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Another flying model . . .

A RUBBER-POWERED CABIN SEAPLANE

FOR sport flying a simple seaplane model makes an attractive change. Any suitable stretch of water will do for a take-off area—even a large puddle!—and it does not matter at all if the flight terminates on land. In fact, it is usually better if a model seaplane does come down on dry ground. There is no pilot to pull the aircraft up and flatten out for a smooth landing. Models just plop down on top of the water in a manner which no full size aeroplane would stand. Nor will most models. They usually turn over!

Lots of Fun

However, there is a lot of fun to be had with model seaplanes. Sooner or later they will get a ducking, so all the parts should be well waterproofed. An extra coat of dope should be put on the wings, fuselage and tail unit and the floats themselves should be thoroughly waterproofed. Performance may not be quite as good as a landplane model, but the actual flight is often more stable and very nice to watch. If you have no suitable stretch of water for take-off, you can still hand launch your seaplane model. Rough and tumble landings on grass will not harm the floats any more than it will damage a wheeled undercarriage.

Apart from the floats the model described in the plan is quite orthodox. Construction follows the same lines as a previous rubber model described in '*Hobbies Weekly*' and so will only be described briefly. As with all model aircraft the first necessity is either to obtain a full size plan or scale up the reduced size plan. The main components are then built directly over the plan.

How to Start

Start by building two fuselage sides over the plan, one on top of the other to get them exactly the same. Longerons and spacers are $\frac{3}{32}$in. square medium hard balsa. The fuselage is different from other models in one respect. The tailplane is located *under* the rear of the fuselage and the seating for the tail is formed from $\frac{3}{16}$in. by $\frac{3}{32}$in. strip built in with the fuselage frame. This is cut away to the shape of the upper surface of the tailplane later.

The basic fuselage is completed by joining the two side frames with cross spacers, cut to the length shown in the top view of the fuselage. Start by joining the two sides at the cabin and rear wing position, then at the nose and tail, and

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

finally add the remaining cross spacers. Check the fuselage for squareness throughout and hold the assembly with pins or rubber bands until the cement has set.

Wing in Two Halves

The wing is built in two halves, again flat over the plan. Shape the trailing edge to a triangular section, notch both leading and trailing edges at the rib positions and pin down over the plan. Cut out a complete set of ribs and cement in place. Then cement the mainspar into the rib notches.

While the wing panel is still pinned down, cut and fit the wing tip. This is cut from $\frac{1}{16}$in. sheet balsa. The end of the mainspar is chamfered off and the tip fitted at an angle butting against the end of this spar. Cement in place once trimmed to correct shape.

When two wing panels have been completed they are joined together at the centre with a dihedral corresponding to 3ins. rise at each tip. The centre joints are reinforced with dihedral braces cut from $\frac{1}{32}$in. sheet celluloid, cemented in place. The centre rib can then be added and small gussets added at the trailing edge. Check the wing for trueness and glasspaper and smooth down prior to covering.

The tailplane is built in a very similar manner. This time, however, the mainspar notches into the bottom of the ribs and so can be pinned down with the leading and trailing edges flat on the plan. Cover between the two centre ribs with $\frac{1}{32}$in. sheet on the top surface only. This is the part of the tailplane which will bear against the fuselage when in position.

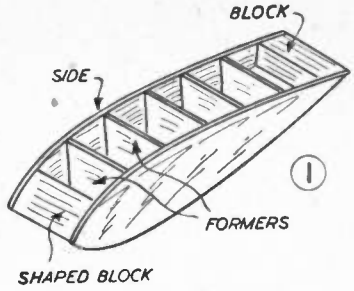
Tip fins are cemented to each end of the tailplane. These fins are cut from $\frac{1}{32}$in. sheet with the grain running either vertically or diagonally. But do not cement in place until the tailplane has been covered and doped.

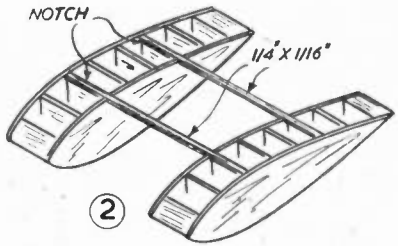
The fin is another simple structure. The outline is built up from $\frac{3}{8}$in. by $\frac{1}{16}$in. strip with $\frac{1}{16}$in. square braces. Round off the edges and cover before cementing to the fuselage. The fin is not cemented in place until the fuselage also is covered and doped.

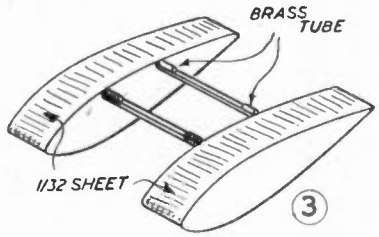
Before the fuselage can be covered, the float struts must be bent and bound in place. To make sure that these are true it will be best to complete the floats as well first, and check the assembly in completed skeleton form.

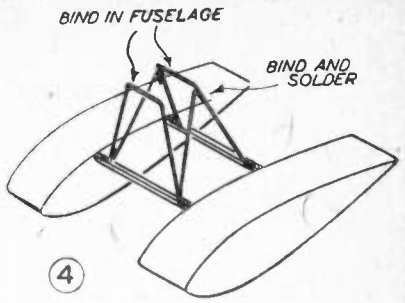
Float construction is quite straightforward. Start by cutting two float sides from light $\frac{1}{16}$in. sheet. Then join with $\frac{1}{16}$in. sheet formers and soft balsa blocks at front and rear—Fig. 1. These blocks can be shaped down to the float outline later.

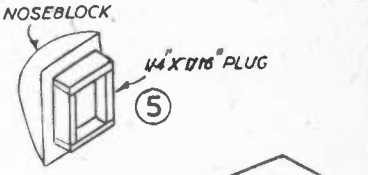
When you have built the second float in a similar manner the two are assembled on $\frac{1}{4}$in. by $\frac{1}{16}$in. birch (or

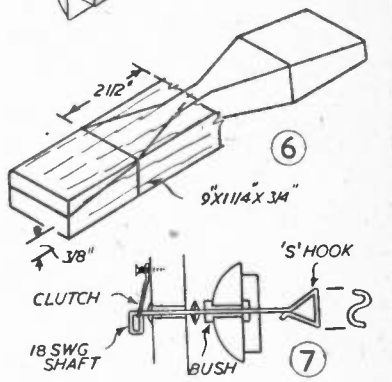












spruce) spacers. Notch the insides of the floats at formers 2 and 4 positions and trim away the top of these formers $\frac{1}{16}$in. and cement the two hardwood spacers in place as in Fig. 2. The floats must be parallel and should be exactly 12ins.

Those who do not wish to undertake scaling up the plans supplied in this issue can obtain a full-size plan (24ins. by 18ins.) from the Editor, Hobbies Weekly, Dereham, Norfolk, price 2/6, post free.

apart. Top and bottom of each float can then be covered with $\frac{1}{32}$in. sheet balsa, with the grain running across the float.

To locate the ends of the struts which hold the floats to the fuselage, small brass tubes are bound to the spacers as shown in Fig. 3. Since the struts are to be of 20 S.W.G. wire, these tubes should fit that diameter of wire. The actual arrangement of the wire struts is shown on the plan and in Fig. 4. There are really two separate 'legs' which are braced by a diagonal strut (also of 20 S.W.G. wire) bound and soldered in place. The bottom ends of each 'leg' are bent outwards and slip into the tubing bound to the float spacers so that the floats can be sprung on and off quite readily.

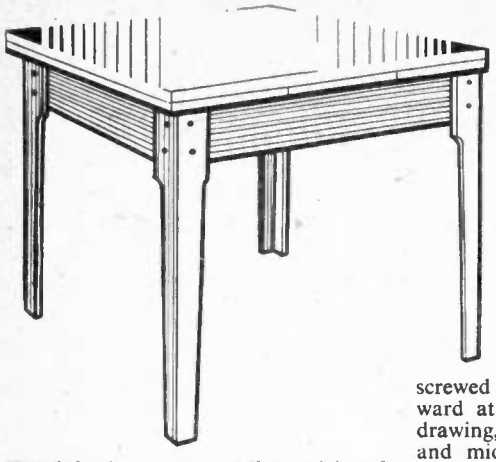
Important Feature

One of the most important features of the float fitting is to ensure that the floats line up with the fuselage at the angle shown on the plan. Unless they do the model will not take off properly, but simply tip over on the water when released.

