ in. thick, for a straight edge (not illustrated).

The Mortar Mix

First scrape out the old pointing well between the bricks to leave ample room for the new, with the iron tool. Then dust out. Mix the mortar on a board, not too much at a time, in case it sets before it can be used. The mortar is a mixture of clean sharp sand and cement, in the proportions of 3 parts of the former to 1 part of the latter.

Heap a quantity on the holder and, with the trowel, press it well between the bricks. Draw the trowel along it, holding the trowel at a slight outward angle, so that the mortar is a trifle below the level of the upper bricks and protrudes a little beyond, the lower bricks, as shown by line (a—b) in Fig. 2.

Clean Work

Now, place the straightedge over the line of pointing, and draw the tip of the trowel along its bottom edge, as in sketch, Fig. 3, to trim the pointing and leave a clean straight edge. The vertical pointing is done meanwhile and is pressed well between the bricks, slightly beyond the level of them, and has its side edges neatly trimmed with the trowel and straightedge. The sectional view, Fig. 2, shows how the repointing should be applied horizontally, and should help to make the foregoing instructions quite clear.

Inside the room it is wise to light a fire for a few days to help dry out the wall, before attempting to re-decorate. If the damp has rendered the plaster soft, so that it tends to break away from the wall it is practically useless, and should be scraped away. No use trying to dry it out. When the old stuff has been removed, any loose fragments and dust should be brushed away.

The wall should then be scraped, and a coating of cement mortar applied, mixed as for pointing. Lay on the coat to within $\frac{3}{8}$ in. of the former thickness, to

leave room for the finishing layer. Score with the trowel to provide a key to assist in the adhesion of the subsequent coat.

Top Dressing

Let this dry out, then apply a thin coat of parian cement to bring the repair to the level of the rest of the plaster. Smooth the surface with the trowel, or if the area is rather large, with a float of home construction, a piece of smooth board, 3ins. wide and 9ins. long, with a

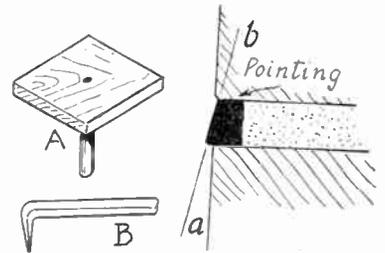


Fig. 1—The mortar board and picker

Fig. 2—Cement shape

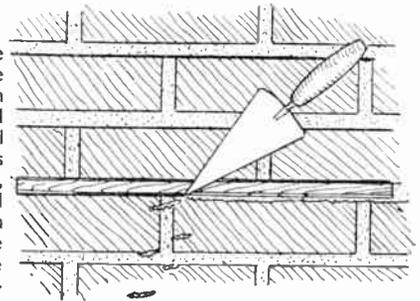


Fig. 3—Straightedge for cutting level

handle for manipulating it. Bevel the edges of the float, and well damp the surface of the plaster to assist smoothing action.

Should the plaster, despite its damp condition, dry out fairly well, and be still sound, then it can be painted over with one of the proprietary damp resisting compounds, Grangersol, Stet, or others advertised, or given a coat of silicate of soda (water glass). After this treatment the walls should be in a fit condition for papering or distemping, as preferred. (185)

Secret Drawers—(Continued from page 199)

alcoves. The writer, grasping the convex moulding of a secretaire whilst putting up Christmas decorations, lost his balance somewhat, and gave the moulding a sharp jerk. To his surprise the moulding pulled out, and was found to be the front of a large, shallow, tray-like drawer.

It is, of course, quite impossible to tabulate all the varieties of secret drawers, since the designer took advantage of whatever opportunities presented them-

selves in connection with the particular piece of furniture he was engaged upon. The late seventeenth and the eighteenth centuries were the great ages of the makers of secret drawers, though specimens are met with before and since.

All the examples mentioned in this article have been selected from actual pieces, in many cases on view in public museums, such as the Victoria and Albert, South Kensington, and the Geoffrey Museum, Shoreditch, as well

as large museums in the provinces.

