

Hobbies

WEEKLY

CONTENTS

	Page
Gramophone Stand and Record Cabinet	177
Lounge Table	179
All-Dry Portable 3	180
Why not keep a Hedgehog?	181
Photographic View-Meter	182
The Care of Goldfish	183
Modern Photograph Frame	184
'Pack Saddle'	185
Workshop Memo	186
Shipmodeller's Corner	187
Things with Shells	188
Modern Photograph Frame Patterns	191

July 4th, 1951

Price Fourpence

Vol. 112 No. 2905

Making a magnificent GRAMOPHONE STAND and RECORD CABINET

In response to requests from readers, we offer this week a useful cabinet, which, when decorated, will prove a welcome addition to the home. It is intended to hold about 200 records, but the construction has been specially simplified so that the worker can easily alter the size to suit his own requirements. By merely omitting the partitions, the cabinet can be made to serve other useful purposes in the kitchen or bathroom.

Pleasing Design

As will be seen from the illustration, it is of pleasing modern design and the top is large enough to take a standard sized gramophone. The cut-away partitions are shaped to allow easy access to 10ins. or 12ins. records. The overall dimensions of the cabinet are 29½ins. high, 18½ins. wide and 13¾ins. deep.

Materials

Since the finished article is intended to be enamelled, the kind of wood used is not important. It is important, however, to see that there are no blemishes which cannot be filled before finishing. We suggest that the framework be made of oak or beech and covered with hardboard. Many types of hardboard are now being offered for sale, licence free. They vary slightly in thickness, most being ⅝in. or ¾in. thick. When properly treated they make good

substitutes for plywood.

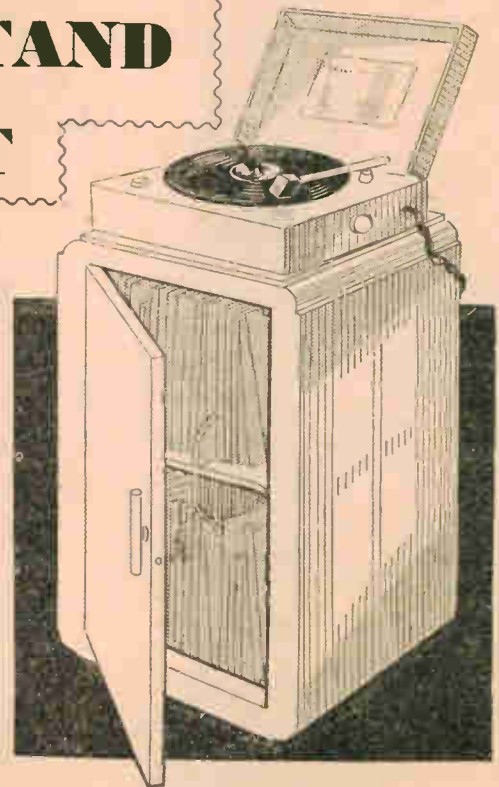
The Framework

The front elevation, with the door omitted (Fig. 1) and the section in Fig. 2 will give a good idea of the general layout, while the perspective sketch in Fig. 3 shows how the various parts of the frame are fitted together. All the parts are lettered in conjunction with the other diagrams.

The first job is to mark out the legs which are shown in detail in Fig. 4. They are cut from 1½ins. material and are 29ins. long. Mark out each end as shown in the section in Fig. 4. Mark out carefully the mortises on the sides of the legs, laying the legs together and using a square to ensure that all are identical. The measurements are all clearly shown. Chisel out in the usual manner.

The Rails

These are of varying lengths and those required are (B—four), (C—four) and (D—two). The pieces (B) and (C) are cut from 1½ins. square wood and are marked out as shown in Fig. 5. The only difference between (B) and (C) is that (B) is 12½ins. long overall and (C) is 15¾ins. Pieces (D) are cut from 1½ins. by ½in. material to the measurements



shown. Keep the tenons slightly on the full side to ensure a tight fit. Remember that you can always trim off, but you cannot easily add anything on.

Having cleaned up the various rails with gasspaper they can now be glued together as shown in Fig. 3. Test the frame for squareness before putting aside to dry.

The Partitions and Shelf

A piece of hardboard should be

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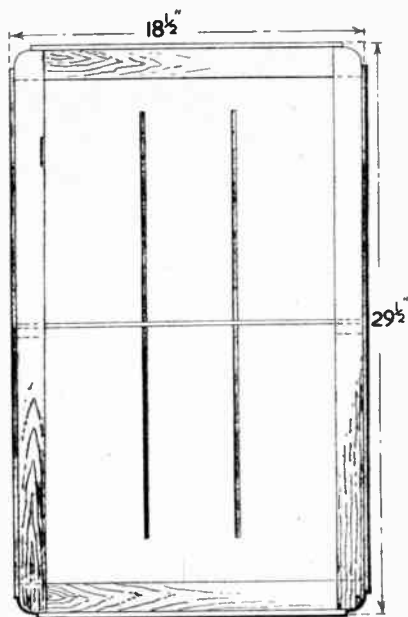


FIG. 1. FRONT ELEVATION

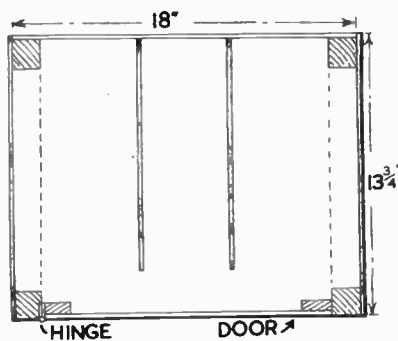


FIG. 2. A SECTION THROUGH THE CABINET

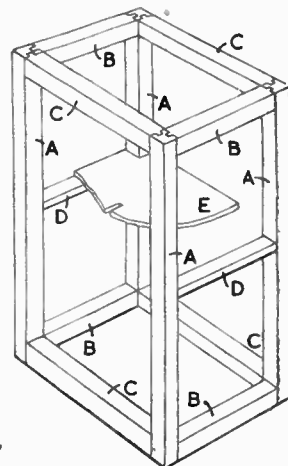


FIG. 3. THE FRAMEWORK

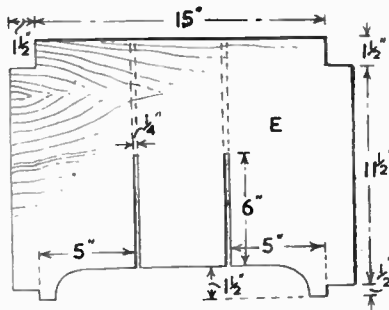


FIG. 6. THE SHELF

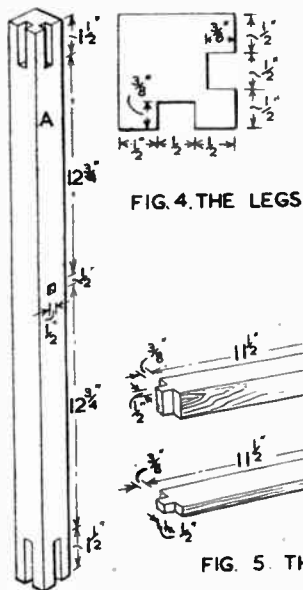


FIG. 4. THE LEGS

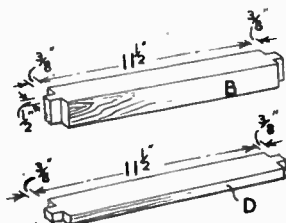


FIG. 5. THE RAILS

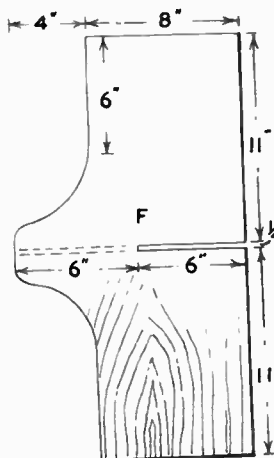


FIG. 7. THE PARTITION SHAPE

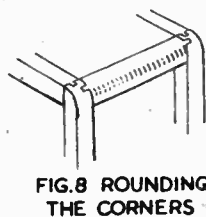


FIG. 8. ROUNDING THE CORNERS

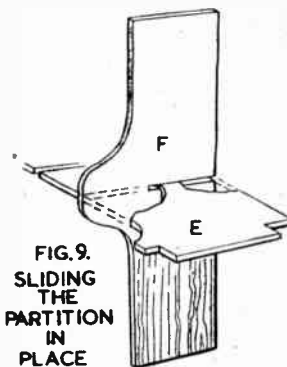


FIG. 9. SLIDING THE PARTITION IN PLACE

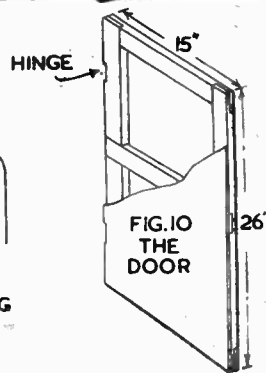


FIG. 10. THE DOOR

Complete constructional drawings

marked out as shown in fig. 6. Before marking out, check on the inside measurements of the frame to make sure that there have been no errors. The curved portion and the halving slots can be cut out with a fretsaw. This part, which is the shelf (piece E) can now be screwed firmly in place as shown in Fig. 3. The partitions (F) are then marked out and cut to shape from 1/4 in. board as shown in Fig. 7. These can be fixed in place when the back and sides, etc., are in position. The final step before covering the frame is to round off the corners (pieces B) as shown in the front elevation, Fig. 1, and

the small sketch in Fig. 8. These can be planed or rasped to shape and finished off with glasspaper.

Covering the Frame

The selected material is now marked and cut to the following dimensions. Sides 27ins. by 13 3/4 ins., back 29ins. by 18ins., top and base 16ins. by 13 3/4 ins. Remember that the back must be shaped to fit the corners as shown in the front elevation. The best way to mark out is to screw the sides, base and top in place and lay the cabinet down on the back and draw round the corners with a sharp pencil. All parts must be firmly

fixed in place with 1/4 in. to 3/8 in. counter-sunk screws and the holes filled with plastic wood. Glasspaper smooth when dry.

The partitions can now be pushed into place and fixed from the back with thin 1/4 in. screws. Fig. 9 shows a cut-away view of one of the partitions in position on the shelf (E).

Constructing the Door

For the framework of the door we suggest 1 1/4 ins. by 1/2 in. material, though this is not critical providing the overall

(Continued foot of page 179)

Make this modern LOUNGE TABLE

THIS table combines the duties of a coffee table and magazine rack—a neat, modern unit for the lounge. Magazines fit in a special 'pocket', with a slot opening in the top of the table at one end. The stored magazines thus take up the minimum amount of table space.

Care Pays

This piece of furniture pays well for careful construction, and is the type of work which calls for veneer covering after completion. Even simply stained and polished, however, it is still a most attractive and expensive-looking piece

of which the maker can justly be proud.

A general view of the table is shown in Fig. 1, and all the parts required are detailed in Fig. 2. These should be cut from the best material available, and accurate workmanship is essential. The leg, sides, back and front should be $\frac{1}{4}$ in. ply for preference, or even heavier stock. The shelf should be of $\frac{3}{4}$ in. material and the base of each leg $\frac{1}{2}$ in. thick material.

The assembly is detailed in Fig. 3, with Fig. 4 giving a side elevation aspect.

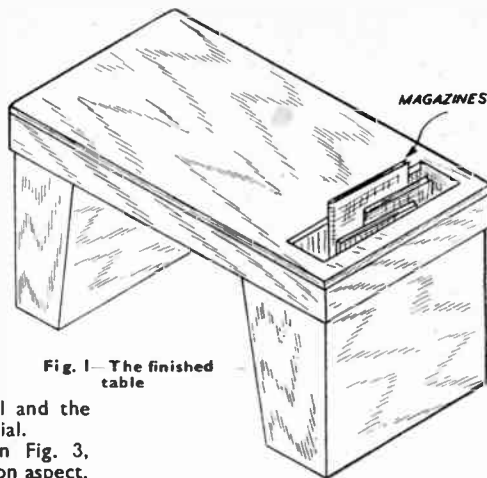


Fig. 1—The finished table

inside back, to accommodate the taper angle of the legs in side elevation.

When a pair of legs has been completed, the top can be glued into place, using the top corner blocks for additional gluing surface. It is a good plan to assemble each leg without the outer back in place to permit access to the interior of the assembly. The leg top jointing can then be strengthened as required, such as by using small angle brackets screwed to the insides of each side and to the underside of the top. Some craftsmen would be satisfied with glued joints, others prefer mechanical and glued joints.

Final Work

With the top in place and the legs completely panelled in, it only remains to fit the 2 ins. by $\frac{1}{4}$ in. members under the edge of the top. These glue directly

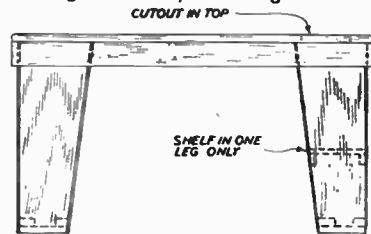


Fig. 4—Side view of assembly

to the legs as well as the table top for greater strength and rigidity. Once the glue has set, the whole assembly can be cleaned up by glasspapering. The edges of the cut-out portion, in particular, should be rounded off with glasspaper and all joint lines carefully smoothed down. After that, subsequent treatment is up to the individual constructor. (330)

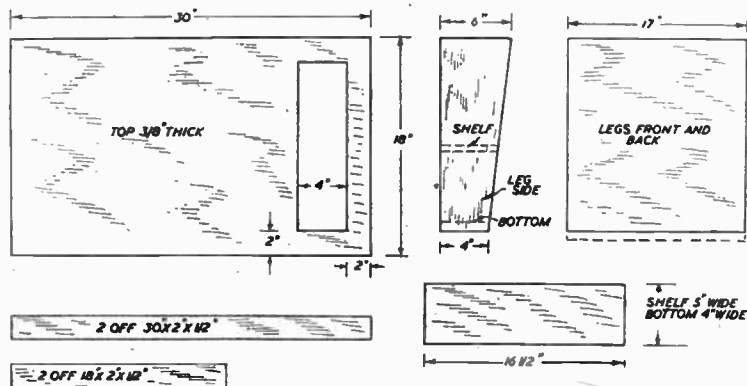


Fig. 2—Main shapes and dimensions

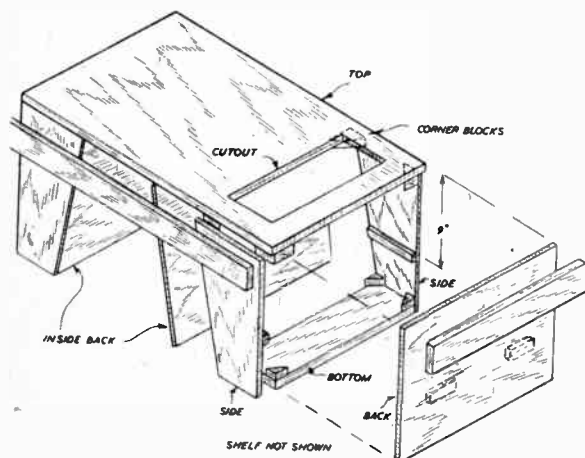


Fig. 3—Exploded view, showing assembly

Each leg is assembled as an open box, tapering in depth from base to top, and corner blocks are used at the bottom and top for a rigid assembly. A shelf is fitted to one leg only, supported on two cross members screwed and glued to the inside of each leg side, 9 ins. from the top. The legs, when assembled should have an overall width of exactly 17 ins. Note that slight chamfering is required on the bottom panel, and the bottom of the

Record Cabinet—(Continued from page 178)

dimensions are as shown in Fig. 10. The cross rails are halved into the uprights and screwed securely in place. The joints must be carefully marked out and squared before cutting. The covering is screwed in place as shown.

Fairly stout hinges should be used for fixing the door and should be recessed slightly as shown. Two small pieces of waste wood should be glued to the top

and bottom rails (C) to act as stops for the door. The handle should be a modern type, preferably chromium plated. To keep the door closed we suggest an ordinary ball catch let into the leg and door frame.

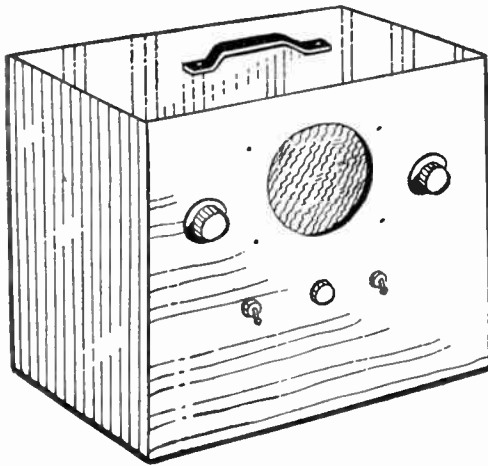
Finishing

A good filler should be used, especially on the legs where end grain will show at

the top. Give one or two coats of priming and two final coats of enamel. Glasspaper down after each coat of priming.

Finally, if the dimensions are not suitable we suggest that you modify the width only. This will mean no difference in construction and will mean a minimum of alteration to existing measurements. (348)

Just the thing for picnic time is this ALL-DRY PORTABLE 3



In order that a midget H.T. battery can be used, without a separate grid bias battery, a grid bias voltage is developed across the 600 ohm resistor. This provides the right value of bias automatically, with the valves quoted. If different valves are used, some slight modification from the value of 600 ohms may be necessary.

Tuning Arrangements

Both coil and frame aerial must be tuned simultaneously to the same wavelength, and, therefore, two tuning controls are used—the larger knobs each side the speaker fret. This arrangement permits of maximum efficiency without difficulty, and it is only necessary to turn each control for maximum volume from the desired station. Most commercially-manufactured sets employ a ganged tuning condenser. This does away with one control knob, but can cause loss of volume, unless very carefully adjusted, due to the two circuits not tuning accurately together.

Separate switches have also been used

for actually making a cabinet, and finishing it off, because this part of the work is quite straightforward and should present no difficulty. A carrying handle (obtainable from the well-known popular stores) is bolted to the top of the case.

Frame Aerial

This is wound upon a frame made from 3-ply, and fixed to the cabinet front, as shown in Fig. 3. After cutting out the panel and drilling it, fix the four pieces forming the frame together with glue and small panel-pins, and fix it to the panel, which will keep it square. Glue can be used, here, with small blocks in the corners, if necessary.

When the glue is dry, the aerial windings are put on. (See Fig. 3). Drill a small hole at 1, thread the end of some 28 S.W.G. wire through, and plug it securely. Then wind on 18 turns. Finish off at 2, also securing the end of a reel of 34 S.W.G. wire at this point. With the latter wire, wind 60 turns, side by side, finishing off at 3. Leave at least $\frac{1}{4}$ in. free space between the sections, and put all turns on in the same direction.

It is permissible to use other gauges of wire, and it is possible to use 32 S.W.G. wire throughout, in which case a 2oz.

It appears that numerous readers would be interested in building an all-dry portable, and they should find this circuit suitable for their needs. Unnecessary complication has been avoided, but, at the same time, a high standard of efficiency has been main-

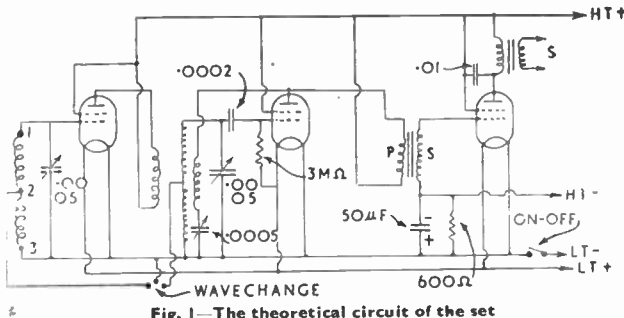


Fig. 1—The theoretical circuit of the set

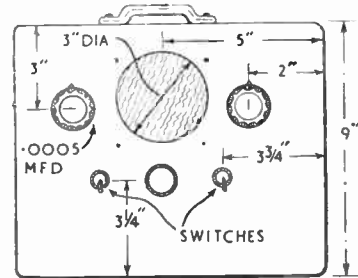


Fig. 2—Layout of the controls on the front panel

tained. The set is quite small—approximately 9ins. by 10ins. by 4ins. A 'midget' form of construction has not been used, as this makes wiring-up difficult.

Circuit Details

The set uses three 1.4 volt valves of the glass, button-base type. When looking at the receiver from the back, a 1T4 is used in the left-hand holder; a 1S5 in the centre holder, and a 1S4 in the right-hand holder. These are for high-frequency amplification, detection, and output, respectively, and these valve types can be obtained cheaply, in unused condition, from ex-government stores.

Both long and medium waves are tuned. As the frame aerial and tuning coil have to operate together, a 3-point switch is wired so that both frame and coil are switched simultaneously, when changing from long to medium waves, or vice versa.

for wavechanging and on/off switching, as many constructors seem to favour this, but a rotary, or other combined on/off and wavechange switch can be used, if desired.

Cabinet and Panel

The positions in which holes are drilled for the controls will be seen in Fig. 2. There is sufficient space for a slightly larger speaker, if to hand. If a smaller one is used, the 3ins. diameter cut-out may need reducing in size. A 3 $\frac{1}{2}$ ins. permanent magnet speaker, with midget transformer for battery-type pentode, is recommended, as being an efficient and cheap type, and easily obtainable.

The panel (or front of the cabinet) is of 3-ply. The top, bottom and sides of the cabinet are 4ins. deep, and can be of $\frac{1}{4}$ in. thick wood; or 3-ply may be used for top and bottom, with $\frac{1}{4}$ in. wood for the sides.

It is not proposed to give full details

reel will be ample. If such wire is used the respective turns on the smaller section may be spaced by about the diameter of the wire.

Note that lead 2 will consist of two ends of wire, together. Leave all the ends long enough to reach the necessary connecting points.

The Receiver

The valveholders and some other parts are mounted on the strip of 3-ply shown in Fig. 4, which is 2ins. wide and just long enough to fit inside the frame aerial, as shown in Fig. 3. Figs. 3 and 4 show all wiring. All connections should be of insulated wire, and a solid wire of about 20 S.W.G. is easiest to handle. Stranded flex is, of course, used for the four battery leads.

When wiring up the valveholders, note that the anode, grid, and screen-grid tags are not the same for all the valves. In addition, alternative connections are provided by some of the

'Snapshotters' should make a PHOTOGRAPHIC VIEW-METER

THE little photographic gadget shown in col. 3 is neither a stunt nor a toy, but a really useful accessory to the serious snapshotter and picture-maker. It is a view-meter, and the idea is that you can look at scenes through it and gauge far better than in any small finder just how a final picture will appear.

So often one discovers too late that a snap, particularly country-side or architecture, would have been just perfect had this tree or that post been left out, or some item or the other included.

Well, the view-meter enables you to weigh up all this kind of thing before the trigger is pressed. The diminutive finders fitted to most cameras certainly let one see if the subject desired is being got on the film, but for finer considerations they are useless.

Collapsible Frame

In effect a view-meter is a collapsible frame with a 'pin-hole' at one end and a card frame the other. Putting the pin-hole to the eye there is immediately seen a section of the view in front, framed by the card—the smallness of the pin-hole making it that the card frame and what is beyond are both in dead sharp focus. You are now looking at exactly what will appear on the film, but instead of having it presented to you as the ultra-fine picture in a view-finder it is being seen full-size. Then by moving about, it can easily be noted what would be the effect of cutting out that tree, etc., and so the best composition for the picture can be decided upon.

In making a view-meter, the main points are that it must be (1) constructed to suit the focal length of your lens, (2) so designed that the eye can be got right tight up to the pin-hole, and (3) rigid when in use and collapsible for easy carriage.

The agreement with the focal length is obtained by making the distance from the pin-hole to the frame the same as this. Even on quite inexpensive cameras the focal length is marked on the metal collar round the lens—as $f2\text{ins.}$, $f3\frac{1}{2}\text{ins.}$, etc. With fixed focus and most box cameras where the lens is set at infinity, the focal length may be taken as the distance from the lens to the film.

The meter is made in five sections as indicated, (A) being a card frame the

same size as your picture, i.e., $3\frac{1}{2}\text{ins.}$ by $2\frac{1}{2}\text{ins.}$, $2\frac{1}{2}\text{ins.}$ by $2\frac{1}{2}\text{ins.}$, while (B) is the base, (C) and (C1) the sides and (D) the eye-piece.

Shapes are as shown, so that when the sides and ends are brought up they lock solid by finger pressure from the outside, the lugs on the ends slipping through the slots in the sides. The frame, it will be noted, does not fasten together, but this is not necessary, as the way of holding it gives all the rigidity required.

Care must be taken in fitting, and it is a good idea to draw the whole viewer as it would lie out flat in paper first of all and then by trial and error and a bit of snipping here and there procure a perfect joining up. The sections can then be copied on to card.

Not too pliable card should be used, although it is remarkable how rigidly thin card will make up in a frame like this.

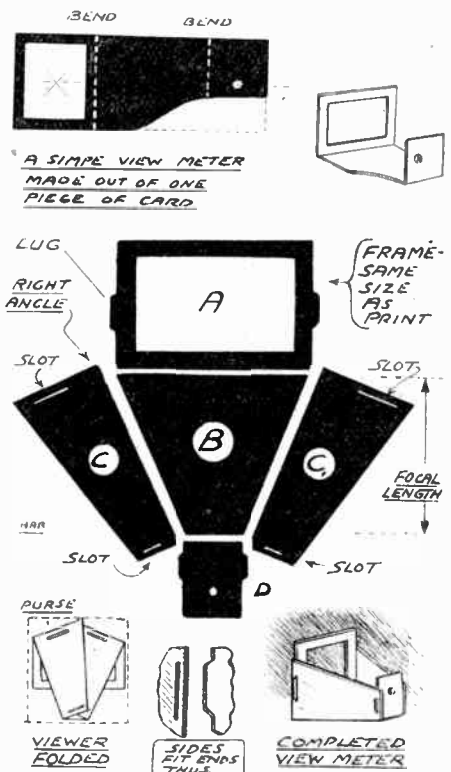
Cut out, the pieces are freely hinged with tape attached with some good glue. The tapes are fitted on top of the base and on the inside for the back and front pieces, so that they will fall inwards, and on the under side for the sides so that they will fold down and backwards.

Hole must be Clean

The hole in the end section (D) must be made with some care. It need not be too small but must be very clean. A hole burnt out with a red-hot knitting needle will do well. It, of course, has to be dead centre with the card frame at the other end.

To prevent glare and to make the scene look well framed the whole inside of the meter is painted matt black—Indian ink will do this quite well. The outside can be left plain card or painted as desired.

When using the meter, the point just made about getting the eye right up tight against the pin-hole cannot be too strongly stressed, as only then do you see what is in front as in a complete frame—which is what is required. It is only then, too, that the pin-hole, acting as a 'stop', brings both the frame and the view beyond into sharp focus—and it is the two being in focus together



Constructional drawings

that gives you the effect of looking at your finished picture.

A very simple view-meter (top sketch) can be made from one piece of card. The card is cut as shown, the rule of the focal length being observed. Near the front end, a section is taken away for the nose as shown and to let the pin-hole come close up to the eye.

The viewer in this case is held by the two hands, the right holding the back frame vertical, and the left the front piece, this hand also being employed to go across the left eye and so aid vision. In fact, in any type of meter the hand holding it should be used also to shade the eye not in use.

This viewer is not as solid or convenient as the first—nor so accurate, as it is easy to get the front out of true without realising it, but it is an easy meter to make for experimental purposes or quick use.

Make a Carrying Purse

Finally, with regard to the first viewer, as this folds with rather a number of corners, it is good to make a simple 'purse' to carry it in. An envelope of stiff cardette with a peak slipping through into itself will do quite well. The left-hand bottom sketch shows how the viewer would lie in its container.

(306)

Question on Neon Signs

I WOULD like some information about Neon signs; their composition and the process of preparing them. (S.C.—Siralu).

NEON signs are made up from glass tubes, which have been evacuated and filled with neon, or other gas; these tubes are bent into the various lettering and other shapes required. When a current is passed, a continuous electrical

arc is formed inside the tube, due to electrons being conducted by the neon. Various colours are obtained by the composition of gas used, and in some cases, by the colour of the tube. It is not practicable for such tubes to be made, except by a manufacturer with glass-blowing and other equipment.

Hints for young owners on THE CARE OF GOLDFISH

THERE is no reason why goldfish should not live quite a long time, several years, if commonsense care is bestowed upon them. Unhappily, many newly-acquired specimens die early, simply because their owners do not know just how they should be treated.

A few hints, therefore, may be acceptable to beginners desirous of setting up a home aquarium stocked with these lovely fish, too well known to require further description. We refer here, of course, to the common goldfish, and not to the fancy varieties.

See that the fish you buy are healthy stock, and go to a reliable dealer for them. Do not overcrowd the tank. The general rule is that there should be 1 gallon of water for each 1in. of fish, excluding the tail. For example, it is better for the health of the fish to keep no more than four 3in. fish in, say, a 12 gallon tank. Thus, it is, perhaps, desirable to select small fish, for a start. Experience will teach you how many you can maintain in a given aquarium.

A Balanced Aquarium

Having made up your mind that you are going to get really good healthy stock and not overcrowd them, the next thought is the tank. If you desire to keep it in the living room of your home, you will not want a very large one. This can be left to your own judgment, but get rid of the prevailing notion that a round glass bowl is the right receptacle—it is not! It might look pretty as an ornament with its bright crystal and a couple of red-gold fishes swimming round and round aimlessly, but it is harmful to its occupants—indeed, one might almost go so far as to say it is 'cruel' to house the fish in such a container.

Far preferable is one of the oblong tanks with iron frame 2ft. long by 1ft. deep and 1ft. wide, or the smaller size 18ins. in length. Makeshift aquariums, such as some folk use—glass jars, bowls, disused wash-basins, etc., are best avoided. If you cannot have the real thing, do not make do with any old thing. If you can afford it, buy the complete tank; but if you wish to be economical, buying the frame and then putting in the glass will come a bit cheaper. It is necessary to do this with care, using a reliable cement, or you will be liable to have the annoyance of a leaky tank.

Having got your tank ready, place it where you wish to have it in the room, on a substantial table or chest placed not too far from the window; if in the window an arrangement of small curtains should be provided for use during the brighter part of the day, otherwise a green sediment (algae) will accumulate on the glass inside, especially in summer, and

the water itself may even become greenish as the result of too much sunlight. An east window is better than one getting the sun all day. A shady spot, but not too much so, is always better for the fish.

A well balanced aquarium should be the aim, but is not so easy to achieve.

At this time of the year, many people are buying goldfish at their local markets, etc. This article should help them to get greater pleasure from their purchases—and ensure the fish a happier and longer life.

However, much can be done by the use of suitable water-plants. Therefore, the floor of the tank should be covered with well-washed sand (everything that goes into the aquarium must be perfectly clean) to a depth of about 1½ins. and if you can get river sand, all the better. Or you can obtain a compost from the dealers in aquatics. Now introduce the necessary plants, also obtainable from dealers. Plants give off oxygen, and absorb any dioxide gases given off by the occupants. Suitable for planting in the tank are Vallisneria, Sagittaria, Ludwigia, and Myriophyllum.

Use part rain water, if you have a supply handy, and part tap water for filling up the tank, taking care to pour in gently so as not to disturb the sand or compost. If the water is about the same temperature as the water in which the fish are brought home, all the better, as a violent change of temperature may upset them. If keeping your tank in the living room you will not need to trouble afterwards about water temperature, as ordinary living-room temperatures are generally about right for common goldfish. With a selection of plants as suggested, the water should not require changing very often, except in a very small tank, where it is advisable to change about a quarter of the contents daily, replacing with fresh cold water, poured in from a little height to help aerate it and increase the oxygen supply.

Cleaning and Maintenance

It is essential to keep the tank cleaned out, from time to time removing sediment, excreta, and uneaten food from the bottom. This can be done with a syphon, which sucks up all waste when the end of it is run over the bed of the tank. Uneaten food is easily removed by placing one end of a length of glass tubing over it, then putting a finger over the top of the tube, when the

particles of 'left-overs' will be withdrawn into the tube.

Snails will help to keep the sides of the glass clean, so be sure to put a few in the tank, both the round-shaped and the trumpet ones. If the smooth glass or slate parts (sides and back) of the aquarium show signs of algae collecting, use a small hard sponge mop to remove the deposit, and dip the mop into boiling water at intervals while cleaning, to wash off any slimy substances on it.

In a balanced aquarium, aeration of water should not be much trouble, as the plants and the movements of the swimming fish should be sufficient; but, in small tanks, as already hinted, it may be necessary to change the water daily, or at least twice or thrice a week. One method of changing water is to place the tank under a tap and let the fresh water pour in gently, automatically replacing the old.

Feeding presents no difficulty. Prepared food can be bought at the aquarists' stores; but if using these prepared foods care must be exercised to see that only sufficient is given at one time, to be eaten up and cleared within ten minutes or so. One fish will need, roughly, as much as can be sprinkled on a silver threepenny bit, twice daily.

Small garden worms minced up are nourishing and slightly laxative and a feed of these now and again will benefit the fish. Small red worms and blood-worms are also useful, whilst Daphnia, if you can procure some out of a local clean-water pond, may be given. A little duckweed or lettuce, finely chopped up, is recommended as a change now and again in diet.

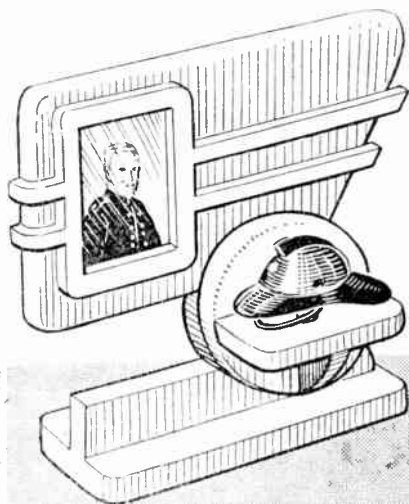
Goldfish Troubles

If goldfish are seen at the surface, swimming with mouth exposed and 'gasping for breath', as we might put it, all is not well with the condition of the water, which needs more aeration. If an odd fish is always gasping at the surface, it should be removed from contact with the rest, as it is a sign of sickness.

Actually, in a well-kept tank the ailments of goldfish are few, and provided the fish behave normally, there is little to worry about.

One of the common ailments is fungus, showing itself as patches of whitish film externally, and sometimes affecting the gills. Any fish so suffering must be taken out and immersed in a solution of 1oz. of salt to 1 gallon of water. This salt bath should be given for at least ten minutes each day until the fish has recovered. Indigestion is another common ailment, the symptoms being a distended abdomen and listlessness. The affected fish should be allowed to fast for a few days, and then fed on chopped earthworms as a laxative. Improper feeding will bring on indigestion, and generally bad conditions in the tank will often cause fungus. (346)

An idea for a MODERN PHOTOGRAPH FRAME



FOR the novel photograph frame illustrated here we are indebted to one of our readers, Mr. R. K. Getliffe, of Fenham, Newcastle-upon-Tyne. It is of pleasingly modern design, and made to take normal 127 sized snaps. On the front of the frame is a platform which holds a little carved motif representing the trade or profession of the subject of the photograph.

The example sent to us by Mr. Getliffe contained a photograph of a fireman, and the carved motif was a fireman's helmet. Other examples come easily to mind. The picture of a soldier, for instance, might well have a small regimental crest; a musician a carved model of his particular instrument; and so on.

The construction of this frame is straightforward and should present no difficulty to the average worker. A page of patterns is devoted in this issue to the various parts, and they are given full-size for a frame to take normal 127 snaps. For a bigger photograph, the frame could be enlarged accordingly, but this enlarging should not be taken too far or the frame will lose its appeal by getting too big and rather ungainly. In the case of a bigger photograph, it would be much better to select just a small part of it, say, the head and shoulders of the subject, and cut this to fit a frame of the size described.

Construction

To make the model, cut out the frame (A), the base (B), the overlay (D), the shelf (E) and the bracket (F). All are from $\frac{1}{2}$ in. wood. The overlay (C) is cut from $\frac{1}{4}$ in. wood.

Clean up the main frame (A), and chamfer the top and leading edge to the section shown. Also chamfer the edge immediately below the cut-out for the photograph, and the sharply rounded

portion of the trailing edge; but the remainder of the trailing edge—which slopes down to the centre circle—should be left perfectly square. Now clean up the base and glue and screw the main frame to it. Next, chamfer the overlay (D) to section as shown, and glue this in position, completing the main work by fixing the shelf and bracket.

It will be noted that when the overlay (D) is placed in position, the ends extend over the edges of the main frame. This is as it should be. The projections on the trailing edge are left with square edges to match the flat surface of the frame at this part, but the projections at the leading edge must be built up with plastic wood to run right round the chamfer and finish flush with the back of the frame. They can be built up quite roughly in the first instance, and glasspapered properly to shape when thoroughly dry.

You will now need a piece of glass $1\frac{1}{2}$ ins. deep and $1\frac{1}{4}$ ins. wide. This is placed into the frame and the picture is put in behind it. Any packing needed to keep the glass and picture firm should then be inserted, and the whole should be covered with a piece of stiff brown paper glued to the back.

The Motif

The next job is to prepare the necessary motif for the platform. In the case of the fireman's helmet illustrated, the wood used is of a fairly hard variety, but some workers may prefer to deal with a softwood, as the latter would, naturally, be easier to carve. The work should be done with a penknife or similar instrument, and some care should be taken to get the model right or the whole effect will be spoiled.

When choosing the wood for carving, avoid balsa (which might be the obvious choice of someone looking for a soft medium), as this wood, though excellent in many respects, does not work easily with a penknife unless the blade is almost razor sharp.

If the motif you are making is a hat on the same lines as the one illustrated, do not omit the chin strap. This can be made from any suitable piece of scrap, and should be glued into small holes bored in the underside of the hat. In the

case of Mr. Getliffe's fireman's helmet, he appears to have used a small length of plastic-covered wire, hammered flat, and the material has served its purpose well.