The best way of getting this rigging correct is to bend the two 'legs' to shape and then bind in the fuselage. Now spring these legs into the float fixing tubes and prop the model up on a flat surface. Support the model level and prop the floats up so that they are the right angle. Now bend the diagonal wire members to the correct length, bind in place and solder. Check again and, if correct, finish the binding in the fuselage, add the gussets and cement well. The floats can be dissembled and the fuselage covered.

The floats should also be covered

(*Continued on page* 277)



Full instructions for making

AN EXTENDING DINING TABLE

THIS is a most useful article of furniture, based on the design now so popular, but considerably simplified in construction. The home-built pattern of leg makes the article much less expensive to make, as turned legs are now dear to buy. For those, however, who may prefer the solid leg, these can easily be substituted, the rails then being mortised and tenoned across in the usual manner.

Make the frame first. This is built up from ⅞in. thick wood, 4ins. wide, to a square of the dimensions given in Fig. 1. It may be noticed that the drawing shows rather an oblong shape, but this can be ignored—limitation of space made it necessary. Use glue and screws at the corner joints, and in the interior angles, screw wood corner blocks to bring all square. Across the centre of the frame groove in a bar as shown.

Notches

In the ends and bar as well, notches are to be cut to receive the slides attached to the extending leaves of the table. Two slides are fixed to each leaf, and each pair is so positioned as to work side by side in the frame, shown by dotted lines in the drawing. The notches one end can be 9ins. in from the sides, those in the opposite end, 10ins., supposing 1in. or ⅞in. thick wood is used for the slides. The notches in the middle bar are cut wide enough to admit, as an easy fit, two slides, of course. The depth of these notches is determined when estimating the shape of the slides, a job performed as follows.

Make a full size drawing, as in Fig. 4, of half the length of the table, upper part only. The top of the table measures 3ft. square; under this are the two extending leaves, with a fixed centre piece, all three being 12ins. wide and 3ft. long. The actual thicknesses of these are put in, the thicknesses depending on that of underframes and plywood covering, dealt with later on.

Now draw a line (a—b) in the diagram, touching the end upper corner of one leaf and opposite end (lower edge) of the same. The amount to be sawn off the slide (B) can then be measured, so that it, when screwed to its respective leaf, dips downward at the correct angle. From the drawing, the depths of end rail notches, and middle bar notches, can also be measured, and cut out. The slides are then cut to length, and bevelled off, the bevel being measured from the drawing.

Making the Legs

At this stage the legs can be made. For each one two pieces of wood are required, and shaped up as in Fig. 3, a pair at a time, or cut separately if waste is to be reduced to a minimum. Each half leg is tapered from 6ins. down from the top, as shown. Both are then glued and nailed together to make an L-shaped complete leg, measuring 4ins. each side. Punch the nails well down (oval nails are best) and stop the holes level. Fix the legs to each corner, as at (A) in Fig. 1, screwing from the outside with round-headed brass screws or flat head screws if from the inside.

Top and Leaves

The table top and under leaves and fixed centre are made up of frames of wood, covered with plywood; a much simpler and less expensive form of construction than that requiring solid wood. A simple half lap joint at the corners will do quite satisfactorily for the frames, well nailed and glued. Care should be taken to ensure each frame being square. In the frame of the centre fixed portion of the table, a middle bar of 1in. wide wood is notched in across, as at Fig. 2.

A middle bar, 2ins. wide this time, is also fitted across the frame of the table top. To disguise the joints in the frames, the outside edges of all are lipped with strips of ¼in. thick wood, after the plywood has been glued and pinned over.

Plywood ¼in. thick will suffice, but not less, and the top surfaces of all frames should be levelled off as may be necessary for the plywood to bed down flat. As the frames must be true to size, allowance for the lipping must be made when marking off the dimensions of all. For example, the 3ft. square table top

(*Continued on page* 278)

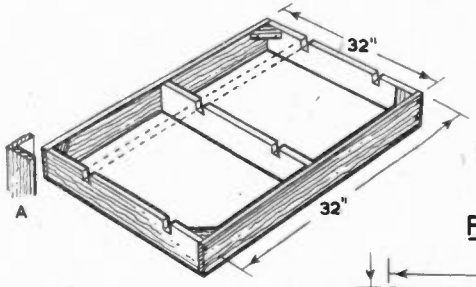


FIG 1

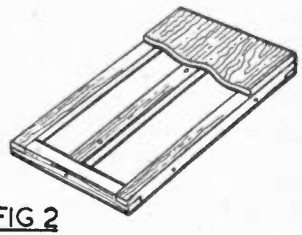


FIG 2

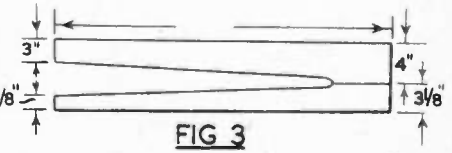


FIG 3

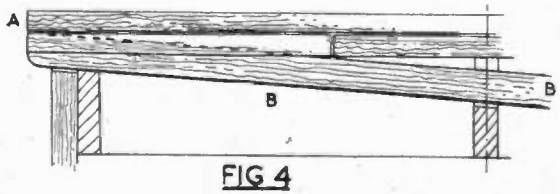
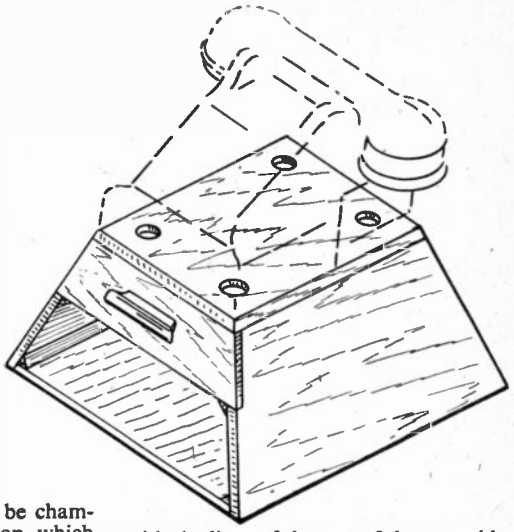


FIG 4

These drawings will assist the constructor

A Telephone Stand and Magazine Rack



CAREFUL workmanship is called for to complete this pyramoidal cabinet which has a space for magazines, a drawer and a top proportioned to locate a conventional hand microphone type of telephone. (The modern '330' type telephone). Alternatively, of course, the top can be left plain and polished, a suitable stand for a vase. The modern lines of the unit will, in itself, attract attention.

The body parts are dimensioned in Fig. 1. Two sides are required and one end. These must be laid out and cut very accurately, otherwise it will be difficult to get a good mitred joint where the sides and end meet.

Sides and end are assembled over a base 15ins. by 13ins., as shown in Fig. 2. The base is chamfered all round to correspond to the slope of the side and end panels and joints are reinforced with triangular stock, shaped to fit. Further triangular pieces are glued to the sides to support the shelf. The shelf is cut from $\frac{3}{16}$in. ply, 10ins. by 8ins., and again chamfered before sliding in place and gluing. Trial and error methods over the final fitting will give best results.

The top edges should now be chamfered off to fit flush with the top, which can then be glued into place—Fig. 3. The top panel is deliberately cut oversize so that it can be finished off properly with the lines of the rest of the assembly once in position. If the top is to serve as a base for a telephone, holes should be cut or drilled as detailed in Fig. 4. These