Naturally, the authorities do not encourage people to probe the choice specimens for possible secret drawers, but if one is interested in the subject, and writes to the chief curator or director of the woodwork department to this effect, it is usually one's pleasant experience to have the curator give orders for the necessary pieces to be pointed out, unlocked, and explained. (151)

An attractive addition to the sideboard is this FRUIT HOLDER TROUGH

OUR picture here shows an attractive piece for the sideboard—a fruit trough or basket. Many forms of trough may be designed, but we think the one shown is, perhaps, the most useful in shape when it comes to the handling of fruit. The article consists of two ends, a wide back and a narrow sloping front, all fixed to a stony floor.

It may be suggested here that the front be of Perspex instead of wood. This material would give a rather good effect and if adopted it requires the grooving of the ends so the Perspex may be slid into place. On the outside of the ends some form of decoration might be added such as shown here.

This decoration may consist merely of fretted overlays simply glued on, or it may take the form of stain and colour laid on with the brush. Again, the decorative panel shown may be in two or more coloured woods and cut as an inlay and glued up and rubbed down and finished with polish.

Ends

The ends should be the first parts to make and two good flat pieces of $\frac{3}{4}$ in. wood each measuring 7 ins. by 6 $\frac{1}{2}$ ins. should be chosen for them. Over one piece of wood draw a number of squares, as shown in Fig. 1, in light pencil lines. Then through each follow the outlines, taking the diagram as a guide. The dotted interior line may also be drawn in to give the true position for gluing on the overlay.

Pin points should be pricked along this line so that when the surface is later cleaned up with fine glasspaper the points will still show to which the overlay may be glued. When the outline has been cut round with the fretsaw and

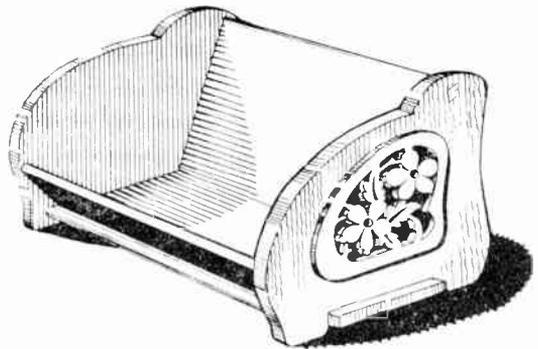
the edges cleaned up with glasspaper, the piece should be laid on the second piece of wood and a line drawn round it in template form. This second piece will be cut and cleaned.

Note, in making the first enlargement of the end include the dots shown on the 'copy' Fig. 1 which indicate where the wood dowels or the screws go for fixing the sloping back and front. The floor will take the form shown in Fig. 2, and this again consists of a piece of $\frac{3}{4}$ in. wood. Note here the width and the length of the tenons so they fit accurately and neatly into the recesses of the ends to which they will be glued and screwed. The circled diagram in Fig. 2 shows the floor being fitted into the recess.

Back and Front

When the ends have been fixed the back and front can be taken in hand. For the back, a piece of $\frac{3}{4}$ in. stuff will be wanted either 12 ins. or 14 ins. long as desired, and according to the length of the floor and 5 $\frac{1}{2}$ ins. wide. One edge of the piece will be rounded off and made smooth with fine glasspaper. The lower edge must be planed to a chamfer to fit on to the floor, seen in Fig. 1.

When this is done fit it into place at first where it is to go. Then prick in through the holes on the ends to mark where the dowels or screws will later be inserted. After this put a little glue on the end grain, not too much so that it will squeeze out. Fit it finally in place and drive in the fixing screws or the wood dowels. The sides of these should be



wiped with glue to make a secure fixing.

The front of the article is next made. This will also be $\frac{3}{4}$ in. thick and cut to the same length as the back. The rounding and chamfering to the edges will be repeated and carried out in a similar manner to the back. The fixing to this piece will also be similarly done.