**Full size patterns
are on page
191**

The motif is mounted on the platform by the simple expedient of a small length of dowelling. The dowel rod is first glued into a hole made in the motif, and then into a similar hole drilled in the platform. Do not fix the motif, however, until after the frame has been properly completed.

The Question of Finish

Finishing is largely a matter of choice. If the frame has been made of a nicely grained hardwood, the worker may desire to leave it in its natural colours, using beeswax and polish to give it its final appearance. In this case, the overlay (C) might well be cut from a darker wood than the other parts of the frame. For instance, if the frame itself is made from $\frac{1}{2}$ in. oak, then the overlay might well be cut from $\frac{1}{2}$ in. dark mahogany.

The frame sent to us is coloured in enamel, and many workers may well prefer to finish their own frame in this way. Here again, though, there should be a contrast between the frame and the overlay (C). In the frame illustrated, the predominant colour is light blue and the overlay is silver. The colours chosen, however, will depend to a great extent on the subject of the picture to be framed. That of a footballer, for instance, might well be coloured to represent the particular team's colours.

The motif should, of course, be coloured as nearly as possible to the article it represents. The fireman's helmet illustrated is coloured black with a red and silver badge painted on its front.

Whichever way you decide to finish your frame, treat the whole well with a good woodfiller before you start. And if you are intending to paint, do not be afraid to give the frame more than one coat, lightly glasspapering the model between each. When all the paint work has been completed and the whole thing is dry, the motif can be mounted with a touch of glue on the dowel rod.

A Tip for Treating a Burn

If you burn yourself do not let the burn come to a blister. Cut a potato in half, get your penknife, scrape a bit of the potato out and place it on the spot

which has been burned. Then get a piece of bandage or a piece of rag and wrap the burn up for about 2 hours to take the soreness out.

Carry your camping gear with a 'PACK SADDLE'

FOR carrying camping gear or hiking kit, the only type of rucksack worth using is the Bergen, or similar, framed pattern. Apart from distributing the load well and sending most of it down to the waist, instead of cutting the shoulders, the frame keeps most of the load off the back—a great boon in hot weather.

But Bergen-type rucksacks are now comparatively scarce and expensive, while most of the Commando-type framed rucksacks now being sold by Government-surplus stores are far too heavy for average English countryside use, though admirable for anyone undertaking a really 'tough' exploration in the wilds. The carrier frames ('Everest'), sold separately, are worth purchasing for the leather straps alone, as we shall soon see.

Enthusiastic amateurs have made Bergen-type frames of basket work, but it is surprising what little use has been made in this country of a wooden-framed 'pack-saddle' used a good deal in the American backwoods. As the illustrations will show, it is a simple four-piece frame with suitable straps.

Special Advantages

It has two special advantages additional to its usual comfortable load-spreading qualities. First, any type of bag can be fitted to it: an existing rucksack, a large army pack, a small kit bag or even a small flour, etc., sack. Secondly, it can be 'made to measure'.

As regards the latter, get a friend to help you measure your own back. Figs. 1 and 2 will show the particulars to take. As regards Fig. 2, one will need a piece of thick wire or a strip of metal bent to shape to act as a template. The frame, when made, should be about 1in. off the shoulder blades and fit easily round the hips.

In use, the greater part of the wooden frame does not touch the body (it would be uncomfortable if it did) but is supplemented by a broad leather or webbing band at the waist and cross-straps at the back (see Fig. 6). A careful study of the principles involved will enable the reader to make the wooden frame to the best advantage.

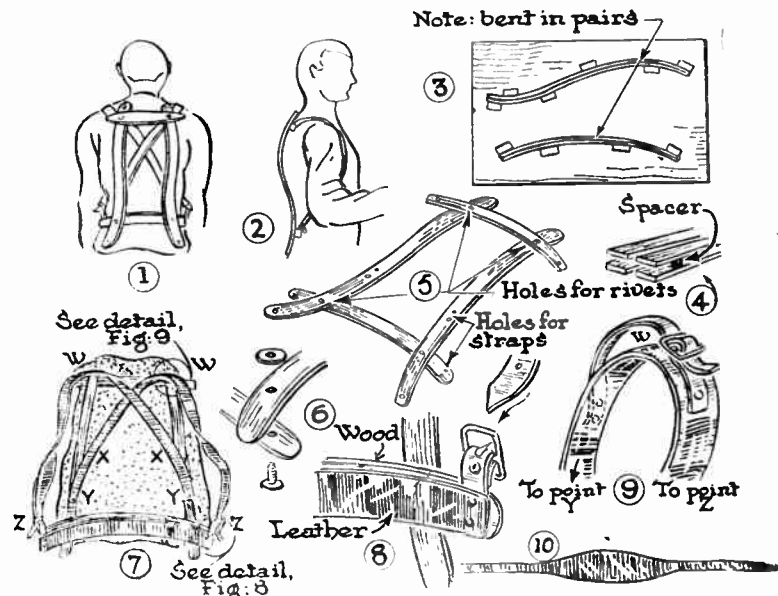
The only decent wood to use is ash of 1½ins. by ½in. section. White oak is an alternative. Ordinary deal is quite hopeless. Ash has remarkable strength and 'give' and can 'take it' where common deal would break or splinter.

The major problem of construction is finding a means of steaming the strips so that they can be bent, but this is soon solved as long as you are not too proud to go scrounging round junk yards to find an iron drainpipe about 3ft. long and 6ins. or so in diameter. (The actual size does not matter very much as

long as it will hold the four strips easily and loosely).

The four strips of wood are to be placed in this pipe, packed with wet sand so that they do not touch each other nor the metal. One end of the pipe is, of course, stopped up with a wooden plug or a suitable tin can. The best way to go about this packing is to separate the strips by means of little wooden blocks as spacers (Fig. 4), place them in the pipe and then add small

shows clearly, and better than a long written description how wooden blocks are arranged (based on a chalked pattern taken from the wire, etc., template from your back), so that the steamed strips can be bent and held. Note that the two long strips are bent together. In theory this means that one is slightly more curved than the other, but in actual practice this is hardly worth bothering about compared with the advantage of bending both strips to-



Construction is made clear by these drawings

quantities of sand and water alternately, packing well down and making sure that the sand is well damped. Failure to ensure this will probably result in the scorching of the wood.

Now support the drainpipe by bricks at each end and light a fire around it (this being done in a corner of the garden, for example). After a while, steam will come steadily from the open end and this steaming should be continued for about a quarter of an hour, care being taken to see that the sand does not get dry. Steam should come out all the time.

Use Tongs

Remove the wood with a pair of tongs or pincers (it will be hot!) and immediately place them on the moulds which should have been prepared in advance, but which will be now described (Fig. 3).

You will need a fairly large flat surface. As it will be required for about a week, you might be able to use the underside of a kitchen table or the wooden wall of a shed or the bare wooden floor of a spare room. Fig. 3

together. The blocks are screwed to the base and strategically arranged so as to hold the 'steamed' wood in the desired position. The upper (shoulder) and lower (waist) strips are also bent together, though afterwards cut to different lengths. Very roughly, for a man-size frame, the long strips will be about 30ins. long, the upper bar 12ins. and the lower, 20ins.

After a Week

When, after a week, the strips are removed from the forms, drill holes as shown, and round off the ends. Temporarily fasten together with nuts and bolts and fit the straps, also temporarily. In other words, before committing oneself finally, test out the proportions. Note the 'under and over' positions of the crossbars, i.e., they are not both on the same side of the long pieces.

When satisfied, take the parts to pieces, glasspaper well, rounding off the sharp edges of the wood. Apply a coat or two of shellac, glasspapering lightly between each (dry) coat and apply two or three coats of spar varnish, glass-

(Continued foot of page 186)

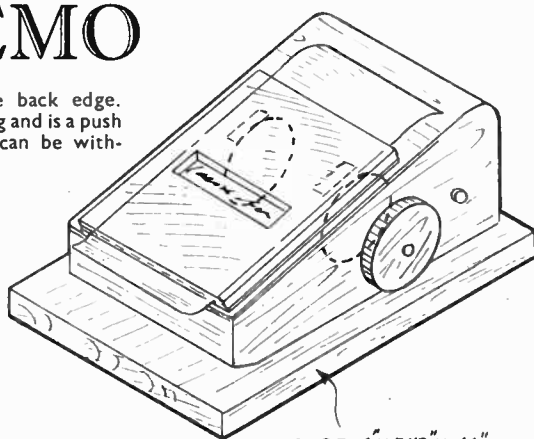
Make this useful desk or WORKSHOP MEMO

THIS little cabinet contains a roll of paper which emerges through a slot in the top and then passes under a celluloid face plate. A friction drive is provided to pull the paper strip under this celluloid to emerge at the lower end, where the paper can be torn off. A slot is cut in the celluloid to provide access to the paper, so that notes, etc., can be written on it. At any time these notes are required, a turn or two on the side knob and the marked strip is offered out of the end of the face, to tear off.

Originally, this cabinet was made for the workshop. Any shortage of materials or stock was then noted and at any time the appropriate 'shopping list' could be torn off. There are other numerous, and obvious applications, one of the advantages of the arrangement being

smooth and round off the back edge. The rear dowel is $3\frac{1}{2}$ ins. long and is a push fit in the side holes. It can be withdrawn for 'loading' with the paper roll. The other dowel, $3\frac{1}{2}$ ins. long, carries four 1 in. diameter discs cut from $\frac{1}{4}$ in. ply. These are located so that the two inner discs—the friction drive—just engage in the slots in the top and so locate the assembly. The two outer discs should be serrated or knurled around their circumference. All four discs are glued to the dowel. The dowel itself should be a running fit in the side holes.

For a better friction drive, the inner discs should be 'tyred' with a rubber



BASE 6" X 3 1/2" X 1 1/4"

Fig. 1

paper can pass.

A suitable paper roll can be made by cutting off a 2 in. length from a roll of kitchen paper. 2 ins. represents the absolute maximum dimension for the roll width. It is preferable to reduce this to about $1\frac{3}{4}$ ins., to avoid any possibility of jamming under the face.

The complete unit can now be finished off by mounting on a base, 6 ins. by $3\frac{1}{2}$ ins. by $\frac{1}{4}$ in. Attach a hinge or a pair of hinges, as shown in Fig. 6, so that the top can be tilted up for access to the interior to replace the paper roll, as necessary.

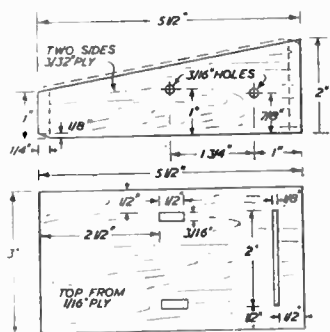


Fig. 2

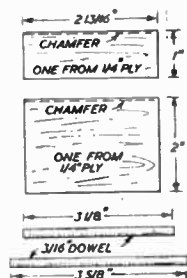


Fig. 3

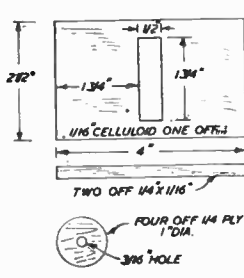


Fig. 4

band. A flat band about $\frac{1}{4}$ in. wide and 1 in. long would be ideal. It will grip the disc tightly when stretched in place, but could also be lightly cemented to the rim with rubber solution. If such 'tyres' are used, reduce the diameter of the two inner discs by an amount equal to twice the band thickness.

Check that the assembly is accurate and that the friction drive discs protrude just above the top—slightly less than $\frac{1}{16}$ in., but not less than $\frac{1}{32}$ in. The celluloid face plate can then be added, separated from the top by two spacers of $\frac{1}{16}$ in. by $\frac{1}{16}$ in., one each side, to form a channel 2 ins. wide through which the

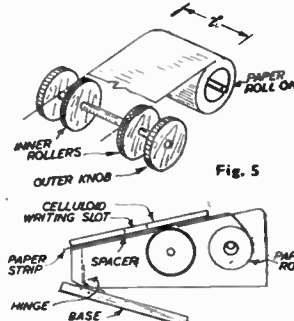


Fig. 5

Fig. 6

A small metal clip fitted to the rear end normally holds the assembly locked. Note the chamfer on the side members immediately forward of the hinge point to allow the necessary opening action. (285)

that the paper strip, normally under the celluloid face, is kept clean. A general view of the finished component is shown in Fig. 1.

The two sides and top are shown in Fig. 2. The sides are fretted from $\frac{3}{32}$ in. ply and the top from $\frac{1}{16}$ in. ply. The sides are drilled to take two dowels and the top is slotted for the paper feed and friction drive. The two end pieces (Fig. 3) are cut from $\frac{1}{4}$ in. ply.

Assemble sides, top and ends on a flat surface. When set, glasspaper down

Pack Saddle—(Continued from page 185)

papering lightly between each. This treatment is not just a faddy luxury, but essential if the frame is to be used in all conditions of weather. The parts are finally fitted together with copper rivets (Fig. 6).

The Straps

The straps can be of leather or webbing. As already hinted some of the Government-surplus carrier frames are worth buying merely for the sake of the chrome-leather straps they contain. The waist band is permanently fixed to each end of the wooden waist-strip,

somewhat like a string on a bow (Fig. 8). These same end attachments also hold buckles to take the ends of the adjustable shoulder straps. Fig. 9 shows one way of attaching the shoulder straps to the upper bar of the frame. The long straps (X-X) should, for preference, widen out where they pass over the shoulders (Fig. 10). On the frame, they are permanently fixed, to points (Y-Y). After passing diagonally over the frame, and being attached to point (W) (see Fig. 9) so that the strap, from (X) to (W) is taut, the straps then widen out (see Fig. 10) and go down to point

(Z-Z) where they are adjustable.

As regards attaching the rucsac itself to the frame, no definite instructions can be given as circumstances vary with each type of 'sac'. In general, loops of webbing are fitted to the 'sac' so that it can be slipped over the frame, or brass rings can be sewn very strongly in such a manner that the 'sac' can be lashed to the frame. A ready-made rucsac will already have these rings fitted. The 'sac' should be so fitted that it can be taken off when necessary for a good clean out, though this is not necessary every day.

(301)



The SHIPMODELLER'S Corner



IN setting up the shrouds, we either make or mar the finished effect of our model, and for actual scale models and the larger models in our series of kits, the best and most authentic effect is secured by following closely the method used in actual ships' practice.

We will, therefore, this week, consider those methods and how best we can follow them in our actual modelling.

As a general rule, shrouds are made in pairs. A single rope of the correct length is doubled at the bight, just below the bend, the two legs being

All about Shrouds

by "Whipstaff"

were usually spaced 15 ins. to 16 ins. apart, and knowing the scale of your model, this enables your ratlines to be spaced accurately and so achieve the correct result.

In some ships of later periods you will come across examples of the CATCH-RATLINE; in this case the ratlines go only to the last shroud but one, aft, except every fifth shroud which is seized to the after shroud. It is this ratline that is termed the 'catch ratline' (see Fig. 2).

And now to methods of shroud making. First, prepare your shrouds as in Fig. 1, allowing, when you measure your length, a little extra for seizing around your dead-eye.

Slip the shroud over the mast head as in actual practice and reeve your lanyards through the shroud deadeyes and the corresponding deadeyes at the channels, drawing taut. Do not finally fasten off the lanyards until all shrouds are in position. You can then, with a pair of tweezers, draw all shrouds equally taut and ensure your deadeyes are level, by adjusting the tension of the lanyards.

This method is for following actual ship practice, when the shrouds are erected in position before the mast above is stepped.

If your tops are large enough to have lubber holes shown, add the tops first and take shrouds up through the lubber hole before slipping over the mast head.

For those who prefer to step all masts complete before erecting the shrouds, the following method will give the right effect. Take your length of cord for your first shroud, seize a deadeye in one end, and temporarily attach this deadeye to the appropriate deadeye in the channel with a wire staple. For this purpose make a wire staple of sufficient length to space your deadeyes four diameters apart as in Fig. 3.

Now pass your shroud up and

around the mast (through the lubber hole, if your top shows them) and back down to second deadeye in channel. Seize a deadeye in the second leg of the shroud at the right distance, reeve your lanyard through this deadeye and its appropriate channel deadeye and draw taut; remove staple and reeve lanyard through the first pair, again drawing taut. Again, do not fasten off until all shrouds are in position, to allow of adjustment. Also, do not forget: first pair to starboard, and second pair to port in each case. Seize shroud legs near mast and slide, seizing up to mast. In both methods the same procedure is followed with the shrouds on the top-masts.

Fig. 4 shows how to seize the deadeyes to the shrouds, if your model scale is too small to allow of doing this in nautical fashion, that is by fastening the cord back on itself with a seizing of fine thread. Glue the end of the cord, pass it around the deadeye and twist it. When set and painted this gives a good imitation, at small scale, of being correctly seized.

When lacing 3-hole deadeyes, commence by putting a knot in one end of the lanyard. The sailor's way was to use a Mathew Walker knot, but except in large scale work this is not practical.

Commence by reeving your lanyard through the after hole of the top

(Continued foot of page 188)

QUESTION AND ANSWER By 'Whipstaff'

Question: What is meant by the 'Beak-head'?

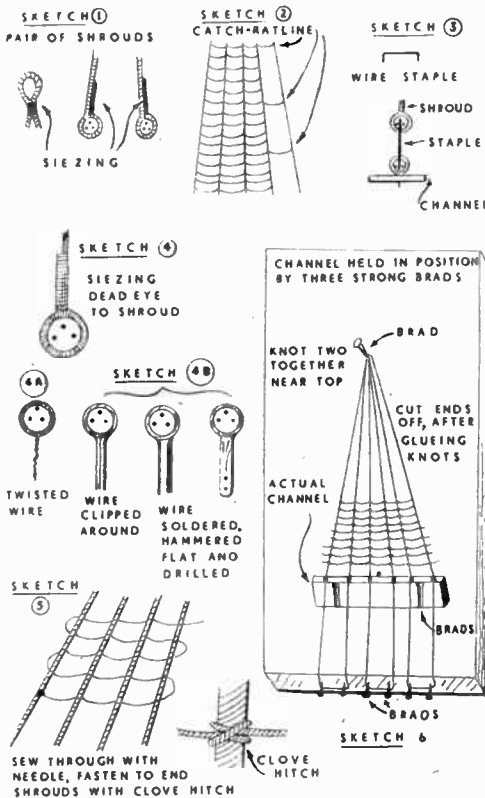
Answer: This was a small platform at the fore part of the upper deck in large ships; usually it was placed at the same height above the deck as the port sills, sometimes for the use of a gun, but mainly for the convenience of the men. At the after part of the beak-head was a bulkhead, which enclosed the forecastle. This name was usually used for ships whose forecastle was square or oblong; a circumstance common to ships which had two or more tiers of guns.

Question: What is meant by 'Clincher built'?

Answer: This is a term applied to ships in which the planks are laid so that the lower edge of each plank overlays the next plank as slates on the roof of a house.

Question: What is meant by 'Carvel built'?

Answer: This method of building is performed by laying the planks edge to edge and caulking them to make them water-tight.



to form an eye that will fit snugly around the mast head (Fig. 1)

A deadeye is turned in the lower end of each leg, and this is eventually made fast to the corresponding deadeye in the channel by means of a lanyard. Where there is an odd number of shrouds on each side, the odd shroud is eye-spliced at the mast head. The shrouds are then erected, first pair to starboard and second pair to port and alternately starboard and port until all shrouds are in position. Ratlines are tied across, being secured to each shroud by a clovehitch.

It is useful to remember that ratlines

A few tips on making THINGS WITH SHELLS

COLLECTING shells can be a fascinating hobby. It provides an object for your summer holiday by the sea, or just for an afternoon's walk along the shore.

No one ever found two shells exactly alike, for every single one has a par-

ticular shape and colour of its own. Finding a few shells is always easy, but it is not so easy to get enough of the right shape and size to make what you have in mind.

Tides roll the shells up on the beach, and then later tides roll them back and forth, until the sand grinds them away.

In order to make useful things with your shells you will also need a few pipe-cleaners and some secotone. Rubber bands are useful for holding shells together while the secotone dries, and remember that a thin film of secotone is better than a thick smear, which, apart from not holding the shells together so efficiently, has an annoying habit of getting on your hands and jersey, which will not be popular with your elders.

Shells are rarely regular in proportion, and one or more little shells should, therefore, be cemented on the bottom of a design to make a solid base. A three point base is the easiest to make.



Fig. 1—Conch shell



Fig. 2—Scallop shell

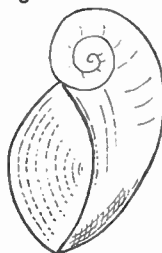
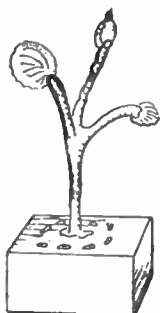


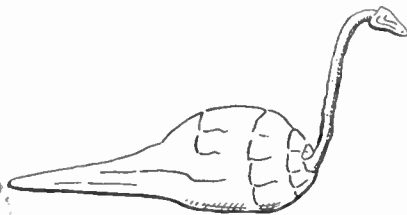
Fig. 3—Snail shell



Fig. 4—Clam shell



A 'flower box' (the stalk is a pipe cleaner)



A 'swan' (pipe cleaner for neck)

The best time to find shells is after a big storm, when the high powerful breakers cast them up in greatest numbers. But they must be picked up quickly or they will be worn away in a short time by the action of the water rubbing them on the sand.

There is no need to trouble you with long names of the shells which you will probably forget, but here are a few of the best known, which will make it easier for you to follow my drawings. Fig. 1, Conch Shell; Fig. 2, Scallop Shell; Fig. 3, Snail Shell; Fig. 4, Clam Shell.

There are many hundreds of designs which you can make with these and other shells, and you will get a lot of fun by planning them. Some take five minutes and some take hours. You will find that things such as ash trays, match holders and place cards are useful for Christmas and birthday presents. (274)

Shipmodeller's Corner—(Continued from page 187)

deadeye, down through the corresponding hole in the lower deadeye, up through the centre hole of the upper one, down through centre hole of lower deadeye, up through forward hole of upper deadeye, down through forward hole of lower deadeye, back up at the rear of both deadeyes and fasten off at the top. I have gone into detail in order to show the correct way to reeve your lanyards in correct ship fashion.

On some vessels the lanyards themselves were seized in the centre, and if this is so in the case of your model, it will be shown on the plans.

Chainplates for your channel deadeyes can be of cord as is the method used on most galleon models, but if you go into detail you will need correct type for your model.

If your model plans show metal chainplates, they can be made of twisted wire (Fig. 4A), clipped around the deadeye and soldered, afterwards drilling or pinning to hull as in Fig. 4B. Flatten wire with hammer before drilling.

If your plans show chain type or any other specific type, I will be pleased to advise on the best way to make them if your query is sent to our Editor.

Ratlines can be sewn through the shrouds, using a fine sewing needle. Fasten with a clove hitch to after

shroud, sew through intervening shrouds and fasten off with a clove hitch to forward shroud, afterwards putting a spot of Durofix on each clove hitch.

The correct ship procedure, and one used by expert modellers at $\frac{1}{4}$ in. scale and over, is to fasten the ratline to each shroud with a clove hitch, thus it is done in correct nautical manner. This is tedious at first, but, after some practice with tweezers you will soon become proficient and work quite speedily. The final result is well worth this extra trouble. In both methods a spot of cement on the outer hitches makes a permanent job (see Fig. 5).

It is advisable, for both methods, to draw out your shrouds and ratlines full size on a piece of white card and stand this behind the shrouds while tying the ratlines. In this way you will ensure getting your ratlines evenly spaced.

For those who prefer to complete shrouds and ratlines before erecting them on the model, here is an excellent method, in which the finished effect approximates in appearance very closely to actual practice. We are indebted to our reader, Mr. H. W. Walls, for the idea.

On a piece of board of suitable size erect one of your actual channels, holding it in position with three strong

brads. If your channels are drilled for chainplates, make duplicates, and with a fine saw slot them in the edge to correspond with the drill holes in the actual channel. Glue and pin one set of channels in position on one side of the model.

Drive small brads in the edge of your board to correspond with the saw cuts in your channel, as in Fig. 6, and one strong brad above the channel, taking your measurement from the mast top to channel in the side of the model. Remember that each shroud aft will be slightly longer than the shroud in front of it.

Shrouds are now built up by carrying your cord from the bottom brads, up over the channel to the brad at the top of the board as in Fig. 6. If necessary, two cords (or two shrouds) can be knotted together before taking around the brad; but this must be done close to the top so as to be unnoticeable in the finished model.

Ratlines are now tied across, for preference with the correct clove hitch, and each knot secured with Durofix, the final assembly being cut off the board and trimmed with a razor blade.

If black cord has not been used, stain black before erecting on the model. (320)

MISCELLANEOUS ADVERTISEMENTS

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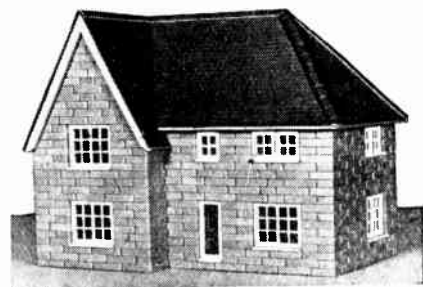
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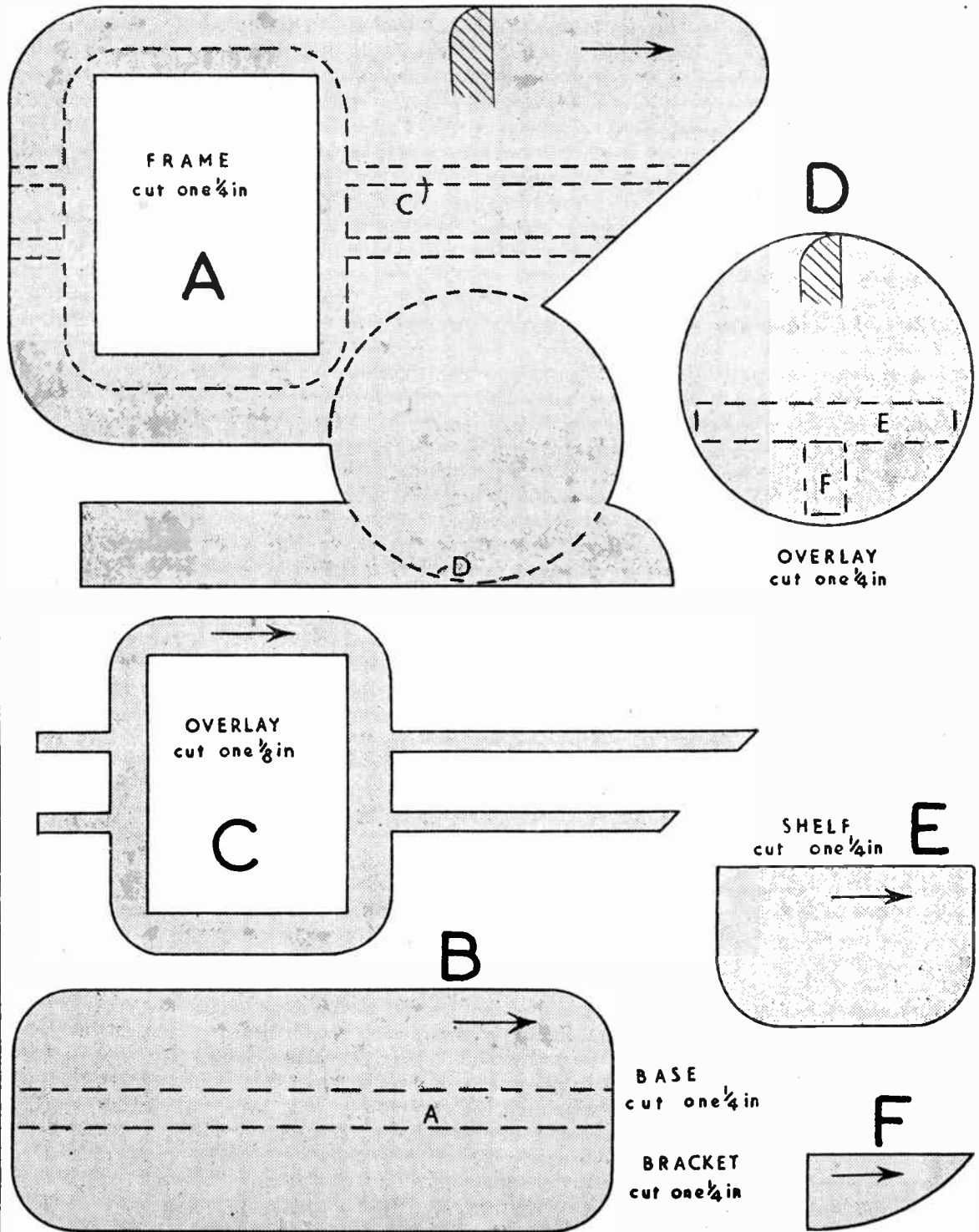
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(See page 184)



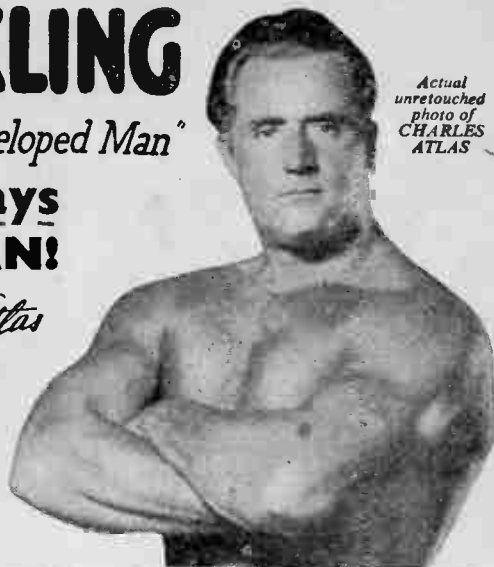
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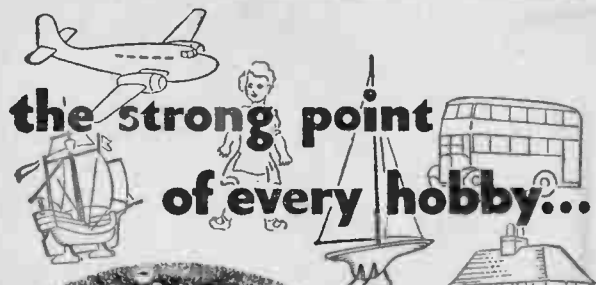
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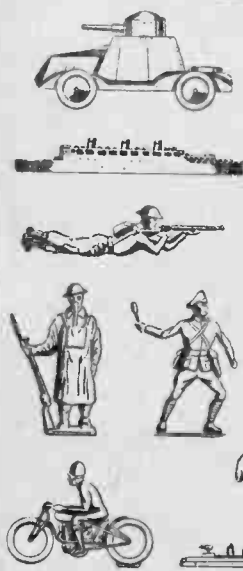
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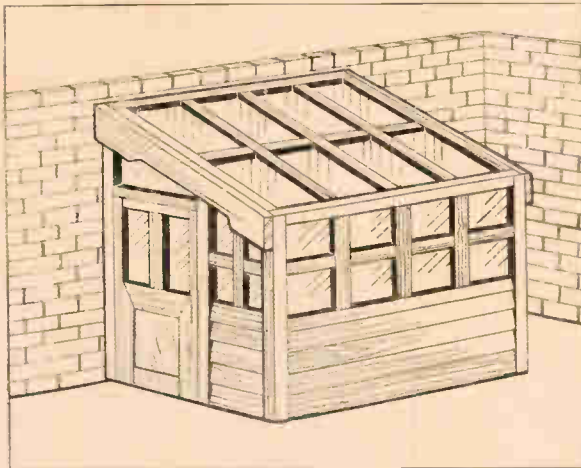
CONTENTS

	Page
A Lean-to Greenhouse	193
A Collector's Showcase	195
Photographic Range Finder	196
Ideas for the Handyman	197
Hiking is good Fun	198
Simple Shelf Bracket	199
Renovating a Fishing Rod	199
Folding Ironing Board	200
Stationery Rack	201
When in Camp	202
Experiments with Soda	203
Replies of Interest	204
Some Reliable Weather Signs	204
Collecting Pond Life	205
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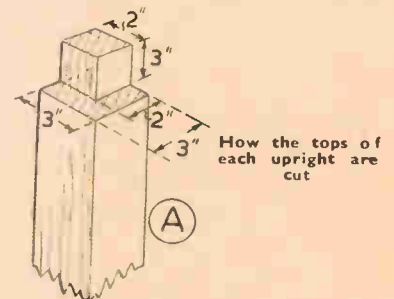


For the gardener—

A LEAN-TO GREENHOUSE

This frame is connected to the wall framework by three rails and a rafter at one end. The bottom, sill and upper rail are of the same section as before, while a 3ins. by 2ins. rafter runs from the corner post to the top of the wall plate. One 1in. by $\frac{3}{4}$ in. bar is tenoned between the rafter and sill rail, halfway along the length of the latter. The overall width at this end of the building is 6ft.

The front gabled framework is shown at (C) and is of the same construction as before. This framework carries the door



opening, the post for which is half-lapped on to the rafter. It is advisable to mark the angled shoulder on the top edge of this by direct measurement against the rafter.

To conform with the roof slope the top rail of the front frame should be bevelled off, while a slight bevel may also be given to the outside edges of the sill rail.

NO amateur gardener will need convincing of the usefulness of a greenhouse, but not everyone can afford such an item. The small greenhouse described here, however, can be put up quite easily by the average handyman at comparatively little cost.

As can be seen from the illustration the design is of the lean-to type. This simplifies the construction considerably, and is also economical of timber.

The needs of individual gardeners will vary, so the dimensions given below may not be exactly suitable. There is no reason why these measurements should not be altered, provided that the general method of construction is followed.

A series of wall-plugs must be fitted into the wall at appropriate places, and, to these, two uprights and a top rail are screwed. Each upright is of 3ins. by 2ins. section, 8ft. 2ins. high, while the rail is 4ins. by 2ins. and 8ft. long.

The front framework measures 8ft. long by 6ft. 8ins. high, the corner posts being 3ins. square and the top and bottom rails 3ins. wide by 2ins. thick. On the inside edges of the posts, a slot 2ins. wide is cut, this having its bottom

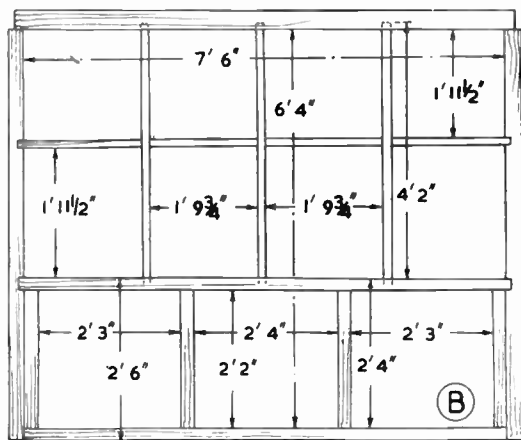
edge 2ft. 4ins. from the bottom of the upright, while a 1in. long by $\frac{3}{4}$ in. wide stump mortise is chopped to a depth of 1in., being at 4ft. 5 $\frac{1}{2}$ ins. from the bottom. At the top of each upright a 1in. wide by 3ins. deep strip is cut on the two outside edges (see drawing A).

A bottom rail 7ft. 6ins. long is fastened between the bottoms of the uprights, while a top rail is half-lapped on to the tops of them. A sill rail, 7ft. 8ins. long of 3ins. by 2ins., fits between the lower slots of the upright.

On the under-side of the top rail, three stump mortises are cut to a depth of 1in., these mortises measuring 1in. long by $\frac{3}{4}$ in. wide. The mortises are duplicated on the upper portion of the sill rail, and three 1in. by $\frac{3}{4}$ in. bars (each carrying a slot for a cross-check joint on its inside face) are fitted between these mortises. The horizontal bar can then be fitted between the mortises on the uprights, fitting round the vertical bars by cross-check joints. The frame is assembled by redleading and screwing the joints.

Four posts of 2ins. square section are then fitted between the sill and bottom rail as shown at (B), which gives the main dimensions of the front frame.

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Front elevation

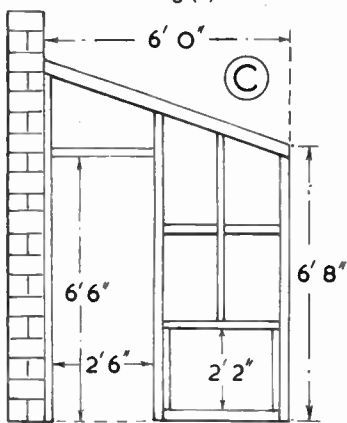
The Roof

The roof is of similar construction to the front frame, but all members are of 1 in. by 3/4 in. wood. Three short and a long horizontal rail are half-lapped together and on to the outside members, and the framework is screwed on to the top of the greenhouse. 'Gable boards' of simple outline are screwed at the ends of these frames; one such board can be seen on the sketch of the finished greenhouse.

It is advisable to have two hinged panes in the roof for ventilation purposes, but all other openings for glazing in the framework should have 1/2 in square chamfered strips fitted round their inside edges to form rebates for the glass (D). On the front and end frames the outside edges of these strips are flush with the outside of the bars, but on the roof frame they are level with the inside edge. All strips are bradded into place and mitred at the corners.

The ventilation panes are simple frameworks hinged on the top edge, and fitted with a casement-stay type of fitting on the other.

The main framework is then completed by cutting the weatherboarding to length and nailing it in place.