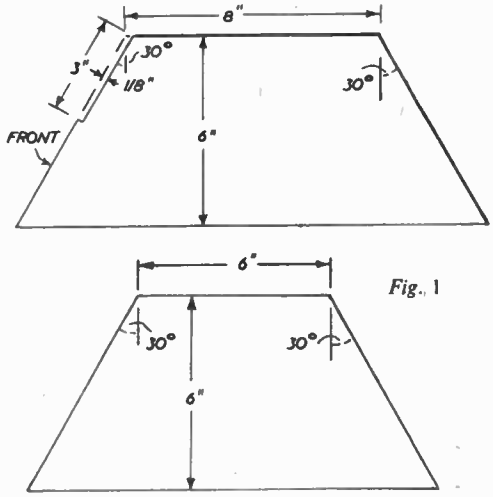


Fig. 1

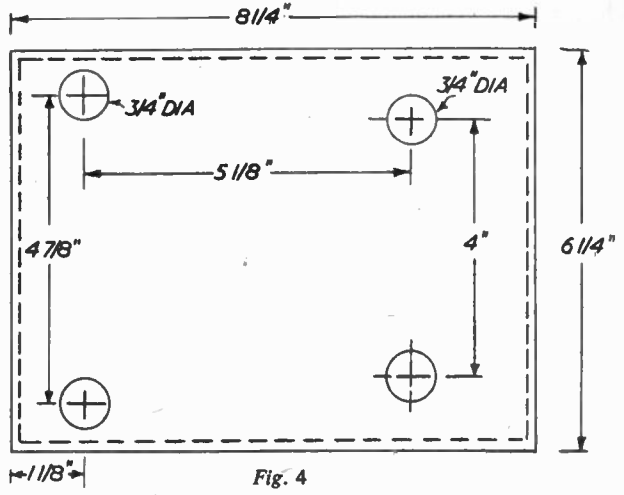


Fig. 4

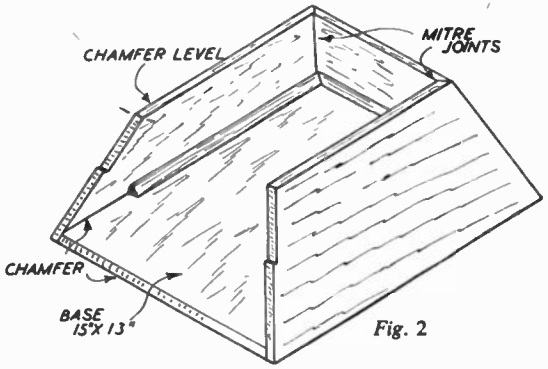


Fig. 2

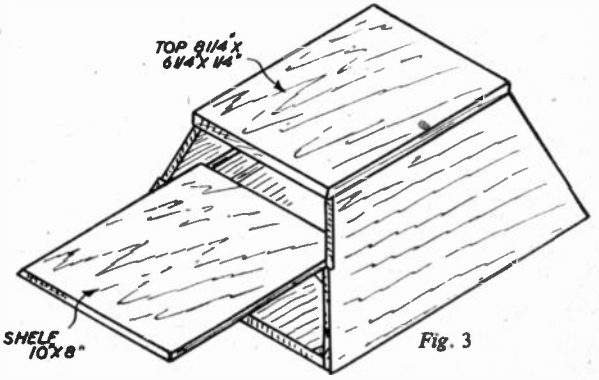


Fig. 3

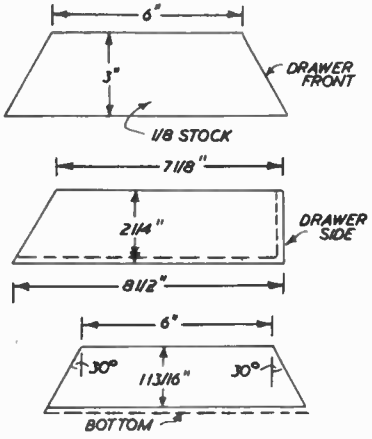


Fig. 5

holes will engage the rubber feet on the base of the telephone and lock it in place. Otherwise simply cut a plain rectangle for the top.

The drawer assembly should now be tackled. Parts are dimensioned in Fig. 5, although these may be subject to slight modification depending on the accuracy of workmanship over the assembly of the main cabinet. Assembly

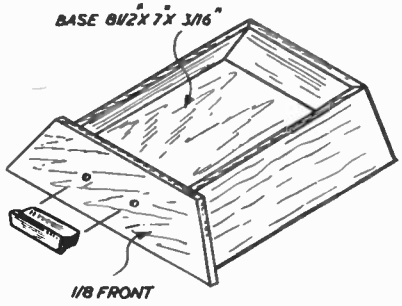


Fig. 6

of the drawer itself is shown in Fig. 6. It is recommended that all parts be checked for fit first inside the main cabinet before gluing together. The drawer front must fit the recess in the sides accurately, and also finish flush with the sides. The back of the drawer is actually vertical, so remember this when checking the 'fit' of the drawer bottom.

Figs. 6 and 7 give two general views of the assembly, Fig. 6 fixing the position of the shelf and Fig. 7 locating the drawer. Check that the drawer does not bind on any part of its travel and also that it shuts flush. There is ample

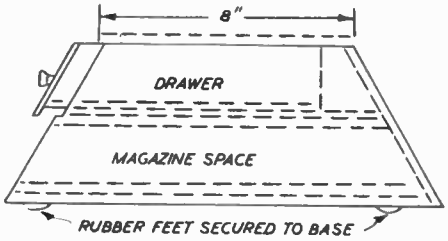


Fig. 8

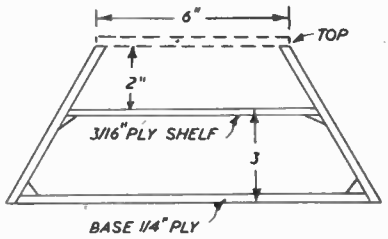


Fig. 7

space in the lower (open) compartment for magazines, etc. To finish off the assembly, add rubber feet to the base so that it can be rested on a polished surface without marking it. (458)

RUBBER-POWERED SEAPLANE

(*Continued from page* 274)

with tissue and given two coats of dope followed by two coats of banana oil. This will form a thoroughly waterproof skin. After covering and waterspraying, the fuselage should be given two coats of dope and one of banana oil, the tail unit one coat of each. The wings can be given two coats of thin dope and one of banana oil. If you do not want to use banana oil, give an extra coat of dope to the fuselage and wings only.

The nose assembly is quite orthodox, although a built-up plug is recommended, as in Fig. 5. This is quite easy to make and better than using a solid plug cut from thick sheet. The propeller is a 9in. diameter 'duration' type which can be purchased ready carved from most model shops, or can be carved from the blank outlined in Fig. 6. If you have little experience in carving rubber model propellers it would probably be best to buy a finished article. The propeller should be bushed and a simple type of freewheel unit fitted. Leave a loop on the front of the shaft for winding.

Now assemble the completed model, using a motor consisting of six strands of $\frac{1}{16}$in. strip rubber. This will probably underpower the model, but will be useful for a start in trimming. The wing is held in place with rubber bands looped over the $\frac{1}{16}$in. dowels and is prevented from rocking by two $\frac{1}{4}$in. square balsa strips cemented on top of the fuselage. Trim the rear of the fuselage to fit the tailplane correctly and attach the tail with a rubber band. Now slip the floats in place and brace with a rubber band from a hook under the nose of the fuselage down to the bottom of each front strut. See if the float assembly is rigid enough. If it appears floppy, solder a 20 S.W.G. wire spacer between the front legs to stiffen. Properly made the original assembly should be adequate. In any case, do not add more than just this one stiffening member.

Now check the model on water. Provided your model is not hopelessly overweight it should float near the waterline shown on the plan. If it does not, check your float angles again.

Flight testing follows normal routine. First check the balance of the model, which should come just forward of the mid point of the wing. The wing can be shifted fore or aft slightly to adjust, if necessary. Glide tests come next, over long grass for preference.

If the model stalls or dives on glide testing, check the tailplane attitude. It may be tilted up or down from its proper position. You should be able to get a good glide by adjusting the tailplane incidence without moving the wing, provided the original balance is somewhere near.

Power flights will show if you need downthrust. Less will be needed than on landplane models since the drag of the floats will tend to hold the nose down. But you will need a rather more powerful motor for water take-offs and so, wound right up, the initial climb should be quite 'snappy'. The actual power required will depend on the total weight of your model and you will have to find out the best number of strands by flight tests. If the model is underpowered from a hand launch it will certainly not take off from water. For good rise-off-water flights the model should give the impression of being slightly overpowered when hand launched with near maximum turns on the motor. (449)

Installing a Power Point

PLEASE advise me the easiest way to fit and connect a 5 amp power plug. (W.A.—Lincoln).

YOU mention fitting a 5 amp power plug, but it is assumed that you actually mean the fitting of a socket or power-supply point. Such a power-supply point is fitted by running 5 amp cable from the fuse and distribution board, which is usually located near the house meter. A 3-socket wall-fitting is used; this will be marked 'L', 'N' and 'E'. The red lead of the cable is taken to the 'L' (Line) socket; the black lead to 'N' (Neutral) socket, and the bare, earthing wire to the 'E' socket. These leads are similarly connected to the distribution board, where a spare fuse-way may exist. The main switch should be opened while fitting, to avoid shocks. Actually, power-supply points are usually for 15 amps, and for this 15 amp cable must be used. Such cable is not necessary, however, if more than 5 amps will not be drawn. In a few instances, local by-laws may exist which make illegal the installation of permanent house-wiring by unqualified persons. Your local council would, doubtless, inform you on this point.

* * *

Motor Overheats

PLEASE tell me how to run a ½ H.P. split-phase 230 volt motor on 250 volts. The motor takes 2·5 amps, has a centrifugal starter, and will run on 250 volts but soon gets hot. (R.A.P.—Welwyn Garden City).