Decorative Panels

In Fig. 3 we see in detail the decorative panel suggested for the ends. The squares here are shown $\frac{1}{2}$ in., and they must be drawn out on to paper full size and a careful enlargement made by following carefully the lines as they run through the squares. The pattern will be stuck down to thin wood and cut out in the usual fretwork manner.

By nailing two pieces of the thin wood together both overlays may be made by the one cutting. Clean up the surfaces, carefully gluing the overlays to the ends, and see that they are in true position according to the pin-pricks mentioned previously. A suitable finish to the article would be french polish, although much depends upon the kind of wood used.

If a Perspex front is to be used, stuff $\frac{1}{2}$ in. would be found useful. Grooves slightly above this thickness must be made in the ends, before, of course, they are framed to the floor. Mark off the grooves accurately and saw down the sides with a fine tenon saw, cleaning away the waste wood with the chisel.

Plastic work is of course of a different character from ordinary woodwork, and there are several books available on the subject, if the worker intends to undertake the subject properly.

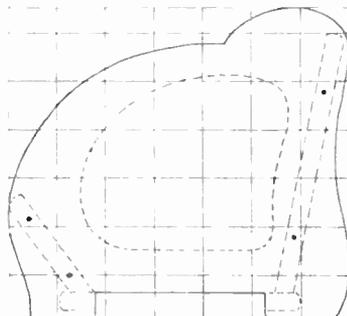


Fig. 1—Outline of end, with adjoining positions shown dotted

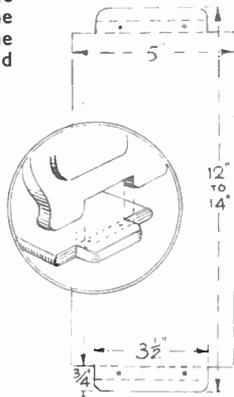


Fig. 2—Rail and joints

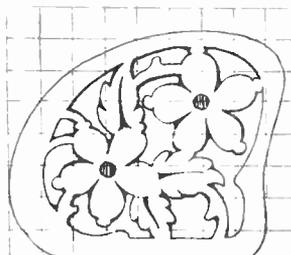


Fig. 3—End decoration

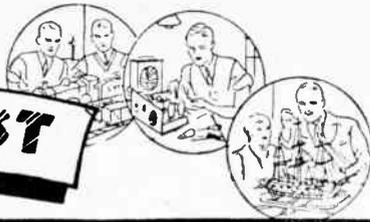


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REPLIES OF INTEREST



Selections from our replies to readers' problems we receive on a variety of subjects relating to Hobbies generally.

Re-silvering Mirror

I HAVE a mirror which has become speckled owing to damp. What procedure and materials can I use to re-silver the back of this? (E.A.W.—Louth).

THERE is no practicable way of removing 'speckling' from a mirror, except to have it re-silvered. The method of doing this is somewhat complex, and as a practical matter it would probably be more economical to have the work done professionally. For your information, however, the following is the general procedure. First clean the mirror of every trace of old silvering, and finish by cleaning with alcohol or some similar spirit. Unless the glass surface is absolutely clean and free from the

treated as described, are then mixed in the proportions of two of (A) to one of (B), and poured over the plate to be silvered—which must, of course, be perfectly level, and located in a sufficiently large dish or container. Gently rock the plate, the solution turns a muddy brown at first, but in two or three minutes or so it clears and in five to six minutes, a thick deposit forms. Pour off the solution and wash thoroughly, removing any streaks of precipitate by wet cotton wool very gently applied. Wash several times with alcohol, dry by means of a warm air fan, and finish by painting with one or two coats of shellac varnish and a finishing coat of red lead paint.

be able to give you a great deal of assistance and advice on the subject of meteorology. For our part, we suggest you work along the general lines of comparing old country weather sayings such as 'red sky at night', etc., with the state of the clouds, temperature, wind speeds and so on. You could then explain the barometer, and how wind speeds are measured, then work up to the more scientific aspects of the subject.

Melting Records

I HAVE a large collection of gramophone records which I feel would be a waste to throw away or burn. Is there a method of melting them down into a sort of varnish? (K.P.—Royton).