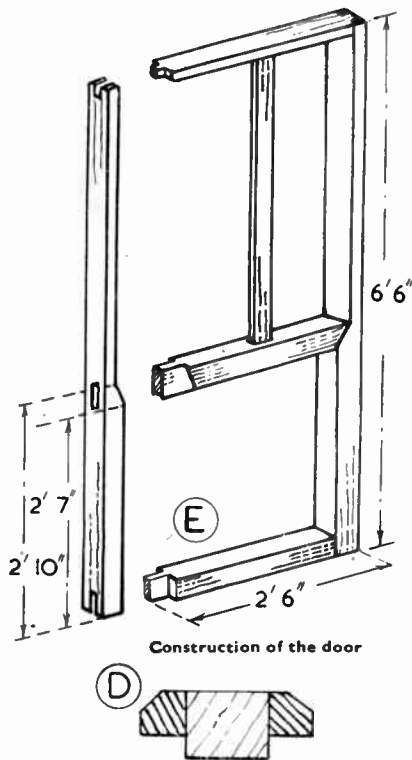
Side elevation

The middle and bottom rails are tenoned into place, the former having sloping shoulders. A top rail (2ft. 6ins.) by 1 1/2 ins. square is similarly tenoned, and between the inside edge of this and the top edge of the middle rail a vertical bar is fitted.

Around the inside of the panel at the bottom of the door, 3/4 in. square strips are glued and pinned, their inside edges being flush with the inside of the door.

The best type of door for such a structure is the 'diminished stile', a simplified version of which is described below.

Uprights for this are of 3 ins. by 1 1/2 ins. section, 6ft. 6 ins. long, while the bottom and middle rails are of the same end section but 2ft. 6 ins. long. Each upright is sawn down at 1 1/2 ins. from the outside edge to a point 2ft. 10 ins. from the bottom of the upright, and from here the shaping goes across to the inside edge at a point 2ft. 7 ins. from the bottom. This is made clear by drawing (E).



Construction of the door

Section showing how chamfered strips are fitted to form rebates for the glass

A suitable panel of 3/4 in. wood is then nailed into the rebate thus provided. The upper part of the door carries two glass panes in rebates formed by chamfered strips as was done with the sides.

After hanging the door the greenhouse is complete apart from interior staging, which must be fitted according to requirements. It may be advisable, however, to fit a lead 'flashing' between the wall and top edge of the greenhouse to prevent leakage of rain water there.

(359)

Collector's Showcase—(Continued from page 195)

Fitting the Glass

The method of securing the glass in the frame is shown in the detailed diagram at Fig. 5 and in the enlarged diagram included with it.

First cut off some strips (K) 3/4 in. wide from 1 in. stuff, and lay them under the frame so that they project 1 in. beyond the interior opening; then mark off where the mitres will be cut at each corner. Cut the mitres with a fine-tooth tenon saw or a fretsaw, and finally glue and screw the four pieces to the underside of the frame.

This should make a solid bed for the glass, which simply rests upon these fillets, and which is held in place by a rounded beading (L) nailed in the angle above it. The perspective sketch and the circled diagram shows distinctly the whole section through the frame and the two members (K) and (L) and the glass

(M). The beading should be carefully marked and the mitres pencilled across on one of the flat sides of the beading before it is actually cut.

Allow Clearance

In cutting the glass for the lid frame, do not have a tight fit, but allow about 1/8 in. clearance in case the frame should 'give' a little while opening and closing. If the glass is being ordered from the local glazier, give him measurements on the scant side to be certain of a fit.

Fit the lid with a pair of 1 1/2 ins. hinges, these being put on, of course, with countersunk brass screws. Shallow recesses should be cut in the back rail of the case to take both flaps of the hinges, as shown in the circled diagram in Fig. 5. The lid will then lie flat and close to the case rail and thus exclude dust. If

the outer edges of the lid are desired rounded off or otherwise shaped, this work should be done before it is fixed to the case.

Finishing Work

The whole of the woodwork externally should be varnished or given two coats of glaze or varnish, which, if nicely laid on, gives a good finish and resembles french polish. The first coat of varnish should be lightly glasspapered before the second coat is applied.

The inside of the case might, perhaps, be coated with eggshell black, which should nicely show up the exhibits, but this inside finish should suit the type of exhibit and be decided wholly by the maker of the show case. The floor inside the case should be covered with green baize.

(358)

Provide a home for your 'finds'—make A COLLECTOR'S SHOWCASE

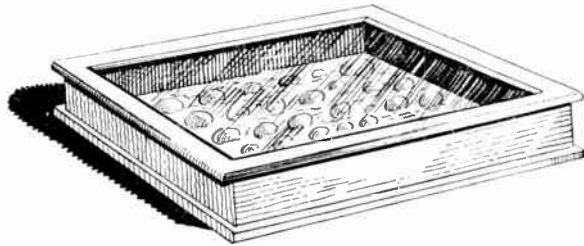


Fig. 1—The finished article

WE show at Fig. 1 a simple and convenient form of showcase, suitable for the display of birds' eggs or of shells one may collect on the beach during a holiday ramble. The overall size of the case is: length 20ins., width 15ins., and height about 4ins. The case has a glass top lid which is hinged to one of the long sides.

known and easily cut in Fig. 2.

This form of joint is satisfactory for a job such as this, for when marked out accurately and carefully cut, it is exceptionally strong. It will be necessary, in setting out the joint, to divide the width of 3ins. into five equal parts, and then set out $\frac{3}{8}$ in. back from the end of each rail as seen in Fig. 2. The cutting

plywood floor of the base. Here it can be glued to the base and countersunk screws run up through this into the four sides of the case. The corner joints must be cleaned off and made smooth, and if the result does not quite please the worker, he may cover them with thin wood which should be mitred and glued to the face of the rails, as at (H) in Fig. 2.

The case thus far made should be laid on a perfectly flat table or bench, and heavy weights put on the top until the glue has thoroughly hardened. The top edges of the case should next be glass-papered off and made ready for the lid.

The Lid

As the frame for the lid must be sturdily built up, the halving joint shown in Fig. 4 should be adopted for the corners. Prepare four rails, two 20 $\frac{3}{4}$ ins. long and two 15 $\frac{3}{4}$ ins. long and all 1 $\frac{1}{2}$ ins. wide by $\frac{3}{8}$ in. thick, as (I) and (J) Fig. 4. Next mark across the width of each rail at the ends of the pieces, and note care-

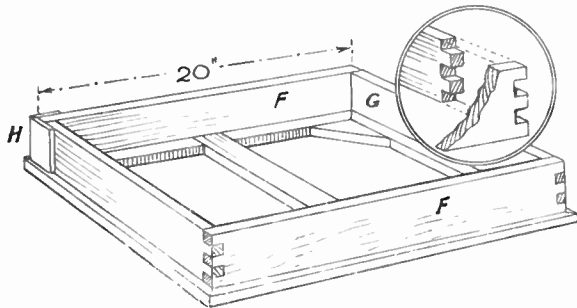


Fig. 2—Construction of the case

Mahogany is the most suitable wood from which to make the case, but a more common wood such as deal or pine might be used. The construction is simple, as the illustration Fig. 2 shows.

There is a main base made up of four rails, two (A) and two (B), which are to be mitred at the ends as seen in Fig. 3. The lengths of these rails are given. Should it be found necessary to stiffen the base at all, according to the kind of exhibits that will be put into the case, then a cross rail (D) may be added, halved into the side rails, and glued and screwed in. The frame may be further stiffened by adding angle blocks glued into the interior corners as shown.

Ply Floor

The floor of the case should be cut from a sheet of $\frac{3}{8}$ in. or $\frac{1}{2}$ in. plywood, and measures 19 $\frac{1}{2}$ ins. by 14 $\frac{1}{2}$ ins. It is glued and screwed to the base rails with a clear and equal margin of $\frac{1}{8}$ in. all round. When gluing up the rails of the base, test the angles to see that they are perfect rightangles before adding the plywood floor.

may be carried out with the fretsaw, as this tool makes a fine cut, essential if a good close-fitting lock joint is wanted.

When cutting, too, keep to the inside of the drawn line; this will further help in making a firm fixing. Care must be taken, however, in knocking the joint together, not to

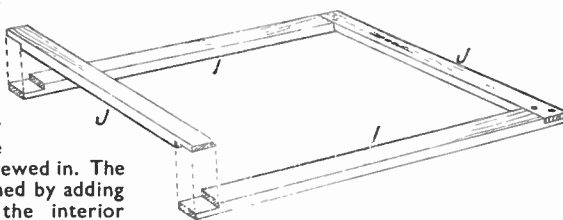


Fig. 4—How the frame for the lid is made

split away the wood at the top and lower edge of the rail. The enlarged detail in Fig. 2 shows one of the angles before the rails are jointed up and glued.

Here again the angles of the frame must be carefully checked for squareness with the try-square or a set square. The resulting size of the frame inside should be such that it will fit exactly over the

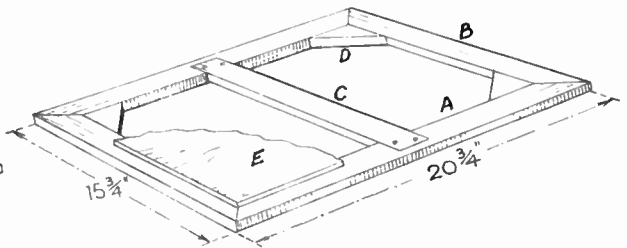


Fig. 3—The main base

fully where the halvings occur. By this is meant the upright rails (J) at the sides of the case run right through, while the top and lower rails are lapped underneath. Keep carefully to this arrangement throughout, and note the finished joints at the right of Fig. 4.

The small-tooth tenon saw will be

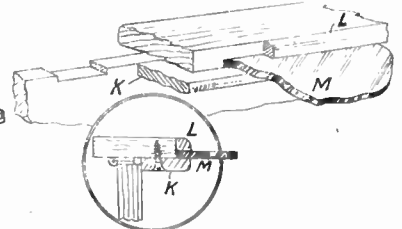


Fig. 5—Showing method of securing the glass in the frame

found best for cutting down the halvings, while the waste wood can be cleaned away with a $\frac{1}{8}$ in. chisel. Get the gluing surfaces quite flat and even before putting them together, so that all surfaces both at top and bottom are flush.

(Continued foot of page 194)

Ensure accurate focus with a PHOTOGRAPHIC RANGE FINDER

PHOTOGRAPHIC readers may be interested in this instrument, as many pictures are spoilt by being out of focus. It is not difficult to construct, but it does need accuracy in workmanship.

While following closely its professional prototype, it has been simplified as much as possible, to better ensure the parts needed being easy to obtain. For instance, in the professional instrument a perforated mirror is employed, and also a prism. In ours, both have been superseded by plain mirrors, which can be cut from any thin mirror in the reader's possession.

In Fig. 1 a longitudinal section of the instrument is shown, which will help to

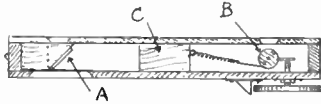


Fig. 1—Sectional view of the instrument

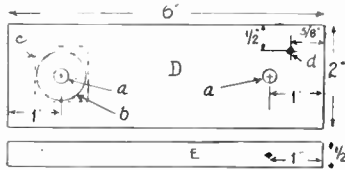


Fig. 2—The parts of the case

make the following constructional details clear. Construct the case first, the parts of which are grouped together in Fig. 2. (D) shows both the front and back of it. There are differences here which must be closely followed. The front (of $\frac{1}{2}$ in. wood) is cut to the dimensions given, and at the spots lettered (a-a), bore $\frac{1}{16}$ in. holes through. Mark and bore these holes accurately, and, to save some tedious repetition, follow this practice throughout. Bevel the holes by using a countersinking tool in the drill, a few turns doing the trick.

Top and Bottom

The top and bottom of the case (E) are cut from $\frac{1}{4}$ in. fretwood also. These have a small hole drilled, near the right side end, just large enough to admit a $\frac{1}{8}$ in. round-headed brass screw. The ends of the case (F) are cut from $\frac{1}{4}$ in. wood. In one only, the left side one, a slot $\frac{1}{4}$ in. wide and $\frac{3}{8}$ in. long is sawn out. Now glue and nail the parts together. Apply a coat of dead black stain to the whole, and again to save repetition, dead black all subsequent parts, except the mirrors, of course. The back of the case will be dealt with later.

At (A) in Fig. 1 a fixed mirror is to be fitted, at an angle of 45 degrees. A holder for this should be cut from hardwood to the shape given in Fig. 3

(G). Cut the piece to size, then bevel one edge to 45 degrees, and in the middle saw out a piece $\frac{1}{8}$ in. wide, as shown. To the bevelled edge the mirror is to be fixed. This is barely $\frac{1}{8}$ in. wide and 1 in. long. Choose a thin mirror, as thin as you can get, and after cutting to size, mark the exact centre with pencilled diagonal lines, and there, with a darning needle, scrape a tiny hole, $\frac{1}{16}$ in. diameter. Any reader who has facilities for the job, and the skill, can drill the hole through the glass, perhaps, and so make a surer job. Fix the mirror, with its central hole exactly in the middle of the cut-out in the block, with a little cement at top and bottom. Durofix or similar adhesive will fix it firmly enough.

Slip it in the case, push a round-headed screw through the slot, and there drive it in the block. It will be seen that, owing to the slot, a little adjustment up or down of the mirror is possible to ensure correct alignment. If made to the dimensions given, a glance through the hole in the front of the case should show the central hole in the mirror also central in the viewing hole.

At (B) (Fig. 1) a moving mirror is

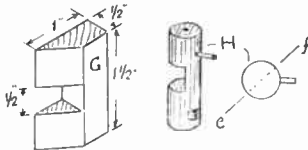
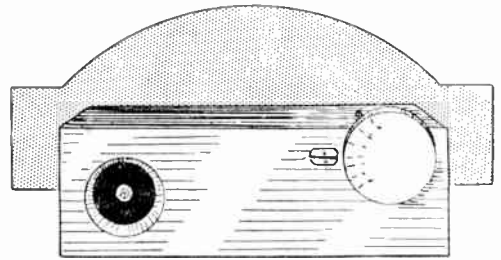


Fig. 3—The holders for the mirrors

fitted. The mount for this is shown at (H), and is a $1\frac{1}{2}$ ins. length of $\frac{3}{8}$ in. round wooden rod. A piece off a curtain rod would do nicely here. See the rod fits well in the case and is not tight, or else it may stick. Centre the ends accurately, and in the holes made, drive $\frac{1}{2}$ in. round-headed brass screws a little way. At the centre, cut out a piece of the rod, $\frac{1}{2}$ in. long, and halfway through it. At $\frac{3}{8}$ in. down from the top, drill a small hole partly through the rod, and in this drive in, a little way, a thin 1 in. brass screw. Cut the head off this screw, leaving a pin about $\frac{3}{8}$ in. long.

At $\frac{3}{8}$ in. up from the bottom, and in line with the pin, drive a second screw, leaving the head sticking out a little. A $\frac{1}{2}$ in. screw will serve here. The position of both pin and screw in relation to the angle of the mirror is important, as is detailed in sketch (H), where (e-f) shows the angle of this mirror, the pin being 45 degrees from it.

From the mirror glass cut a piece $\frac{3}{8}$ in. wide, bare, and $\frac{1}{2}$ in. long. Cement this in the space at the centre of the rod. Now remove the end screws, push the rod in the case and replace the screws in



the holes, top and bottom of the case. See the mirror support can swing quite freely. At this stage, or earlier if you like, cut two pieces of $\frac{1}{4}$ in. fretwood, 1 in. long and $\frac{1}{8}$ in. wide, and glue these top and bottom of the case, inside, as shown at (C) in Fig. 1.

Piece of Spring

A short piece of spiral spring or a strong elastic band (the spring is best), is now hooked over a tiny screw eye,

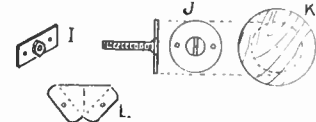


Fig. 4—Parts of the mechanism

driven in block (C) (the bottom one). The elastic band, if used, is then stretched and pulled over the screw head at the bottom of the rod. With a spring, it would be safer to tie a short piece of strong thread to it, and then tie the thread to the screw head. The space between the rod and back of the case is small, and possibly a spring, if employed alone, would stick or jam. Now give the rod a twist, and if all acts well, the spring should promptly force it back to its original position.

The back of the case can now be seen to. Cut this to the same size as the front and at centre (a) (left side), instead of the $\frac{1}{16}$ in. hole, cut a 1 in. one, as at (b). Bevel the edge of this outwards. Cut a piece of thin tin to $1\frac{1}{2}$ ins. wide and $1\frac{1}{2}$ ins. long; and in its centre, punch out a hole $\frac{3}{8}$ in. diameter. This is secured behind hole (b) with a small nail top and bottom, as at (C) (dotted outline). Both holes must be truly concentric. At the right side, instead of the hole (a), drill a $\frac{1}{8}$ in. one at spot (d).

You will need a 1 in. brass screw bolt and nut. Solder the nut to a small piece of brass, as at (I) Fig. 4, soldering it accurately over a $\frac{1}{16}$ in. hole drilled through the brass. Drill fixing holes each side, and fix the brass over hole (d). To the screw, solder a disc of metal, about $\frac{3}{8}$ in. diameter as at (J), and drill a pair of small fixing holes also. This is screwed to a $1\frac{1}{2}$ ins. disc of fretwood (K). Screw the whole ensemble in hole (d).

(Continued foot of page 197)

Here are some more IDEAS FOR THE HANDYMAN

It is surprising what we can make up from odd bits of furniture found in the loft or purchased at the dealers, and with the present shortage of materials, it is a good idea to have a look round and see what can be found in this way before the conditions of the market send up the price of even the most ancient piece of furniture.

Kitchen Fitment

The first item shown was an old chest of drawers. This can be very handy for the kitchen if you deal with it this way. Clean it over thoroughly and well glasspaper it. Then fill in all the cracks and crevices with plastic wood, or, if the

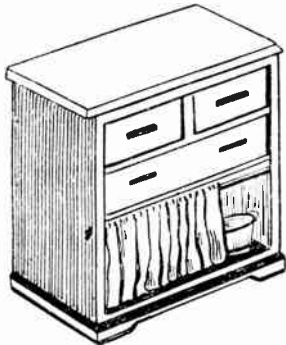


Fig. 1—New use for an old chest of drawers

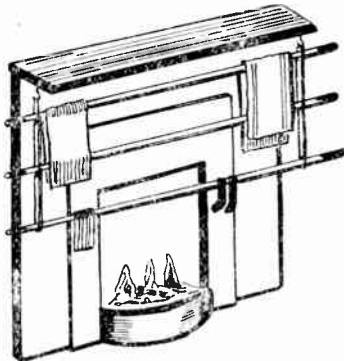


Fig. 3—Spare drying rack

cracks are large, use one of the compounds used by decorators.

Divide the top drawers into small sections and, with a lift-in tray, this can be made into a cutlery box. The second drawer is ideal for plate mats and other items wanted at meal-times, and the longer drawer is just right for the storage of dusters, tea cloths and so on.

One part can be divided to hold preserves which you will be needing during the season. Fix a short curtain as shown and line the bottom with some linoleum and this will hold spare pots and pans which cannot be housed elsewhere.

Tables With Flaps

Flap down tables are always handy because they can be adapted for any room at any time or folded flat and will then take up little room. These tables are often found at the dealers in a very bad state and can easily be renovated and made to look new. On the other hand, you can make this shape of table to your own plan. Fix two drawers, one at each end. The flaps are slightly wider than the centre section, and, when fully opened, allow you to seat quite a few people. The flaps must be firm and from 1in. floorboard to fit in under the table when not in use.

A spare drying rack is always handy, especially in a flat. The one shown is made with thick cord bound together to make loops for three broomhandles or two or more full-length dowel rods.

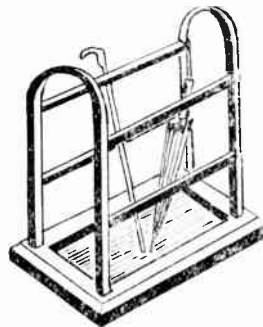


Fig. 4—Umbrella stand from an old towel rail

These are slipped through the loops and fitted to hooks under the mantelshelf. You will need two rings on the cords to hold the rack in position.

The advantage of this idea is that you can, in fine weather, hang this along the top of an open window to air a few things, and when not in use, it can be put away in a cupboard.

For Umbrellas

An old towel rail which is no longer needed can be used to make a stand for umbrellas. Shorten the bars so that you can make a wooden tray surround as shown to fit a flat baking dish, which you should paint in light green. One coat of flat paint should be given first. Paint the

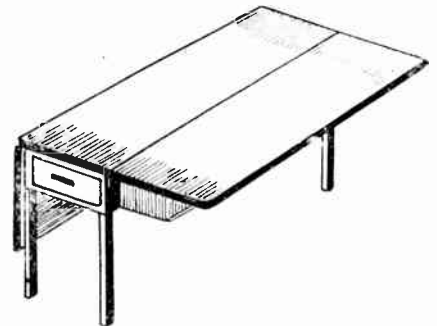


Fig. 2—Flap down table

wooden base in black, and then stain the wood, if this is possible.

One needs patience to make up these ideas, but it is well worth it and can be very enjoyable. When an old piece of furniture has been cleaned down and you intend to paint it, you will find that flat grey paint will give a good 'body' to the woodwork and fill in all the corners and small parts which might otherwise be unsightly.

Undercoat is most essential if you intend to change the furniture into a pastel shade, and there is no reason why you should not do this. Most good paint firms now do an undercoat to go with the actual shade, and using this gives a more definite pastel shade than otherwise. (332)

Photographic Range Finder—(Continued from page 196)

Now, from a piece of thin brass or tinplate, cut out the shape (L), bend up and screw or nail to the case, so that its front edge nearly, but not quite, touches the disc. Fix the back on, and all is ready, screwing it to the ends of the case, and blocks (C).

Calibrating the Disc

To calibrate the disc, proceed as follows. Take a view through the eyehole in the back of the case of some

nearby object. Turn the disc, and you should see a double image of the object. A little further rotation, and the double image will blend into one. At this stage, make a mark on the disc, opposite the pointer, and print thereon the number of feet it is away. Other distances are calibrated similarly. The disc is more easy to mark if covered with a piece of thin white card, and the marks and figures plainly put in in indian ink.

If the double images are not in correct

alignment, a little adjustment of the fixed mirror (A), should be made up or down, until right. Give the whole a coat of varnish, especially the cardboard disc. Those whose cameras are plainly marked with focusing distances may prefer to calibrate their range finder to correspond.

A final point. To keep out dust it is a good plan to glue pieces of cellophane behind the viewing and eye holes. (355)

At holiday times HIKING IS GOOD FUN

MANY readers will be looking forward to the summer holidays, with their opportunity for getting out-of-doors. Hiking, or tramping, has a wide appeal to energetic holiday-makers, and this is not surprising, for it is good fun. The Duke of Windsor, when he was Prince of Wales, told a gathering of hikers: *'Tramping in the country is the greatest and healthiest fun that city-dwellers can have'*. This is a true statement, for there is no happier or more interesting way of spending a week or a fortnight in summer than exploring the countryside on foot.

Therefore, if you wisely decide to go on a tour this year, make your arrangements in good time. Here are some useful tips that may be helpful, especially to the new-comers desirous of taking up this pastime.

Join an Association

Join an association or a local rambling club. By so doing you will meet with other hikers, and get the benefit of their experiences. The Ramblers' Association (20, Buckingham Street, London, W.C.2) caters in a most helpful manner for all types of trampers. Enquiries should be made to the address given, or to the Secretary of the nearest District Federation of the Ramblers' Association. The objects of the R.A. include the protection of the rights and privileges of hikers; to foster a greater love, use, and knowledge of our countryside; and to secure travel facilities and to obtain public access to mountains and moors. By joining the R.A. you will have the pleasure of making friends with others who are ever ready to extend a welcome and to help the beginner in all ways. Subscription for membership is moderate.

Then we have that excellent organisation, the Youth Hostels Association. A worthier movement for young folk was never started. A membership card presented at any of the hostels in England and Wales will procure a bed, a meal, and other facilities at very moderate charges. At some hostels, suppers—and other meals—are provided, while at others there are facilities for preparing and cooking your own meals. Ramblers visiting hostels should carry their own plate, knife, mug, fork, and spoon, in case of need. Sleeping-bags can often be hired on the spot.

Would-be members should send for the Y.H.A. Handbook (price 7d. post free). The address is as follows: *Youth Hostels Association, National Office, Welwyn Garden City, HERTS.*

This useful handbook will enlighten beginners and others to the many valuable privileges and advantages they will, as members, obtain. The list of the numerous hostels will be of great help when planning tours and routes. Rail-

way concessions—point to point vouchers—are issued, enabling members to travel to their starting rendezvous at reduced fares. The Handbook gives all necessary information about this scheme, and also about many other matters of interest to members.

Usually, members of the Y.H.A. and the R.A. (and other associations and clubs) travel in friendly parties, and this social aspect to hiking is pleasant and attractive. The hostels, especially, are an inestimable boon, enabling open-air lovers to spend a summer holiday in the cheapest and most delightful way. There are few parts of Britain to-day where the Y.H.A. sign does not hang out, beckoning Youth to happy, care-free holidays.

And how lovely and comfortable are many of these hostels. In some cases they are beautiful old mansions like the Hall at Ilam, near Dovedale, set in splendid surroundings. There are converted barns, and squat wind-swept shelters on the mountains and fells; there are interesting historic buildings as the old City Mill at Winchester.

The annual subscription to the Y.H.A. is: Juvenile Membership, 2s.; Junior Membership (16 to 21), 5s.; Senior (over 21 years), 10s.

No Elaborate Outfit

No elaborate outfit is needed for cross-country tramping. You can wear slacks, or breeches, or shorts, whichever you fancy. But you *must* have good strong waterproof boots or shoes, well-fitting, and studded with hobs. Never hike in ill-fitting footwear, and keep the leather soft by dressing with dubbin.

Your usual comfortable old clothes, such as you wear for outdoor events and when in the country generally, will be quite good enough. However, if you care to spend your money on the various hiking wear now made especially for holiday-makers, then you will find a wide range of clothing available. It is all a matter of individual choice.

Alone or with a Party

We have already touched upon the advantages of being with a party when on tour. Yet there are some individuals who may prefer to travel alone. It all depends upon one's temperament and sentiments. Few of us can prescribe for our friends on this matter. Some great walkers preferred to go alone—R. L. Stevenson was one. Others are of like mind to the enthusiast who said: 'Give me a companion by the way, if it be only to remark how the shadows lengthen as the sun declines'. Providing there is the right spirit and the right company, then a party adds joy and interest to a hiking tour. Another drawback to tramping alone is the risk of accident, particularly in remote places and mountains, where a sprained ankle or other injury

may prove serious. In this respect one might add the following maxims: (1) Keep to the footpaths and tracks as much as possible. (2) Beware of peat bogs and potholes. (3) In strange, wild country, carry a compass. (4) Do not allow yourself to get belated at nightfall in the midst of mountains. (5) Carry a good whistle which can be used to attract attention in case of accident.

Yes, there is much to be said for company on a tramping holiday, for a friend in need on the spot is a friend indeed. There have been one or two unfortunate happenings recently, and it is taking a risk to venture into mountainous and remote regions quite alone, especially for the beginner.

Carrying Kit

You cannot beat the rucksack, a fairly large one; and let it be one with a steel frame. The well-known 'Bergen' type is excellent—if obtainable. Any frame touring style rucksack is suitable, where the weight of luggage is automatically distributed and balanced evenly on the back—a great consideration on a long tour. Slings of rucksack should be of webbing broad enough to prevent cutting of your shoulders. Avoid narrow leather slings.

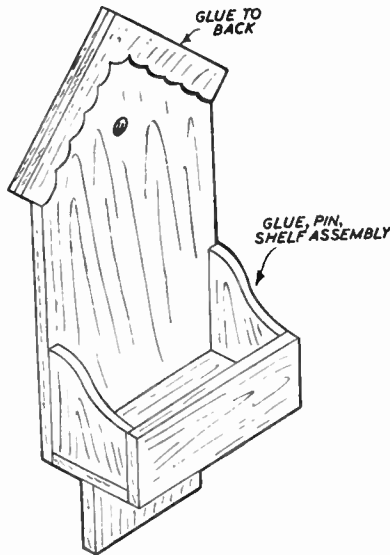
Maps are useful when exploring the countryside beyond the limits of your own knowledge.

By far the most useful kind of map is the Ordnance Survey, with a scale of 1 in. to 1 mile. Such a map gives full details of all roads, footpaths, contours, woods, rivers, villages and towns, post offices, telegraph offices, etc., and you can find your way about easily with the aid of such a sheet, after you have learnt to read your map. Small scale maps are no use to the hiker.

It is possible now to obtain special tourist maps covering certain popular regions. These are coloured to show heights. They are published by the O.S. office. One great advantage of plotting a route with the aid of the map is that you can plan the tour with the object of avoiding busy centres and main roads.

A final word—if you have a sit-down office job or similar sedentary occupation, do not set off on a long hiking tour without doing a little preliminary training. A few weeks before commencing your summer holiday, spend as much as possible of your leisure time—week-ends offer the opportunity—walking across country, choosing field paths and rough lanes and commons. Do not shirk the hilly parts! Learn to maintain an even, steady pace. This is wiser than starting off with a rush, only to be whacked at the end of the first five miles. This training will limber up leg muscles and harden the feet. You will be all the better for it. (349)

A home for odds and ends is this SIMPLE SHELF BRACKET



ALL parts are fretted out from $\frac{1}{4}$ ply and assembled by gluing and pinning together. The complete unit is both simple to make and useful. Hung in the kitchen it can hold two or three small containers, spices, and so on, or the little odds and ends which seem never to have a proper home!

All dimensions for laying out the back are given. The roof slope is 30 degrees. A $\frac{1}{4}$ in. diameter hole is drilled in the exact centre at about the height of the lower part of the roof to fit over a nail in the wall for hanging. The dotted line shows the position of the shelf.

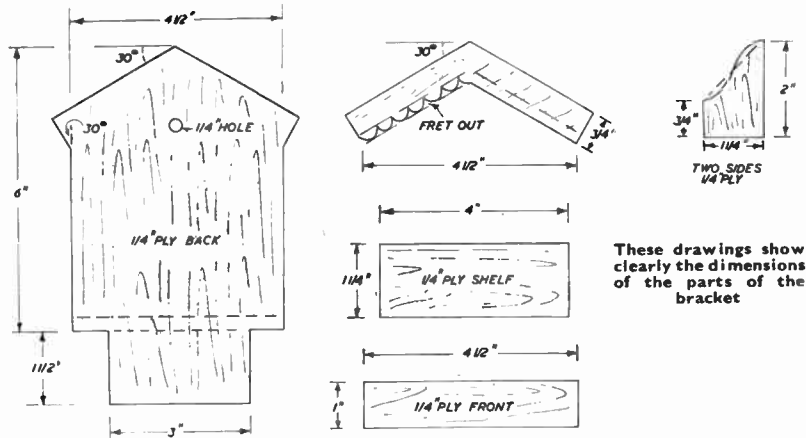
The shelf, front, sides and eaves are fretted out separately. Scallop the lower edge of the eaves to improve the appearance and glue to the back. Pin and glue the shelf in place and then add the front and sides. Provided these are cut true in the first place the assembly

must be square and accurate.

When the glue has dried, glasspaper the whole fitment down thoroughly. Appearance could be greatly improved by painting on windows, etc., and giving the whole the appearance of the front elevation of a cottage or house. Alternatively, the fitment can be stained and polished, or enamelled.

Screw eyes located in the underside of the base provide handy points for hanging small kitchen implements, etc., and add to the usefulness of the fitment.

(287)



These drawings show clearly the dimensions of the parts of the bracket

Renovating a Fishing Rod

WERE you ready for the summer fishing season? Roach, perch, dace, rudd, carp, tench and others are all worth catching now. (The season opened on June 16th). If you were not properly prepared, get your house in order NOW. Do not leave it until the day you desire to set forth to the river.

A fishing-rod is expensive nowadays. If neglected, it may become warped or bent. Take care of it, and keep it in a bag, which can be hung up by a loop at one end on the wall of your spare room, or wherever you store your tackle. As a rod costs three or four times as much now as pre-war, it is advisable to look after it and make it last as long as possible.

After much use, however, a rod is bound to be somewhat the worse for it, for varnish becomes scratched and often peels off, leaving bare places where the wood or cane is likely to suffer from wet by rain or immersion in water. These bare spots should be covered with shellac and afterwards varnished over. Even if there are no scratches or scars, a coat of waterproof coachmaker's varnish or the special varnish sold by fishing-tackle dealers will do it a world of good.

Apply the varnish with a small camel-hair brush, or, better still, with the tip of your finger—the first finger of your right hand, unless you are left-handed. You will find it possible to put on a thin smooth coat in this way, whereas with a brush the varnish is liable to spread somewhat thickly and dry tacky, unless you are very careful.

Use the Best

Remember, too, there are varnishes and varnishes. Use only the best—that specially made for the purpose.

Before commencing to varnish a rod, see that the whippings of the rod-rings are in order. Any frayed whippings should be replaced with silk thread. Fishing tackle dealers sell this in different coloured spools, and you can use green or white as preferred. Do the whipping neatly, keeping an even job of it. A useful medium for varnishing all kinds of silk wrappings is celluloid varnish. Bought stuff is the best, but you can make a substitute by dissolving strips of clear celluloid in equal quantities of acetone and amylacetate. It may be difficult to obtain celluloid just now, so you may like to know that a substitute can be had from old photographic films.

Take a film and wash it well in caustic

soda to remove the emulsion and gelatine, and scrape it carefully until nothing is left but the celluloid sheet. Cut this into small strips and place a quantity in the solution as above. Next day inspect the bottle or jar (a jar with a screw-top is suitable for your purpose) which must be kept tightly corked, and see if there is any excess of the celluloid. If there is, add further solvent and leave for a time. By adding further quantities of celluloid or solvent as may be called for, you can have a supply of quick-drying varnish at hand. A word of warning: this kind of varnish, though handy for touching up tyings of gut to hooks, for silk bindings, etc., does not always take well on ordinary wax, so if waxing your wrappings or tyings, use wax without tallow in it. Keep the jar or bottle well corked or stoppered.

If you cannot make celluloid varnish, you may use the ordinary shellac varnish for the purpose.

While you are about the job, it is as well to inspect the rings of the rod, and if any are worn thin or damaged, replace them with new ones before doing any varnishing. Broken rod joints can be spliced by any handy person, but the job will be done much better by experienced rod-makers.

(365)

The housewife will welcome a FOLDING IRONING BOARD



THIS popular type of ironing board is well worth the making, being of the folding type so easy to put away after using. It is economical as regards wood, and a lot cheaper to make, as these boards are more expensive to purchase now ready made. There is nothing difficult about its construction. It is just a simple job of woodwork, and a few feet of boarding will provide the necessary material.

Make the Board First

The actual ironing board might be made first. This is shown in Fig. 1, an underside view. It is cut to the shape from a single board of $\frac{7}{8}$ in. deal. Where shown at (A) screw across a piece of wood, $\frac{3}{4}$ in. thick and $1\frac{1}{2}$ ins. wide, just 7 ins. long. At (B) screw across a second piece, the same length as (A) or approximately so (see later on) and $\frac{3}{4}$ in. by 2 ins. section. Owing to the width of these pieces of wood, to avoid having to use extra long screws, a good plan is to bore $\frac{1}{2}$ in. holes first, $\frac{1}{2}$ in. to $\frac{3}{4}$ in. deep, then to continue through the rest with a smaller hole to just allow of the screw being pushed through. Screws $\frac{1}{2}$ in. long will then suffice.

The folding legs part are shown in Fig. 2. The inner legs (C) are made up first. Cut these from good quality deal, or a hardwood, beech for example, if available. Cut the top crossbar to length, and fix with screws. It will be seen that this pair of legs splay outwards, so space them apart at the bottom to outside measurements of 1 ft. 1 in., and keep them so until the diagonal braces are fitted, then free them. A spare strip of wood nailed across them at the bottom will hold them temporarily in place. This is best done before the top bar is screwed across. Trim this bar to the slope of the legs afterwards.

Where indicated by the short dotted lines, drill $\frac{1}{2}$ in. holes for the rivets,

which will afterwards hold the legs together, and permit of folding. Now trim the ends about 20 degrees slant, as shown, the slant at the bottoms being cut the reverse way of the top, for bedding flat to the floor. The diagonal braces are cut from $\frac{1}{2}$ in. by $\frac{3}{4}$ in. wood, and nailed across, approximately where shown in the drawing, on the side opposite to the crossbar at the top.

The outer legs (D) are now cut. These are rounded at their tops, and a hole bored through at $\frac{3}{4}$ in. down. The bottoms are cut at a similar angle to the inner legs. Where shown by the short dotted cross-line, bore holes for the rivets. Now fix these legs to the inner pair with $\frac{1}{2}$ in. iron rivets, with washers outside. Do not clench the rivets too tightly, as a little freedom is necessary to allow the legs to fold and open freely.

Now, through the holes at the top of the legs, screw them to the ends of bar (B) on the underside of the ironing board. A couple of $1\frac{1}{2}$ ins. round-headed

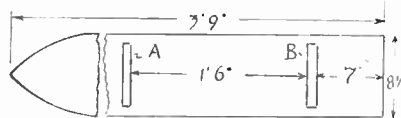


Fig. 1—The board

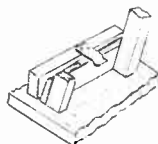


Fig. 3—Details of the metal catch

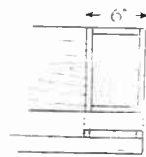


Fig. 4—The frame for the iron

screws can be used here, and the screws should not be driven in right home, but allowed a slight clearance for the legs to fold without rasping against the ends of the bars. A $\frac{1}{8}$ in. clearance will be enough. See the tops of the legs clear the ironing board by about $\frac{1}{4}$ in. by driving the screws in the bar at $\frac{1}{4}$ in. up. Now fold the two pairs of legs flat under the ironing board, and then nail a diagonal brace across the lower half of them.

Open out the table, and tighten up the rivets and screws, as may be necessary to permit it to stand quite firm and level, but do not overdo this, or the folding may involve some strain, not good for the table. A metal catch is advisable, to keep the table, when opened out, in position. A simple affair this, shown in detail sketch Fig. 3. It is a short piece of springy steel or

brass, screwed to the bar (A) and with its free ends bent to a curve to slip over the top crossbar of the inner legs, which butts up against (A) when the table is opened out.