IF the motor is for 230 V and is operated from 250 V it is being over-run by 20 V. This excess 20 V could be dropped by using a wire-wound resistance of approximately 8 ohms, if 2·5 amps are flowing. Such a resistance could be made from thin iron-wire, or other resistance wire. Over-heating might also arise from the motor being called upon to drive machinery of an excessively heavy type, or from a breakdown in insulation in some of the windings, or other fault. Normal ventilation should be provided. If the motor is an ex-service one, it is possible that it is unsuitable for continuous running, as many ex-service motors are designed for special purposes. Any belts, gearing or other reduction drive should run freely, and be of a sufficiently high ratio to allow the motor to turn at full speed, otherwise overheating is particularly likely.

* * *

Capes and Cycles

I SHOULD be glad to know how to preserve cycling oil-skins from cracking. Also I would be pleased if you could tell me a good book on how to take care of a new cycle—lubrication, care of enamel and chromium, and adjustments of all parts, etc. (G.C.—Warboys).

THERE is no easy method to prevent oil-skins from creasing and cracking when rolled up for long periods. It helps if when not in use they are well shaken out and hung up in a dry airy place. Badly cracked oil-skins that need renovating may be treated at home with linseed oil. Or you can give them a coat of oil-skin dressing, which can be obtained from J. Barbour & Sons Ltd., South Shields, Durham, price 3/- plus 11d. postage. For coloured oil-skins ask for the yellow colour. A dressing of this will renew oil-skin garments and help to prevent cracking. The book you require is 'Cycling Book of Maintenance', published by Temple Press Ltd., Bowling Green Lane, E.C.1, price 2/6 net, which gives full practical details for cycle repairs and maintenance, etc. You may also obtain it from various cycle dealers, such as Curry's and others. Try your local dealers.

* * *

Electric Clock

I AM interested in constructing the electric clock described in Hobbies Weekly, and have bought the synchronous unit. Please inform me on the following points—(1) the two connections for the mains, (2) the two spindles for the hands. (G.D.—Hornchurch).

AT the top of the unit is a small ebonite block with four screws. The top two, the ones without the connections, are connected to the mains supply. There is only one spindle on the unit used. This is placed immediately under the ebonite block mentioned above. This drives the minute hand. The hour train is driven from a ten-toothed wheel fixed to this spindle. This in turn drives a thirty-toothed wheel with an eight-toothed wheel fixed to it and geared to a thirty-two-toothed wheel with a loose sleeve to which is attached the hour hand.

EXTENDING DINING TABLE

(*Continued from page 275*)

will need a frame 2ft. 11½ins. each way; the leaves framing will be 2ft. 11½ins. long and 11½ins. wide; the fixed centre one the same length but 12ins. wide, as no lipping will be needed on its long edges, these being covered by the inside edges of the leaves.

To ensure the edges of both leaves joining up accurately to the fixed centre, when not extended, glue dowels in them, and corresponding holes for the dowels in the fixed part. Two dowels to each leaf will be enough, and the holes for these must be accurately positioned. Similar holes are bored in the end edges of the table top to guide the leaves in correctly when extended.

Fix the centre part across the table with screws. Place the leaves in position, also the slides. Reverse the whole upside down on the floor or bench, and then screw the slides to their respective leaves. Before gluing the plywood to the table top, lay it over and bore ⅜in. holes through the centre bar of both top frame and fixed centre part below. These holes can be 6ins. in from the sides. Into the holes in the table top glue 4in. lengths of dowel rod, letting them stick out underneath. These pins, as we may call them, keep the table top in position, while allowing it to rise and let the leaves be extended when the table is required to be longer. The plywood can then be glued over, and the lipping fixed to its edges.

This finishes the work of construction. Glasspaper the whole, and stain and varnish oak colour. Suitable strips of wood could be fitted underneath the leaves to form grips, to enable them to be easily withdrawn on occasion. Also it is a good idea to drive in the bottom edges of the legs (two to each leg) some of those small steel furniture domes to ease the passage of the table when drawn over the floor. (479)

CUTTING LIST

Frame (2).	2ft. 8ins. by 4ins. by ¾in.
Frame (2).	2ft. 6½ins. by 4ins. by ¾in.
Middle bar.	2ft. 6½ins. by 4ins. by ¾in.
Legs (4).	2ft. 4ins. by 4ins. by ¾in.
Legs (4).	2ft. 4ins. by 3½ins. by ¾in.
Slides (4).	2ft. 9ins. by 1½ins. by 1in. or ¾in.
Table top (4).	2ft. 11½ins. by 1½ins. by ¾in.
Middle bar.	2ft. 8½ins. by 2ins. by ¾in.
Leaves (4).	2ft. 11½ins. by 1½ins. by ¾in.
Leaves (4).	11½ins. by 1½ins. by ¾in.
Fixed centre (2).	2ft. 11½ins. by 1½ins. by ¾in.
Fixed centre (2).	12ins. by 1½ins. by ¾in.
Middle bar.	2ft. 8½ins. by 1in. by ¾in.

Lipping—¼in. thick, 25ft. run.
Plywood—3ft. square and three panels 3ft. long and 12ins. wide.

A Useful Bookcase

A BOOKCASE is probably one of the most straightforward and at the same time one of the most useful articles of furniture that the home constructor can tackle. This model described is no exception. It is quite easy to make and would form a useful addition to almost any room.

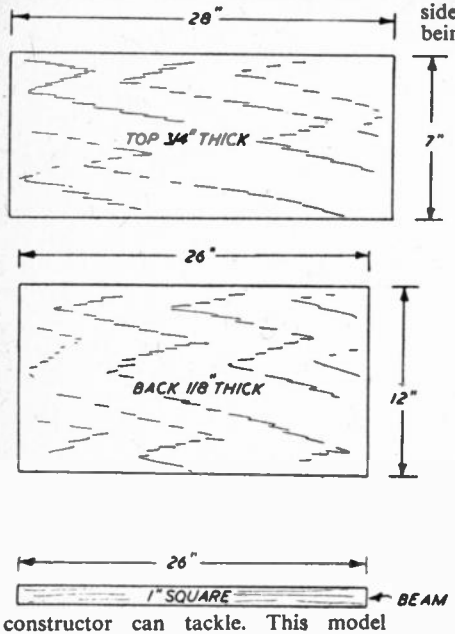
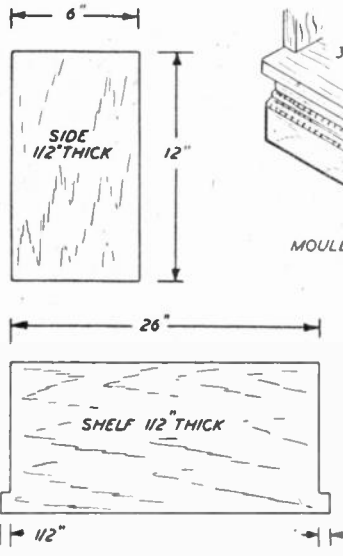


Fig. 1

All the main parts are dimensioned in Fig. 1. The top should be of good quality stock, also the sides and shelf, as these will be constantly in view. The back can well be made of hardboard, as little of this is normally visible. The 1in. square beams are also completely hidden in the final assembly.

The main assembly is shown in Fig. 2. The top is mounted on the sides, overhanging ½in. at each end and with the back flush with rear vertical edge of each side. The back, which fits between the top and sides, will help in getting this assembly square, provided this part is itself cut square initially. Pin all joints for greater strength.

Two beams are now mounted between the sides, the top of the beams being exactly 3ins. high.