BEFORE destroying your very old records, it would be worth while offering them for sale to the B.B.C. or to the Gramophone Co., as some old titles are now unobtainable, and collectors might welcome them if by any chance you had any titles that are not readily available. To melt down the records, it is merely necessary to raise their temperature, when they will melt. Do this very carefully, as the material contains much resin, wax and other highly inflammable ingredients. To convert this melted material into varnish will call for some amount of experimentation, but try a small quantity first. Bring to the molten stage, then add a small quantity of linseed oil, about twice as much copal, and then add terebine—as much as needed to act as a drier and cause the varnish to set and harden in, say, about eight hours. Be very careful not to have a naked flame anywhere in the vicinity, or a serious fire may occur. Strain the molten record material, and remove all dross before attempting to make your varnish. After all your efforts, the result may be unsatisfactory owing to the fact that the composition of the material in detail is unknown.

Meteorology

IS there any way of explaining meteorology as a hobby to boys' clubs without being so weighty on it? (B.K.—Dulwich).

WE suggest you get in touch with the Controller of the Meteorological Office, The R.A.F., Kingsway, London, W.C.1, who would, no doubt,



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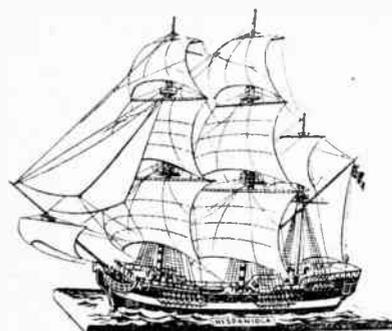
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A SHIP MODEL FROM TREASURE ISLAND

A design for the famous model of the 'Hispaniola' of R. L. Stevenson's book is given with this issue. Complete kit (No. 2852) for making, obtainable from Hobbies Branches for 10/9 or post free 11/6 from Hobbies Ltd., Dereham, Norfolk.

slightest trace of grease or dirt, the re-silvering will be a failure as specks of foreign matter will show up. Prepare a solution (A) made up of 100 parts distilled water, 10 of loaf sugar, 10 of alcohol and half of commercially pure nitric acid. Prepare a separate solution (B) one part silver nitrate dissolved in 10 parts distilled water, then add strong ammonia until the brown colour in the solution becomes clear. Then prepare a solution of 1/2 parts of potash (purely alcohol) and 10 parts of distilled water. Add this to solution (B), then add ammonia until the solution is again clear. Another solution consists of 1/2 part silver nitrate in 8ozs. of distilled water; this is added to the previous solution until the liquid becomes straw coloured. Then filter this solution. Quantities of Solution (A) and the Solution (B),

Books to Read!

A review of interesting books for craftsmen which have been recently published. Obtainable through newsagents or booksellers or direct from the publishers mentioned.

Nets

by G. A. Stevens

NETMAKING may not at first sight appear to be everyone's hobby, but a little thought will soon prove how worth-while such a knowledge can be. This book, for instance, tells you how to undertake string bags for carrying tennis balls, bowls, etc., a garden hammock, a shopping net, a netball goal net, a tennis net, etc., and sometime or other any one or more of these becomes a vital necessity. But the book does more—it tells you the whole story. Commencing with general principles, types of needle and loading, the methods of making are clearly shown. The editorial is large, easy to read and follow, and the drawings are unusually easy to understand in their stage-by-stage progress. The author is an experienced man of the sea himself, and knows exactly the questions and answers to a very varied subject. Actual size of cord is shown and there are chapters on net making of all kinds, mounting, mending, preservation, knots and bending. We are occasionally asked by our readers to recommend a book on Net making, and now we know a really good one.

Published by Routledge and Kegan Paul Ltd., 68/74 Carter Lane, E.C.4.—Price 5/-

Flower Pressing

by S. Francis Blackwell, B.E.N.A.