Not Difficult

The sketch shows its shape plainly, and it should not be difficult to bend the metal and fit it in place. The top bar should have its under edge rounded a bit to allow it to slip under the spring easily, the latter snapping over it, and holding the lot firmly.

CHILD'S PENCIL BOX

For making the Pencil Box from this week's free Design (No. 2906) we supply the necessary wood price 4/9 inc. purchase tax, post free.

At the square end of the ironing table, glue and nail four narrow strips of wood to form a frame for the iron to rest in when not in use. This is shown in Fig. 4, and a piece of asbestos sheet is nailed inside the frame for the iron to lay on without burning the wood. The table is then covered with a double thickness of old blanket or similar material, with an outer covering of white calico, tacked round the edges of the board.

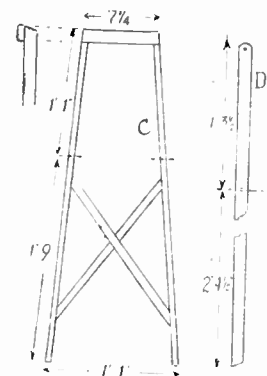


Fig. 2—The folding legs

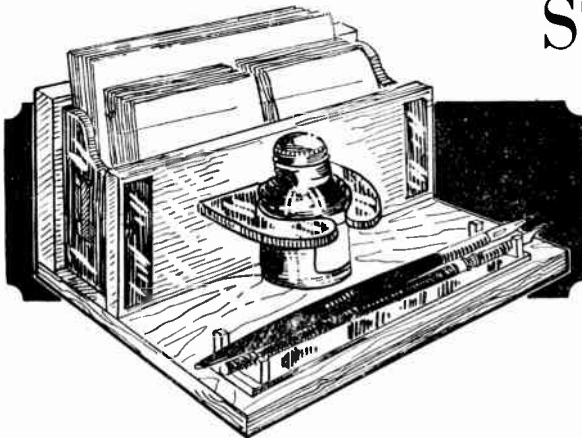
The wood can be left plain, the usual practice, or varnished as preferred, and when completed will make a welcome addition to the household equipment. Sizes of timbers required are given in the cutting list below. (322)

CUTTING LIST

Inner legs (2)—2ft. 10ins. by $1\frac{1}{2}$ ins. by $\frac{3}{4}$ in.
Outer legs (2)—3ft. 8ins. by $1\frac{1}{2}$ ins. by $\frac{3}{4}$ in.
Table—3ft. 9ins. by 8 $\frac{1}{2}$ ins. by $\frac{3}{4}$ in.
Bar (A)—7ins. by $1\frac{1}{2}$ ins. by $\frac{3}{4}$ in.
Bar (B)—7ins. by 2ins. by $\frac{3}{4}$ in.
Diagonal braces (2)—1ft. 6ins. by $\frac{3}{4}$ in. by $\frac{3}{4}$ in.
Diagonal brace (1)—1ft. 8ins. by $\frac{3}{4}$ in. by $\frac{3}{4}$ in.
Top crossbar—7 $\frac{1}{2}$ ins. by $1\frac{1}{2}$ ins. by $\frac{3}{4}$ in.

Wood and plastic make this

STATIONERY RACK



ALL of *Hobbies* readers work in wood and not a few work in plastics. It is not widely realised, however, that wood and plastics go well together. This model utilises both, though it should immediately be stated that if the reader does not care to use plastic parts, the whole job can be done entirely in wood. The out-and-out plastics enthusiast may even make the whole job in plastic. But a wood and plastic job, as described, is recommended.

As will be seen from the diagrams, the project consists of a stationery rack with a pen and ink stand. It is fully dimensioned but it must be pointed out that the dimensions apply only if Post 8vo

is used, it relies on its own beauty for good effect, so a good quality hardwood—oak, mahogany, etc.—should be used and well planed, scraped and polished.

Start with the Ends

A start might be made on end pieces (D), as these can then be used as a check on the dimensioning of other parts. These pieces (D) are in $\frac{1}{8}$ in. plastic, preferably of a colour contrasting with the wood to be used. Each piece is $4\frac{1}{2}$ ins. by $2\frac{3}{8}$ ins. and dimensioned as shown in Fig. 8. The $\frac{1}{8}$ in. slot in the middle comes on the centre line.

The back (A) is detailed in Fig. 3. This is of $\frac{1}{2}$ in. wood. When the side pieces (D) are fitted in the slots, the top

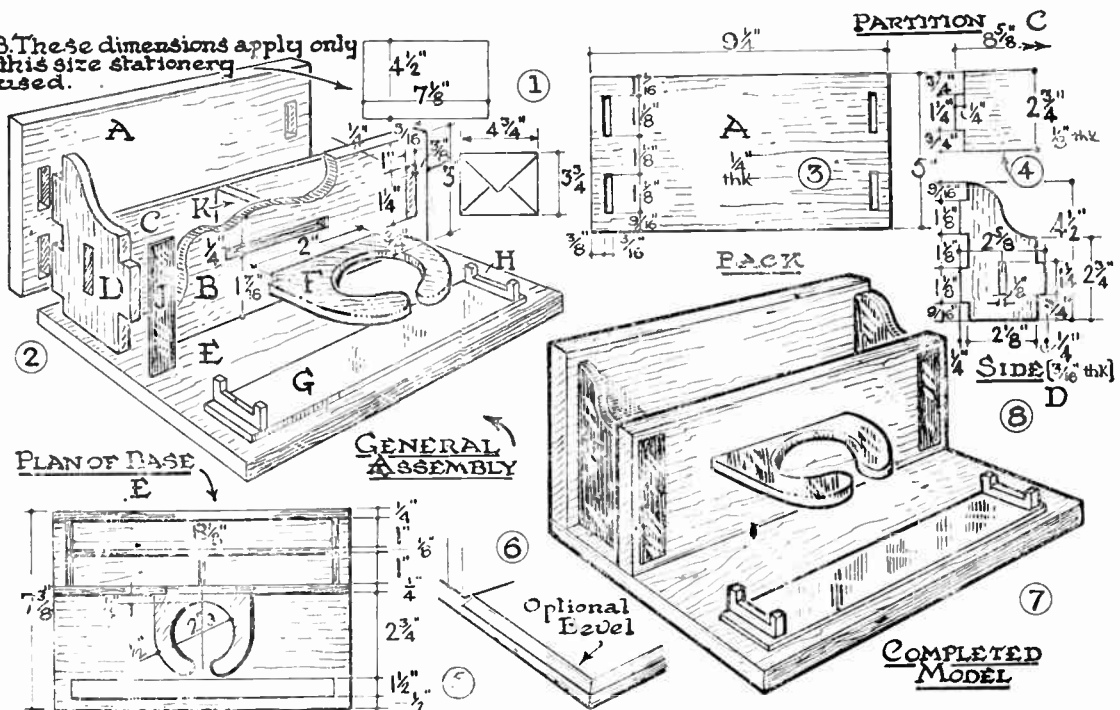
of the side piece will be $\frac{1}{2}$ in. from the top of the back, and the side piece will be $\frac{1}{8}$ in. in from the end of the back. The front (B) is not detailed separately but can be seen quite well in the 'exploded' view at Fig. 2, where some dimensions have been applied. It is a strip of $\frac{1}{4}$ in. thick wood $3\frac{1}{2}$ ins. wide and $9\frac{1}{2}$ ins. long. Slots are cut, as shown, to take the front edge of the side piece. For convenience in showing other parts, Part (B) is shown partly broken. There is a slot at both ends and also another horizontal slot to take the ink-bottle holder.

Partition (C) is easily made, being a $2\frac{3}{8}$ ins. wide strip of $\frac{1}{4}$ in. wood or plastic, $8\frac{3}{8}$ ins. long, this allowing for a $\frac{1}{4}$ in. tenon at each end. The inside width of the stationery compartments is $8\frac{1}{2}$ ins. as can be seen in Fig. 5. The envelope partition is divided by a $\frac{3}{16}$ in. thick partition (K).

The horn-shaped ink-bottle holder (F) is cut from $\frac{1}{4}$ in. thick plastic. This has not been detailed separately but a good idea of its shape can be seen in Fig. 1, whilst Fig. 5 gives some dimensions. Instead of a horn shape, there can be a complete circle. The break, as shown, is merely to give a light touch. Constructors are reminded that the size of this piece must be checked up with the ink bottle being used. Instead of a plain ink bottle, it is sometimes possible to

(Continued foot of page 202)

N.B. These dimensions apply only if this size stationery is used.



The stages in making the rack

Some hints to remember WHEN IN CAMP

GOING camping this summer? Well, it is a grand sort of holiday. A fortnight under canvas with the right company can be very jolly. But all members must do their share to make it so. If you are a 'twosome, threesome, or foursome' camp or more, equal division of labour should be aimed at. If everybody does his or her own job, the work is got through quicker and better—and everybody is happier.

Take Turns

Turns can be taken, so that one camper has not *all* the dirtier work to do, such as attending to the fire, gathering wood, washing up, etc. It is simple enough to divide up into daily shifts. However, if you have a *really good cook* in your party, try and persuade him or her to take on the job for the whole period. Of course, other members can give a hand; no one wants to go to camp and be cooking all the time!

This article is intended only to give the reader a few simple hints on matters often overlooked or neglected when in camp. Many beginners concern themselves with just learning the chief things about tents, equipment, sites, and comfort, but there is more to it than that, and the little things we do or do not do may easily make or mar the full enjoyment of a holiday under canvas.

The following points are worth remembering when in camp. Do not eat *undercooked* food of any kind, especially meat. Meat and fish go wrong quickly in hot weather—throw out any such foodstuffs not above suspicion. Keep everything of this nature—and all bread, cakes, and eatables of every kind—carefully covered over to protect from flies and germ-carrying insects.

The experienced camper attaches great importance to the drinking water

available—do not be tempted to use river water or that from any running stream without first boiling it. It is better to arrange for your water supplies at the nearest farm or cottage. At organised camps, mains water is mostly laid on, so there is no need to worry over your drinking water.

Stings and insect bites can be treated effectively with ammonia or sal volatile. A small bottle of the latter is often handy about camp, not only for stings and bites, but in case of an attack of giddiness or fainting.

Keep a small first-aid outfit handy. It is to be hoped that you will not require it; but accidents *will* happen at times, even to the most careful.

Avoid Wet Clothes

Do not sit around in wet clothes, especially in a draughty spot. If you get caught in a rainstorm or tumble into the river, hasten back to camp, strip and rub down, putting on dry clothing. If you have not taken a change with you, get into your blankets or sleeping-bag while one of your pals gets a fire going and does the needful. See that any wet clothes are well dried before putting them on again. Hang boots or shoes upside down on a stick pushed in the turf to dry out after they have been immersed in water.

It may seem brave to ignore soaked boots and allow them to dry on your feet—but it is wiser to take them off, for wet footwear is often a source of 'colds' and feverish chills. There is less risk in going barefoot about camp than in allowing boots to dry on your feet.

Do not be tempted to lie about under trees in a cool draught when you have been perspiring freely after exercise. It is wiser to slip on a pull-over or extra garment until you have cooled down.

Destroy Rubbish

The only satisfactory way to get rid of rubbish and 'left-overs' is to burn it, or you can, as an alternative, bury it. There is a tendency in many camps to be 'happy-go-lucky' in this respect, but any slackness may be harmful—rubbish of all kinds attracts flies.

One member of the party might volunteer to attend to this 'scavenging' daily, or the whole camp might give a hand for a few minutes each day.

Knock empty food tins flat and bury them under the hedgerow. And when we say 'bury' them, we mean it. Do not just throw refuse into the hedgebottom and leave it at that.

Make an incinerator—an old bucket with holes in it, raised on stones, can be made to serve for want of a better—and all such stuff as egg-shells, bones, vegetables refuse, etc., can be disposed of in this.

Sanitation is of the first importance in a camp. The latrine should be erected in a spot well away from the tents, in a well-screened site, and in lee of the prevailing wind. A length or two of canvas fastened on poles or stakes of reasonable height, fixed round a trench—the soil of which should be heaped handy for use in covering in again—will serve the purpose well enough, unless it is a permanent camp.

Sometimes campers can be seen throwing greasy water, and refuse water from cooking pans, on the grass around the camp. It is a dirty and unwholesome habit. Dig out a grease pit at some convenient spot away from the tents and put all such waste water in it. Do not throw dirty water into a river or stream to pollute it. Someone lower down may have to use the stream's water for cattle and other livestock. (345)

Stationery Rack—(Continued from page 201)

find, on old junk stalls, a cut-glass inkwell—one long since parted from its companions and the magnificent inkstand that it once adorned. Take care, however, that such an ink well, if used, has a well-fitting cap, otherwise the ink may easily spill or, on the other hand, rapidly dry up.

Part (G) is of plastic and need not be thick. The actual width is not very critical, so that the constructor may have a piece that can be used without special cutting from a larger sheet. It can be, say, 1½ ins. wide and about 8 ins. long. The pen rests can be cut from fairly thick plastic, great care being taken to get the bases flat and square, as these parts are to be cemented on.

The base itself (E) is a plain piece of ¾ in. wood, 9½ ins. long and 7½ ins. wide. Optionally, the front and part of the sides can be bevelled as shown in

Fig. 6. The only other parts to be cut are two parts (J), of thin plastic, about 2½ ins. by ¾ in. These are merely to hide the front tenons on part (D).

The parts are now fitted together but not yet glued. It is a good plan to make the tenons slightly longer than needed and then trim off waste afterwards. Joints should obviously be a good fit but take care not to strain those mortise holes which are rather near the edge of the wood in parts (A) and (B). Glasspaper well all parts, especially those inside surfaces which will not be so easy to get at once the model is permanently assembled.

Parts (A), (B), (C), (D), (F) and (K) can be assembled as one unit and then mounted on base (E). Small panel pins carefully driven into the wood on parts (A) and (B), or, better, a few small screws will fix the base. The whole is

then carefully stained and polished. Afterwards the pen rest and panels (J) are cemented on.

A luxurious touch (but a practical one, too) is given by gluing a piece of green baize to the underside of the base.

It will be noted in the sketch, that the notepaper is a 'step' above the envelopes (which are placed, by the way, with their opening sides vertical). In actual practice the notepaper would be a fraction below the level of the envelopes, but as it looks better, as shown, a 'step' of wood or cardboard can very easily be fitted inside the notepaper compartment so as to raise the level. If a block of wood is used for this purpose, it can be screwed to both the back (A) and the base (E), thus making quite a strong connection.

Instead of envelopes, postcards can be placed in one compartment. (317)

EXPERIMENTS WITH SODA

WASHING soda, or sodium carbonate to give it its chemical name, is such an important chemical that millions of tons per year have to be manufactured. And it is not only at the domestic sink where it is so useful, for many industries making all kinds of other chemicals, inorganic and organic, find it essential to their processes.

Industry, however, seldom uses it as washing soda, but as soda ash, which contains nothing but sodium carbonate, whereas washing soda contains 63 per cent of water in the form of water of crystallisation. Industrialists see no sense in paying the railways to bring them water, hence the use of soda ash!

To make soda ash or anhydrous sodium carbonate, you need merely heat washing soda. Place a few of the crystals in a crucible and heat gently. They will quickly melt to a clear liquid, then boil. When no more steam is given off, let the crucible cool, when you will find a white deposit is left. Remove this, powder it and keep it for your chemical stock.

Conjuring Trick

With a small variation, this experiment may be turned into a conjuring trick to interest a non-chemist friend. Hand him a crystal of washing soda. Point out that it is quite solid and yet you propose to produce water from it! To mystify him further, let him crush it in your mortar to prove it is not a fake crystal with liquid concealed in it.

Now heat the soda in the apparatus shown in Fig. 1, and collect the water which distils over, at the same time giving your friend a knowing smile!

You may have noticed during these two experiments how easily washing soda melts. It melts, in fact, as low as 32 degrees Centigrade (90 degrees Fahrenheit)—about the temperature in the sun on a hot summer day. Place a few crystals in a narrow test tube and put the tube in a beaker of hot water, when they will quickly and easily melt.

If you now fix the bulb of a thermometer into the melted mass (Fig. 2), and let the water cool, the mercury column will fall steadily then remain stationary at 32 degrees until the melted mass solidifies. (To free the thermometer heat the water again until the soda remelts).

Washing soda is a convenient starting point for the home chemist when he wishes to prepare some other sodium salt. To a solution of washing soda add dilute hydrochloric acid gradually, stirring well on each addition until the effervescence subsides. When the effervescence after the addition of one lot of acid is less brisk than before, drop a piece of blue litmus paper into the soda

solution. Continue adding acid until the paper just begins to turn red.

Now evaporate the solution to dryness. A white powder will be left in the evaporating basin. Moisten your finger, dab it on the powder and taste it. You will find it has a familiar salty flavour. You have, in fact, produced common table salt (or sodium chloride) from washing soda.

The preparation of many other sodium salts can be effected in a similar way.

With washing soda we can also make salts of other metals, by precipitating their carbonates and dissolving those in acids. The following experiment, in which we prepare cobalt sulphate from cobalt chloride, illustrates this.

To a solution of cobalt chloride add soda solution gradually, with stirring, until a fresh addition produces no more precipitate. The lovely mauve precipitate is a mixture of several basic cobalt carbonates. Wash this by de-

being heated. To illustrate this let us prepare litharge, or lead monoxide.

Add soda solution to lead acetate solution until no more white precipitate of basic lead carbonate is formed. Wash the precipitate well by decantation, filter it off and dry it in a moderate oven. Now heat it in a crucible. It will rapidly turn to buff coloured litharge.

Yet another convenience of washing soda, is that with its help we can turn a ferrous into a ferric salt. It is an advantage to know how to do this, for should you run out of ferric chloride you will find the local pharmacist rarely stocks it and it usually means writing or making a trip to a laboratory furnisher.

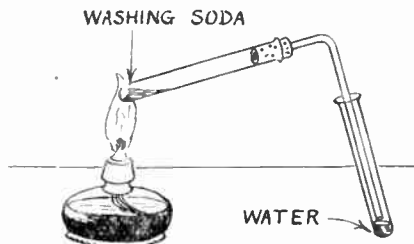


Fig. 1

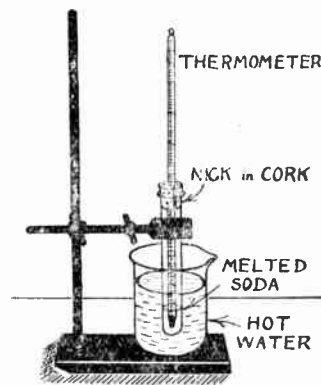


Fig. 2

cantation in a big bottle with large volumes of water, allowing the precipitate to settle well each time, until a portion of the poured off water no longer gives a white precipitate with silver nitrate.

Now filter off the precipitate, transfer it to a beaker and dissolve it in just enough dilute sulphuric acid. To avoid overshooting the mark add the acid in small portions, allowing the effervescence to subside before adding more; stop adding acid when there is still a little cobalt carbonate undissolved. Filter the solution and evaporate to the crystallisation point. On cooling, red crystals of cobalt sulphate will separate out.

Let the cool solution stand overnight. For maximum yields, crystallisations should always be allowed a few hours' standing, for, owing to supersaturated solutions forming, crystallisations are seldom completed by merely allowing to cool down to room temperature. Dry the crystals by drainage on a clean porous brick or tile.

Many oxides, too, can be made with the help of washing soda, for most of the carbonates of the heavy metals, such as lead and copper, yield up their oxides on

All pharmacists stock ferrous sulphate, however.

To prepare ferric chloride from ferrous sulphate, make a solution of the latter and add soda solution. A pale green precipitate will form and effervescence will occur, with evolution of carbon dioxide. When the action subsides and the precipitate sinks, carry on adding soda until no more precipitate forms.

Now wash this precipitate of basic ferrous carbonate by decantation several times, until a sample of the wash water no longer gives a white precipitate with barium chloride. Filter off the basic ferrous carbonate, then open the filter paper out on to a saucer. The carbonate will begin to oxidise superficially to brown ferric hydroxide and will be completed quickly if you now put it in the oven.

When the mass is brown throughout, transfer it to a beaker and dissolve it in dilute hydrochloric acid, adding the acid gradually and leaving a little ferric hydroxide undissolved. On filtering you will have a solution of ferric chloride for your reagent shelf. If you want the solid, evaporate to dryness and store the substance in a tightly corked bottle, as it is deliquescent.

(305)



Electric Welding

COULD you give me any help in building a small electric welding set for model work. I have been shown how to use a large set and would like to make myself a small one to work from a 12 volt battery on 250 v. D.C. (D.T.—Brighton).

WELDING from any D.C. source capable of supplying the current necessary, will prove very simple for small work. All you will require will be a suitable insulated handle, to hold the carbon, and stout leads to take to the supply. If using the mains direct, take the usual precautions to avoid shocks. Small welders for use with an accumulator are obtainable ready-made, but this is not very economical, and as you have already used a welding tool, you will be familiar with operation, and with the type of holder, clips, etc., which are required.

Projecting Slides

COULD you tell me a way of projecting an Adiscope slide on a screen? Together with the slide, I have, of course, the viewer. The slide itself is of 16 mm. film. As I have so many slides, I feel there must be some way of projecting them on a screen. The film itself has the 'pictures' on the film at rightangles to the side of the film. To see the film, one has to hold the film parallel to the ground. (R.B.—Natal).

To transmit the image on any kind of transparent film or slide, requires fundamentally a sufficiently powerful

light source behind the film, and in front of the film a projection lens; all three items being housed in any suitable box or container to shield the light, and prevent it showing elsewhere than via the lens. A suitable light source is a 100 watt electric bulb of the pearl or frosted variety, the film strip can be accommodated in a vertical 'gate' or guide strip of suitable size, the lens should be of about 1½ ins. focal length and mounted in a focusing jacket or in a mount capable of being moved endways in tube. The lens, film and lamp must all be in line, and the device used in a darkened room. A tin box makes a practical lamp housing; a hole the size of the picture can be cut through it, and the film placed over the hole on the outside of the box and held in a grooved strip of tin. A camera lens can be used if nothing better is available.

Mains Pick-up

I HAVE built a 4-valve mains radio, but I am not satisfied with the performance. The valves cannot take much power so volume cannot be built up for weakly received stations. Could you tell me something about a mains pick-up amplifier, as if I could connect such an amplifier to my set, I am sure it would solve my problem. (J.C.—Liverpool).

YOUR receiver may already possess two stages of low-frequency amplification; one such stage will certainly be present. As a result, it would probably

prove impracticable to feed an amplifier from the set. A 4-valve mains receiver should give all the volume required for domestic purposes. Distortion on loud signals may be caused by the speaker being unsuitable, or a connection, component or valve, particularly in the output stage, being out of order. Lack of range of reception may be caused by the tuned circuits (if more than one is used), being out of alignment, or by inefficient reaction, or other fault in the coils or that section of the set. If an extra valve was to be added, it would be best to build this as an actual addition to the set, but the method of coupling, etc., would depend upon the circuit at present in use.

Vibrator

PLEASE give me a circuit of a 2-volt vibrator R 76C self rectifying 7 pin, output 290 v., at 60 mA. (A.E.—Brynmawr).

THE vibrator does not appear to be a standard English type, and because of this, no connections can be traced. Input to the vibrator will probably be to the two larger pins, and this can be checked by connecting a battery, when it should be possible to hear the unit working. Such vibrators do not of themselves give a high voltage output; this only means that they can be used with such an output, and a special transformer will be required to obtain the high voltage, which may be rectified by connecting to other pins on the vibrator, which are internally wired to contacts actuated by the reed. The actual circuit will depend largely upon the transformer it is intended to use, and whether full-wave operation is in view. The vibrator, essentially, is merely a buzzer, and is used to interrupt the primary current of the transformer, so that the latter can be used for step-up purposes. (Transformers will not work from ordinary direct current).

Some Reliable Weather Signs

EVERYBODY knows the old tag: 'Red sky at night, shepherd's delight; red sky in the morning, shepherd's warning'. In fact, it is almost always unreliable, as are several similar ones. However, there are a number of really good signs by which local weather can be forecast. They are based on normal conditions as can be seen by a moment's thought. They form a valuable little fund of knowledge for the naturalist and rambler.

Clouds

Soft-looking clouds mean that fine weather is in the offing. High clouds moving against the wind mean a change in the weather soon. Both hard-edged dark clouds and jagged cloud banks mean wet weather, while the latter are also a sign of gales and windy conditions. A south wind usually brings an

improvement in the weather in the form of heat.

Fine Weather Signs

A grey sunrise is a fairly good sign of fair weather, as is also a wind veering with the sun. Rain before seven, sun before eleven, is a far more reliable guide than its well-known counterpart mentioned above. If a full moon rises clear it means fine weather is on the way, while a heavy dew on the garden lawn is a sure sign of heat during the day.

Bad Weather Signs

Swift-moving clouds lying low in the sky are a sign of rain. Heavy rain can be expected when there is a heavy, copper-coloured sky; a halo round the moon is a sign of a period of rain. It can also be expected when the moon rises pale in colour. Bright lights at night from a

distant town, clear views first thing in the morning, a rainbow in the morning, and a bright yellow sunset, are all signs of rain in the near future.

Wind Signs

The west wind is noted for rain, and a south-west wind also brings rain. A good south breeze is sure to herald a fine, warm spell. An east wind in the winter will bring rain, and probably cold weather. A summer east wind brings dry, cool days.

One other little point gives signs of the weather within the next few hours. A fair amount of bird song early in the day heralds fair weather, while a lone thrush or blackbird singing usually means rain. When no bird song is heard it is a sign of extreme heat or thunder and rain; and, if there are clouds about, look out for the latter.

(271)

You can have lots of fun COLLECTING POND LIFE

POND hunting is good fun in spring and summer. There are many interesting creatures in the green weedy water of the wayside and farm-yard pond that are well worth catching, and keeping in a glass-sided tank or in a tub or similar receptacle in the garden. A more permanent arrangement can be made, at moderate cost, by digging a hole in a corner of your plot and lining it with concrete.

Pond life is fascinating, as there are so many diversified forms. As J. H. Crabtree, in his little book about *Fresh-Water Wonders*, points out: 'The vast community of animal forms in fresh-water areas is without number or limit. They live and burrow in the silted floor and on the soily bank; they swim in legions in the water; they crowd on the weeds, stalks, leaves, and roots of water plants'.

Indeed, there is sufficient life in all its many wonder forms in a pond to occupy one's attention for all the leisure moments one can enjoy in spring and summertime. The minute forms—infusorians, water-fleas, cyclops and larvae of many kinds—provide a separate study, for which you need a pocket lens and a good microscope.

A beginner, who takes up pond hunting as an out-door hobby, will not, at first, be inclined to go in for such study of the secrets of the water, but will confine himself to catching the larger creatures, such as diving beetles, water-boatmen, skaters, newts, water spiders, and snails, etc. These do well enough if kept in an old round tub or a receptacle as suggested.

Collecting Tools

The tools required for collecting pond creatures are quite simple and inexpensive. They are a net, dredging hook, dipping bottle, a can with handle, a wide-mouthed bottle, and maybe a few tin boxes.

A dredging-net is a primary need.

Get 1yd. or so of calico, net, or similar material, and sew it up so that it forms a triangular bag with a triangular mouth, and to each corner of the opening fasten a long piece of strong cord. As the mouth of the net must be kept wide open when in use, sew to the upper edge a piece of tough wire bent into the shape of a triangle. Another kind of net is made similarly but with a circular opening, easily formed by bending round a length of stiff wire, and sewing the net to it. This sort of 'butterfly' net is useful for catching up the swimming creatures.

The dipping bottle is a wide-mouthed one of medium size with a spreading rim. A wire ring is fastened tightly round the neck, and the twisted ends of this serve to fix the contrivance on to the

preferably, with rain water.

Garden Tub or Pond

If you seek to keep such creatures as newts, snails, tadpoles, dragonfly larvae and fresh-water whelks, a sunken tub in the garden or a small 'pond' or trough lined with concrete will serve very well. As with a tank, plant some water-weeds on the bottom. Procure from a local stream or wayside pond a quantity of duckweed, which will soon spread itself on the surface of the tub, and protect the inhabitants from enemies, and from the sun's rays in hot weather.

Such creatures as the diving water beetle (*Dyticus marginalis*), the water boatman, water scorpion, and the water spiders should be housed in separate

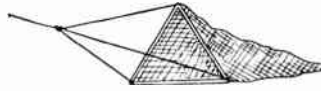


Fig. 1—Triangular dredge net

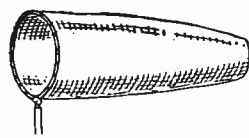


Fig. 2—Dipping net



Fig. 3—Drag hook

end of a long stick. The best kind of can is a fairly capacious one, such as anglers use for carrying live-baits in. A dredging hook is often handy for getting weeds, and is merely a triangle set of hooks secured to a strong cord.

Personal equipment consists of stout waterproof or rubber boots—and go to the pond clad in old clothes, so that it does not matter much how you get muddied up.

On arriving at the scene of operations, just use your own common-sense and judgment in selecting a likely spot to make a start. In using the drag-net, throw it as far into the water as the cords will allow; let it sink and then draw slowly to the bank. You will bring lots of stuff up, probably plenty of mud; but this should not deter you. Empty the contents of net on the bank, and examine carefully, if it is the smaller pond life you require. Anything you wish to retain that promises to prove interesting, transfer to the can for taking home.

You will need a few weeds, which can also be carried in the can. Do not put water in the can, for if the tiny inhabitants are permitted to swim, the more voracious among them will set about devouring the weaker ones. Therefore, when collecting the smaller animals put some wet weeds in the bottom of your can, and place the tiny creatures in. They can be inspected on arrival home, and any that you desire to keep should be transferred to the aquaria tank, already prepared for their reception. To arrange the tank in readiness, place some sand and stones on the bottom and plant weeds therein. Then fill the tank with clean water from the tap, or

containers. Big glass jars are suitable. If kept together, the stronger will prey on the weaker. The great water beetle, for instance, is very pugnacious, holding all other small pond creatures under his domination. Furthermore, he feeds on them, and will even attack animals and insects much larger than himself. Do not give him a chance, and if you wish to keep him in captivity, segregate him and his clan from all other kinds.

Newts are interesting creatures. They do well when housed in a tub. Do not be afraid of them, for they are quite harmless; eating worms, insects, and grubs, they can be maintained in captivity with little trouble. There are three kinds. The smooth newt, commonest of all, is of an olive colour, 3 to 4ins. long, with dark spots and lines on the head and body. In spring the male wears a notched and crested fringe along its back and tail. The female has a shallow crest without notches. The Great Warty newt is a trifle larger, and the crest is more prominent. It has a rough warty skin. The smallest of the trio is the Palmate newt, but as this is rare, you will seldom find it. To identify, remember that it is green in colour with blue markings above and cream with a yellow streak below; the male has palmate feet in springtime, its toes then being webbed. It wears a level crest, dark in hue.

Do not overcrowd your tank or tub, and be sure to have a supply of weeds. There is no necessity to change water very often. Do not stand glass tanks or jars—or place the tub—in the sun. If fixing a tub or making a small concrete pond in the garden, choose a shaded site.

(300)

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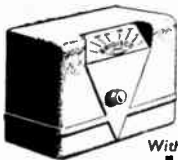
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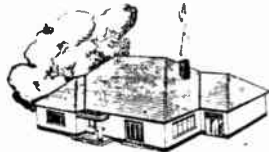
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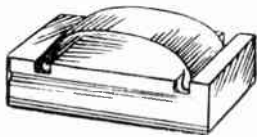
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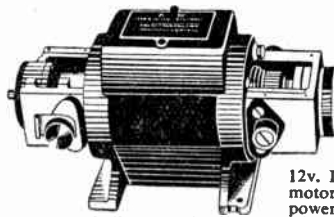
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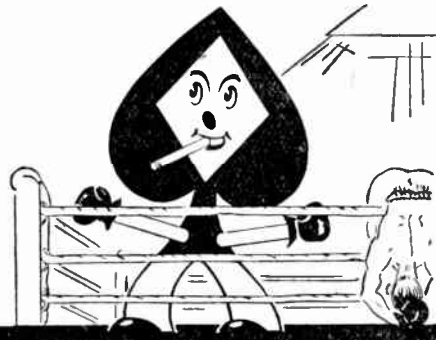
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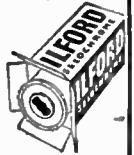
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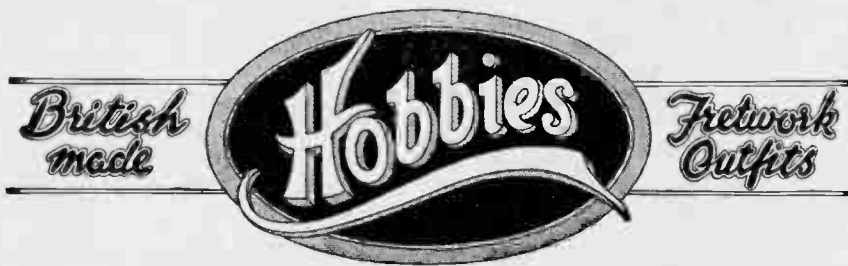
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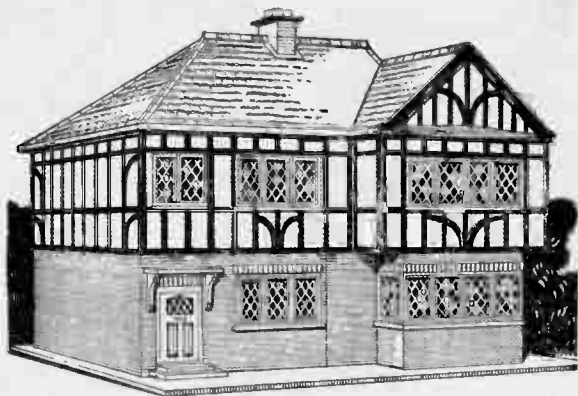
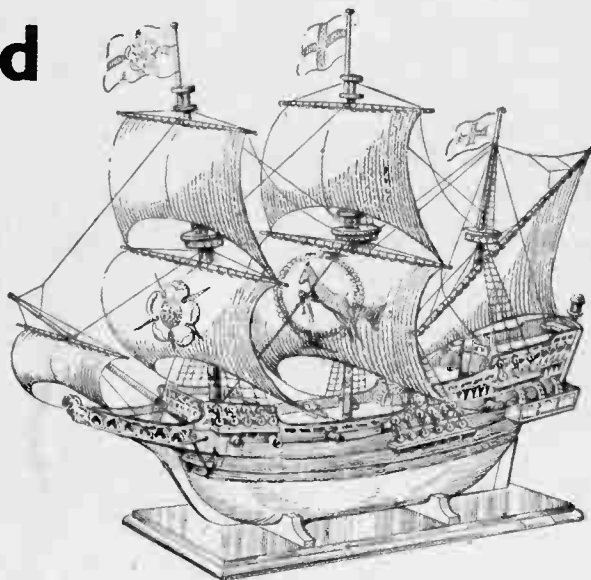
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WEEKLY

CONTENTS

	Page
Flying Model Aeroplane	209
Pair of Book-ends - -	211
A Fishing Rod - - -	212
Electric Money Box -	213
Collecting Wild flowers	214
Doggy Novelties - -	215
Serviceable Morse Key	216
Small Hat Rack - -	217
Pictures of Holiday Snaps -	218
Replies of Interest -	219
Boating without Spills	220
Patterns for Flying Model Aeroplane	223

July 18th, 1951

Price Fourpence

Vol. 112 No. 2907

An easy-to-build FLYING MODEL AEROPLANE

THE high wing position of this model gives ample stability for flying under most conditions. At the same time a semi-scale appearance is maintained by incorporating a glazed cabin (thin celluloid covering) and modern blunt wing and tailplane tips. The propeller and undercarriage are large, by full-size standards, but this is necessary to get a reasonable length of power run from the rubber motor.

The plans are reproduced one third full-size, and a set of full-size drawings should be prepared on tracing paper. Full-size plans are necessary, for many of the components are built directly over the drawing. If drawn on ordinary paper, rub over with a candle to prevent parts sticking down, or cover the plan with waxed paper.

Build the two fuselage frames first. These are of medium $\frac{1}{4}$ in. square balsa or hard $\frac{1}{8}$ in. square balsa. Newcomers to aeromodelling are advised to choose the larger size. Balsa can be easily cut with a razor blade, but owners of fretsaws should make use of this tool for cutting repetition pieces such as wing ribs. A number can be cut together, and they will be identical.

The two side frames are built directly over the drawing of the fuselage side elevation, one on top of the other. This is the simplest method of ensuring that both sides are identical. Cut all the vertical members to length and cement in place.

When the cement has set, remove the

two sides, separate carefully and join with cross spacers at the centre position. Block up square and leave to set. Then cement the two ends together, and the nose cross spacers. After this, the additional cross spacers can be added. Check that the whole assembly is true and square.

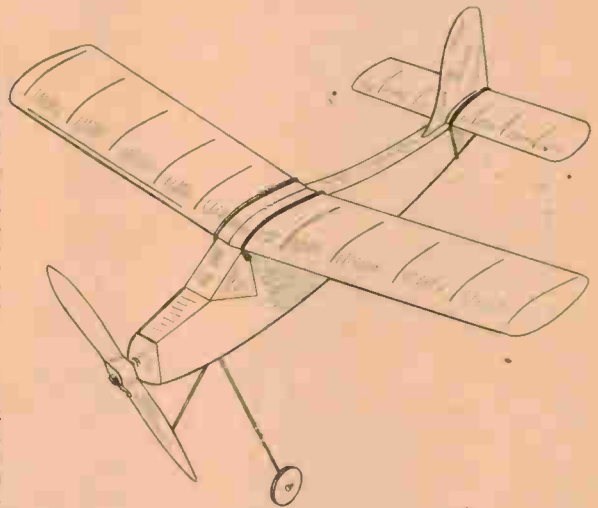
Sheet in the first bay of the fuselage for additional strength, then bend the undercarriage from 18 S.W.G. wire and bind and cement to the fuselage. The fuselage can then be covered in tissue, one strip for each side and one for the top and one for the bottom. Use photo paste or tissue cement for sticking the tissue in place, pull taut and trim off

This model was designed by R. H. Warring, well known aeromodeller. 1/3rd full-size plans appear on page 223, and should be scaled up.