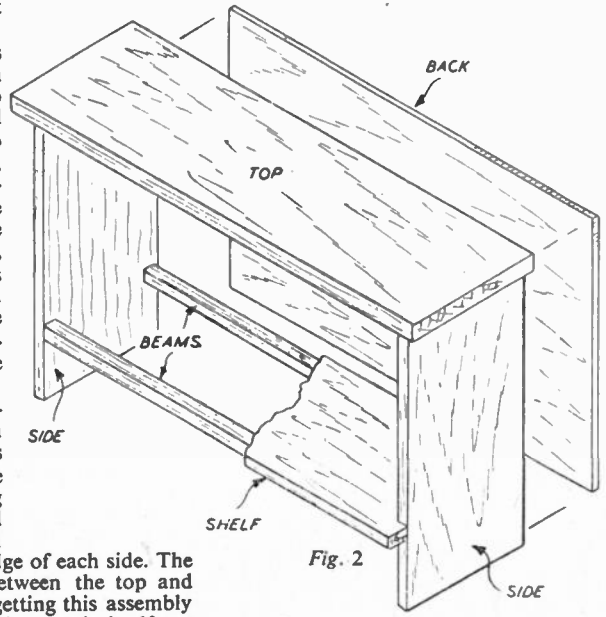


Fig. 2

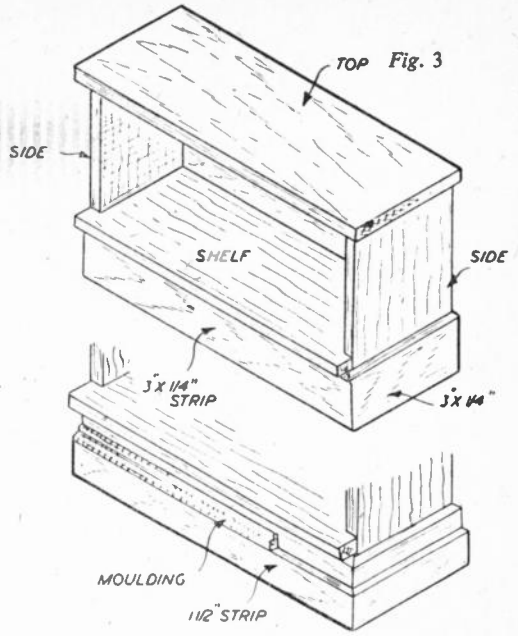


Fig. 4

The ends of the beams can be located by pinning or screwing, if desired, or glued joints only can be used, when triangular blocks should be mounted under the end of each beam for a stronger assembly. These triangular blocks can be pinned, as well as glued to both sides and beams.

The shelf, cut to proper size, simply slips between the two sides and rests on the beams. It should be glued in place, after the fit has been checked and approved. Make sure that the front projection lines up accurately with the sides.

After this we can pass to the stage shown in Fig. 3. Around the front and two sides 3ins. by ¼in. strips are added, with mitred corner joints. This 'fills in' the front of the bookcase under the beams and also adds to the attractiveness of the sides, by relieving them of a certain 'plainness'. Again take care to fit these strips accurately. If you have worked strictly to the dimensions given, the longer strip will be 27¼ins. long with both ends mitred, and the two smaller strips 6¼ins. long with one end mitred.

You could quite well leave the assembly at this stage and simply glasspaper down and finish. However, to give the base a more solid appearance, further strips should be added, this time 1¼ins. wide, as shown. The longer

(*Continued on page* 282)

CENTRE-SPREAD FOR 'SNAPSHO

LEARN CAM

If you're thinking of buy notes before you

WITH the arrival of summer holidays many people consider obtaining a camera, and it is felt that readers will be interested in a description of the various types, together with their advantages and disadvantages. In this way the selection of a suitable camera may be made more easy, and the reader can be sure that he is buying one which will do the type of work he requires. There are many types, and each have points worth noting.

Sizes of Film

The type of film known as '120' is most generally used. With most cameras this gives eight photos approximately 2¼ins. by 3¼ins. on one spool of film. This is a useful size because contact prints will be large enough for an album, and the user can always have enlargements made from especially good negatives. Some cameras provide twelve photos 2¼ins. by 2¼ins. on this type of film; others no less than sixteen exposures, about 1⅝ins. by 2½ins. These, however, are rather small for contact prints, so that enlargements have to be made. If the user does not possess an enlarger, this will prove rather expensive. Contact prints *can* be made from such negatives, of course, but are somewhat minute.

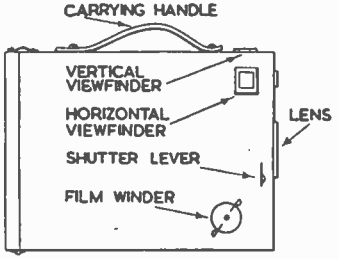


Fig. 1—A simple box camera that can give good results

A few cameras take '127' film, giving negatives about 1⅝ins. by 1⅝ins. Enlarging is practically essential with such a small size, and are certainly required with those cameras taking 35 mm. film, where the negatives are only 1in. by 1½ins. or even smaller.

Smaller—Cheaper

The smaller the negatives are, the more cheaply can photos be taken. But this saving may be lost by the cost of enlargements. So if the photographer is satisfied with 2¼ins. by 3¼ins. photos, or, perhaps, the 2¼ins. by 2¼ins. size, a camera for these is best. Contact prints, if done at home, are extremely economical; where these are done by a shop the charge is also quite small. But if enlargements will in any case be obtained, or the photographer has an enlarger, then a smaller sized negative will enable shots to be taken more cheaply.

Box Cameras

This is the cheapest type and shown in Fig. 1. They can be obtained for either eight 2¼ins. by 3¼ins. or twelve 2¼ins. by 2¼ins. shots on the spool of film. The larger size may be used in either an upright or flat position, for upright or horizontal photos, optional viewfinders being provided. These viewfinders are usually of the type giving a very small reflected view so that the photographer can locate his subject. But with the more expensive, modern types, a large viewfinder may be provided on the top. This does not improve the photos, but enables the subjects to be taken to be seen more clearly.

The back usually opens so that film can be inserted; as with other cameras, this can be done in daylight. The film may also be removed in daylight. After each photo the film is wound on until the next number on the spool appears in a small window at the back of the camera.

Such cameras normally have a lens of about *f*11, which means that shots can only be taken in sunny or bright weather. The shutter usually has a speed of about $\frac{1}{25}$th second, so that rapidly-moving objects cannot be photographed well. No means of focusing is provided on the cheaper types, but all objects between about 10ft. and infinity will be reasonably sharp. In the better cameras, the lens may be provided with other shutter speeds, and means of focusing. This aspect is common to all cameras and will be described later.

Folding Cameras

Fig. 2 shows a typical camera of this kind, and it has the advantage that, when closed, it occupies very little space. It can easily be carried in a pocket. Cameras of this kind can be obtained for all sizes of film. Many have a small viewfinder similar to that on the box camera. The more modern cameras have an eye-level finder, and the photographer looks directly through this, holding the camera at face level. Except with the very cheapest types, the lens extends itself automatically, through a system of levers, when opening the camera.

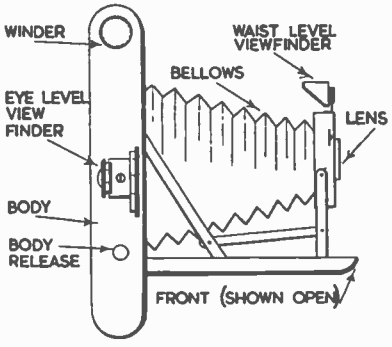


Fig. 2—An example of types of folding camera

The lens and shutter will only be the same as in the simple box camera, with the cheap models. The sole advantage gained is thus that of portability. But with the more expensive cameras of this type, better lenses and shutters can be obtained, as will be explained. Such cameras usually have a 'Body Release'—a small button, conveniently situated, which operates the shutter easily.

Twin-Lens Reflex

This type is more expensive, but very popular, and is shown in Fig. 3. It has two lenses of similar type. The lower one projects the image on to the film in the usual way. The upper one has a mirror behind it, which throws the image up on to a glass screen underneath the hood. By turning the focusing knob the front panel, with lenses, is moved in and out. In use, the hood is opened and the scene to be photographed is focused on the glass screen, by means of the knob. As the 'taking' lens moves with the top lens, the scene is also accurately focused on the film.

The scene on the film is almost exactly that seen on the glass screen, which gives a view full size, right-way-up, but with sides reversed. Accordingly, many expert photographers feel this type of camera the best for good work.

Similar cameras exist, in cheaper types, where the upper lens only projects a view on to a large viewfinder; these are not true focusing reflex cameras. With the true reflex, the scene is actually focused on the glass screen.

For all normal shots a two-lens reflex is excellent. It is less satisfactory for close-up shots because the view as seen by the top lens is not *quite* the same as that seen by the lower lens. For distant work this is immaterial; but at distances

TTERS'

ABOUT ERAS

ing a camera, read these make your choice

under about 3ft., it becomes noticeable.

Single-Lens Reflex

One of these is shown in Fig. 4, and the scene is projected on to a glass screen exactly as with the twin-lens reflex. However, the mirror swings up, when the shutter-release is pressed, so that the same lens then projects the scene on to the film. As a result, the scene photographed, even with close-up subjects, is exactly as seen on the screen. Because of this, such cameras are very popular, and accurate focusing is possible. They have one disadvantage—at the actual moment of taking a shot the scene cannot be viewed on the glass screen, because the mirror has moved

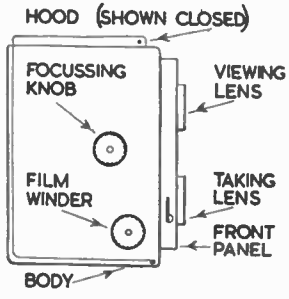


Fig. 3—A twin lens reflex camera

up to uncover the film. However, this is not a serious difficulty, except when taking rapidly-moving objects, sports shots, and so on. Here, a direct-vision finder similar to that in Fig. 2 can usually be opened, and the moving subject viewed through it.