A DELIGHTFUL book for summer use to help with any country walk as a reminder of happy days well spent. How little we realize the beauty of nature around us, and particularly in every flower we find—whether in our own back garden, in the local park, or in the real open country. What a fascinating interest there can be in collecting and preserving these varieties is shown in this large stiff cover book with its colour pages, drawings, botanical pressing paper, identification charts, etc. There are 38 wild flowers illustrated in colour, a flower calendar, with clues for finding, collecting, pressing and mounting specimens. The book provides the unusual hobby for outdoor and indoor occupation—gathering the flowers on your country walks and preserving and mounting them in the home later on.

Published by Medallion Press Ltd., 5 Dowgate Hill, E.C.4.—Price 3/6

Our Railways

by Alan F. Shoults

A CHEERFUL and colourful little book for the youngster, original in style, and pleasing in content. Each page contains a bright picture of some phase of the railway system, and on the

facing page is a poem relating to that particular activity. The personalities and places of the vast organisation are dealt with in a charming manner, the combination of picture and poetry proving an instructive, as well as picturesque sequence and combination. Published by Edgar Backers, 49 Cank Street, Leicester—Price 2/6

Woodwork Joints

by Charles H. Hayward

THE name of the author is sufficient guarantee that the book is a veritable mine of information, and one that should be in the hands of every keen carpenter or home handyman. The range of joints used in professional woodwork is really amazing, but the book deals with them all. The amateur, true, is seldom likely to require to make a knuckle joint for instance, or a scarf, fishplate or bridge joint, but the keen student who really wants to learn should certainly know about them to his advantage. The book is of 168 pages, profusely illustrated, even to having diagrams on its inside front and back covers. It can be thoroughly recommended to anyone in the woodworking

trade, to home craftsmen, handicraft masters and students who propose devoting their life to the worth-while job of carpentry.

Published by Evan Brothers Ltd., Montague House, Russell Square, London, W.C.1—Price 7/6

Postage Stamps

by L. N. and M. Williams

THAT fascinating subject, Philately, is undoubtedly increasing in popularity, and it is a fallacy to think that it appeals only to younger people. We know a wide variety of people of mature age who are thrilled by the pastime and the pleasure it affords. This book is one of the Puffin series, and, as might be expected, is authoritative, interesting, and good value. Its large pages are particularly helpful in information for the beginner, with illustrations of terms which may well be known to the expert, but may likely fog the more uninitiated. The history of the stamps is shortly followed and its contents include watermarks, postmarks, errors, forgeries, classic stamps, local stamps, perforations, etc., so the reader should have a sound knowledge of collecting

HOBBIES STAND AT THE B I F

ONE of the largest stands in that particular section of the British Industries Fair at Olympia last month was the attractive stand of Hobbies Ltd. Proof of this was the constant attention it received from visitors all day long. All the tools, machines and materials were excellently displayed, and diffused lighting and tasteful colouring showed up the plated tools and polished woodwork to great effect. Apart from the general interest there were three outstanding points. A full size window had been set out with Hobbies goods (centre background in the picture) to show buyers what could be done. A new type of bicycle fretmachine being used for curative purposes in occupational therapy centres. And a large Georgian Doll's House (look out for news about it!) revolving in the foreground. In an Exhibition where display stands are really wonderful, you may be sure Hobbies was among the best.



from the concise, and informative matter in its pages. Those who think they might be interested in the hobby would certainly be convinced after a perusal and study of this reasonable little book.

Published by Penguin Books, West Drayton, Middlesex—Price 1/6

Ships in Bottles

by J. P. Lauder and R. H. Biggs

ONE would hardly think there is enough to write about on this subject to fill a 74-page book, but the combined authors have certainly done so very efficiently. The mystery of those tiny full-masted ships which you see in all kinds of bottles is revealed, so that the patient beginner can undertake to puzzle and please his friends and feel cock-a-hoop at his own wonderful ability. Drawings and photographs illustrate the pages profusely and each step in the process is explained in detail. From the number of readers of Hobbies Weekly who write for information we know how popular the subject is, and now we can recommend a practical book on the subject at a reasonable price which certainly covers all the 'gen' on a fascinating and delicate subject.