Those who wish can obtain full-size plans, price 3/6 post free, on application to The Editor, Hobbies Weekly, Dereham, Norfolk.

with a razor blade. Waterspray and leave to dry. This will pull the tissue up quite tight, when two or three coats of clear model dope should be given to preserve and waterproof the covering.

The wings are built flat in one piece. Shape and notch the trailing edge and pin over the plan. Then pin the main-



spar and leading edge in place. Cut the ribs required from $\frac{1}{16}$ in. sheet balsa and cement in place, all but the centre rib.

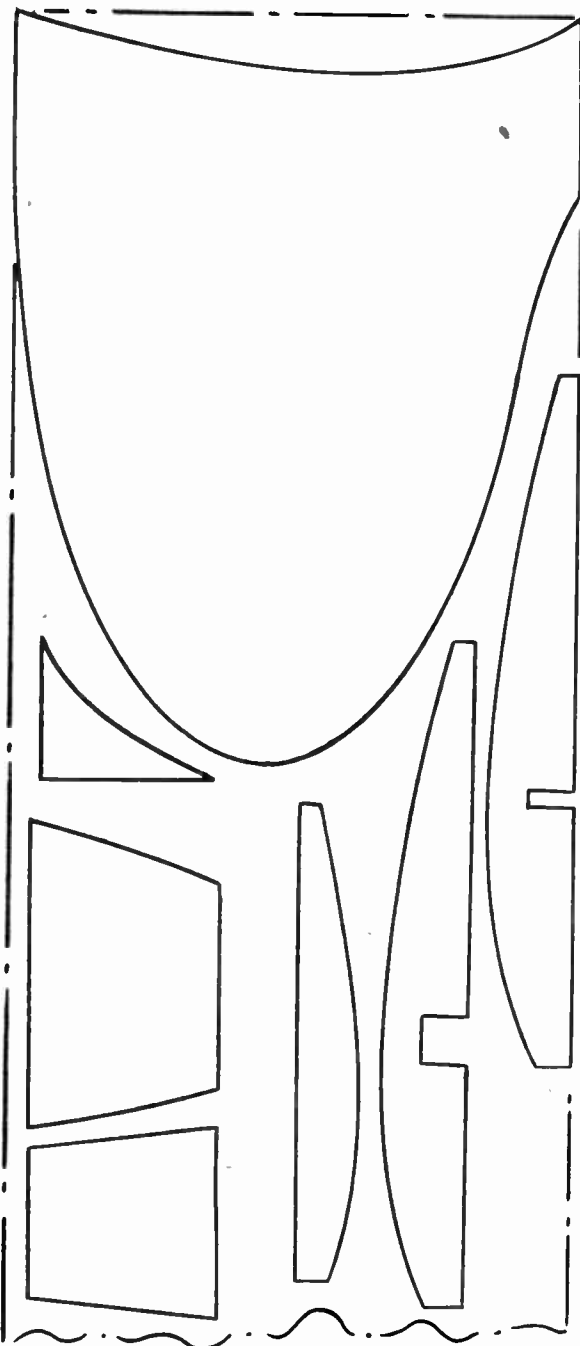
When set, crack the wing at the centre and notch the spars so that each tip can be raised $2\frac{1}{2}$ ins. Cement two spar braces on either side of the main-spar break, and then cement in the centre rib and add the gussets cut from scrap $\frac{1}{16}$ in. sheet. Cement blocks of soft $\frac{1}{2}$ in. square balsa to each wing tip, and carve and glasspaper down when dry. Now glasspaper and smooth down the whole wing frame.

The Tailplane

The tailplane is built in a similar manner, only without dihedral (and there is no mainspar). Fill in between the centre ribs with $\frac{1}{16}$ in. sheet. Wings and tailplane can then be covered with tissue, one piece for the top and bottom of each panel (four separate pieces for the wings and two for the tailplane). Waterspray and dope as for the fuselage.

The fin is cut from $\frac{1}{16}$ in. sheet balsa—one large piece and a small fillet cemented in front. The fin cements directly over the centre of the tailplane,

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



These full-size patterns of important parts will help the modeller

and is covered and doped. Make sure that the fin is square with the tailplane.

The propeller can be bought ready

place, should balance level when supported under the middle of the wings. Test for glide by hand launching into

finished, or carved from a 9ins. by 1in. by $\frac{3}{8}$ in. block of medium balsa, shaped as shown on the plan. The propeller is bushed and mounted on an 18 S.W.G. shaft, carried in another bush in the nose-block. Bending the end of the shaft into a loop forms both a winding loop (for winding with a hand drill) and a freewheel lock. The clutch of the freewheel is a small piece of 20 S.W.G. wire, looped at one end and pinned into the propeller.

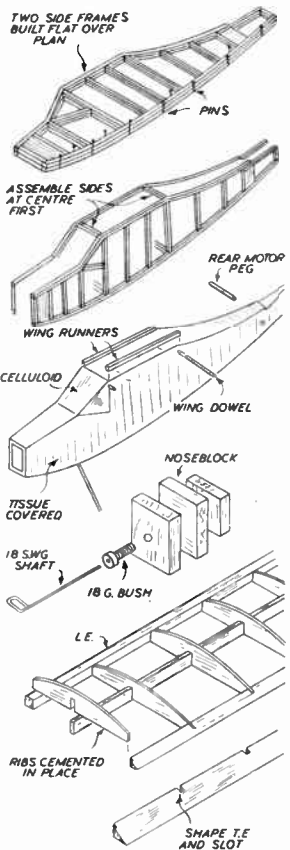
Power

Power required is six strands of $\frac{1}{8}$ in. strip rubber. Four strands may be adequate for a model built very lightly, or for flying in fine weather. A few test flights will soon determine the best motor. On 100 turns, the model should be capable of climbing. If not, two more strands should be added to the motor.

Two $\frac{3}{8}$ in. square members are cemented to the top of the cabin part of the fuselage. The wings rest on these and are held in place by rubber bands looped over the dowels. The tailplane is held in place by a band passing around the fuselage, over the tailplane and around a pin pushed into the rear of the fuselage.

How to Test

The model, completely assembled with the motor in



Drawings which show how the model is built up

wind, slightly nose down. Aim to release at approximately the flying speed. If the model stalls, add weight to the nose (e.g. modelling clay). If it dives, pack up the trailing edge of the tailplane slightly ($\frac{1}{32}$ in. or $\frac{1}{16}$ in., not more).

Under power, a tendency to stall may show up again, even when correct for glide. If this is so, pack the top of the noseblock down slightly to effect a cure. A turn can be given by slightly warping the fin to the right, or turning the whole tail unit very slightly in this direction. Make only small adjustments at a time, and only one adjustment at a time.

Avoid Winds

Normally, small models of this type should not be flown in winds. All test flying, in any case, should be carried out in as near to calm air as possible. It also helps to save possible damage during testing if flying is done over long grass. In even a bad crash, very little damage is then likely to result. (369)

Pair of Book-ends—(Continued from page 211)

ruff and Judy's collar can be modelled in plastic wood and added as shown in the illustrations which head this article. The heads are best painted before being screwed in their final position.

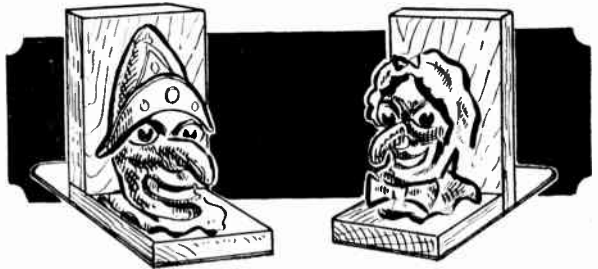
Fig. 5 shows that under the wooden L's of wood, a comparatively thin but stiff sheet of metal (e.g. sheet iron) is

fixed with countersunk screws, so that it projects about 4ins. This can be seen quite clearly in the heading illustrations. Without this, the book-ends would have to be extremely heavy to resist the outward thrust of a pile of books. With the metal end slipped under the first book or two, the books

are enabled, by their own weight, to support themselves.

Such book-ends would look very well for children's books, though they would not be out of place anywhere. Instead of being used for book-ends, the heads may be mounted on shaped plaques and used as wall-decoration. (314)

Punch and Judy are the 'stars' of this PAIR OF BOOK-ENDS

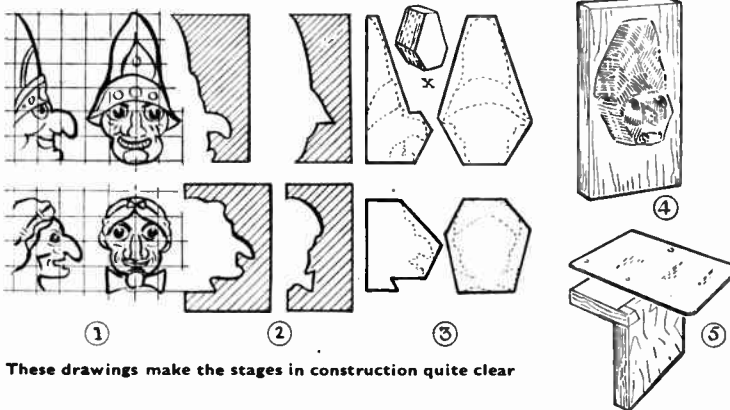


OF designs for book-ends there would appear to be no end, and handicraft designers have continually exercised their ingenuity in thinking up novelties. Here, however, is an idea which has not, we think, been exploited before — Punch and Judy book-ends. Whilst the artist who illustrated the heading to this article has not been lacking in skill, it is impossible to give, in a small-scale black and white illustration, the full colourful effect of the completed job.

The Punch and Judy heads are made in exactly the same way as those used by the professional showman and will stand up to any knocks they may accidentally get—an advantage over those book-ends with a flimsy type of ornamentation.

Working Drawings

The first step is to prepare full size working drawings. Figs. 1, 2 and 3 are in double pairs, so to speak. All in the top



These drawings make the stages in construction quite clear

row refer to Punch and all in the bottom row refer to Judy. All to the left-hand of each pair refers to a side view and all the right-hand sides of pairs refer to a full-face view.

It is necessary, as just stated, to make full-size drawings of the four squared-up drawings of Fig. 1. The squares are 1in. No doubt many readers will complain that they are no artists, but the writer can soon 'explode' this idea. In the first place, it is not so very difficult to copy a squared-up drawing. Secondly, one is not drawing, and, later, carving, for an art-school diploma. In fact Punch and Judy (indeed, the whole 'gang') owe a very great deal for their effect on their grotesque appearance, so that if you do get proportions somewhat 'out', this is likely to be a gain, rather than a loss, so far as the present project is concerned.

Having made the drawings, full size, prepare a set of four templates (to be

cut from thin cards or plastic) as indicated in Fig. 2. The left-hand templates represent the side-face view and the right-hand ones represent half of the front-face views. These templates are traced off from the full-size patterns just drawn. Minor curves can be simplified.

Suitable Woods

The most suitable woods to use are lime, birch, beech or American white-wood. You might be able to obtain Obechi (a light African whitewood). Deal is of no use whatever and time should not be wasted on trying to carve it. Oak will stand up well to carving but is tougher to work.

For the Punch head you will need a block 6ins. long, 4ins. wide and 2½ins. thick (these are finished sizes). Take care that the wood faces that will eventually go against the upright and the

base of the book-end proper, are flat and square. The grain should run from neck to top of head.

In addition to the templates shown in Fig. 2, another set of four are required, as in Fig. 3. The dotted lines in the diagram have merely been added by the artist to show how the shapes were arrived at. They are not required on the templates themselves. The wood is then cut through one way, as shown on a small scale at (X). The left-hand (side view) template of Fig. 3 is then used so as to cut the wood the other way. Of course, in this case you cannot place the template flat against the bent sides of the block. You must keep the template upright and more or less 'sight' over it.

You will then have a very roughly shaped head which can be further modelled with the chisel, gouge, pen-knife, etc. Keep applying the templates shown in Fig. 2. Do not aim at too

'slick' or smooth a finish. Let the whole job be faceted with small chisel, etc., marks. Make everything exaggerated—an extra large nose, deep-set eyes, very prominent cheeks and so on.

It will greatly help if, before carving, the wood is mounted on a spare strip, as in Fig. 4. Use a couple of screws driven in from the back, but place them in such a way that they are unlikely to foul the cutting edges of tools. With such an arrangement as Fig. 4, the wood can, if desired, be clamped down on a bench so that both hands are free for carving.

If too much wood has been taken off, the deficiency can, later, be made good with plastic wood, but do not use this 'saver' as an excuse for hasty and ill-considered work in the first place. Use glasspaper very sparingly or not at all.

Judy is carved similarly to Punch, from a block of 3ins. by 3ins. wood, 4ins. long.

The book-end proper consists of two pieces of wood joined together in an L shape, preferably by dovetailing. The upright is 8ins. high and 5ins. wide. The base piece is 5ins. wide and 5ins. long. The wood, which is about ½in. thick can either be a decent hardwood, oak, for example, which is polished, etc., and left in its natural (but enhanced) condition or else deal can be used, being filled, well papered, and then painted. The painting can either be in a flat shade or else red and yellow stripes can be painted, in imitation of the striped canvas of the Punch and Judy booth. The writer's preference, however, if painted wood is used, is for a rather deep blue all over, as we do not really want background colours that will clash with the colouring of the Punch and Judy heads themselves.

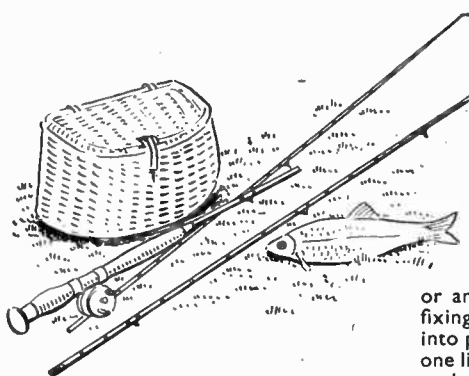
Painting the Heads

The painting of the heads with enamels can be done whilst they are still on their temporary 'stocks' (i.e. the piece of wood to which they are temporarily screwed). First give a filler coat of, say, aluminium paint. Then go all over with white. When dry, paint the noses, cheeks, lip outlines and tip of chin, bright red. Outline the eyes and eyebrows in black and paint the eyes themselves black. The foregoing applies to both Punch and Judy. Punch's hat is red with yellow piping and buttons. Judy has a white mob cap with a black ribbon showing.

If desired, some indication of Punch's

(Continued foot of page 210)

Convert a steel aerial into A FISHING ROD



IN response to many requests from readers, we are giving details of how to convert a steel aerial into a fishing rod. These aeri-als, which are ex-govern-ment stores, are frequently ad-vertised at about 7/6 to 9/- each. Such a rod has its limitations, of course, but it is quite suitable for certain types of coarse fishing.

The rod we have shown here is intended to be used for ordinary float fishing and ledgering. It is unsuitable for fly-fishing, but a shortened version will do admirably for pike fishing. The length, in this case, should be about 7ft. to 8ft., and gives a light springy rod that is useful for spinning or live baiting.

Not Difficult

There is nothing difficult in the making, nor are the corks, etc., hard to obtain. A stamped addressed envelope to the Editor will bring the address of a reputable stockist where fishing accessories can be obtained. The fittings are sold in various grades with prices varying accordingly.

Assuming that you wish to construct a roach rod, let us go through the operations step by step. The aeri-als are usually in three pieces, each 4ft. long. The pieces we require will be the two thin pieces, and 2ft. of the thin end of the remaining piece. Take this short piece to a shop which sells bamboo canes—ironmonger or nurseryman—and select a length of cane into which the short length of aerial will fit. The knots may prevent it being pushed right in, but so long as it will fit in the end, it will do. Now bore or burn out sufficient of the knot to allow the short length to be pushed in about 12ins. A glance at Fig. 1 will show the idea.

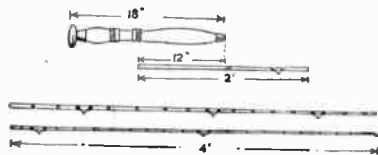


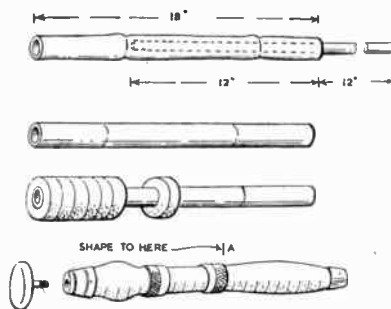
Fig. 9—The completed rod

Making the Handle

The next step is to carefully round off the knots and smooth down the cane until it is of a uniform thickness. Fig. 2 shows this operation complete.

Then thread on the corks and glue them in position. These corks are sold ready-bored, and usually measure $1\frac{1}{2}$ ins. outside diameter with a $\frac{3}{8}$ in. or $\frac{1}{2}$ in. hole. The thickness will be approximately $\frac{1}{2}$ in. Balsa cement or any good waterproof glue is used for fixing, and the corks should be pushed into position one at a time, smearing each one liberally with glue. Fig. 3 shows the corks being threaded on. If the holes are too large, the bamboo can be wound with thread to make up the thickness.

When just over half the handle has been covered, it must be laid aside to dry. The corks must then be shaped as shown in Fig. 4. We then have half the handle shaped—up to the position



Figs. 1, 2, 3 and 4, which show the various steps in the construction of the handle

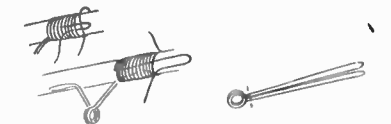


Fig. 7—The top ring Fig. 8—How the whipping is done

marked (A). The winch fittings are now put in place as shown, and you can then continue with gluing the remaining corks in position. The choice of reel fittings is left to the reader, but the sliding fittings shown require no fixing whatever, and have the advantage of allowing the reel to be fixed in any position required.

Shape the Ends

The ends of the handle must be shaped to fit the butt cap and shoulder ferrule. These should be pinned in place as shown in Fig. 5. Bore holes carefully, push in the pins and then force in the short length of aerial. This operation will turn back the pins and at the same time hold the aerial securely in place. If

you require a rubber button this can now be screwed in.

Various types of rings can be purchased, but most of them are rather expensive. A good suggestion is to compromise by buying a top and bottom porcelain or agate lined ring, and make the rest from wire. There are several types of ring, but the one most used is the stand off type shown in Fig. 6. A short length of suitable wire is twisted round a knitting needle, the ends bent and trimmed off, and finally flattened as shown. Take a good look at a friend's rod to see exactly how they should be shaped. They should not be all the same size, but should graduate from small at the top to large near the butt. About seven will be required, as shown in Fig. 9. The shape of the top ring is shown in Fig. 7.

Whipping

'Silko' is a good material for whipping, and this operation should be done as shown in Fig. 8. The loose end is laid along and the turns laid over it. About three turns near the end, the loose end (A) is laid back along the rod and the

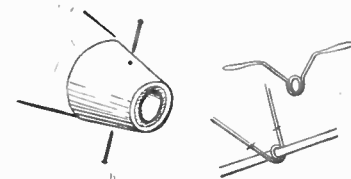


Fig. 5—Pinning the shoulder ferrule

Fig. 6—The intermediate rings

whipping continued over it for three or four turns. The end (B) is now tucked through the loop formed and the end (A) pulled through. The piece (B) is consequently pulled under the whipping and the loose ends can be trimmed off neatly. To finish off, take a little Balsa cement or varnish and smear over the whippings with the fingers. This will 'lay' the fine hairs on the 'Silko' and the rod will now be ready for painting.

A good quality quick drying enamel should be used. Brown is the usual colour, but this could be livened up by painting the whippings green or red. After the rod has been painted, the intermediate whippings can be added. These are only to improve the appearance and could well be omitted if desired. Their position and approximate number are shown in Fig. 9. (391)

INTERESTED IN MODEL BOATS ?

If you are, you will like to know that in the next week or two we are publishing an article, complete with the necessary drawings, on the making of a modern type racing yacht. Don't miss your copy.

The children will want this ELECTRIC MONEY BOX

A TOUCH of novelty is always helpful in teaching youngsters the habit of thrift. So we have no doubt that many of our readers will be glad to have this amusing little money box, either for use in their own home or as an acceptable present.

Each time a penny is pushed through the slit, pussy's eyes (which are actually small torch bulbs) flash a 'thank you' to encourage the youngster in the good work. The lighting is from a torch battery housed in the bottom of the case, and making up the toy provides an interesting little piece of wood and electrical work, needing little in the way of materials.

The dimensions given allow for wood of $\frac{1}{2}$ in. thickness being used throughout, and all measurements are given in the Cutting List. The only other requirements are the two flashbulbs and a battery, and an oddment of thin sheet brass or tin.

Cutting Out

Fig. 1 gives an outline for the front, ruled in $\frac{1}{2}$ in. squares for easy copying, and at Fig. 2 will be seen a general view of the 'works'. Before cutting the two holes in the front for the bulbs, first measure the actual bulbs to be used, to ensure a good fit. It will be seen that the case is built up of three compartments, the bottom one for the battery, the middle one for the coin box, and the top one housing the coin chute. As a coin slides down this chute, it passes over two pairs of metal strips wired into the circuit, and the coin thus closes the circuit and causes the bulbs to flash twice.

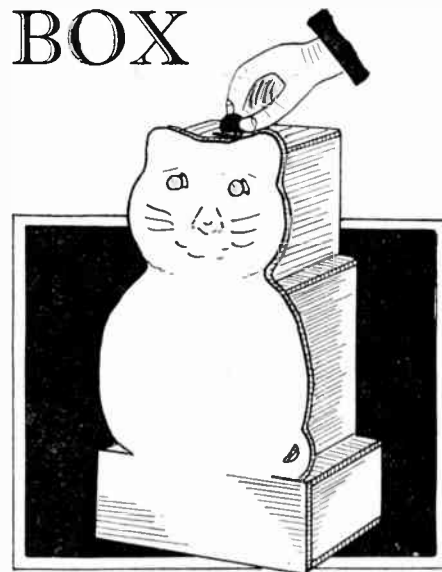
The base and the top of the battery case are identical, and measure 4 ins. by 3 ins., with two side pieces 3 ins. by $1\frac{1}{2}$ ins. and a back $3\frac{1}{2}$ ins. by $1\frac{1}{2}$ ins. The coin box top is a piece 3 ins. by 3 ins., the two sides 3 ins. by 3 ins., and the back 3 ins. by $2\frac{1}{2}$ ins. For the chute, cut two pieces $3\frac{1}{2}$ ins. by $1\frac{1}{2}$ ins. and two narrow strips $\frac{1}{2}$ in. wide for gluing down the edges of one of the pieces, as shown at Fig. 3.

The sides of the chute compartment are cut 3 ins. by 3 ins. and the back 3 ins. by $1\frac{1}{2}$ ins. It will be seen that the top of the case is in two parts—a piece $2\frac{1}{2}$ ins. by $2\frac{1}{2}$ ins. screwed to the sides and back, and a strip $1\frac{1}{2}$ ins. by $\frac{1}{2}$ in. glued to the front, the space between these two forming the coin slit.

The Metal Parts

The metal parts for the electrical work are quite simple, and consist of two pieces for the lamp contacts and four pieces for the coin chute. Cut a strip of the brass or tin $1\frac{1}{2}$ ins. long and $\frac{1}{2}$ in. wide and bend it to a right angle about $\frac{1}{4}$ in. from each end. Put the bulbs in place and screw down this strip in between them so that one of the turned-up edges just touches each bulb, as shown at Fig. 4. Cut another strip $1\frac{1}{2}$ ins. by 1 in. and bend it horizontally so that, when it is screwed into position immediately beneath the two bulbs, it just touches the tips of them, to make the other contact (Fig. 4).

For the coin chute contacts, cut four pieces of the metal sheet each $\frac{1}{2}$ in. long and $\frac{1}{2}$ in. wide. Glue the two $\frac{1}{2}$ in.



wooden strips on to one piece of the chute, then fix these four metal pieces flush up to them, with about 1 in. between the two pairs, as seen at Fig. 3. Leave a $\frac{1}{2}$ in. space at the top and bottom for the edges of the wood to be tapered off when we come to fix the chute into position. When fixing on the plates, countersink the screw holes, and, when in position, rub down the screw heads with a file so that they make a flush surface with the brass, over which the coins can slide easily. Do not forget, too, to use screws long enough to project through the wood far enough for wires to be fixed on to them on the underneath side.

Assembling the Case

The base of the model is hinged for the battery to be easily got at, and the back of the coin box is also hinged to facilitate the removal of the coins when necessary. If suitable metal hinges are available, these, of course, make the best job; but strips of tape well glued across serve equally well in this case, since the doors are not going to be opened very often, and this simplifies the work. Two little hook and eye fasteners on the back of the model hold these lids closed.

Bore a small hole in the top of the battery compartment, near the front edge, and a similar one in the top of the coin box, through which the flex can later be led from battery to contacts. Having built up as far as the top of the coin box, try the two slanting chute pieces in position, tapering their ends until they fit nicely. Then mark their position on the top of the coin box and cut a suitable slit in this to allow the coins to fall into the box. If these cuts are made on the slant it gives a smoother entry for the coins as they leave the chute.

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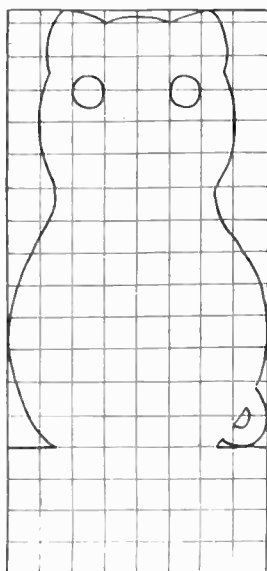


Fig. 1—Outline of the front of the box

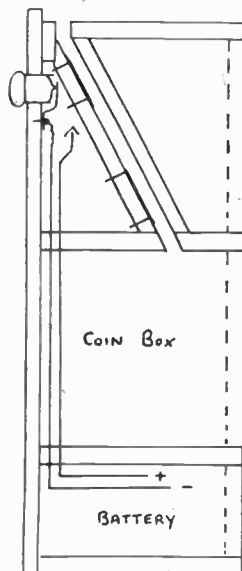


Fig. 2—A view showing details of construction

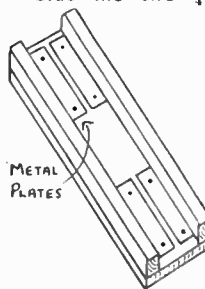


Fig. 3—The chute

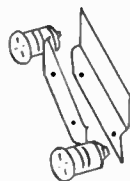


Fig. 4—Arranging the 'eyes'

You can learn a lot about nature

COLLECTING WILD FLOWERS

SUMMER is the time for collecting wild flowers, and a most interesting out-door hobby it is, taking you into the countryside when everything is at its best. An album of wild flowers, properly preserved and mounted, is permanently interesting. You may even develop the pastime, and add ferns, mosses, leaves, and grasses. But first, wildflower collecting is most worth while.

Roughly, there are at least 750 kinds of wildflowers to be discovered and collected in Britain. The places where the various species are found should be noted. There are the flowers of the meadows, the woods, the marshes and bogs, the moors, the dells and glens, commons, and wayside banks. The river also has its own flora, and even high up on mountains a few specialities are to be climbed for and appreciated all the more for the work involved, and, in some cases, the risks you have to take.

How to Collect

You will need a suitable basket for your specimens, so that the blossoms do not get crushed. Select only the very best blooms—good specimens of the finest colourings. When you are lucky enough to come across a rare species not often found in your particular district or county, take extra care of it, and make a note of it underlined in red ink in your diary. Such an entry may add to the knowledge of botanists and other authorities.

Having collected a basketful of varied flowers, the next step is to set about their preservation. This job should be tackled immediately, before they have lost something of their beauty and colourings. The work may be divided into three main processes: (a) drying, (b) pressing, (c) mounting and arranging in your album or scrap-book.

Drying

A simple method of drying out your specimens is to place the flowers

between absorbent material, gradually increasing pressure as the drying proceeds. If too much pressure is applied at first the blossoms are likely to get squashed and will look a bit of a 'mess-up', instead of keeping shape and colour. The object is to deprive the freshly-gathered flowers of their juicy matter without delay, for as long as they are damp the delicate colours will go on disappearing. The secret of preserving the natural colours as much as possible is by drying quickly.

A common method of drying and pressing is to place the flowers in the absorbent material between two flat boards that can be tightened together by cramps or thumbscrews; failing that try two flat pieces of stout cardboard with the flowers carefully placed in the absorbent material and laid between them. On the uppermost board place several fairly heavy books or other weights, adding further books or weights as the drying proceeds.

When dealing with a number of specimens select with care those you desire to preserve, discarding poor ones, and any with bruised stalks, broken leaves, or disfigured petals.

Now, take your perfect specimens and lay them neatly and as artistically as possible on the absorbent material—a sheet of wadding, or other suitable stuff, which is placed on two or three sheets of newspaper. After arranging the specimens as neatly as possible until there is no room for more—do not overcrowd, if you desire good results—take another sheet of wadding and more newspapers, and place very carefully on the top of your flowers. Then place the upper board in position, put your books or weights on top, or clamp together the upper and lower board as the case may be, and set aside in some place where no one will disturb your home-made press.

About a Week

By this method drying should be completed in about a week. Then undo the press, remove wadding or other

material you may have used, take out the flowers carefully, and remove any bits of material sticking to them—this needs care or you will ruin the appearance of the specimen handled. Take the wadding away, substitute a double thickness of white blotting-paper, place specimens on this, and put a similar piece on top and again screw up or weight them.

When this final pressing, which will take a few days, is completed, remove specimens and provide for arranging and mounting them in scrap-book or album. Write the name under each flower, as you mount it.

Take Care

Fixing the flowers to the sheets in the album calls for some care. Large specimens can be fixed by making small horizontal slits in the stems with a sharp thin-bladed pocket-knife, passing little slips of paper through them, and, after making similar small openings in the supporting paper, threading the slips through to the under-surface, where they are stuck down. In the case of delicate specimens or small-sized flowers, the binding strips are passed over the stems and threaded, as before, through the support. These binding strips—if preferred—can be coloured with a 'wash' of similar hue to the parts of the stems they cover over, to harmonise with the whole.

Your specimens can be arranged in various ways. A simple method is to arrange them under their colours, i.e. yellow, blue, red, and so on, or you can place them under their different forms—as 4-petalled, 5-petalled, many petals, daisy-shaped, funnel-shaped, umbrella-shaped, etc. Or schedule them according to place found, as moor, downland, field, bog, or riverside. If you wish to be more scientific you can arrange them in order of families. In any case, write all descriptions of habitat, etc., in simple understandable language, avoiding Latin names, which your friends will not know when you proudly show them your collection. (364)

Electric Money Box

(Continued from page 213)

Wiring Up

Before the coin chute is actually glued into place, wire up the metal plates. Twin flex makes the ideal material for this. Beginning at the lamp contacts, connect both strands of one piece of flex to one of the contact screws, then split the flex and connect one strand to the top left hand plate on the chute and one to the bottom left hand piece. Cut another piece of flex about 12ins. long, divide the two strands for a few inches, and fix one to the top right hand plate of the chute and one to the bottom. Then thread the double flex through the holes in the coin box and so into the battery compartment where it is connected to

CUTTING LIST (for wood of $\frac{1}{8}$ " thickness)		
No. of Pieces	Description	Size
1	Front	$8\frac{1}{2}" \times 4"$
2	Base and battery compartment top	$4" \times 3"$
2	Battery compartment sides	$3" \times 1\frac{1}{2}"$
1	Battery compartment back	$3\frac{1}{2}" \times 1\frac{1}{2}"$
1	Coin box top	$3\frac{1}{2}" \times 3\frac{1}{2}"$
2	Coin box sides	$3" \times 3\frac{1}{2}"$
1	Coin box back	$3" \times 2\frac{1}{2}"$
2	Chute pieces	$3\frac{1}{2}" \times 1\frac{1}{2}"$
2	Chute edge strips	$2\frac{1}{2}" \times 2\frac{1}{2}"$
1	Top of case	$2\frac{1}{2}" \times 2\frac{1}{2}"$
2	Chute compartment sides	$3" \times 3"$
1	Chute compartment back	$3" \times 1\frac{1}{2}"$
1	Chute block	$1\frac{1}{2}" \times 1\frac{1}{2}"$

one of the battery brasses. The flex from the other terminal of the battery comes up through the coin-box holes and goes straight to the other contact-maker on the lamps.

Finishing Off

Test the wiring to see that the bulbs do light up when metal contact is made across either pair of plates on the chute, then glue the chute in position. Try out the coin slits with a penny to see that it slides easily into the box, then glue or screw down the top and back of the coin-chute compartment. Finally finish off the outside of the model with black and white paint or enamel, with a few amusing strokes of white on the face for nose, mouth and whiskers. (310)

Ideas for some DOGGY NOVELTIES

HANDICRAFT workers and makers of novelties looking for something that should sell well should not overlook the fact that most people are very fond of dogs and will usually pay a shilling or two for a distinct souvenir of their doggy friend.

The basis of the novelties to be described is a good photo of the dog.

enlargement is done. Leave instructions for only the dog part to be enlarged. It might be mentioned here, however, that apart from using photographs of individual dogs one can use (at least, for amateur use and not for commercial production on any appreciable scale) photos and pictures of dogs cut from magazines, etc.

A fairly well-known idea is to glue the

take a small plaster cast (Fig. 4) of the dog's paw imprint in soft soil. Find a good impression and ring it round with any suitable non-leaky 'fence'. Ideal would be, say, a salmon tin with both top and bottom cut cleanly off with one of those patent tin-openers where one turns a key. The plaster is added slowly to the water, stirring slowly all the time. (Too vigorous a stirring will result in air bubbles). The mixture should be like thick cream and poured slowly over the impression so that it is about 1in. thick. It will set in a few minutes and the cast can then be taken indoors but it is well to leave it, say, overnight before handling too vigorously. The plaster can be cut, like wood, with a knife and chisel and can be trimmed to a suitable shape, mounted to the wooden base and painted brown. Plastic moulding powders are often advertised and these would give a less fragile casting than plaster.

'Dirty Paw'

But to return to our photographs. Figs. 1 and 2 show how instead of a plain cut-out, a 'kennel' can be built around it, whilst the 'dirty paw' idea can also be incorporated as shown, together with the 'big bone' joke, to be mentioned shortly. In fact, the purpose of this article is not to give inch by inch dimensions for any one model but to give



Considerable patience and some artfulness are required. We know only too well the dog that moves just as the camera shutter is about to click or the dog who finally poses excellently—but in a shady part of the garden, or out of focus of the camera.

Two Tips

As this is a constructional article and not one primarily on photography, the writer will give but two tips that he has found extremely useful. First select a sunny spot in the garden, etc., where you want the dog to stand. Set up your camera (on a low stool, etc.) and focus on this spot. Have the shutter already set as regards aperture and time. You will, of course, have spent some time making friends with your doggy 'victim' if he is a strange dog, but take care not to over-excite him.

Now put down some dainty tit-bit—a chocolate, perhaps, on the spot and watch very carefully. Just as the dog has finished give a short 'toot' on a toy motor-cycle horn or the 'Ma-Ma' gadget inserted in some dolls, or anything similar. You may be able to get a friend to do this. The dog, hearing the strange noise will look up inquisitively. Then you click the shutter!

Needless to say, this does not by any means invariably work and certainly you would not catch many dogs twice with the same trick. But it definitely works much better than the usual frustrating business of hopefully following the dog round with a camera.

From the small snap just made, an

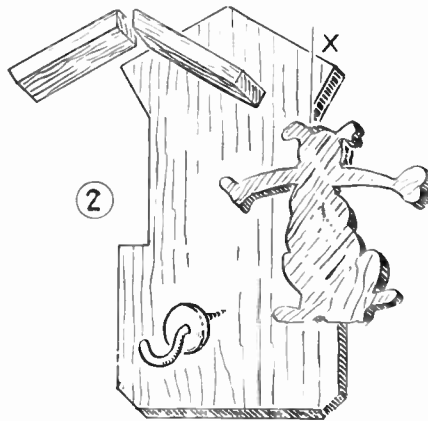


photo on plywood, afterwards cutting out, leaving a rectangular base on which a calendar pad can be fixed. Less well

known is to fix, instead of the calendar, a hook on which the dog's lead can be hung when not in use—a really practical and useful idea since otherwise the lead is always getting mislaid.

As a really novel idea (leaving aside, for a moment, our photographs) is to have a dog lead holder in the form of a paw-mark (the lower part of Fig. 1). This will gain, obviously, in attraction if it is the paw-mark of some definite pet. Harassed housewives will assure you that you do not have to look far to find muddy paw marks, but it does not require unusually great ingenuity to get a dog to run first over wet and muddy ground and then over a sheet of paper—say, a piece of ceiling paper laid out in his path, so that a record of his paw mark is made and can be traced off.

Plaster Cast

An extension of this idea would be to



③



④



⑤

⑥

plenty of ideas which the reader can combine and mingle with his own notions.

The purpose of the flare-out so to speak, at just below point (X) on Fig. 2 is so that the roof pieces can be supported along their complete length, otherwise the ends would project. This would look

(Continued foot of page 216)

Get into practice with a SERVICEABLE MORSE KEY

A STRONG and serviceable key for Morse code practice can be made almost entirely from wood, and if well-finished and painted black, is scarcely to be distinguished from a ready-made key of similar type. This key can be used with a buzzer or oscillator, and is capable of fast sending.

The Wooden Parts

The base should be solid and fairly thick, and a size about 6 ins. by 2½ ins. by ½ in. thick is suitable. Two holes are drilled at one end, for screw-type terminals. Two holes are also drilled nearer the centre, so that the pivot blocks can be screwed from underneath. All these holes are countersunk so that the bolt and screw heads do not project from the base.