Single-lens reflexes enable extra lenses, such as those used for close-up or telephoto shots, to be used easily. The exact result of the extra lenses will always be seen on the screen. The user can, therefore, assure that his subject is sharply focused, and that he is getting exactly what he wishes on his negative.

Points on Focusing

The method of focusing reflex cameras has been dealt with. Simple box cameras have no means of focusing. Better-class cameras of the type shown in Fig. 2 will have a lens which can be focused to any distance from about 3ft. to infinity, and this is frequently marked as shown in Fig. 5. Here, 'Distances' are shown in feet. Some cameras, especially of foreign manufacture, may be marked in metres, which is rather awkward. Whatever the markings, the photographer judges, guesses or measures the distance to his subject, and sets the lens accordingly by rotating the ring until the correct distance is opposite the indicating mark. As a result, the sharpness of photos will to some extent depend upon judging the distance fairly accurately. To overcome this, very expensive cameras have rangefinders incorporated; such rangefinders can also be purchased quite cheaply, and used separately.

Simple cameras may only have two settings: 'Close-up' and 'Distance'. If so, the lens is simply set according to subject.

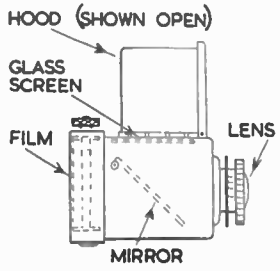


Fig. 4—How a single lens reflex camera works

Shutter Speeds

Typical shutter-speed markings for a good camera are shown in Fig. 5. When the pointer is set to 'T', time exposures can be made, the shutter remaining open until the shutter-release is pressed a second time. This is useful for interior shots, night photography, etc. When the pointer is on 'B', brief-time exposures are made, the shutter remaining open while the release is held down. One of these settings is usually found on all cameras, including the smallest box cameras.

By setting the pointer to the other positions, exposures of from $\frac{1}{25}$th second to $\frac{1}{200}$th second may be made. With the high shutter speeds rapidly moving objects can be taken, and some cameras have speeds of up to $\frac{1}{1000}$th second. But when light is poor, the slower shutter speeds must be used, or the film will be under exposed. The most expensive cameras also have a small clockwork arrangement which gives exposures of as long as 1 second or more. This is useful for taking shots when light is poor, and when real time exposures cannot be given due to some movement of the subject.

Also found on more expensive cameras is the delayed-action release. This is a small lever which is set, with a clockwork mechanism. When the shutter-release is operated a delay of about 15 seconds arises before the shutter actually operates. This enables the user to photograph himself, or join groups, etc., the camera being on a tripod or otherwise placed in the correct position.

Lens Apertures

The size of the lens aperture is shown by an '*f*' number (see Fig. 5). The *smaller* this number, the more light the lens allows to pass. Cheap cameras with small lenses (*f*11 to *f*16) can only be used in bright daylight, unless a time exposure is made. Slightly more expensive cameras have lenses of about 6·3 aperture, and shots may be taken in good daylight, with these. Better cameras have lenses as large as *f*3·5. With these, shots can be taken in poor light. The very best cameras have even larger lenses. The larger the lens, the more readily may pictures be taken in dim light, but with bright light, as during midsummer, the user may need to cut down the light passing through, and this is done by turning the 'Apertures' ring.

For High Speed

Large lenses are necessary for high-speed shots, to get enough light on to the film. For example, in good daylight, with an *f*16 aperture, an exposure of $\frac{1}{25}$th second would be required. If the lens is *f*11, then $\frac{1}{50}$th would do. With an *f*6·3 aperture, $\frac{1}{150}$th would do, and only $\frac{1}{500}$th second would be required with an aperture of *f*3·5. If the user wishes to take action shots in poor light, a large lens is, therefore, necessary. For shots in sunlight, the small lens is satisfactory. (471)

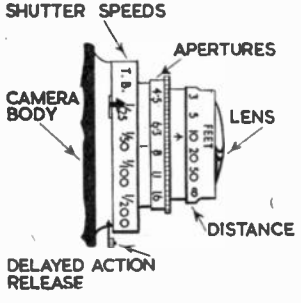


Fig. 5—A diagram explaining shutter speeds, etc.

Some things you ought to know about

'Meths'—the Photographer's Friend

METHYLATED spirits has so many uses for the amateur photographer that it deserves an article to itself. 'Meths' can now be got in good quantity at any chemists but, unfortunately, the pure colourless spirit cannot be obtained, as by law it has to be treated with a chemical which produces a purple tint. But this addition is not a dye and the spirit can be used on various surfaces without them becoming tinted. In fact, although it now looks a rather fearsome solution to use in photography, a bath of treated spirit is as safe to employ as one of the colourless variety.

Drying Negatives

A good use for meths is the rapid drying of negatives. After the usual washing the negative is wiped over with a well-softened piece of wash leather and then placed in a dish of the spirit. Here it stays for about two minutes and is then taken out and wiped with another scrap of leather, this time softened with spirit. Within thirty seconds it will be found that the negative is bone dry—a process that would take several hours in the usual way. This 'express' drying rather savours of magic to anyone who is seeing it for the first time.

Films can be dried in the same way. The washed roll has all the surplus water taken off by gently pulling it between a wad of the softened leather. It is then run through the spirit in the dish-developing style—that is holding the ends and raising one hand as the other is lowered, the bottom end of the loop so formed remaining in the dish and running through the solution it contains. A wipe, as with the plate, and the celluloid is dry and hard in seconds.

Prints, too, can be dried in a similar manner, being soaked in the meths and then wiped over. Although it sounds risky, a print soaked in spirit can be *burnt* off. A light is applied to one corner and as the resulting flame runs across, the print is transferred from one hand to the other. The flame does not burn the paper and as the flame dies out (which is but a matter of seconds) the print is dry and with rather a higher gloss than if it had been dried naturally.

When drying a good number of prints or negatives this way it is good to have two dishes of spirit and put the material first in the one and then the other. The first dish will in time become contaminated with too much water. This then can be thrown away and number two dish become number one—a fresh number two dish being poured out. This means that the plate or print always comes out finally from a bath of strong uncontaminated spirit and so dries out evenly and well. If a spirit bath has become too full of water the drying may be patchy.

The cleaning properties of methylated spirits have to be seen to be believed. If a film or glass negative has become soiled or rubbed, take a wad of cotton wool well soaked in the spirit and carry out a systematic swabbing of the surface. The dirt that comes away can be seen by the cotton wool and the effect is to brighten up the whole image, entirely remove dirt, and greatly reduce the effect of abrasion marks.

Prints that have become soiled by carrying too long in a wallet or with age can be brought back to a state of brilliance in the same way. Here the striking results can be more readily seen. With the swabbing, the dirty whites become pure and bright once more, while the rest of the print takes on an added brilliance. Slightly trimmed and treated with meths an old dirty print can often be made to look as good as the day you made it, or when it came from the 'D and P' man.

Such is the brightening effect of treatment with meths it is a good idea to give all newly-made prints a quick rub over, as this will take away any scum that the washing water may have left and will also rather make up for imperfect washing. The effect of meths, too, is to slightly harden the gelatine of the print which is good, as it allows of using a degree of polishing action as the spirit dries out of the leather and which gives quite a gloss.

Methylated spirits cannot, however, be used with 'printing out' paper, as it just rubs the surface off. This kind of paper was not on sale during the shortages, but it is coming back now, and it is just as well for the amateur photographer to know that it won't take meths.

Cleaning Lenses

Another use for meths is cleaning lenses, finders and the like. Again a very well softened piece of wash-leather is used and the spirit in this case must be quite fresh with no suggestion of water or other substance about it—the purple tint does not matter, of course. The lens is wiped gently over, inspecting to see that any smears that were on the glass are being removed, and the glass is left to dry itself. There must be no polishing action for optical glass is very soft and soon scratched.