Published by Percival Marshall & Co. Ltd., 23 Great Queen Street, London, W.C.2—Price 3/6

How to Repair Furniture

by Raymond Yates

HOW often do we regret having to discard a comfortable or sentimentally valued piece of furniture because it needs repairs and does not seem worth the very high price—apart from the interminable time—needed to put it right. Well why should you? Here is a book which will literally save you money and provide you happiness at the same time. The author knows

what he is talking about, because he has been doing this sort of thing for years. He deals with everyday things, troubles you find in most homes, and which he deals with in an easy and economic way. Apart from early chapters on tools, the book deals with those all-too-common complaints in the home—broken legs, warped boards, non-slide drawers, etc. And having done a suitable and satisfactory repair he tells you a variety of ways in which to finish it—varnish, oil, polish, lacquer, enamel, etc., even apart from woodfillers, stains, etc., and processes of upholstery for your seating needs. Altogether a book worth a place in any handyman's home. For those just starting a home it could not be more valuable, when you think of the opportunity of 'picking up' damaged furniture, which you can make first class by following the advice given in this worthwhile book.

Published by Nicholas Kaye, Trebeck Street, London, W.1—Price 8/6

Cricket

by Andrew Sandham

NOW then, you budding county cricketers, here is your chance. Instruction by the official coach at the Oval and formerly Surrey and England player. What more could you want for 2/6? Mr. Sandham can write as well as play cricket and illustrates his points with equally clear photographs. All branches of the game are dealt with, in clear incisive wording easy to understand and follow. A fascinating book to read, giving an urge to improve your present standards and instruction how to do it. Apart from the helpfulness of general and specialized play, the last chapter deals with the culminating triumph of Captaincy! Something to aim for and attain. But what ideals and virtues it demands! The author suggests

you need wisdom, resourcefulness, imagination, diplomacy, an even temper, patience, calmness. And he should know. But even if you never hope to enjoy all these and attain a captaincy, you can certainly improve your play and enjoy your cricket more after reading this book.

Published by W. and G. Foyle Ltd., 119/125 Charing Cross Road, London, W.C.2—Price 2/6

Your Radio and Television

NO one can doubt the increasing interest in the modern necessities of life, and the amateur who has more than the usual haphazard knowledge, is keeping in touch with progress. The book is not entirely technical but covers general interest matters as well—a variation which makes for interesting as well as informative reading. There are 128 pages with 80 illustrations and subjects are dealt with by leading personalities and acknowledged experts in the radio field. There are fascinating chapters on Outside Broadcasts by Wynford Vaughan Thomas, 'Here is the News' by Frank Phillips, How Programmes Originate, by Richard Rowlands, whilst on the technical side explanation is given on choosing, installing, and operating a set. All very helpful and interesting. And who would think a chapter necessary on 'How to Look and Listen'? But there it is—quite packed with points we should all know and follow to get the full and real enjoyment from our sets. How few of us do can be realized after reading just that one chapter! Altogether a most interesting and helpful book without the technicalities and highflown language usually associated with this vast and bewildering subject.

Published by Odhams Press Book Department, 67/8 Long Acre, London, W.C.2—Price 3/6

Loom—(Continued from page 197)

in the first heald, and then tied to the rear rod in carrier (D). The second thread is passed between the first and second heald and tied to (D), the third thread through loops in second heald, the fourth thread passed between the second and third heald, and so on to the number of warp threads used. See each thread is of equal tension.

Now depress the heddle, which will carry half the threads below the rest, and leave a space for the shuttle to pass between, when weaving. Note, with a pencil mark, where pin (a) on the heddle comes on the slide. Now pull heddle up until the threads it carries are now above the rest, and make a second mark on the slide where the pin comes.

Heddle Position

Remove the slides, after untying the threads, of course, and where these marks come, cut small notches one side of the groove where the pins move up and down. These are shown in Fig. 2. The heddle frame can now be fixed in the low or high position by pressing it back until the pins (a) catches in one of the

notches, and so allows free movement of the hands to manipulate the shuttle. Replace the slides and the loom is finished, and ready for use.