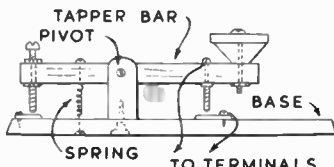


Fig. 1 - Side view of the complete key

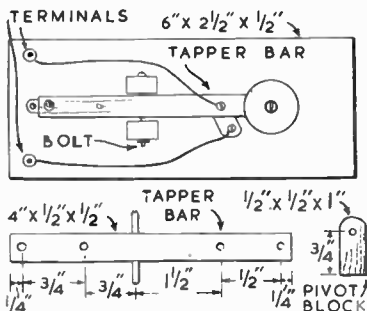


Fig. 2 - Top view of the key, and details of the bar and pivot

The key bar is 4 ins. long and ½ in. square, and is drilled as shown in Fig. 2. As with the two small pivot blocks, the hole for the pivot, which may be a long bolt, should not be larger than is necessary. Sideways wobble will then be avoided.

Some suitable type of knob may be to hand. If not, the end sawn off a cotton-reel is suggested, and this can be secured to the taper bar by means of a bolt passed directly through both.

All the wooden parts are glasspapered, then given a thin coat of varnish or paint.

Metal Parts Required

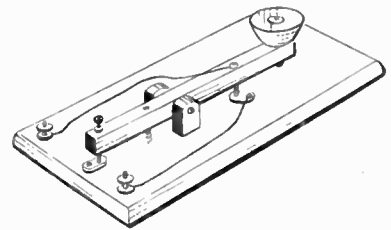
In addition to the terminals and bolts mentioned, two further bolts are required. One, near the taper knob, is about 1 in. long. The second, at the

THE MORSE CODE	
A	..-.
B	-.-.
C	-.-.-
D	-.-.
E
F	..-.-.
G	...--.
H-
I	..-..-
J	..-.-.-
K	-.-.-.
L	..-.-.
M	---..
N	..-.-
O	---.-
P	..-.-.
Q	-.-.-.
R	..-.-.
S	...--.
T-
U	..-..-
V	..-.-.-
W	-.-.-.
X	-.-.-.
Y	..-.-.
Z	---..

A dash should be three times the duration of a dot.

other end of the bar, is slightly longer, and fitted with lock nuts. By means of these the up and down movement of the key can be adjusted as the user requires. It is an advantage to have washers under the nuts.

Both bolts strike upon small pieces of metal which are screwed to the base. These can be cut from brass or other metal, and a lead is taken from one of the terminals, as depicted.



A small spring, stretched between wire hooks, keeps the short end of the taper bar down, the screw that end pressing upon the plate on the base. When the knob is pressed, the second screw touches the plate under the key, completing the circuit.

A short length of flex is used between the one screw and second terminal. A free up and down movement of about ¼ in. is average, and the lock nuts can be adjusted to obtain this.

Buzzer Circuit

A simple buzzer circuit is given in Fig. 3. For proper practice two persons are necessary, and one should send while the other receives, positions being changed from time to time. Rapid sending is much easier than rapid receiving, but with a little practice the sound of each letter will be recognised. Twelve words per minute (sixty letters) is a good average. (311)

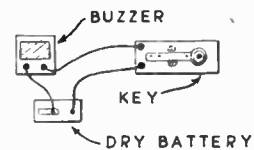


Fig. 3 - Circuit for key, battery and buzzer

Doggy Novelties—(Continued from page 215)

all right, but there would be danger of the ends catching on something and getting pulled off. If desired, however, the line can be carried straight down at (X).

There is room, indeed for humour. Fig. 3 shows a squared-up design which can be copied. The squares can be, say, 1 in., but can be, for example, ¾ in. or 1½ ins. according to the size required. Except for the rolling tongue, the figure is symmetrical so that only one half need be shown. One can show a large Alsatian or bloodhound sitting in an absurdly small basket (Fig. 6), or by the simple process of having two separate photographs enlarged to varying scales, and then stuck side by side on the plywood, one can get the ludicrous effect of an outside 'nound' as illustrated in Fig. 5.

This is a particularly apt 'gag' in those cases where, from a small puppy, the dog has grown larger than his owners would have imagined. Having taken the main, dog, photograph and enlarged it suitably, the pose of the human is decided on. For example, in Fig. 5, it is necessary to have the human figure with a slightly upraised arm.

In Figs. 5 and 6, only parts of the bases are shown. Fig. 5 (showing a Yorkshire terrier) indicates how a shaggy outline has to be simplified for cutting-out purposes.

If you manage to get a photograph of a dog holding a stick, ball or bone, and if you are possessed of a little skill as an artist, you can show the dog holding an outside 'bone', as in Fig. 1.

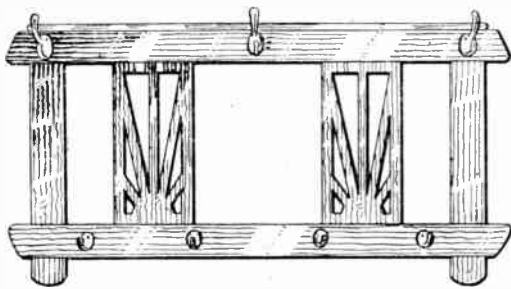
It will be appreciated that these novelties cannot be mass-produced and

so the home-hobbyist is secure from competition in this respect. He might, indeed, make quite a 'corner' in this business. After dealing with private orders and acquiring skill (he may, if not a good photographer, work in collaboration with one who is), he may extend his scope by seeking orders via pet shops or from a small stall at a dog show or exhibition.

As with cut-out calendar making, use a fine fretsaw blade for cutting (take care not to soil the photograph). Glasspaper the 'whiskers' and then paint the edges and back with black matt paint ('egg-shell black') taking very great care not to get any paint on the face of the photo.

Though this article has dealt with dogs as subjects, the reader will note that, to a great extent, cats, horses and other pets can also be used. (315)

It's easy to make a SMALL HAT RACK



THE hat rack shown in our sketch on this page is typically modern in style, and its outline lends itself admirably to the use of either carved panels or the plain fretwork panels shown here.

The dimensions of the rack are such that it would be suitable for the less spacious hall, or for the larger hall where, perhaps, a stand is already installed, but where an overflow rack is sorely needed.

The general dimensions are given in

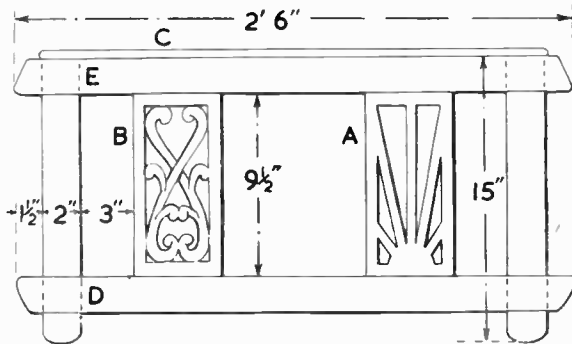


Fig. 1—Framework and dimensions of rails and panels

Fig. 1 but these, of course, could very well be increased or reduced to suit the particular case in hand. This rack is, undoubtedly, a fretworker's task, as there is some simple shaping to be done. There are also showy pieces of work in the two panels which add so much to their attractiveness.

Two Types

It will be noted that alternative designs are given for the panels, and the worker has the choice of plain fretted ones, as at (A), or rather more elaborate ones, as at (B). In the latter he will be able to exercise his skill in simple recess carving, which will give so much more 'life' to the simple scroll work introduced.

The most appropriate wood to use is oak, but pine would also make an excellent job and be much simpler to work. The easiest of wood joints have been used, and these are really necessary if the frame is to be made strong enough for the job. The ordinary halved joint

forms the connection between the lower rails and its upright rails, as at (D), while the open halving joint is used for the top rail at (E), Fig. 1.

A working detail of both these joints is given in Fig. 2 and it must be observed that the lower recess (D), on the upright rails, is made $1\frac{1}{2}$ ins. up from the bottom. At the top the recess runs through at (E). Both recesses on each horizontal rail, however, are made as that at (D), and are $1\frac{1}{2}$ ins. in from the ends.

Fitting the Rails

As all the rails are 2 ins. wide, the recesses in every case will be made 2 ins. square. They should be cut down to half their thickness with a tenon saw. All the joints should fit tightly and should need gently knocking home before the screws are put in from the back of the frame.

The interior angles of the frame

wide and may be cut from ordinary solid fretwood or from plywood if this can be got in suitable thickness and grain. If the curved panel is chosen, then, of course, the solid $\frac{1}{2}$ in. fretwood will be wanted. For the plainer design, the plywood will answer just as well. Draw out the 1 in. squares, starting from a common centre line crosswise in each case, and from the base of each panel upwards. Line in half the design only, and then trace this and transfer it to the other side of the centre line. Make a good hard black line over the whole outline before commencing to cut with the fretsaw. The slight recessing needed to show up the scroll work in the panel (B), can be carried out with a $\frac{1}{4}$ in. chisel or even a very sharp pocket knife.

Not too Deeply

Do not cut too deeply to weaken the wood, but just about $\frac{1}{8}$ in.—sufficient to give light and shade and to show the cross bandings of the scrolls. It is quite a simple job to fix the panels in the frame, and Fig. 4 illustrates how this is done. At a distance of 3 ins. in from the inner

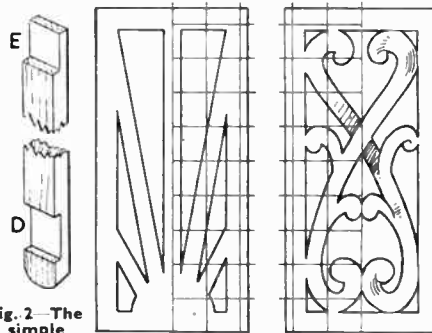


Fig. 2—The simple joints of the frame

Fig. 3—Alternative designs for the panels

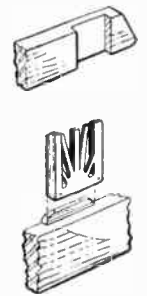


Fig. 4—How the panels are fixed

should be tested with a square to see that they are exact rightangles before the screws are run in. The piece (C) along the top rail is 27 ins. long, by $\frac{7}{8}$ in. by $\frac{3}{4}$ in. in section, and is rounded on its front and return-end edges and afterwards screwed on. The back edge of this piece must come flush with the back edge of the frame.

Fancy Panels

At Fig. 3 are given the interior panels to an enlarged scale. Half of each panel is squared over to make the task of reproducing on wood simple for the worker.

The panels are $9\frac{1}{2}$ ins. long by $4\frac{1}{2}$ ins.

edges of each upright rail, small fillets about $\frac{3}{16}$ in. wide by $\frac{1}{16}$ in. thick are glued and pinned to both lower and upper horizontal rails as shown in the detail. To these the fretted panels are fixed by means of round-headed screws.

The Finish

If the rack has been made from oak, a good rubbing with linseed oil will help to darken it and give a good surface finish. Or the wood may be stained lightly and finished with a coat of polish or varnish.

If pine wood is used, then it may be either stained and varnished, or painted a suitable colour. To hang the rack, two strong brass wall plates will be wanted. Usually these plates have two holes for screw fixing to the frame of the rack, with one larger hole above them for the wall fixing screw, which should run into a rawplug or a wood plug fixed into the jointing of the brickwork. The plates should be screwed to the top rail of the frame and not to the member (C) above it. (366)

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An expert tells you how to make PICTURES OF HOLIDAY SNAPS

NOW that the holiday season has arrived, every amateur photographer is, or should be, anxious to get busy with the camera, hoping and striving to achieve better results for his or her efforts this year than hitherto—and I firmly believe that, with a little care, and, perhaps, rather more thought in the selection of subject, it is definitely possible for us all to produce a greater percentage of successful results.

Plenty of Failures

It is a well known fact that every season a very large number of films are exposed which, on being developed, prove to be failures because of errors in exposure times, miscalculations of distances, movement of the camera, etc., or, perhaps, through the inclusion of some ugly object which could have been avoided by taking a step or two to the right or left.

If you are a beginner then the few hints given here will, if noted, certainly help you considerably. On the other hand, if you have been using the camera for three or four seasons and have been fairly successful, you may still find some of the tips quite useful in enabling your work to be somewhat more pictorial than before.

Most of you will realise that there is a difference between a picture and an ordinary snapshot, but it is advisable to let you know what I am driving at when trying to explain what that difference is. If you take a picture, it is a snapshot only so far as the actual exposure time is concerned, for it might mean only the merest fraction of a second. But before making the exposure, ten minutes or more may have been spent deciding the best position, the right exposure time and other details. When taking a snapshot, however, it is frequently made on the spur of the moment, without any thought for its pictorial nature, lighting, shutter or stop or anything else. It so happens that the incident or subject strikes you as a pleasing or happy one to record, and so you hope it will turn out all right. Really, it comes into the category of haphazard shooting.

Now, do not get the idea that you should not use some of your films for these 'records' of happy doings and events. They are a large part of the joy to be gained from having a camera with you at all times. But every advanced photographer will tell you that even these pictures will turn out to be very much better once you have cultivated the habit of thinking of the pictorial possibilities before making the exposure.

To show what I mean, let me give you an illustration of an actual occurrence. A gentleman was sitting with his wife on the beach at one of our seaside resorts when his attention was called to a small curly headed kiddie trying to dig at the



The big splash. This picture has caught the action of the waves nicely

sand. He did some quick thinking, and, after making some changes to the shutter of his camera to ensure correct exposure, and carefully adjusting the distance scale, he walked a few paces so as to have the light at his back and the sunshine well splashed on the youngster—and, at the right moment, he made the 'snap'. The result proved to be a real picture, and it gained the first prize of ten guineas in a photographic competition in the autumn.

You all know that the intensity of the light, or, as we prefer to term it, the light value, can vary considerably during the day. In summer it can be brighter sometimes at 10 a.m. than at midday, and at other times, light is better in the afternoon than in the morning. Heavy dark clouds may reduce its power, but a few white puffs in the sky can enhance its value. Dark buildings or trees occupying the foreground of a scene will necessitate longer exposure time than an open view with a white cottage in the foreground.

Correct Exposure

Judging the correct exposure is one of the principal snags that every amateur is up against, but, fortunately, it need not be a source of worry or failure, for there are numerous guides—known exposure meters—on sale. And as they range in price from a shilling or two to so many guineas, every amateur can be the owner of one. Whatever it may cost, it will very soon prove its worth, and no one should be without one.

It is not a question of which is best, but rather what can you afford. If you are a beginner, I would not advise the

higher priced photo electric type, but rather the cheaper form as incorporated in the Johnson Welcome Photographic Year Book. In any case, whatever type you have, or intend to get, study it and become proficient in its use. Then, when you make your first tests with it and find that the calculations are giving you the right exposure times, stick to it and use it always for every exposure you make. And do not worry yourself about any other make, or do any more guessing.

A Simple Subject

I have given you an example of a successful picture from a snapshot, and now I will give an illustration of a picture resulting from a very simple subject. It happened in the late autumn in a leafy lane in a London suburb. There were trees on both sides of the lane, with bushes alongside the unmade footpaths. The roadway was well splashed with glorious patches of sunshine and, being a lover of both sunshine and trees, I felt that a picture was here if the right spot could be found. With eyes on the trees and sunny spots, I tramped the lane and soon selected the most suitable position. The light was tricky, but my meter gave me the time, and the exposure was correct. The result proved a winner, and it has always been a reminder that a simple subject can prove a picture.

It is quite the usual custom when on holidays to spend a fair portion of the time walking, cycling or motoring around the countryside of the town or village in which one is staying, in order to visit the places of beauty or other

interest, or, possibly, just for the pleasure of a picnic in the woods. In any case, it is on these jaunts that the owner of a camera has the opportunity of doing some pictorial work.

Let us briefly consider the very full subject of landscape work. If you will take the trouble to examine any pictures of this nature you will find that, in the majority of them, two, three, or more of the following objects are included and play a most important part in the composition: trees, water, cottage or church, lanes or pathways, and clouds. I think you will agree that these simple objects are usually easy to find in our country places, and it is well to remember that the closer they are together the better it is for the photographer to make a picture.

I mention this because we are all much impressed when we come across a wide expansive view spreading across acres of fields, with rows of trees in the middle distance, and finishing with some hills in the distant background. These views are not altogether suitable for recording on a small film, and should be passed by until one has had a fair amount of experience. Then it will be realised that they serve their purpose only when there is some object of primary interest occupying the immediate foreground.

It is better to concentrate on a scene where some of these objects are, more or less, grouped near at hand and capable of being included as a complete subject on the film. Quite frequently, on the outskirts of a village, you will find a footpath leading to a pond or stream in a field where some cows are grazing. On one side of the field there may be a row of trees, and nearby a cottage with a path leading to the gate. You have the items

and probably at first sight they might not appeal to you, but do not be deterred by that first impression. Spend a few minutes walking here, there and elsewhere around that spot, sometimes with the footpath running out of the view at the bottom right hand corner and sometimes out of the left. Maybe the cottage will be better if it is on the right rather than the left, or the cows slightly out of centre. And perhaps the lighting will greatly improve the whole vista if it is coming from the back of you.

Further, do not forget to study those tufts of white clouds. Try to imagine that you are an artist and have to find the best possible position for your



Another excellent seascape. This was taken at Tregudda

easel, where all the principal objects can be portrayed in such a way that each will serve to attract the eye to the others, thus building up a perfect 'harmonious' whole.

Harvest Time

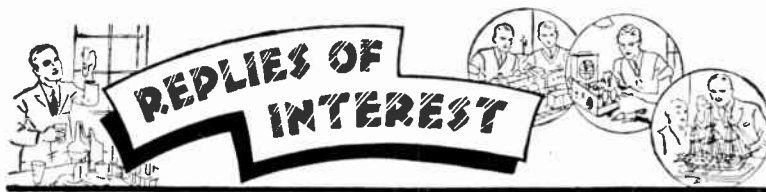
Harvest time gives one a splendid opportunity for 'action' photographs and if you can make friends with the farmer or some of the workers, it should be possible to get three or four different studies of the work, especially if you promise to send them a print—but be sure to keep the promise!

Most of our country churches are well worth visiting, and many of them have items of architectural or historic interest. For interior work a time exposure is often required, and, of course, the lighting must be carefully considered. It is a good point to find out the vicar or verger to get permission to take the photographs, and he will often prove helpful.

We must have a word or two about seascapes, because most of us like to spend our holidays by the sea. If you are at a place where there happen to be some cliffs, rocks and rough waves, it should be possible to make one or two typical sea studies, but you will be well advised to consider early where it is best to stand, so as to compose the main objects of the proposed study. You will want to know where to get the best view of that big wave smashing itself on the rocks, with the cliffs in the background. At the same time, it must be a safe spot where you will not get soaked by the wave or cut off by the tide. The times of high tide should be noted.

If the place is one where yachts abound, then these will help you when the sea is calmer, and perhaps the head of the pier might prove the best point for getting these and any other boats. But unless there are attractions such as fishing boats, harbour scenes, etc., the actual beach or sea scenes are rather limited. If there is a river nearby, however, and you can wander along its banks, then a day's tramp in the vicinity should give you a whole spool of exposures of beautiful studies. On all occasions, do not forget the clouds—which so often make pictures of your holiday snapshots. (357)

time, change the water several times.



Earphone Head-Bands

PLEASE tell me what metal to use and how to make head-bands for earphones. (D.G.—Saffron Walden).

HEADPHONE head-bands are commonly made from all types of metal, by different manufacturers. A fairly light, springy metal is desirable, and some universal-joint method is necessary for mounting the earpieces, so that these can turn in any direction to fit against the user's ears correctly. The joint should also permit of some up and down movement of the earpieces, so that they may be adjusted to the correct height for the wearer. Two strips about 10ins. long by $\frac{3}{16}$ in. wide would be average, and the exact method of securing the ear-pieces will have to depend upon whether the latter are

fitted with screws or other similar method of mounting, or small holes, at each side, so that they must be pivoted in a U-shaped wire frame with small prongs engaging in the holes.

Aquarium Cement

WHAT can I use as a mixture, apart from putty, to glaze an aquarium? (W.B.—Rotherhithe).

THE following is a recipe for a good cement for fixing glass in an aquarium. Take $\frac{1}{2}$ lb. of white lead, ground in oil; $\frac{1}{2}$ lb. red lead, dry, and $\frac{1}{2}$ lb. litharge, dry. Knead the last two into the first. It soon hardens. When the glass is fixed and cement dry, fill with water, and do not introduce the fish under a fortnight. In the mean-

About Plastic

CAN you tell me a cheap and effective way to emboss plastic? I make plastic or Perspex nameplates, and at the moment am using indian ink. It is not very suitable as it is only on the surface. Is a machine for the purpose very expensive, as I want it to be below the surface? (J.W.—Glasgow).

THE embossing or incision of lettering, etc., on plastic can be done quite readily with a small electric engraving pen, costing somewhere about £5/10/-. Alternatively you can incise the lettering with a hand graver, consisting of square tool steel blade about $\frac{3}{16}$ in. or $\frac{1}{4}$ in. square and ground off at an angle of about 50 degrees across a diagonal. This results in a V-shaped pointed tool. You can make it from square silver steel, hardened in oil and tempered to a dark straw colour. The blade should be short, say, about 3ins. or 4ins., and have a ball shaped handle so you can push it from the palm or ball of the hand.

How you can enjoy BOATING WITHOUT SPILLS

SUMMER is a time when we all like to go boating, but unfortunately the season is often marred by accidents. These are generally due to tyros not knowing the elementary rules which govern this most interesting pastime.

The first thing to learn is how to get into a boat properly. The correct way is to step over the side (bow or stern) right on to one of the middle boards. It is all a question of balance, and stepping right on to this centre seam does not in any way upset the trim of the little craft. Getting ashore is just the reverse process, and a person should step right from the middle board on to the jetty. Any putting of a foot higher up the side is bound to cause the boat to tilt over, which may be dangerous.

The Oars

A boat, of course, is sent along by its oars and if you have not done any rowing before, you should find out, near the bank, just what can be done with these. Thus, try working one oar and it will be found that the boat goes round in circles. The two oars worked in opposite directions makes the boat go round in a tighter circle still. Pushing on the oars instead of pulling, it will be found, sends the boat backwards, while dipping them vertically in the water and holding them there acts as a brake. Learn all these things, as we say, near the bank, or better still on one of the shallow boating lakes, where, if you do have a spill, the water comes no further than to your knees.

Note, too, while you are experimenting with the oars, that if you lay the blades flat on the water and hold the oars tight, a great stability is effected, for you have made a boat which is in effect as wide as the oars. This locking can be sometimes very useful in an emergency.

Now about the actual rowing; but always remember that it is far more important that you should be able to manoeuvre a craft correctly to start with than to pull huge spectacular strokes.

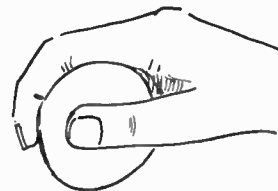
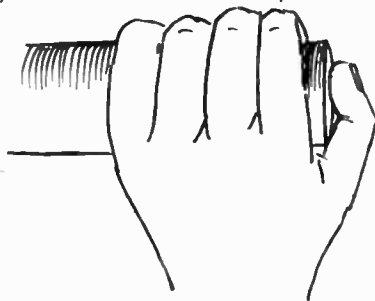
The main point up to now is to realise that the basis of safe boating is perfect balance, and just like a person riding a bicycle keeps it upright without thinking how he is doing it, so the expert oarsman keeps his vessel in good balance without conscious thought.

Now, with regard to the actual movement which propels the boat. To begin with, try only a very short stroke with an equal pressure on each oar. The pull, however, should not be very vigorous, being rather more even and gentle. As you get used to the short strokes it will be possible to replace them by longer ones, while still keeping the boat in a straight line. In the end, you will be able to use the oars for their

full swing, which means that you are getting the maximum pulling effect from each movement. Always keep a slight pressure downwards on the oars, as this prevents any tendency for them to rise and leave the rowlocks. If the oar tends to work up it can leave the locks and you may fall suddenly backwards, which seafaring men know as 'catching a crab'.

'Windmills'

Your first stroke will be of what is called the 'windmill type'; that is, the oar blades will describe a circle if looked at sideways on. Into the water they go, bury deeply, come out and forming a half circle, dip back once more. Later, you will find that a much simpler action



These drawings show the correct way to hold oars. Note the thumb over the end

and one taking less effort can be brought about by twisting the wrists when the blade is just leaving the water. This makes it skim across the surface to the point when it is once more dipped in. This action is called 'feathering', and once you have got the general idea of rowing, is not hard to pick up.

Learn as quickly as possible how to 'ship' oars. This is done by letting them drift right up to the side of the boat and then pulling them sharply in towards you, so they lie in the boat one at either side of where you are sitting. To be able to do this smartly can be very useful if you suddenly want your hands free for some other job, as, say, the staving off of some boat that is bound to bump. Letting go of the oars without bringing them inboard often means that one or the other leaves the rowlock and floats away.

Correct Way

The correct way to hold oars is with the thumbs placed across the end of each. See sketches. This helps one to keep a slight outward

pressure which makes the oar sit tightly up to the rowlock—that is to say, the collar which is found in the centre, and is put there for that purpose, presses firmly up to the rowlock.

Steering is always a difficulty for the beginner, for unless the oars are pulled with absolutely even pressure, then the boat goes round in circles. The best way to keep straight is to look at some landmark directly over the stern (which is the way the oarsman is looking) and then to always keep this right over the stern. Should the boat have a rudder, then the oarsman need not bother so much, for the steering is greatly left to the person holding the rudder lines.

While catching crabs, etc., have at times caused boats to turn over, it is safe to say that most accidents take place by persons trying to change seats in

mid-stream. Changing should never be attempted by novices unless near the bank, when it is possible to hold on to an overhanging bough or in some other way steady the boat.

Finally, it is nice to see a boat brought to the landing jetty in a neat clean way, and this is done by getting a certain momentum on the boat some little distance out and then coming slowly in, steering as necessary by a touch of one oar or the other. Upon getting close in, the oars are smartly shipped and the jetty grasped as soon as possible, thus allowing passengers to get safely out. (387)

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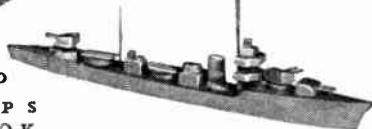
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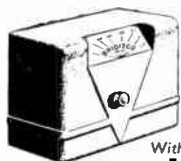
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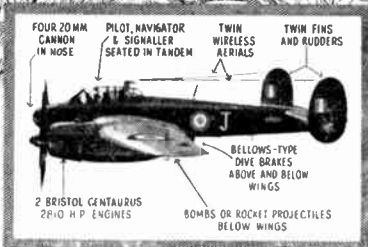
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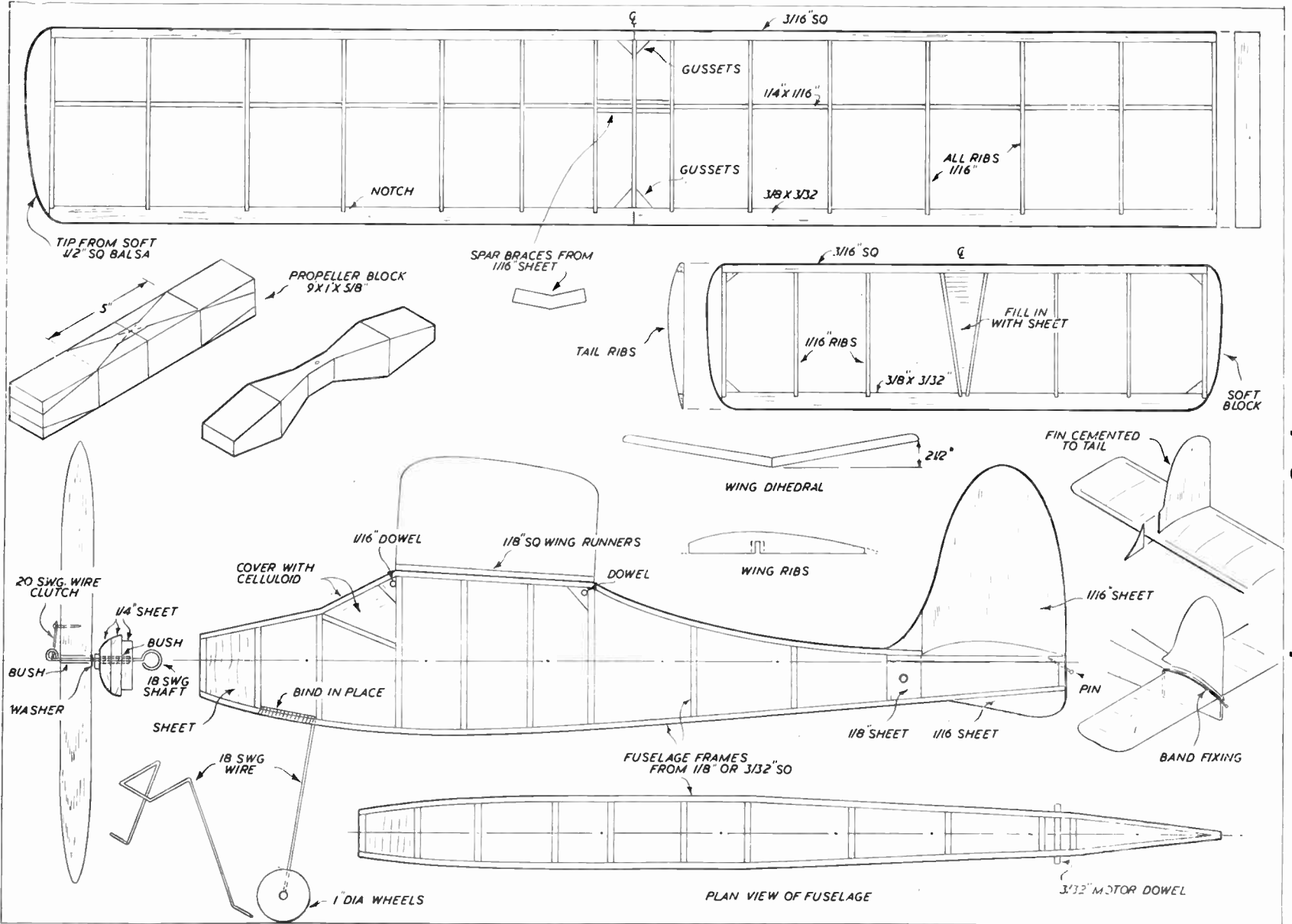
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CONTENTS

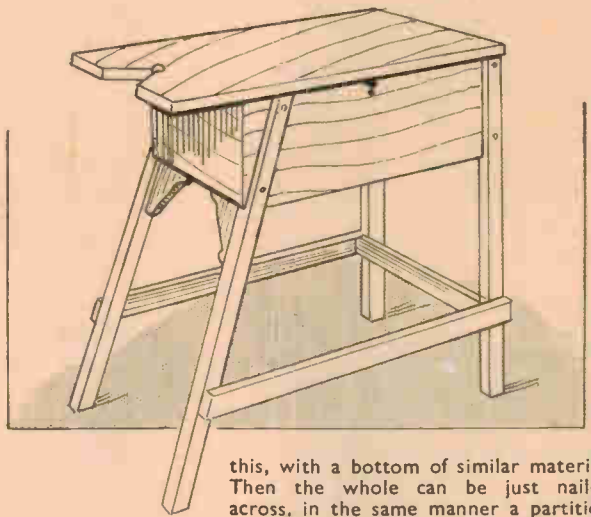
	Page
Fretworker's Own Table	225
Replies of Interest - -	226
Modern Padded Stool	227
Fishing in Ponds - -	228
Using Scraps of Leather	229
Two Novelty Pincushions	230
Model Railway Matters	231
Simplified Racing Yacht	232
Seaside Pebbles - -	234
An Angle Lamp - -	235
Simple Wood Turning	236
Some Knots you Should Know	236
Stamp Collecting - -	237
Two Novelty Pincushion Patterns	239
DESIGN SHEET FOR A CAKE OR FRUIT STAND	

July 25th, 1951

Price Fourpence

Vol. 112 No. 2908

You can build this specially designed FRETWORKER'S OWN TABLE



THE table illustrated has been specially designed for the convenience of the fretworker, but can, of course, be used for practising most handicrafts as well. It is of fairly light construction, and can, therefore, be easily carried to the most convenient part of the room for work, and a lift-up top reveals a commodious box beneath to hold tools and unfinished work.

Simple Woodwork

An extended portion of the top forms a cutting table, but readers who may prefer to use one of the metal ones, can easily omit this portion by making the top 6 ins. less in length. Construction is

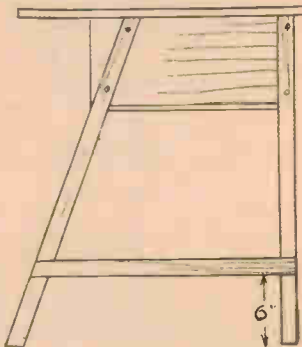


Fig. 1—Side view of the table

quite simple—just an ordinary job of woodwork.

A side view of the article is given in Fig. 1, to show general construction, but dimensions will be gathered from the detail drawings. The box body (Fig. 2) can be made of deal, $\frac{1}{2}$ in. thickness. This is heavy enough, as a light article is to be preferred, as being easier to carry. Outside dimensions are given, and these must be adhered to. The box can be just butt jointed and glued at the corners, or rebated, if a neater job is desired. The bottom, if of plywood, should be screwed, as well as glued on, but if of $\frac{1}{2}$ in. wood, nailing and gluing will suffice. Whichever wood is employed, the total height should be that given in the drawing.

Tray for Small Tools

A fixed-in tray, to hold saw blades and small tools can be nailed across, as shown. This should be at least 1 in. down from the top, to leave room above for the fretsaw, and can be about 1 in. deep. Wood $\frac{1}{2}$ in. thick will serve for

this, with a bottom of similar material. Then the whole can be just nailed across, in the same manner a partition would be fixed. The bottom of the tray should be nailed to its side piece before the bottom of the box is fitted on.

The legs (Fig. 3) are cut from 1 $\frac{1}{2}$ ins. wide strips of wood, $\frac{1}{2}$ in. thick. The rear pair are straight, and shown front

CUTTING LIST

Box sides—	1ft. 5ins. by 7 $\frac{1}{2}$ ins. by $\frac{1}{2}$ in.
Box ends—	1ft. 1in. by 7 $\frac{1}{2}$ ins. by $\frac{1}{2}$ in.
Box bottom—	1ft. 5ins. by 14ins. by $\frac{1}{2}$ in.
Rear legs (2)—	2ft. 4ins. by 1 $\frac{1}{2}$ ins. by $\frac{1}{2}$ in.
Front legs (2)—	2ft. 6 $\frac{1}{2}$ ins. by 1 $\frac{1}{2}$ ins. by $\frac{1}{2}$ in.
Side rails (2)—	2ft. by 1 $\frac{1}{2}$ ins. by $\frac{1}{2}$ in.
Rear rail—	1ft. 3ins. by 1 $\frac{1}{2}$ ins. by $\frac{1}{2}$ in.
Table top—	2ft. by 15 $\frac{1}{2}$ ins. by $\frac{1}{2}$ in. plywood

and side view at (A). Reduce some 8 ins. of the top portion of these legs to half thickness, then screw them to the box body at its rear end. Use brass round-headed screws as they look much neater. The front pair of legs (B) are to be fixed to incline forwards, so that any pressure on the cutting table part will not cause the article to tilt up.

Cut these legs to the length given, then set a bevel to 20 degrees from the vertical, and set the lines across at top

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

and bottom, as seen in the drawing. With the same angle, set the line across which the shoulder of the cut-away portion will come. From here to the top, the legs are reduced to half thickness to match the rear ones. When setting out the legs, remember the cut-away parts must come on the inside faces of them. This is fairly obvious, but is, nevertheless, a point that can be overlooked, with the result that wood is wasted. Screw these front legs, as shown in Fig. 1.

Across the legs, at about 6ins. above floor level, nail a rail of $\frac{1}{2}$ in. by $1\frac{1}{2}$ ins. wood, as seen in the side view, and

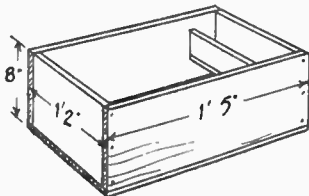


Fig. 2—The box body

another rail of similar stuff across the rear legs. This rail can be clearly seen in the drawing of the finished article. Under the box, at the front, a pair of wood brackets are screwed and glued, as in Fig. 4 (C). These take the place of a cross rail, omitted in the design, as it would get in the way of the worker's feet. Cut them to the shape from any

spare wood available. The top edges of these should be bevelled, so that when fitted to the inclined legs, they will butt flat up under the box. Fix these temporarily with screws, then remove, glue the edges, and rescrew tightly in position.

The Top

The table top (D) Fig. 4, is best cut from $\frac{1}{2}$ in. or $\frac{3}{4}$ in. plywood. It will then be in one piece. If solid wood is used, tongued and grooved boards, or boards doweled together to make the width, should be employed. Narrow battens should be screwed underneath, just outside the box body, to keep all together. Battens could be fixed inside, if preferred, but as it is suggested that the fretsaw be fitted to rest under the lid, these battens would probably get in the way.

Where shown in Fig. 4, bore a $\frac{1}{8}$ in. hole through the wood, and cut out the angular space for the saw to enter. The

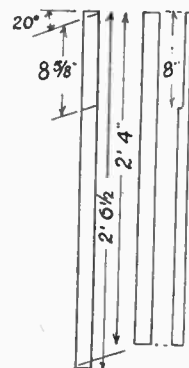


Fig. 3—Dimensions for the legs

lid can now be hinged to the box body with a pair of 2ins. butt hinges. Also fit a hook and eye fastener, to hold the lid down when work is taking place on it. A simple fitting or pair of catches can be fixed to the inside of the lid to hold the fretsaw when not in use.