The rather more advanced amateur will be interested to know that methylated spirits can be employed as a slight 'reducer' for dense and clogged area in a plate negative or film. Try this experiment—wrap a cloth round the end of, say, a pencil and after dipping in 'meths', rub steadily on an old negative. The cloth becomes black; this is silver coming away. A dense area of negative rubbed steadily for some time thus can be made thinner and so 'reduced'. The rubbing must be even and light with a slight circular action. The negative must be continually inspected to see how far the reduction has gone, for once started it becomes increasingly more rapid. With care, however, this form of reduction is ideal where small areas require treatment. (437)

USEFUL BOOKCASE

(*Continued from page* 279)

of these strips will be 28ins. and the smaller strips each 6¼ins. long, again with mitred joints, assuming the same thickness of material (¼in.) for these strips. To complete, a further moulding strip can then be glued in place, as shown, and the whole glasspapered down smoothly.

In glasspapering down, round off the corners of the top and also the protruding front edge and corners of the shelf. Finish all the wood perfectly smooth before attempting to fill the grain, and then stain and polish. For those reluctant to tackle French polishing, stain in the normal manner and then simply polish with ordinary wax polish. The resulting finish will be on the dull side, but still quite attractive. Over a period of time, and with repeated wax polishings at normal intervals, a very fine gloss will be worked up on the surface. This is the lazy man's method of polishing—he leaves it to his wife to do the hard work for him! In a few month's time, however, he will probably be showing it to his friends as an example of just how easy he found it to get a good polish on wood. (474)

Just right for mother — a
Robust Sewing Box

THIS robust little box is easy to make. Good quality material which will polish and finish well should be chosen, and careful workmanship will result in an object to be proud of.

Box parts are detailed in Fig. 1. Top and bottom are cut from ¼in. ply, the other parts from ⅜in. thick material. 1in. triangular stock is needed for the corner blocks, and, in addition, smaller section triangular strips will be used to gusset the bottom. Lid sides and back can be cut from 1in. by ⅜in. stripwood.

Construction of the box and lid is fairly well detailed in Fig. 3. Front, back and sides of the box and lid are

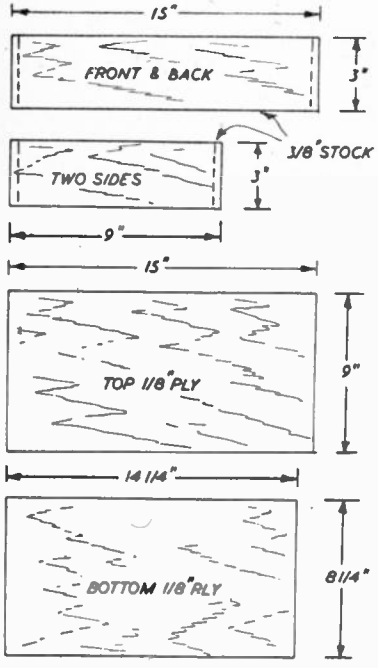
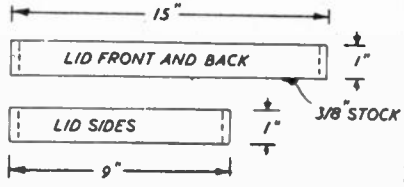


Fig. 1

mitred at the corners. The lid parts can be glued directly on to the top for ease of assembly. Provided the top itself is cut square, the lid cannot help but be square by this method. Back up the corner joints with 1in. lengths of triangular stock, as shown.

The box back, front and sides are assembled *around* the bottom. Again the corner joints are mitred and reinforced by triangular stock glued in place. The length of these corner blocks will be 3ins., less the thickness of the bottom, i.e. 2⅞ins. exact length. They can be cut slightly oversize and trimmed down to correct height later if desired. Further to support the bottom, add smaller gusset strips around the inside, as shown. This should give a rigid assembly with glued joints alone.

When the lid and box assemblies have set, check them for size, one against the other, and also for flush fitting. Trim up as necessary. The lid is hinged to the box in the conventional manner with small cabinet hinges; or with an externally located hinge as shown in Fig. 3. This has the advantage of obviating screwing into short grain wood. Either method should be satisfactory, the method shown allowing a little more latitude and, if a decorative form of hinge is used, the effect can be



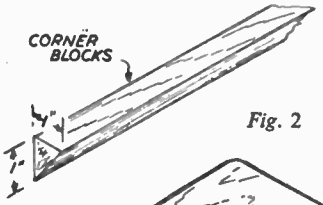
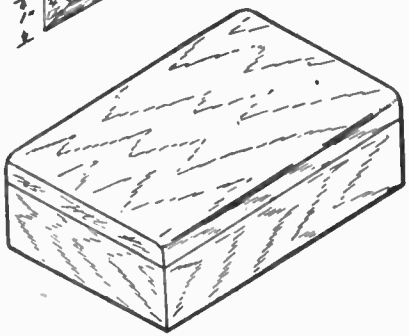


Fig. 2



most pleasing. The hinge is located, of course, with the lid in place.

The finished box should then be glasspapered down thoroughly all over, rounding off the corners to improve the appearance. Take pains over the finishing, filling the grain of the wood, staining to taste and then polishing. A

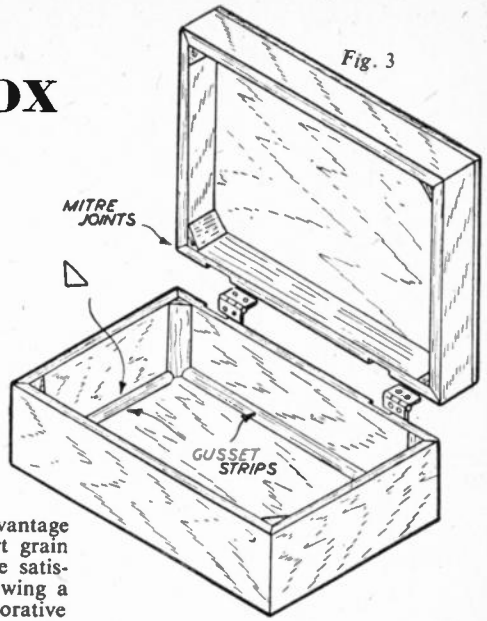


Fig. 3

few hours spent on this will be well worth while.

About all that remains to be done then is to pad the inside of the box. A satisfactory method is to line with cotton wool and then cover with satin or similar material with a sheen and pleasing appearance. Spread out the padding evenly and work carefully over one section of the box at a time. The lining should be attached around all its edges, lightly gluing down to the gusset strips and to the edge of the box or lid proper. Trim off any excess material and add a contrasting binding strip to finish off the edges. Check that the lining does not interfere with the proper closing of the box.

To add a final personal touch, fret out an appropriate initial and glue to the top of the box, either in the centre or towards one corner. (475)

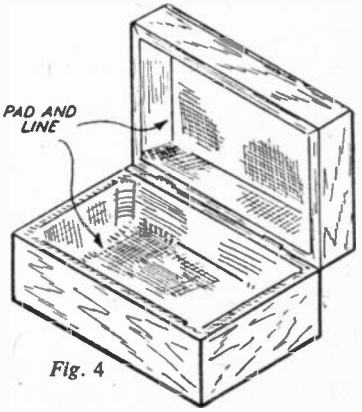


Fig. 4

A home handyman tells you about

Using Beadings and Mouldings

BEADINGS and mouldings are now available in quite a well assorted range and at popular prices, and readers may do well to see where these will fit in with improvements in the home. They make a great difference, and will also cover up ugly gaps in floor edges and where we find, perhaps, that our panels (through lack of experience) do not quite meet.

In Fig. 1 is shown a moulding which I used to finish off a room I had decorated and in which the skirting board was uneven, and damaged by wear near the base. Apart from the finish this moulding does improve the look of any room, and can be picked out in a contrast shade. Such mouldings run in sizes ¼in., ½in. and 1in., and the latter is best on a large room. Careful mitre joints should be studied, especially in projecting walls.

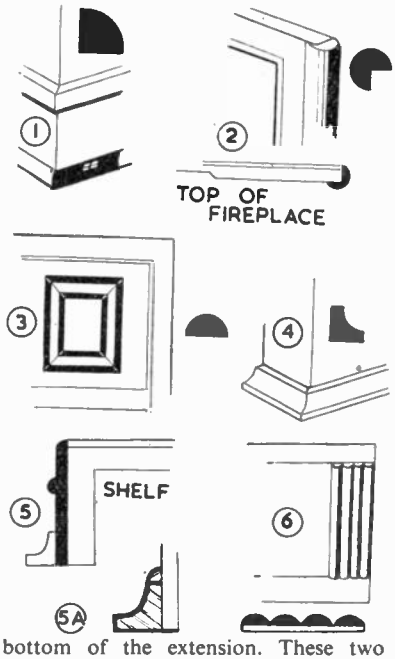
I enlarged my mantel-shelf and covered it with panel board, but this left rather a rugged edge down the offsides away from the actual fireplace. A neat finish was made with 1in. half round beading on the face of the board and ¼in. round on the side, making a three-quarter part of the circle. See Fig. 2.