A shuttle for the loom is illustrated in Fig. 4 (J). It can be cut from $\frac{1}{2}$ in. fretwood, but better, perhaps, to use a thinner plastic material. When cut to the shape, carefully glasspaper off all rough edges. For using different colours of weft thread, two or three shuttles are necessary.

Another point, when the whole of the warp threads are tied on, weave narrow strips of plastic or celluloid, between the threads to keep them apart, as in diagram (I). If this is not done, the threads are apt to bunch together. Two strips, $\frac{1}{4}$ in. wide will be enough, and are placed as near as possible to the rod in

the rear carrier (D).

In use, the slide and heddle are brought forward, but as the weaving proceeds they are pushed back enough to allow of working until the job is finished. Work up to 3ins. wide can be done on the loom, and where longer lengths than the present capacity are required, the horizontal bars could easily be lengthened to a reasonable extent. Though only tabby weaving can be done on this loom, the variety of stripes, squares, etc., possible is immense, and will quite likely stimulate interest in more complicated patterns later.

The Wood to Use

The wood used can be oak or beech or deal, if the former are not obtainable. Hardwood, of course, is much to be preferred for making an article of this kind, it wears longer and makes for smoother action. Quite a small quantity is required. For the carriers, a 1ft. length of $\frac{3}{4}$ in. board only is needed, with two 3ft. 6in. bars of $\frac{3}{4}$ in. by 1in. wood for the horizontals (C). A 4in. by 9in. panel of $\frac{1}{2}$ in. fretwood for the slides and shuttle, and a similar panel of $\frac{1}{2}$ in. wood for heddle and the parts specified. (183)

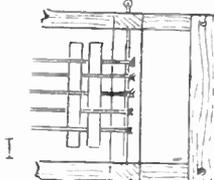
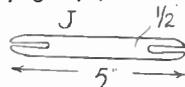


Fig. 4 — A suitable shuttle

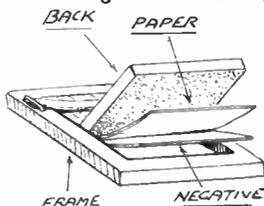
PHOTOGRAPHIC ALPHABET

Here is the second of our series of helpful hints for photographers. A dictionary of terms frequently used, and sometimes unexplained.

C for—

CONTACT PRINTS

A PRINT from a negative can be made in one of two ways—either by putting the negative into a glass-fronted frame with a sheet of sensitive paper behind it and exposing to light, or by placing it in an 'enlarger' and throwing a picture of the negative (in the same way as a magic lantern does) on to the paper pinned up some little distance away.



As the paper in the first case lies against and touches the negative, prints made in this way are spoken of as 'contacts' or 'contact prints'. The size-for-size prints you get from the chemist or D & P agent are all 'contacts'. The second method is usually used for enlarging, although size-for-size prints can be produced this way.

CAMERA SHAKE

PICTURES can be blurry for several reasons. The subject may have been too near if the camera is a fixed-focus box, or there may have been wrong focusing if of a focusing type. These causes can always be recognised by the whole image being diffused and lacking definition. If, however, the blurriness has a dragged sideways appearance, then the fault has come about by jerking the camera at the moment the lens was open, thus causing the picture to slip a little. This sort of fuzziness is spoken of as 'camera shake' and can always be clearly detected on close examination. It is generally caused by jabbing the trigger too hard. If possible the camera should be held with one finger underneath, the lever being moved with the thumb, or vice versa. This means that by a slight pressure upward the downward movement can be counteracted and the trigger 'squeezed' rather than pressed.

The very best way to make an exposure is to have the camera against something solid, say, a gate-post or wall. Newspaper photographers go to endless trouble to avoid 'camera shake'.

COLOUR FILM

A COLOUR film is one which goes through your camera in the usual way but which gives a coloured transparency, like a lantern slide, when developed. How it does this mystifies many people, but the principle is really

very simple. With an ordinary film, although the surface looks smooth, the sensitive emulsion is really made up of thousands of little grains, each individual, which have the ability of blackening according to the amount of light that falls on them, this being the way we get the picture.