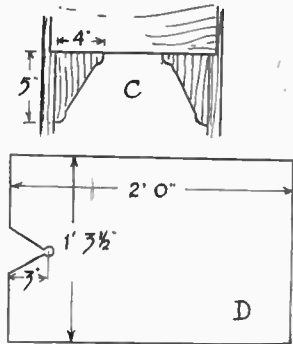


Fig. 4—Details of the front brackets and the table top

The completed article can be left plain, or, if intended for use in a living room, which would make the table look somewhat out of place by comparison with the furniture, it could be stained and varnished to match. The top, however, can be left plain, and covered with a fancy table cloth when not in use. (397)



Electric Motor

I HAVE been trying to build a small motor with permanent magnet, the horseshoe type, but I am in difficulty in magnetising the steel. Could you advise me how to do this, is it a special steel, or will the mild steel do? Also could you tell me the best turns to put on the armature? (J.A.—Bloxwich).

IT is intended that a permanent magnet (ready magnetised) be used; it is scarcely possible for anyone to undertake this type of magnetising at home. The gauge and number of turns of the armature windings will depend upon the voltage to be used, and whether maximum power, or economical running is required. Thin wire will give economical running, but low power. About 26 S.W.G. is usual for 3 to 6 volts or so. A wound field magnet can be used instead of the horseshoe magnet.

CAKE OR FRUIT STAND

Necessary material for this week's design (No. 2908) can be obtained from Hobbies Branches or from Hobbies Ltd., Dereham, Norfolk, for 11/11 including tax, post paid.

White Cement

COULD you tell me how to get a permanent white cement? (N.T.—Whitecairns).

A PERMANENT white cement is impossible, as the atmosphere and the proximity of the damp soil will ultimately discolour any cement. Your most practical plan is to use one of the proprietary white cements, such as 'Snowcem'. These are brilliantly white and remain so for a long time. Alternatively, mix your Portland cement with white sand, white aggregate—such as crushed white quartz or marble, and add an amount (say, 10 per cent) of whiting or gypsum.

A Longbow

I SHOULD like details how to construct and fashion a longbow made of yew and ash together, and/or one made of ash. I do not know the dimensions of the wood on which to commence, nor the special glue with which to join the two woods. Some hints on how to make straw targets would also be appreciated. (R.H.—Hemel Hempstead).

ASH is quite a suitable wood for a bow. It should be about 5ft. long and of 1in. square section. Some 6ins. of

the middle should be planed round, and the rest tapered to $\frac{1}{8}$ in. by $\frac{1}{8}$ in. at the ends, the shape being roughly like a U, with the flat end facing the archer when the bow is in use. Near the ends, matches for the strings are filed, these being at one acute angle for the string to set in securely, and not spring out. If you desire to glue two strips of ash and yew together, either Durofix or Aero glue would suit, if the strips are cramped together while the glue is getting hard. For a target, twist straw to make a rope about 2ins. in diameter. Coil this round and round, tying each coil to its neighbour, until a disc of 2ft. 6ins. is obtained.

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(Phone 23744)

'At home' in any home—a MODERN PADDED STOOL

A STOOL such as we show here is almost a necessity to any home. It is of modern design and would fit in with most house furnishing schemes.

Almost any of the hardwoods may be used, oak, of course, being by far the best, but perhaps the most trying to work for the amateur woodworker. The outline and proportions of the stool shown are of pleasing proportions, but these may be modified to suit one's own requirements, if necessary.

The Legs

Four good straight grained pieces of wood 16ins. long by 1½ins. square in section should be chosen for the legs. In laying them out for marking, note if there are any surfaces a little irregular in grain, or if they contain any small knots.

Before the mortises are cut in the legs, however, it must be decided what style of shaping is to be made on the legs themselves. In Fig. 4 three sections are shown. (A) shows how two tapered chamfers are planed on the two front edges of each leg. These chamfers are again given in the view Fig. 1 of the front and side of the stool. The tapers are run to a distance of 9½ins. up the legs and at the base they measure ¾in. or ⅝in. wide.

The second type of shaping, that shown as (B) in Fig. 4, makes a completely tapered leg from the bottom upwards, the actual taper being on the

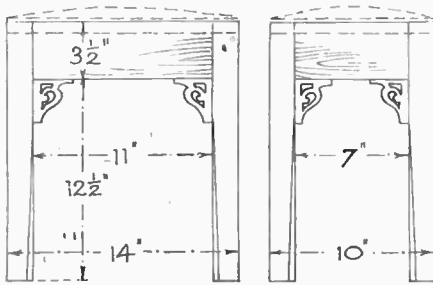
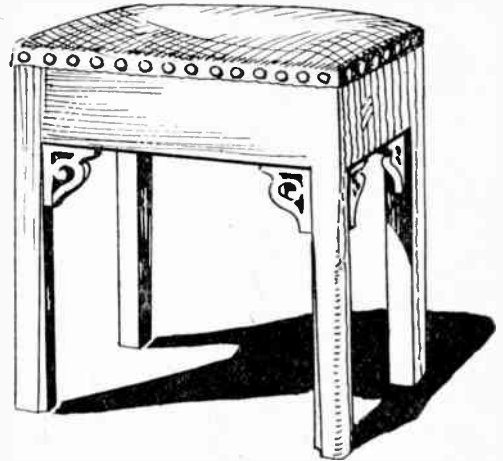


Fig. 1—Side and end views

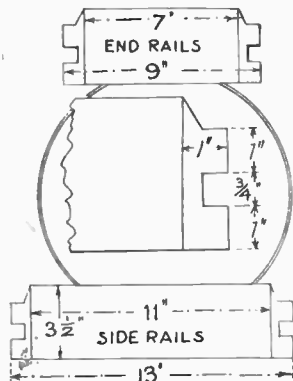


Fig. 3—Enlarged detail of the joints

These surfaces should be kept for the inside in all cases, and a mark of some kind made during the setting out.

Take great care in squaring up the ends of each piece, and keep these all evenly together during the marking out of the mortises. A glance at Fig. 1 shows the proportions of the stool, both side and end, the little fretted brackets glued and pinned along underneath the rails giving a little added character to the whole.

All four rails are mortised and tenoned into the tops of the legs in the manner shown in Fig. 2, and in the detail Fig. 3.

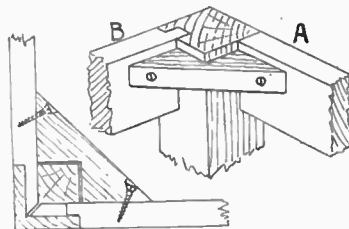


Fig. 2—How the rails are jointed

inside of the leg as indicated by the dotted lines in the figure. The third style is shown at (C) and simply means the planing away of a wide chamfer on the four sides of the leg. In this case, of course, the corner chamfer extends the whole length of the leg, while the other three chamfers stop off immediately under the side and end rails.

In cutting the tenons on the rails, note that they are cut on the inside so that the face of the rail lies flush with the outer face of each leg. The corner plan in Fig. 2 clearly indicates this.

There are two methods of finishing



Fig. 6—How to set out the stiffening pieces

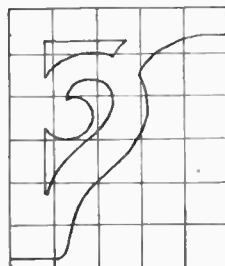
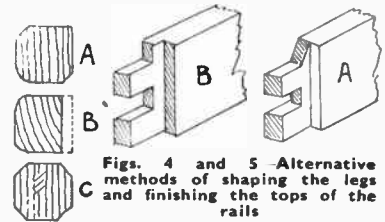


Fig. 7—The design for the eight fretted brackets. In this the squares are 1½ins. sided, and when set out full size on the wood or a sheet of paper, the outline can be accurately drawn in by following each square carefully. Wood ¾in. thick will answer for the brackets, which should be carefully cut with the fretsaw and

the tops of the rails where the tenons occur. For these, see the two diagrams (A) and (B) in Fig. 5. The latter method is the stronger of the two, as it holds the whole width of the rail in the groove shown. The extreme ends of the tenons must be cut to an angle of 45 degrees, so that they meet together in the middle of the leg (see plan at Fig. 2).

The joints are now ready for gluing. Glue and clamp up the two ends of the stool first and test all angles with the square. Follow up with the side rails and glue them in their respective slots,



Figs. 4 and 5—Alternative methods of shaping the legs and finishing the tops of the rails

making sure that there is no surplus glue in the mortises to prevent a close-fitting joint.

When the glue has hardened, the four angle stiffeners shown in Fig. 2 are cut and glued and screwed in. The method of marking out and cutting the stiffeners from a length of wood 20ins. long by 1½ins. by 1in. thick is shown in Fig. 6, while Fig. 2 again shows them in place round the legs.

Fretted Brackets

The eight shaped and fretted brackets to go under the rails may be enlarged from the squared diagram (Fig. 7). In this the squares are 1½ins. sided, and when set out full size on the wood or a sheet of paper, the outline can be accurately drawn in by following each square carefully. Wood ¾in. thick will answer for the brackets, which should be carefully cut with the fretsaw and

(Continued foot of page 228)

You can spend many happy hours FISHING IN PONDS

DURING the summer holidays plenty of fun can be had by fishing in ponds. Most of us commenced our angling by catching small perch in a farmer's pond. Even when we have done quite a lot of fishing in river, canal, loch and lake, we still go occasionally to the reed-fringed pond, because some of the smaller sheets of water hold great possibilities for sport.

The species of fish found in ponds range from 'tiddlers' to perch, carp, tench, bream, roach, and even pike. Quite small ponds have produced 10lb. carp and 6lb. tench on occasion, so there are wonderful chances of hooking a real 'whopper'.

A Longish Rod

Many ponds have weedy margins—indeed, most have an abundance of weeds of various kinds, and sometimes the surface is carpeted with matted masses of weeds possessing floating leaves with tough stems. Where this occurs it may be necessary to clear a few spots with a weed-hook or rake before starting to fish.

A fairly long rod is useful, to enable you to reach well out beyond the fringe of reeds and sedges usually found at the margin. A rod about 12ft. long, of light cane, can be used to advantage, and with it one can cast the bait well out from the bank.

Where carp and tench are to be fished for, you need a good line and strong tackle. The gut cast must be not less than 3x strength. When big carp are present a No. 3 or No. 4 hook is necessary; for tench a No. 8 will serve. You will need a small lead bullet or two split-shots to cock the float, which should be either a goose quill or a porcupine quill.

Carp are notoriously difficult to catch; you may fish for days on end and never get a bite. But if you do hook a fair-sized one it will compensate you for the

long wait and effort. Should you feel disposed to test your patience, then go to the pond very early on a summer's morning and bait your hook with either sweet paste, pearl barley, stewed wheat, maggots, slugs, snails, or small red worms. A small potato (boiled) is also recommended, while, in August, wasp grubs may be tried. Remember, coarse tackle has no chance with carp, so cunning are they, and the tackle must be of extra good quality, though fine.

Tench give Good Fun

You will do better with tench—probably. But even they can be coy feeders, refusing a bait for days in succession. However, if they elect to feed and you are on the pond bank at the right time, you will enjoy thrilling sport. Tench are often caught in sizes up to 6lbs. and over. The general run is around 2lbs. to 3lbs. These fish give an excellent account of themselves when hooked. Despite somewhat lethargic habits, tench are powerful swimmers. The best times to catch them are at dawn during hot summer weather, and again late in the evening, as twilight deepens into night.

A cautious 'biter' is the tench, and the angler is advised to wait until the tip of the float has disappeared under the surface. Sometimes the float will slide sideways over the water in a slanting position. Wait; do not be in too big a hurry, and never try to hook the fish until the tip of the float has been dragged under. At times, the float will rise out of the water, and fall flat on the top. This denotes that a fish has lifted the bait from off the bottom and is rising with it. Occasionally, a tench will toy with your bait, merely twitching the float; if you gently pull your baited hook towards you, but not lifting it from off the bottom, there is a good chance that the fish will suddenly grab it, and probably hook himself!

Baits for tench include worms, snails,

slugs, honey paste, maggots, and wasp grubs in season. For groundbait you may try soaked bread and bran into which a few scraps of worm are mixed. The tench will root among it for the worms, and this fact will be denoted to the angler when he notices tiny bubbles rising to the surface. Cast the baited hook in that spot.

It is advisable to fish the bait dead on the bottom; but, if getting no bites there, it is just as well to try fishing mid-water or even 1ft. or so beneath the surface. In short, vary the depth of the float by adjusting it from time to time if sport is slow.

Perch are the Best

Perch are the best of all pond fish for the summer holiday angler. True, they may not be very large, but they do provide great fun, for they are bold biters, and are not afraid of a bit of tackle, provided it is suitably baited. And they do not take much pleasing. Worms—small lobs, brandlings, and cockspurs are all welcome. Use No. 8 or 9 'crystal' hook and a cork float, and a 1yd. gut or nylon cast 2x strength.

You will find perch in ponds, lying among the weeds; in deeper holes and cruising along clear channels between beds of weed; and by old tree roots. Fish as close to the weeds as you dare with safety, during hot weather. Do not give a hooked perch too much line when hooked between weeds, or you may lose him.

Many smaller ponds appear to contain what may be termed 'jack' perch—little fellows of no great size. These are often voracious and it is possible to catch dozens in a day. Such ponds would yield bigger and better fish if the majority of their finny tenants were netted out. Where there are too many mouths to feed on a pond's natural food supplies, the fish are not likely to develop and grow into big ones. (339)

Padded Seat Stool—(Continued from page 227)

cleaned up before being fixed in place. They should stand back about $\frac{1}{4}$ in. from the face of the side and end rails. The top surface of the rails and legs should be levelled off and cleaned, and the top board then added. A piece of plywood would be best for this or two or three separate boards could be nailed on.

The Seat Covering

Many workers will, no doubt, decide to have the stool covered and padded by a proper tradesman upholsterer, while others will take a pleasure in doing the work themselves. The job is not particularly difficult, and the materials can be purchased at any appropriate store.

First lay over the wood a good stout sheet of brown paper, then on this

spread evenly some flock or straw padding to get a suitable shape. Over this spread a piece of hessian and tack this on loosely. Add more padding as required and finally stretch the hessian and retack. On the top of the hessian lay some sheets of wadding and then over this again spread a stout piece of linen

and tack this in place. The final outer covering is put on and secured with leather covered nails, or brass-headed nails, as desired. The covering may consist of leather or leatherette or a fabric of some kind. It must be well secured whatever covering is chosen, and the nailing should be close to make a good fixing. All this is made clear in Fig. 8.

The wood of the stool should be cleaned carefully, and, when glass-papering, keep to the way of the grain in rubbing cross scratching. The wood may be stained to match the surrounding furniture, if desired. Oak would look rather well if left clean and rubbed up with wax. Mahogany, on the other hand, would be best stained and varnished. (377)

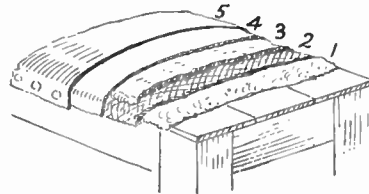


Fig. 8—The stages in padding the seat

A few ideas for USING SCRAPS OF LEATHER

THERE are a number of small but useful articles that can be made up from oddments of leather, and a few are described here. They offer the beginner in leatherwork an opportunity of trying his hand at the craft without the need for any great expenditure on materials.

For the more experienced craftsman, they provide a means of using those odd scraps of leather which accumulate from time to time. It should be noted that none of the suggested articles is a 'white elephant'. Each has a definite use and would make a welcome gift for a friend or relative.

If the beginner tackles the series of small articles in the order suggested here, he will find himself being gradually introduced to those simple skills and operations which are necessary for a fundamental knowledge of leathercraft.

Bookmark

First, we offer a simple fringed bookmark which may be fashioned from any oddment of suede or leather. The diagram at Fig. 1 illustrates a useful size, but the dimensions may, of course, be altered to suit existing material or one's personal requirements.

A simple rectangular shape is advised for the beginner, employing a pierced decoration and fringe, as shown. The more experienced craftsman will have no difficulty in evolving a design, possibly modelling the leather and staining in more than one colour, which will allow him to exercise his greater skill.

The pierced decoration can be made either with hollow punches of the necessary sizes, or by using a 6-way pliers punch. When using the single hollow punch the leather or suede should be rested on a thick piece of cardboard or a block of wood, the punch carefully positioned, and the end of the punch given a smart blow with a light hammer. A piece of thin card should be placed beneath the leather when using the plier punch, as this helps to produce a cleaner hole. Ensure that the positions of the holes are carefully marked before attempting to punch them.

When the decoration and fringes have been cut, you may wish to stain your bookmark, if it has been made of natural leather. First, wipe the surface with a weak solution of oxalic acid to remove grease marks. Prepared leather stains can be obtained in a large variety of colours. These may be applied direct to the leather and, when dry, your bookmark may be finished off by giving it a brisk wax polish. Do not attempt to stain or polish any article made in suede.

Serviette Ring

For the beginner, this will be his first introduction to modelling and thonging. An offcut of calf-skin or sheep-skin

measuring 7ins. long by $1\frac{1}{2}$ ins. wide is needed. Cut a piece of paper to similar size, and draw the simple interlaced design illustrated at Fig. 2. Now damp the surface of the leather with a sponge or pad of cotton wool and smooth the strip of paper on to the leather so that it adheres to the damp surface.

With the aid of a straight-edge, and a bone folder or a piece of broken wooden ruler sharpened at one end, lightly impress the lines of the pattern into the surface of the leather. When satisfied

thong should be carefully pared down, and glued beneath the thong-stitches on the *inside* of the serviette ring. Complete the thonging of the remaining edge in a similar manner.

A set of half-a-dozen of these serviette-rings would make a welcome present for a friend.

Comb Case

No measurements have been given for the comb case in Fig. 3 because the dimensions of such a case must,

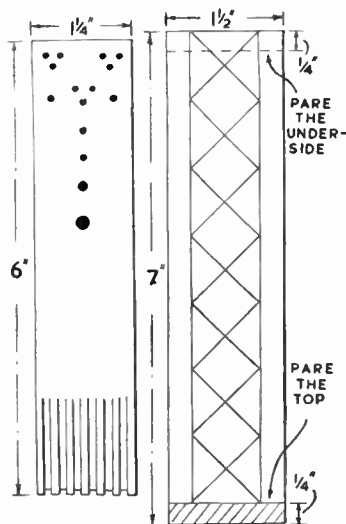


Fig. 1—Useful size for a bookmark

Fig. 2—Design for a serviette ring

with the modelled design, use a sharp knife to pare away the two ends of the strip of leather (see Fig. 2) so that a neat joint may be effected when the serviette ring is bent to shape.

Before gluing the ends of the serviette ring together, however, the positions for the thong holes must be marked. Place a ruler $\frac{3}{8}$ in. from the edge of the leather and make a pencil dot at regular $\frac{1}{4}$ in. intervals. This must be done to both edges of the leather, and care must be taken to ensure that the holes are level with each other.

When the holes have been made, either with a hollow punch or a six-way plier punch, the skivered or pared ends may be glued together, keeping the surface of the leather perfectly free from surplus glue.

You will require a thong measuring about 1yd. long, and both the thong and the serviette ring should be stained and polished separately. This done, sharpen one end of your thong to make it easier to pass through the thong holes. Pull the thong through the first hole until only 1in. of it remains, then hold this in position with a paper-clip or spring-type of clothes-peg, and complete the thonging of the first edge. The ends of the

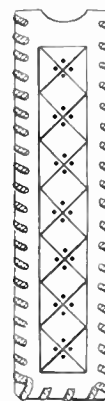


Fig. 3—An attractive case for a comb

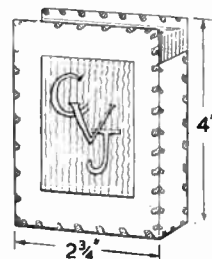


Fig. 4—A case for a pack of playing cards

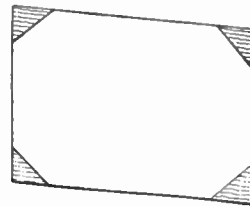


Fig. 5—A blotting pad

obviously, be made to suit the comb for which it is intended.

You will require two pieces of leather for the case, and two pieces of skiver for the lining. Cut a pattern from a piece of card or stout paper, and, using this as a template, cut the leather and skiver to shape.

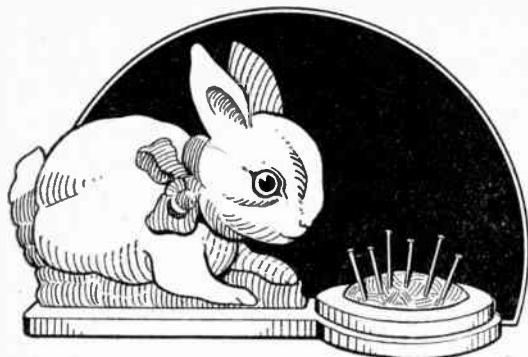
Sketch the outline of the pattern on to a piece of paper, damp the surface of the leather, and then position the pattern and model the leather in the manner already described for the serviette ring. The dots in the pattern can be made with an ordinary nail punch *lightly* hammered into the surface of the leather.

When the pattern has been modelled on both pieces of leather, brush a coating of paste on the reverse sides and attach the skiver linings. Rub gently with a pad of soft, clean rag, squeezing any surplus of paste towards the edges. Allow to dry under pressure.

Ensure that both sides of the case are the same size, trimming them if necessary, and then run a small quantity of glue along the inner sides of the three edges that have to be thonged, and put the case aside until the glue has set.

(Continued foot of page 230)

Full size patterns on page 239 for these TWO NOVELTY PINCUSHIONS



THESE two interesting little fretwork novelties should appeal to the beginner at fretwork, and even merit attention by the more expert worker who is out to make a little pocket money by selling his work to suitable shops or to bazaars.

If these novelties are made on the mass-production principle, where templates of the various individual pieces are cut for use direct on to the wood, and other means used to lighten the work, quite a margin of profit can be made.

The pictures on this page show the finished pincushions, while on page 239 of this issue the full-size patterns are supplied for each part.

Small Cost

The cost of making the articles is quite small because they can be cut from odd pieces of $\frac{3}{8}$ in. or $\frac{1}{2}$ in. wood. Each consists of three pieces, the base, its overlay and the figure and bird upright.

The base is cut to the simple outline shown, and it has one open slot or mortise cut in it, into which the tenon of the upright will later glue. On the base is glued a ring of wood—shown by

the dotted lines on the pattern sheet. This ring encloses the pad forming the pincushion. A half pattern of the overlay is given, showing the centre from which the two circles forming the overlay are struck.

Good Plan

It would be a good plan to cut the circular overlay from plywood, if this can be obtained, in order to give strength to the article, as the strain of holding down the cushion material is inclined to crack or break ordinary fretwood. It should be noted that the one base and its ring overlays is suitable for either the swan or the rabbit upright. Cut out all the parts with the fretsaw in the usual way and clean them up with glasspaper. Note must be taken of the markings on the figures so that they can be transferred to the main body coating of paint and painted in afterwards.

The cushion itself is made by making a pad of sawdust with a thin linen covering. This is pressed into shape and made sufficiently large to project through the opening of the overlay.



Now lay a circle of velvet, or other suitable material, over the pad and press down the overlay rim over it until it rests comfortably on the face of the base.

Choose Bright Colours

The extreme edge of the covering material should be wiped with glue, and so should the underside of the overlay, in order that whole will be held securely to the base. Four round-head screws might be added for the sake of security if needed. In applying the paint, keep to bright colours and get a flat even wash of colour all over. Allow this to harden thoroughly before adding the other shading coats.

It would be a good plan, if several of the articles are to be made, to finish one of each right off, choosing the colours and markings carefully. These can then be kept as guides for future use. (351)

Using Scraps of Leather—(Continued from page 229)

Now carefully mark the positions of the thong-holes and then punch them through both thicknesses of leather. In this way you will have no difficulty with the register of the holes.

Commence thonging at the top of one side, allowing about 1 in. of thong to be tucked under on the inside and glued down.

Playing Card Case

Measure a pack of playing cards to find the size of case required, and cut back and front panels from your scrap of leather. A single narrow strip of leather forms the bottom and the two sides. Three pieces of skiver will also be needed to line the case after it has been modelled.

There is practically no limit to the type of motif you can use for decoration purposes. If the case is for yourself or a friend, a really personal touch would be to employ a simple monogram as a form of modelled decoration.

Sketch the outline of your design on to paper and use a hard pencil or the sharp end of a modelling tool to reproduce the outline on the surface of the leather beneath. Remove the paper and damp the leather again, and then re-trace the outline so as to deepen it.

Sharp Outline

Now use the flat end of the modelling tool to press down the leather on each side of the design. This will need to be done several times. Keep the surface of the leather damp by frequent sponging, and ensure that a clean, sharp outline is maintained. If you wish to emboss the design, place a piece of carbon paper face-side uppermost under the leather while using the modelling tool on each side of the design. Turn the leather over, remove the carbon paper, and use the modelling tool to press the leather upwards on those parts of the design which you wish to emboss.

Line the various parts of the case with

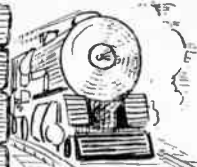
skiver, mark out and punch the thong-holes, thong your case in the manner already described for previous articles, and there are some more scraps of leather which have been put to good use.

Blotter

Professional-looking blotters, which would make welcome gifts or should find a ready sale, can be made from empty cartons and scraps of leather.

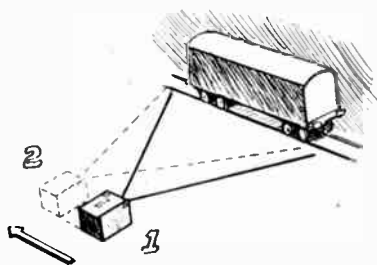
Cut a base-board of cardboard to suitable size and line it on both sides with coloured paper. Make the paper lining for the top of the base-board about 1 in. wider all round so that it can be turned under and so cover the edges.

Fashion the corner-pieces from scraps of leather—coloured, if possible—allowing a generous margin for turning under on two sides and gluing to the base-board. When the glue has set, insert a suitably-sized sheet of blotting-paper and the job is finished. (335)



NO matter how good a model railway photograph, if taken with an ordinary camera it always lacks one important thing—the third-dimension or depth. That is to say, all the items, whether they are 1ft. or 6ft. away, all look on the same plane. This, of course, is the case with all ordinary photographs, but it often leads to a more confused appearance in pictures where there is a large amount of fine detail—as there is in model railway scenes.

There is a type of photograph, however, which supplies the missing dimension and brings the final picture into a complete illusion of relief. Indeed, so marked is the impression of depth and roundness given that one almost gets the feeling that it is an actual miniature that is being examined. Distance now becomes distance and items stand out from one another in an astonishing manner, so much so that you almost imagine that a hand could be placed behind that engine, or this truck picked up.



How to make the two exposures when getting pictures with an ordinary camera

These photographs are 'stereoscopic' and can be easily obtained with an ordinary camera, even down to the simple 'box' variety, so there is no reason why you should not get some stereo pictures of your layout.

The Principle

The principle by which three-dimensional pictures are obtained is very simple to understand. If you cover one eye and look at a near-in object, and then cover that eye, inspect it with the other, it will be found that the view is not the same. The difference is small, but a little further round corners will be seen with the one eye than the other, and in general there will be all the variation one would expect from two slightly removed view-points—which of course, the eyes taken separately, have.

Although our eyes receive slightly different pictures we are so made that

these merge in our brain and we 'see' only one, in which everything stands out in full relief.

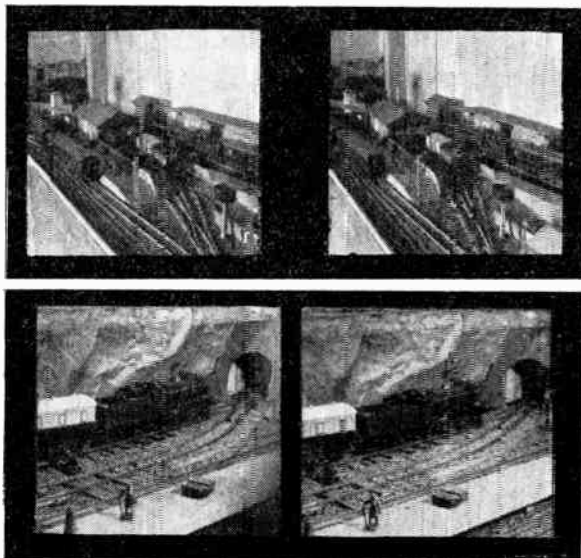
To obtain stereoscopic pictures, this principle of our sight is copied closely. Two pictures of the subject are taken with the lenses about as far apart as the eyes—that is, somewhere between 2½ ins. and 3ins. Viewing these two pictures through a pair of simple lenses, the same process takes place as when the items were viewed in nature—the pictures merge, the brain gets the same impulses and the picture stands out exactly as did the full-sized scene.

Dual Lenses

The usual way to get the photographs is to have a camera with dual lenses and shutters taking on to one plate or film—really two cameras in one. While this kind of camera is necessary for moving subjects, when the two pictures must be taken exactly together, there is no need to have anything of this sort for still scenes as found on model railways and for still subjects such as models themselves. Here perfect results can be obtained by using an ordinary camera and taking two pictures one after the other, the instrument being moved sideways for the second. If the items being taken are fairly near in then the sideways movement should be about 2½ins. but if they are a good distance away this can be increased without spoiling the final picture.

To help in the taking, the camera should be on some flat surface as, say, a table top, or even one of the treads of a step-ladder will do. This means that the camera has simply to be slipped sideways the required distance and you have no doubt about it being on the same level—which is an important thing in the getting of nice three-dimensional pictures.

Identical exposures are given to each picture, and if it is a full scene and not just one model that one is taking, the lens should be stopped well down to give sharp definition from the items nearest in to those the furthest away.



Two excellent examples of stereoscopic pictures mounted ready for viewing

Generally speaking, indoor model railway pictures will have to be time exposures and for this class of work this is good, for a long exposure with a small stop always seems to get a finer degree of detail into a negative than a snapshot with the lens wide open.

The exposure should be very full, for stereoscopic viewing likes detail everywhere. Harsh pictures with no detail in the high-lights or shadows do not look well, so within reason give quite long exposures. Quite excellent pictures can be taken with one or two electric bulbs, and the writer has had such using two 60 watts lamps and an exposure of nearly ten minutes. The film used was invariably 1300 H and D and the stop f36. While the exposures are being made, one must sit down quietly, as any vibration will take away from the dead sharpness which is so required for a nice stereo picture.

Keep Prints Soft

Having got the negatives, the prints are made in the usual way—except again they are kept soft with plenty of detail everywhere. And here P.O.P. (daylight paper) is useful, for it brings out detail better than almost any other printing material.

The prints secured, they must be gummed on a strip of card of suitable size to fit the stereoscope you have, but their position as taken must be changed over—in any case a few experiments will

(Continued foot of page 234)

There's no lack of performance from this SIMPLIFIED RACING YACHT

A MODEL yacht with a racing performance need not be a complicated job. This model is designed on full size lines and sails fast and well, yet takes little time and materials to construct. It could be elaborated—with the fitting of an automatic steering gear, for example—or enlarged in size, if required.

The hull is made of $\frac{1}{16}$ in. ply, assembled on bow and stern blocks with three intermediate formers or bulkheads. A constant beam is used from bow to stern, only the underbody being curved.

Four ply panels are required, two sides, a deck and a bottom. Dimensions for these are given in Fig. 1. The deck is cut out, as shown, and there is also a slot for the mast to fit through. The bottom has a single slot amidships through which the centreboard passes. It is important that the positions of these slots be cut accurately.

Hull Construction

Construction of the hull is detailed in Figs. 2, 3 and 4. Start by laying the deck down on a flat surface and then glue in the chamfered bow and stern blocks. These can be made from any suitable wood. Then add the three formers or bulkheads.

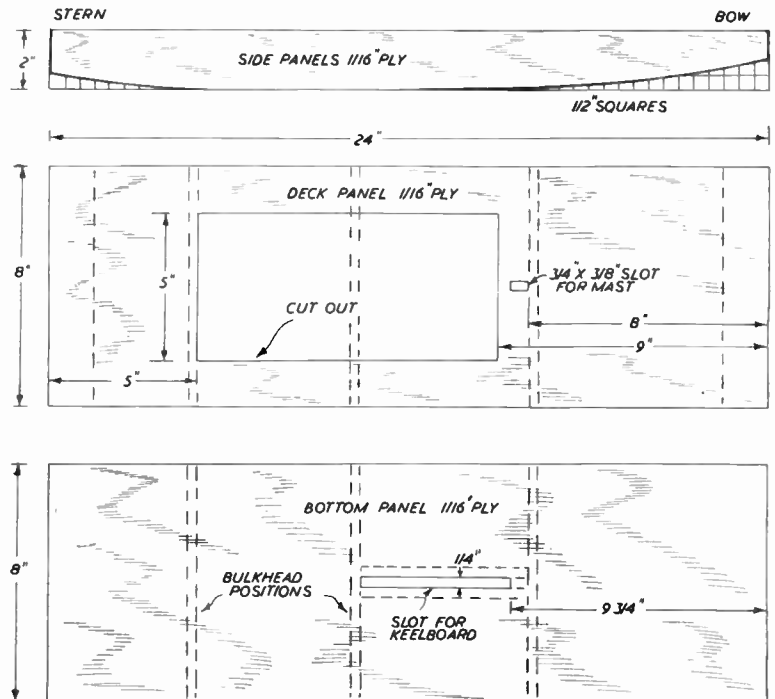
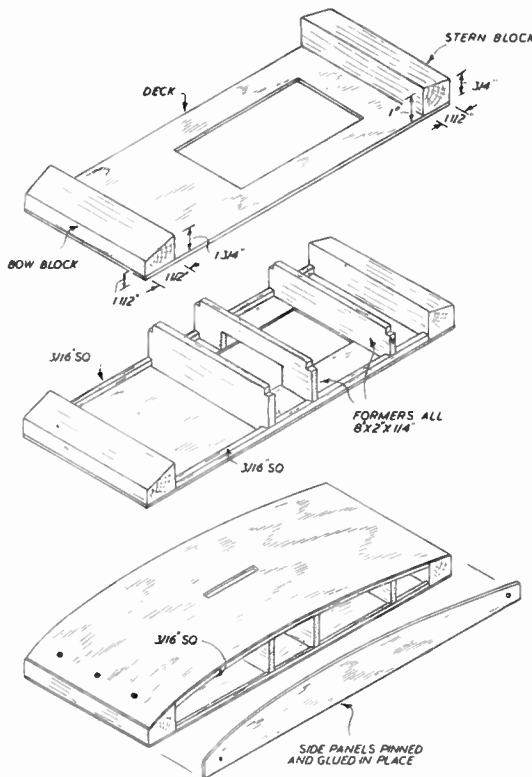


Fig. 1—Details of the sides, deck and bottom



Figs. 2, 3 and 4—Stages in making the hull

2 ins. by $\frac{1}{4}$ in., the middle one being cut away to a width of 5 ins. and a depth of 1 in., to match up with the cut-out in the deck. Next glue the $\frac{3}{16}$ in. square backing strips in place.

The bottom can then be glued in place, screwing to bow and stern block. Make sure that the deck stops flat during this operation. Further strips of $\frac{3}{16}$ in. square are then glued in place as shown, one each side, when the two side panels can be added. Screw the side panels to the bow and stern blocks and pin to each former. Make sure that all joints are good ones and watertight. It need hardly be mentioned that waterproof glue must be used throughout.

A deck plan of the hull is given in Fig. 5. This shows the place of the various fittings. A coaming of $\frac{3}{8}$ in. by $\frac{3}{8}$ in. strip is glued around the deck cut-out and the five eyelets or screw

eyes are carefully screwed in place. The rudder rack is made from brass strip and is screwed to the deck in the position shown.

Hollow Box

A hollow box is built up between the first and second bulkheads, into which fits the keelboard—Fig. 6. The keelboard itself (Fig. 7) is a 5 ins. square of $\frac{1}{4}$ in. ply. Weights are bolted to each side of the bottom, but we will deal with these later. At this stage make sure that the keelboard fits into its 'box' housing, leaving a $\frac{1}{8}$ in. wide gap forward into which the mast fits. At this stage you can round off the bows with glasspaper and fit the brass tube through the sternblock to take the brass wire carrying the rudder. The rudder is cut from brass, soldered to the tiller wire. Bend the tiller wire as shown (Fig. 6) so that it bears lightly in the notches cut in the tiller rack.

A complete side elevation of the model is shown in Fig. 10. From this you can draw out the sail plan. The mast is a 3 ft. length of $\frac{3}{8}$ in. by $\frac{3}{8}$ in. strip, straight and true with a good grain. The mast should tape away in thickness to the top. Check that the mast fits properly through the deck slot and into the front of the keelboard 'box'.

The Sails

The only really suitable material for the sails is model sailcloth. However, if this is not obtainable, some similar

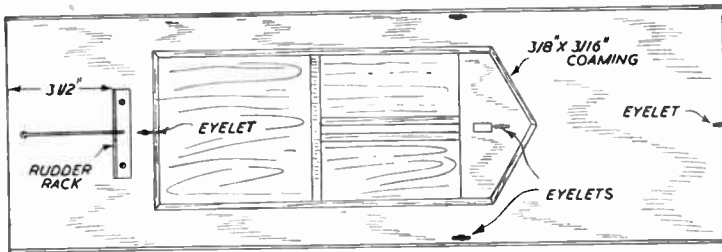


Fig. 5 - The deck plan

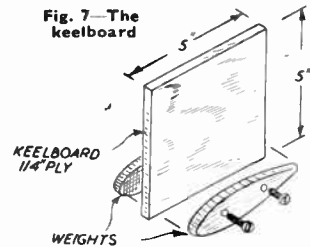


Fig. 7 - The keelboard

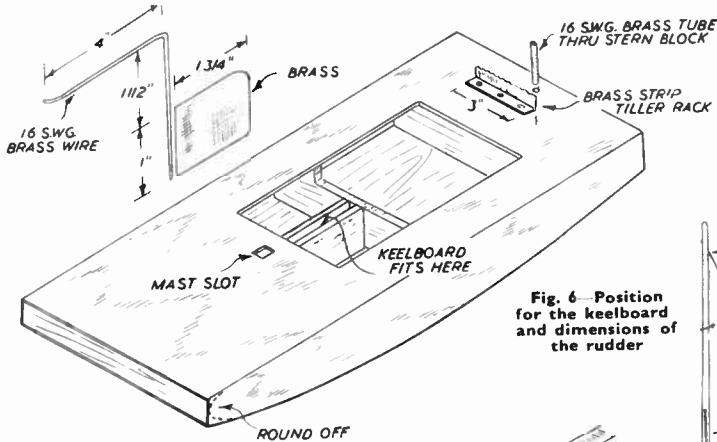


Fig. 6 - Position for the keelboard and dimensions of the rudder

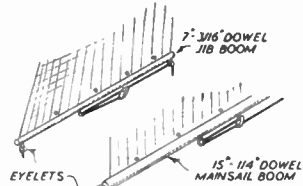


Fig. 8 - The jib and mainsail booms

material can be used. Some modellers have used plastic sails with some success, although this is not to be generally recommended.