Half-round Beadings

Well mitred half-round beadings will always make an attractive panel if not overdone in use. On a sunken panel these are most effective. In Fig. 3 I have shown this idea and its position in relation to the rest of the panel. Note the spacing. In staining or painting do not make the mistake of picking out these beadings in prominent contrasts. This will have the effect of making the whole setting look too stripy. Choose a neat and neutral contrast if necessary. In fixing beadings, use a small *Hobbies* hammer, otherwise, due to lack of experience, you may damage the raised section and will not be able to repair it.

In Fig. 4 is shown a 1in. convex moulding with a deep edge and this is most effective used in a large room as a finish and where the floor boards may be very uneven or the skirting badly worn. It can also act as a good draught excluder.

Sometimes we build on to a shelf or extend the mantel-board outwards and down the front. If you have recovered the top of the shelf with some panel board this will leave a rough edge into which dirt will seep. By adding the front panel of wood and finishing the top with a length of ½in. half-round beading you will then set this off well to take the type of beading shown on the bottom of the extension. These two beadings are very handy and used together will not look too ornamental. I have used two of the half-round ones with this idea and got a very neat effect. Fig. 5.



Beware of Dust and Grease

Do not use beading or moulding with a wide flat top edge in places where you expect a lot of dust or grease, as this shape will always help to harbour it. If you do use this, then finish off with a length of ¼in. quarter-round which will then glasspaper down to smooth off with the lower beading. This is shown in Fig. 5A.

To set off a fitment such as a cupboard or a fairly deep fireplace I have found the use of strips of ¼in. half-round beading ideal. In Fig. 6 are shown a series used in sequence to make an attractive column effect. Another idea, a little more ornate, is to use, on the two outsides of the column strips of a fancy beading, slightly raised on ¼in. stripwood.

Odd strips and beadings can have all manner of uses and I am never without them in my wood stock. Obeche from the wood shop in 3ft. lengths and sizes ¼in. by ½in., ¼in. by ¼in. and ¼in. by ¾in. will always fit in well. These can also be glasspapered off well and take the place of a glass beading. Obeche is light, glasspapers well and does not splinter. It will not split when small nails are used. It also takes priming paint very smoothly and makes a good neat finish to any cabinet work, cupboard or shelf fixing and odd jobs about the house. (473)

Joe Smith Likes Queer Names

AN American magazine writer, Joe Smith, makes a hobby of collecting queer names of people. He gathers in names from all quarters, and finds trade and telephone directories, newspapers (especially the births, marriages and deaths columns) and old documents fruitful hunting-grounds. Pride of place in his collection goes to a rare and weird name from the African veldt, Theanderblast Mishgedeigle Sump, Esq. In the Los Angeles telephone directory he found Gisella Werberzerck Piffl, of Hollywood, and was so entranced with her name that he could not resist ringing her up to find out who she was. Then there was the Wisconsin wedding between May June, daughter of Mr. and Mrs. John July, to Frank, son of Mr. and Mrs. August Welke, and the strange case of Miswald Wrandvakist, who decided his ungainly name was unlucky and changed it to Lincoln Dislgrowles Wrandvaufgilmotkets! Mr. Smith finds the name of a Mr. Sczhealleangpschzealleangtstandxianzebwiestinze a welcome change from his own common surname. Even our own London telephone directory has helped to fill his collection no end. There is Mr. Kats Braces, a hairdresser, Mr. Abplanalp, Dr. Gossip, Mr. Needlestitcher, Captain Pine-Coffin, two Mr. Shovels and even a Mr. Thing. (280)

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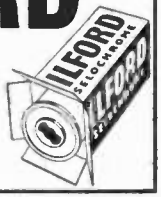

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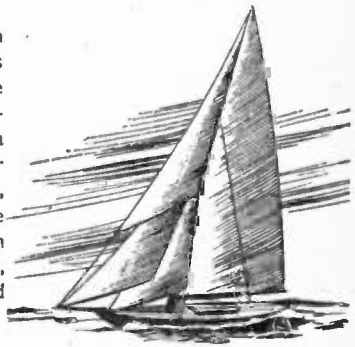

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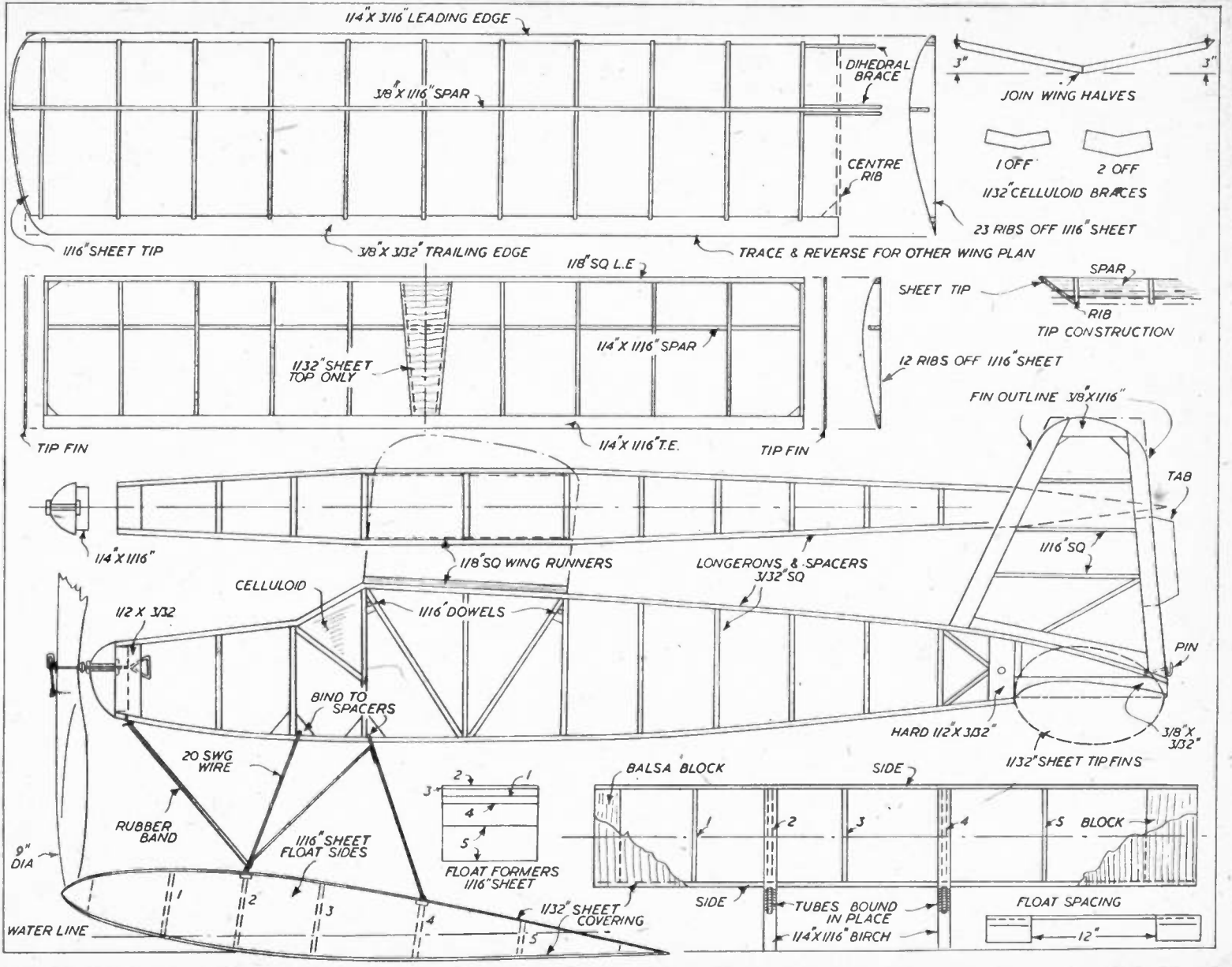
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RIB
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12 RIBS OFF 1/16" SHEET
FIN OUTLINE 3/8"X1/16"
TAB
1/4"X 1/16"
1/8" SQ WING RUNNERS
LONGERONS & SPACERS 3/32" SQ
1/16" SQ
CELLULOID
1/2 X 3/32
1/16" DOWELS
PIN
BIND TO SPACERS
HARD 1/2"X 3/32"
3/8"X 3/32"
1/32" SHEET TIP FINS
20 SWG WIRE
RUBBER BAND
9" DIA
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