With a colour film the emulsion is made up of grains which have the characteristic of taking up the colour that falls upon them. Thus, if the ray is yellow, the grain becomes yellow, etc. It is all a matter of very simple chemical reaction.

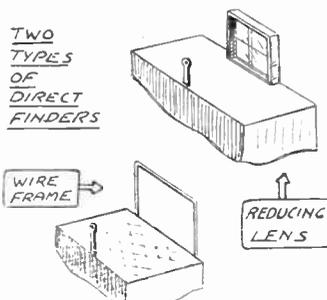
Colour film can be bought in the usual 3½ins. by 2½ins. size and certainly gives some very charming results.

D for—

DIRECT FINDER

THERE are two types of finders. Those you look down on to a small pane of glass set horizontally, as with box cameras, and those where a piece of glass or a frame is set vertically and you peep into it by holding the camera to the eye. In this case you look straight at the view through the arrangement and so they are spoken of as *direct* finders.

There are several types, but most



make use of a reducing lens in which you see the scene in miniature. The lens is crossed by two lines and the camera is set on the scene by aligning with a pointer fixed at the back. A very simple form of direct finder is just a wire frame the same size as the film, located in front, with a pointer at the back. When raised to the eye the subject can be clearly seen outlined by the frame and, with this kind, good composing of a picture is easy, as the subject is seen full size.

DESENSITISER

THIS is a very handy solution that amateurs might use quite a lot more with advantage. It is a variety of dye (obtainable from any photographic dealer) and its effect is to make a film no longer sensitive to light (or, at least, subdued light).

It is used in development and if a film is run through the solution for one minute in total darkness when taken from the camera, development can then be carried out in candle light, which is much more convenient than the usual dim red of the ordinary dark-room lamp. The solution can be poured back into a bottle and used repeatedly.

A second way of employing desensitiser is to add a little to the developer and then develop the film for one minute in the red light, after which the candle can be lighted and development completed in its comfortable illumination.

The usual desensitiser is pinacryptol green and there is now a yellow desensitiser being used. Both cost very little. It is good to store all desensitisers in a dark bottle. Incidentally, although these desensitising solutions are in the nature of dyes, they do not in any way mark or tint the film or plate placed in them.

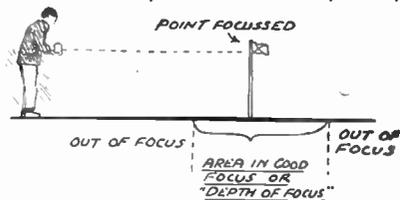
DEPTH OF FOCUS

IF you look closely at most photographs you will see that items nearer in than a certain distance are fuzzy, while those beyond a certain distance are also out of focus. This makes it that the area in good definition is really a band running across the picture from side to side.

The distance from the nearest to the furthest well-focused point is spoken of as the 'depth of focus' and this distance can be altered by different settings of the lens.

The less amount of the surface used the greater the depth. Thus the smaller the 'stop' (or hole in front of the glass through which the rays get) the nearer and further will things be in definition and a small stop must be used if a great depth is required.

With focusing cameras the further away the point focused on, the greater the depth of focus automatically becomes. If you focus on an object, say,



at 7ft., the depth might only be from 5ft. to 9ft. (i.e., 4ft.), but if 40ft. was the point to which the scale was put, the range might easily become 25ft. or more.

Most box cameras are fixed at a range that brings everything from about 12ft. to infinity in focus.

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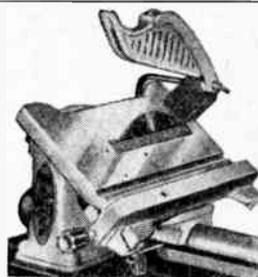
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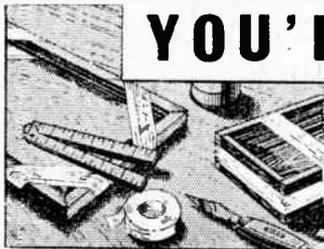
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