Eyelets should be stapled through the sails so that the jib can be bound or lashed to the jib boom, and the mainsail to its boom and also the mast. The front of the jib is sewn to a cord line (in the hem of the sail).

Booms can be made from dowel. A 7ins. length of 3/8 in. diameter dowel for the jib boom and a 15ins. length of 1/2 in. diameter dowel for the mainsail boom. Fittings are all screw eyes. Bowsers for adjustment of the sails, and for adjustment of tension in the mast stays, can be cut from a length of plastic stock—e.g. a toothbrush handle—drilled through with two small holes, Fig. 9.



Fig. 9 - A method of mass-producing bowsers

Weighing the Craft

The keelboard should now be glued permanently in place. Erect the mast and sails. It is now necessary to find the weight which must be added to the bottom of the keelboard to trim out the completed model with the waterline as shown in Fig. 10. This is best done by trial and error, since individual weights may vary with different models. Once the required amount of weight has been determined, duplicate this in two suitable shaped pieces of lead or similar material and bolt in place through the keelboard.

Prior to this flotation test, of course, the whole of the inside cockpit and outside of the hull will have been thoroughly waterproofed, either by varnishing or painting. The resulting model should be one of which you can, justly, be proud. (375)

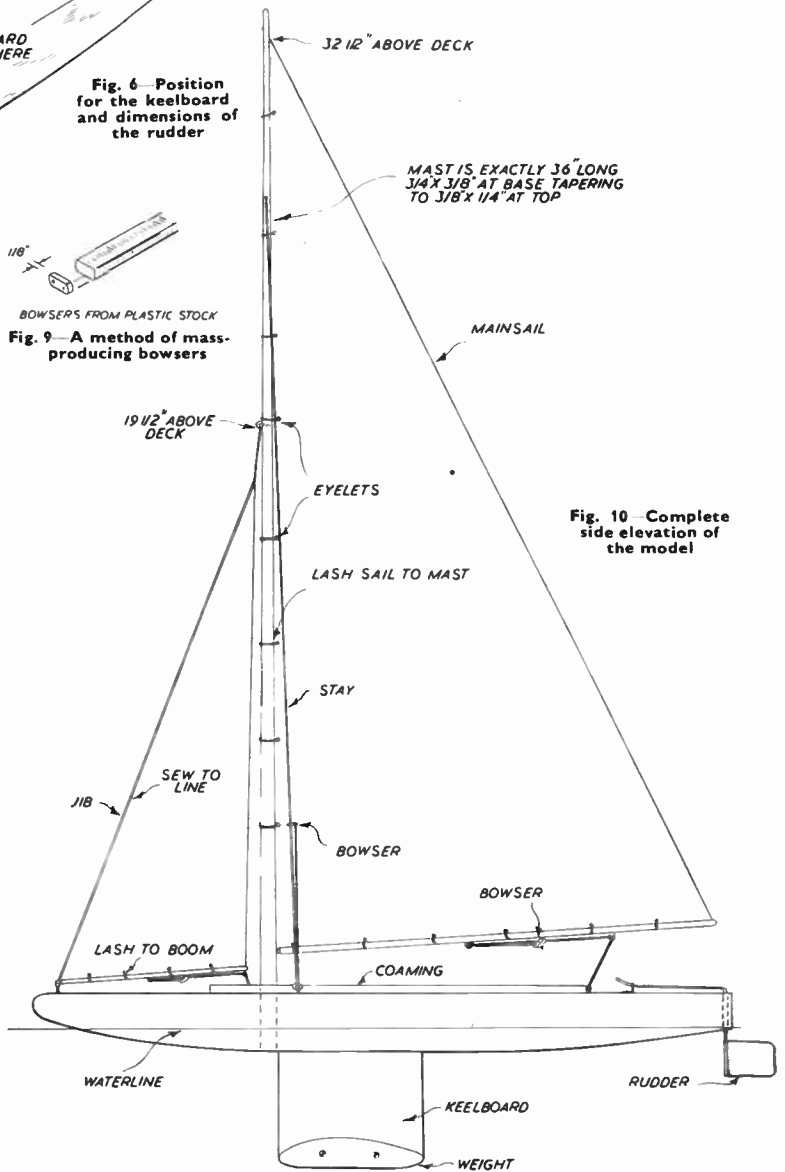


Fig. 10 - Complete side elevation of the model

Practical tips for grinding and polishing SEASIDE PEBBLES

WHEN taking a holiday ramble along the sea-shore, one often finds very attractive pebbles of unusual colour. Sometimes these are carefully collected (more particularly by the younger members of the party), but as it is rather difficult to find a good use for them, they are usually thrown away after a few days.

With a little patience and some simple equipment, these pebbles can be made to reveal their hidden beauties, and can then form novel paper-weights and other reminders of the holiday. Certain quite common types of stone can also be made up into brooches, necklaces, rings and other types of jewellery.

The process of polishing will first be described, and then a few notes will be given about the types of stone likely to be found on our beaches.

Shaping

The original stone may not be altogether of the required shape, and may show scratches caused by wave action, etc. If an ordinary grind-stone is available, the pebble can be rounded down on it quite well, or, failing this, the stone can be worked to shape on a piece of coarse sandstone kept well damped with water.

Having worked the stone to shape, it will probably be found that most of the surface scratches have disappeared. If not, they must be taken out on a 'Water of Ayr' stone. This is a very fine stone of the kind used for sharpening razors, and is kept 'lubricated' with water. Grinding the stone surface on this is quite a long process, so as many scratches as possible should be removed during the shaping stage.

A stone-holder of the type illustrated at (A) must then be made.

This is simply a piece of cone-shaped wood about 2ins. deep and of a similar diameter at the top. A short length of dowel is fastened into the bottom of this to serve as a handle, while the top is slightly scooped out.

Some stone-holding cement is then made up from 2ozs. of pitch, 1oz. of resin, ½oz. of shellac and a little beeswax. This cement is heated and put into the depression at the top of the holder, and

a stone is then pushed into the cement, leaving enough stone projecting for it to be polished. When it is desired to remove the stone, it will be necessary to re-heat the cement.

The actual polisher is a flat piece of wood covered with felt. This is dressed with oil and emery powder, and the stone polished, fresh powder and oil being added as the felt dries. After a time the stone will be showing a good polish, and a change can then be made to a fresh felt pad treated with oil and putty powder to give the final glaze.

Polishing is often simplified by the use of a drill of the kind illustrated at (B).

Here again the stone is held in a holder of the type already described. The handle of the holder passes up through an ordinary reel, and rotates in the under-side of a fairly stout piece of wood. A bow about 18ins. long is made from a piece of flexible wood, the bowstring passing once only round the reel. As the bow is pushed backwards

and forwards, the fixed reel causes the stone-holder to revolve on the polishing pad beneath.

Although they have been omitted from the drawing for the sake of clearness, two legs should be fastened at the ends of the top block to keep it at the proper distance above the polishing pad.

When using such a drill, the stone is mounted in the holder and is revolved over a piece of sandstone. With the rough shaping done, the sandstone is removed and the 'Water of Ayr' stone is put in its place. Polishing proper is done with two felt covered blocks, but with these a small depression is made in the surface so that the whole of the stone is in contact with the felt.

Making Necklaces

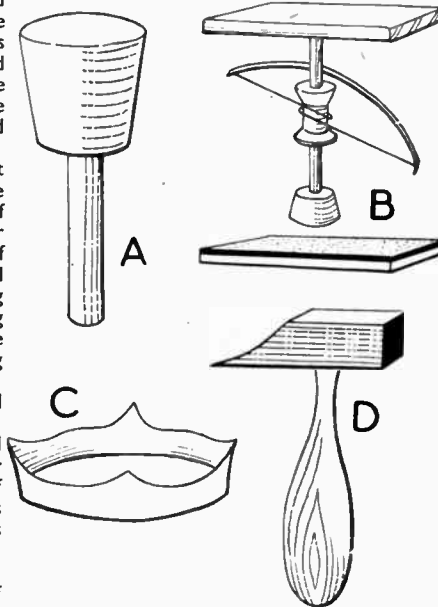
For making necklaces and such items, holes can be drilled in the stone with an ordinary hand drill, or, with some sorts of stone, with a short length of knitting needle fitted into a drill of the type described above; the cutting action of the needle can be helped with emery powder and oil.

Brooches and similar ornaments need 'mounts' that can be purchased, or can be made by the home metal-worker. There are two types of mount, the type shown at (C) having small clips that are turned over to hold the stone in place. The second type has a shallow rim to hold the stone, which is kept secure by being bedded in a little holding cement.

Kinds of Pebbles

Two main kinds of pebbles are found round our coasts, one the ordinary common pebble, and the second those in which fossils have been embedded; this last type is common on the south and south-east coasts. Such fossil stones, when cut and polished, often show very clearly the form of the shell or animal embedded in them.

Agates, jaspers, chalcedonys and carnelians are all well-known types of decorative stone that are comparatively common, but in hunting for these and other specimens a small geologist's hammer will be found useful. Such a hammer is shown at (D). The pointed end of the tool is used as a pick, while the actual breaking of the stone can be done with the hammering face. (268)



(A) Stone-holder. (B) Polishing drill. (C) Mount. (D) Geologist's hammer

Making Model Photographs Live — (Continued from page 231)

soon show which way round gives the stereoscopic effect and which does not.

Stereoscopes can be bought through some photographic dealers and in their simplest form are merely two very ordinary (but matched) magnifying glasses set at one end of a base with a frame at the other to hold the card.

Some time ago there were one or two neat little collapsible viewers on the market, the front and back folding down; but with the shortages caused

through the war, these now can only be obtained at second-hand marts. Actually, however, it is not hard to rig up a stereoscope oneself, the matched lenses being obtained from a pair of the cheap spectacles now being sold by certain chain stores. Get a fairly strong sight and sandwich the lenses between two sheets of card having holes taken out at eye separation (about 2½ins.).

Stereoscope and card to hand, all is now ready, and by slipping a card into

position and looking through the eye-pieces the three-dimensional picture is at once seen.

If you can procure one of the collapsible viewers ('scopes they are sometimes called) it is as easy to carry a series of smaller slides about to show friends as single snaps—and, certainly in the case of model railway pictures, with greater interest to all concerned, for with model railway settings the stereoscopic picture is seen at its best. (307).

For less than five shillings

AN ANGLE LAMP

THE useful angle lamp described below cost the writer less than five shillings. It is first-class in appearance, and is as serviceable as those costing several pounds. Moreover, it is easy to construct, and, having made it, you will find it indispensable.

Scrap brass tubing was used, and was purchased from an ironmonger for a shilling. Rods from an old brass bedstead are admirable for the purpose.

The three lengths of tubing measure (see Fig. 1)—(A) 12ins. $\frac{3}{8}$ in. diameter; (B) 20ins. $\frac{5}{8}$ in. diameter; and (C) 11ins. $\frac{1}{2}$ in. diameter. A further length, 12ins. $\frac{3}{8}$ in. diameter, will also be needed for the stand.

The Lamp Holder

Make the lamp holder first. A small coffee tin, 3ins. diameter, was used for this, and it was cut down to 2ins. Make a hole 1in. diameter in the bottom, and

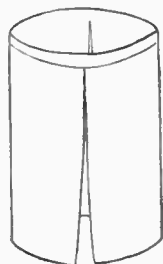


Fig. 2—Cutting the lamp shade

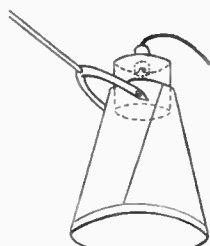


Fig. 3—The lamp shade completed

insert a lamp holder, which can easily be screwed in position.

Then make the lamp shade. A large dried-milk tin proved ideal. Carefully remove the bottom of the tin, and cut the rough edges to give it a neat appearance. Leave the $\frac{1}{2}$ in. rim, where the lid normally fits, and cut down on either side (Fig. 2).

Now place this large tin over the smaller one, and draw the sides tightly together. Bind with string to keep in this position temporarily.

Next drill a hole in each side, and insert small bolts and nuts—the nuts should be inside the tin. The string may now be removed (Fig. 3).

The Arm Extensions

Then you will need to attach the completed lamp shade to the piece of tubing measuring 12ins. $\frac{3}{8}$ in. diameter. To do this, first hammer a 1in. wooden plug in one end of the tube. Then cut a strip of fairly thick tin, 9ins. by 1in. Bend the tin over, and hammer flat to measure 9ins. by $\frac{1}{2}$ in. Drill a hole in the centre, and screw it to the wooden plug in the tube.

Also drill two more holes, one in each end of the 9ins. strip of tin, and attach the strip to the lamp shade with the two

bolts and nuts already holding the shade in position (Fig. 3).

Now prepare the second brass tube, measuring 20ins. $\frac{5}{8}$ in. diameter, and at one end cut out a piece to form a slot, depth $\frac{3}{8}$ in. and width $\frac{3}{8}$ in.

Into this slot place the $\frac{3}{8}$ in. diameter tubing; but, before doing so, plug the end of the smaller tube, and hammer it to form a square, so that it may be gripped firmly. Then insert it, and a hinge will be formed, if holes are driven through both tubes, and a $\frac{3}{8}$ in. bolt is pushed through. A winged nut should be used for easy adjustment (Fig. 4).

The third tube, 11ins. by 1in. then needs to be prepared. Hammer into one end of it a wooden plug, depth 1in.

Then take a piece of thick tin, 3 $\frac{1}{2}$ ins. by $\frac{1}{2}$ in. and, with a screw in the centre, fix it to the wooden plug.

Bend the tin semi-circular, and into it place an empty cotton reel. (The two ends of the reel should first be cut off, as this gives a better appearance). The reel is fixed to the tin strip by means of two small nails.

Through the top of the reel insert a 1 $\frac{1}{2}$ ins. screw, so that it can reach the hole in the centre (Fig. 5).

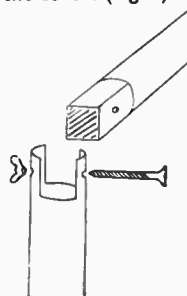


Fig. 4—Tube connection

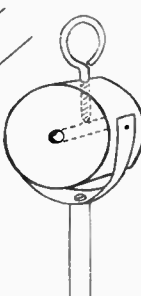


Fig. 5—The rod holder

A brass $\frac{1}{2}$ in. stair-rod, cut down to 14ins. is then pushed through the hole in the reel. Drill a small hole, $\frac{1}{4}$ in. from the end of the stair-rod, and, after having made holes in both sides of the tube, attach the rod to the tube with a thin nail, the end of which should be bent to prevent it falling out (see D, Fig. 1). Use the screw in the cotton reel to adjust the brass arm. (If preferred, instead of the brass rod use a brass chain, with a small weight at the end. You will still, however, need the screw).

The loose end of the 20ins. tube is now to be fastened to the 11ins. tube that holds the cotton reel. To do this, simply bend around the thick tube a piece of tin, 5ins. long, $\frac{1}{2}$ in. diameter, and drill holes to take a 1 $\frac{1}{2}$ ins. bolt. Use a winged nut.

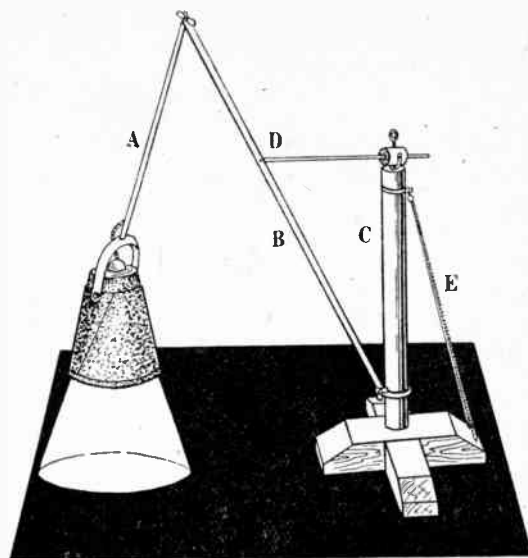


Fig. 1—The completed lamp

The Stand

The stand only now remains to be made, and for this you will need two 11ins. lengths of wood, 2 $\frac{1}{2}$ ins. square. (However, it should be pointed out, that if this wooden base is weighted with lead or iron, it can be made very much smaller).

Cross the wood by making a simple joint, and fasten with four nails, which must be kept well away from the centre. Taper the ends of the wood (Fig. 1).

Then drill a $\frac{3}{8}$ in. hole in the centre, to a depth of 2ins. Into this insert the remaining tube, 12ins. $\frac{3}{8}$ in. diameter. Hammer it well in, and make sure it is a tight fit. Put a little padding around it, and then place over it the large tube (C) (Fig. 1), which should swing easily.

Two 7 $\frac{1}{2}$ ins. springs (E) (Fig. 1) help to improve the appearance of the angle lamp, but they are not essential. They can be fastened to the large tube with a strip of tin, 5ins. $\frac{1}{2}$ in. diameter.

Fixing the Flex

Finally attach 4ft. or 5ft. of flex. Fix it to the lamp holder first. Then drill a hole 1 $\frac{1}{2}$ ins. from the end of the small tube holding the lamp, and push the flex through the tube, until it comes out at the other end. It can be threaded just as easily through the second tube (B) (Fig. 1), if the rod (D) is first removed.

A plug is, of course, to be put on the end of the flex.

Paint the inside of the lamp shade white, and the outside black. The wooden base, and all other parts—excluding the brass—should also be painted black.

A lamp of this type is a pleasure to use, and, because of its easy adjustment, it will be found most useful in any home or workshop. Moreover, it is economical, for instead of requiring a 60-watt bulb, a 25-watt is sufficient.

(308)

A pair of spoons by SIMPLE WOOD TURNING

THIS is a simple wood turning job which can be tackled by anyone with a wood-turning lathe or similar equipment. The pattern is for two (a pair) of wooden spoons of useful size and pleasing appearance. Smaller spoons could be made by taking the 1 in. square grid as $\frac{1}{2}$ in. squares to produce a pair of spoons 7 ins. long. These would be useful for salad serving, etc., and it is quite a simple matter to turn one of the pair into a wooden fork by carving away excess wood at the head and fretting out the prongs.

Start by selecting two pieces of good quality wood, 14 ins. by 2 $\frac{1}{2}$ ins. by $\frac{1}{2}$ in. Both pieces should be identical, as far as possible. These are then glued together to make a 'sandwich' with a piece of balsa 14 ins. by 2 $\frac{1}{2}$ ins. by $\frac{1}{4}$ in. (see Fig. 1). Rough carve this to circular section as in Fig. 2 and then turn on the lathe. Rough carving is easy, and saves a lot of unnecessary lathe work.

The Pattern

The pattern for turning is given in Fig. 3. Scale up full size and make a template of one half to check the work. Alternatively, you can work 'by eye' to

are then separated by splitting down the middle—through the balsa. The balsa can be scraped off each half without damage. Hollow out each spoon part with a gouge or wood carving knives, trimming to a pleasing shape and smooth with glasspaper. Try to get each spoon bowl identical in appearance. The sharp top edges of each spoon should also be rounded off with glasspaper and the grooves may be continued across the top by scribing and trimming out very carefully with a model knife.

Alternative

Instead of a balsa 'sandwich' two blocks 2 $\frac{1}{2}$ ins. by 1 $\frac{1}{2}$ ins. could be used, glued together with a strip of paper between them. The finished turning is then separated along the paper layer. Sometimes, however, it is not possible to separate the two halves in this fashion without damage to the surface of one or both of the spoons. (323)

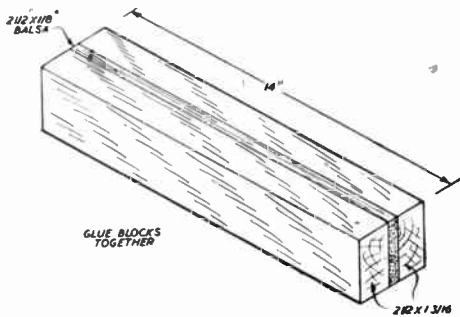


Fig. 1—The 'sandwich'

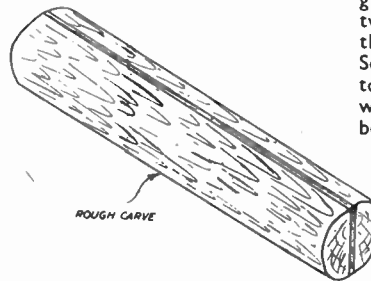


Fig. 2—The 'sandwich' roughly carved

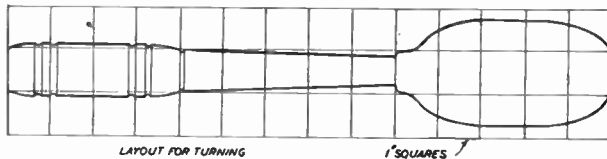


Fig. 3—Pattern for turning

approximately the same pattern. Use glasspaper for a fine smooth finish before removing from the lathe.

The two halves

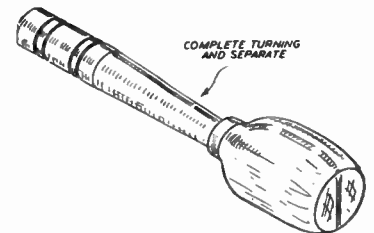


Fig. 4—The turning completed

Some Knots you Should Know

NOTHING is more useful than to know what knots to use on the various occasions when they are needed. The wellknown 'Granny' is not a good knot, and is certainly the knot which should be used least—and not in the majority of cases as is the rule. There is a knot to suit almost every need: one which fulfils all the requirements. Here are a few of the most useful.

1. Clove Hitch. This is used for the commencement and completion of lashings; particularly useful in the tying of beams, poles, and the like. It will not slip either way.

2. Reef Knot. A widely known knot, but easily and often tied the wrong way with the result of the Granny. Is used for joining two ropes or strings of the same thickness. An exceedingly safe knot.

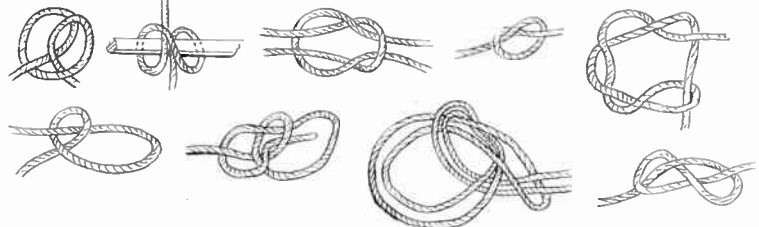
3. Thumb Knot. Used for preventing the ends of rope and string fraying.

4. Figure of Eight. Use the same as that of the Thumb knot, but less liable to loosen.

5. Timber Hitch. This is used for hauling logs, beams, etc. The main feature is that the knot is held tight by the weight it carries.

6. Bowline. This is a loop type of knot. Very useful for securing, and will not slip.

7. Bowline on a Bight. A development from the Bowline, and much stronger. Used for taking weights out of the ordinary. Tied with two thicknesses. (299)



The knots illustrated are; top row (left to right) clove hitch (2), reef knot, thumb knot and timber hitch. Bottom row (left to right) bowline (2), bowline on a bight and figure of eight.



Introduction to The Postage Stamp

IN these days, one is inclined to take the services of the Post Office very much for granted rather than to think about the organisation which is behind this service and the stages by which it has grown in order to give us the ease of communicating with each other that we now enjoy. Nowadays, you just go to the Post Office, lay your coppers on the counter, receive a very small piece of paper which you stick on the envelope, put into a slit in the wall, and then wait for a reply.

Do you think that it has always been as easy as that? No! Not by any means. So let us trace what has led up to this now very familiar stamp, as it is called, and also the marvellous service that we get for this small outlay.

Few Could Read

In the early days of British history, there were very few people who could read and write, opportunities for travel were few and travel was most uncomfortable anyway. So much so, that people did not travel unless they had to do so. Moreover, there was plenty of work to be found, so that it was not necessary to leave home in order to go to work.

Since friends and relations lived close together, and since few could read or write, there was not much need for a postal service; in fact, the only real need for news was in the event of something big happening, such as a threat of war, and it was such an event that might be said to have led up to the postal service. It happened in this way.

Richard III was afraid of a landing on these shores by one Henry Tudor, so in order that he might have the news immediately if such a landing did take place, he organised relays of horsemen, each of whom would be waiting and ready to carry the news a certain distance to the next man, who would in turn then set out and do his stage of the journey. These men were known as 'King's Messengers' and gave the idea to a man named Brian Tuke, who in 1516 developed his scheme and was known as 'Master of the Posts', an appointment he held until 1545. He organised posts where there would be horsemen at fixed distances along the roads, between London and Dover and also other important towns, ready to carry such letters as might be necessary.

The Royal Posts

By Queen Elizabeth's time, the Royal Posts were recognised as the only mediums for the conveyance of mail. By 1603 there were fixed posts to Ireland and also to Scotland, and by 1629 there

was a weekly mail to Plymouth. During the reign of Charles I, one, Thomas Witherings, was responsible for the establishment of six main posts, and it is on record that he paid post boys so much for each journey. Those who wanted to send a letter had to take it to offices which had been set up in large towns, and as only one office was set up in each town, many people would have a long walk to send the letter on its journey, while those who lived in villages would have considerable distances to travel. The result was that local carriers would undertake, for a small fee, the task of posting people's letters in the towns.

During the period of the Commonwealth, the appointment of 'Postmaster-



**BISHOP
MARK.**
Fig. 1



**DOCKWRA
MARK.**
Fig. 2

General of England—the comptroller of the Post Office' was literally put up for auction. The person who paid the highest amount had the job, and, naturally, those who succeeded in buying this appointment made good use of their term of office to enrich their own pockets. For instance, on the restoration of Charles II, in 1660, Henry Bishop was made Postmaster General on his paying the sum of £21,500 a year for seven years.

Too Long

Now people had been complaining that their letters were taking too long to reach their destination, so Bishop introduced a form of what we now call a postmark, giving the date and the month on which a letter was posted, so that there could be a check. These marks are now called 'Bishop Marks' and consist of a circle of approximately 1 in. in diameter divided across the middle with the date of the month on the top and two letters representing the month below. One illustration is of such a 'Bishop Mark' and this applied to a letter would indicate that it was posted on 17th April. Bishop was forced to resign in 1663.

From 1663, the monopoly of the posts had been granted to the brother of King Charles II—the Duke of York and his heirs—but on his accession in 1685 as

James II, the monopoly reverted to the crown. In 1680 a London merchant named Dockwra introduced a penny post for London. He managed this very well indeed.

He organised seven main sorting houses besides a number of smaller collecting stations at which his messengers called many times a day to collect and take the letters to the main houses. He devised a form of postmark consisting of a triangle, around the three sides of which appeared the words 'Penny Post Paid' and, then in the centre, a letter representing the house from which the letter came. He also had a heart shaped mark with, say, 'Mor. 8' or 'Af. 4', which meant that the letter had been posted at either 8 a.m. in the morning or else at 4 p.m. in the afternoon.

These Dockwra marks are very scarce indeed. There are some in the British Museum and a few are in the hands of private collectors, but not many. The illustration shows what one of these looked like.

Infringement

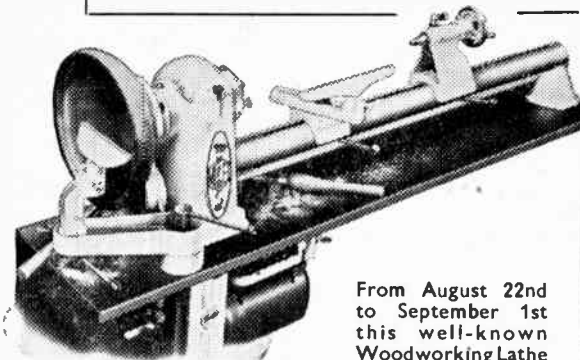
The Duke of York soon saw in this Dockwra post an infringement of his monopoly rights, and brought an action against Dockwra and had it stopped in 1682. But the organisation of this postal system was so good that the Duke continued to use the same system, even employing a number of those who had helped Dockwra. He also used a very similar type of mark.

Still another attempt at cheaper postage was made, this time by a man named Povey. This was in 1708, and Povey employed men who, as they went round the streets, rang a bell. For a long time the postman's bell was one of the familiar sounds of the streets of London. Although the sound of the bell persisted, Povey did not, and he, like Dockwra, was the subject of proceedings and was fined £100 for infringing the Duke's rights.

(To be continued)

No one who takes up the hobby of stamp collecting can afford to miss the historical information given in an article such as this. Watch for the others in the series.

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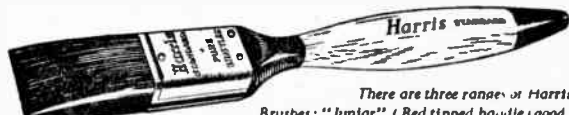


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Harris—the paint brush with a name to its handle



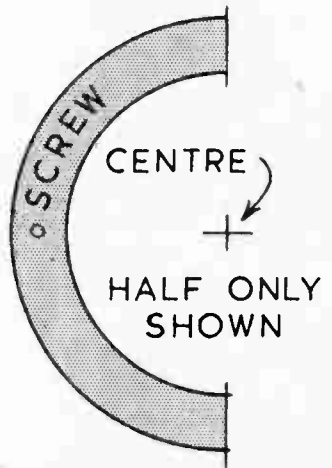
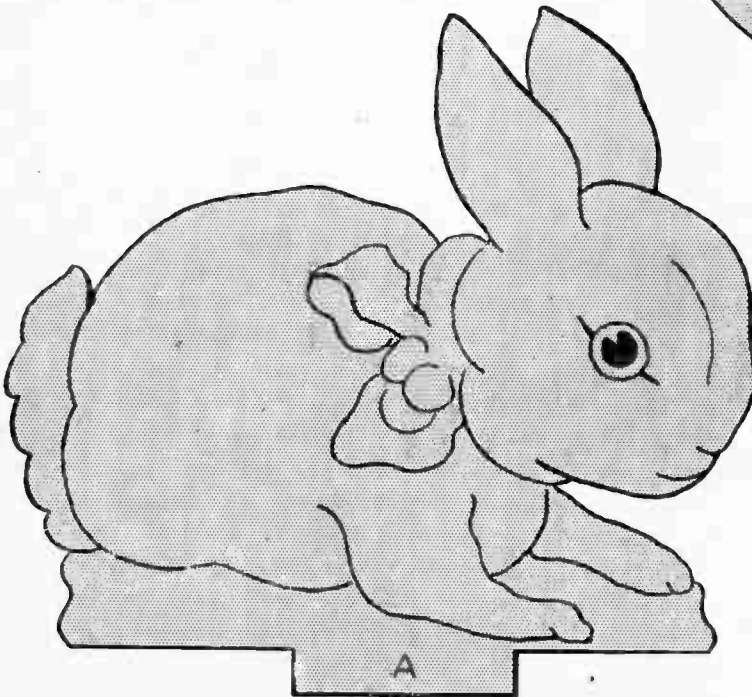
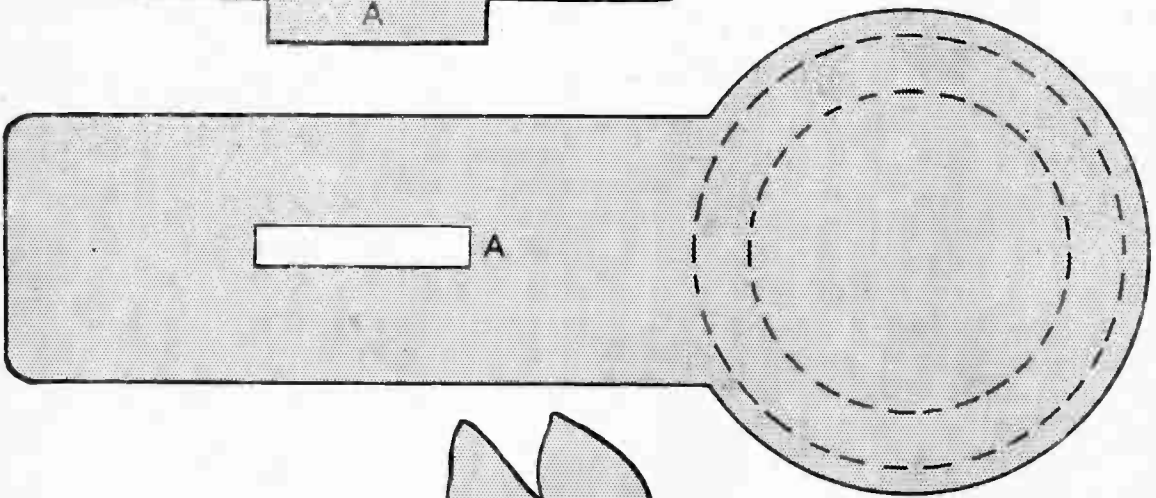
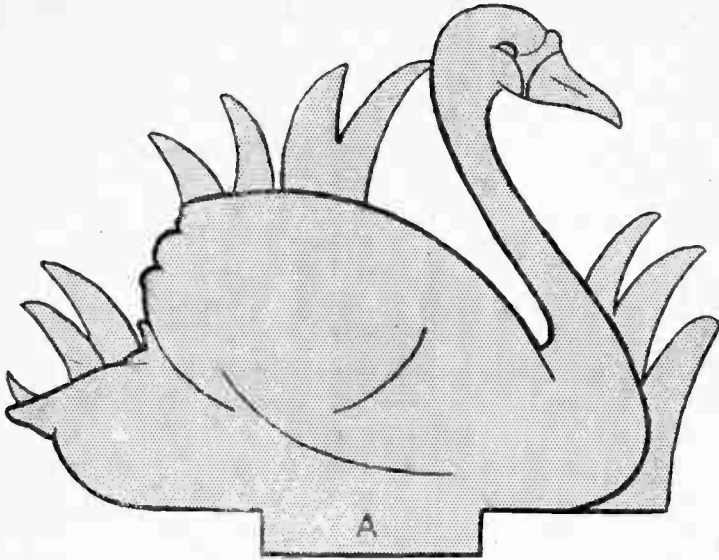
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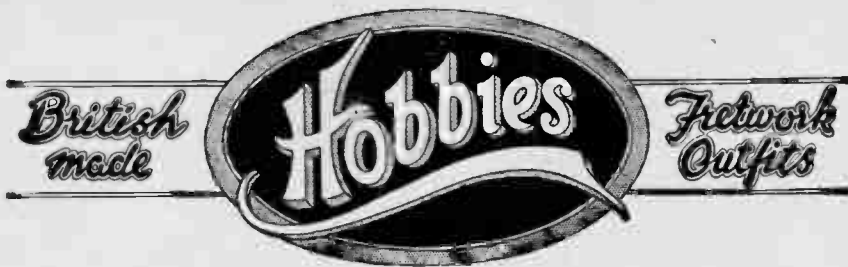
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CRC 26

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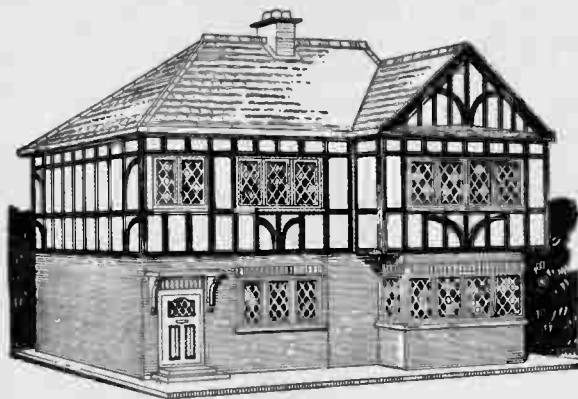
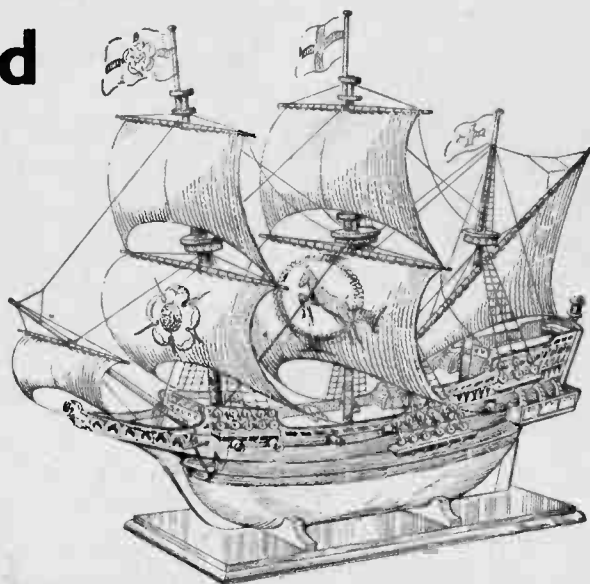
See page 230





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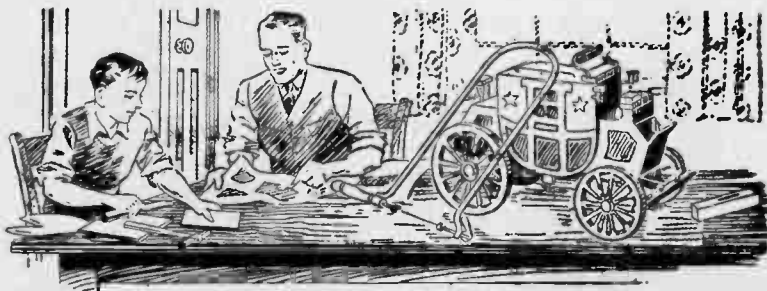
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