HOBBIES WEEKLY

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IN THIS ISSUE

★ *FREE Design inside for*

BLACKBOARD AND EASEL

MAKE IT FROM A HOBBIES KIT

Stripwood, round rod and hinges needed to make the blackboard and easel are contained in kit No. 3142. Obtainable from branches etc., and Hobbies Ltd., Dereham, Norfolk, price 16/6 post free.

CHILDREN love playing at 'schools', whether it be indoors during the cold winter days, or in summer on the lawn. A board and easel is a big aid in education—parents should encourage their children to this end.

The board and easel described here is 36ins. high, which makes it quite suitable for children to use, and the area of the board will enable much to be drawn on it. There is a hinged back leg and the assembly will be found to be quite stable with normal use.

Make up the easel first with 1in. by ¾in. stripwood. Cut pieces 1, 2 and 3, rounding off the tops of pieces 1 as indicated on the design sheet. Note that piece 3 (the top rail) is approximately 9½ins. long, being halved to the uprights (1) as shown in detail (A). The lower rail (2) is notched in position between the two front legs and fastened from the outside with screws as shown in detail (B). In all cases, drill holes first before screwing to prevent any splitting of the wood. To obtain perfect joints when fixing pieces 3 and 2, lay out the assembly on a flat floor and mark off the positions of the rails. Note that the splay of the legs will necessitate a slight angling of the joints.

The chalk rack can be seen in diagram (C). The length of piece 6 is approximately 6ins., and it is shaped as shown in the section. Glue it to lower rail 2.

The makeup of the back leg (piece 4) consists of a length of 1in. by ¾in. stripwood 32¾ins. long halved to the 8in.

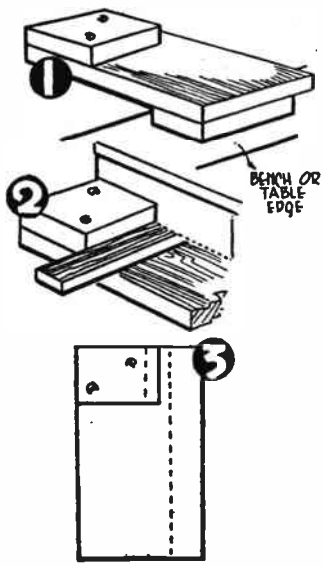
● **Continued on page 227**

Make these yourself

Sawing Board or Bench Hook . . .

EVERY craftsman uses a sawing board (or bench hook) for two main purposes. It holds the wood and it also prevents saw marks being made on the bench. The sawing board is equally useful to the home handyman, since it will prevent many a black look for marking the kitchen table when sawing or chiselling.

Beech is the favourite wood for this article owing to its hardness and close



grain. Oak will do equally well and is often easier to obtain. The dimensions need not be rigidly adhered to, but may be adjusted to individual requirements or the wood available.

Cutting list:—one at 10ins. by 5ins. by ⅞in.; two at 4ins. by 2ins. by ⅞in. (planed); four screws.

The drawing in Fig. 1 is self-explanatory. The two blocks are screwed down in the positions shown (for a left-handed person these blocks will be screwed to the right-handed edge of the board).

The two screw holes should not be in line down the centre of each block, but staggered as shown. This avoids the tendency to weaken the block and cause splitting. The screws should be well countersunk and screwed in tightly.

Once made, this board will be an effective aid for years. As well as being reversible, and thus capable of use on both sides, it should not be discarded when it has become very worn. The baseboard and blocks can be sawn off along the dotted lines and a virtually new board is the result—although it will be about ¼in. narrower (see Fig. 3).

Fig. 2 shows the sawing board in use. A right-handed person should hold the wood tightly up against the forward block with his left hand and saw in the usual way with his right hand.

By Keith John

For greater rigidity whilst sawing, the bottom block can be held in the vice if a proper bench is available. Most craftsmen, however, simply use the board against the side of the bench. This board is often used for vertical chiselling when it is desirable to prevent the bench or table being marked.

A Book to Read

Maintenance and Management of Small Locomotives

by H. E. White

THE building of a model locomotive is one thing; keeping it in proper working order, so that it may retain its powers of giving pleasure for a long time, is quite another. The expert advice on maintenance offered by Mr. White will, therefore, be most welcomed by those who have taken up this fascinating subject as a hobby.

Published by Percival Marshall & Co. Ltd., 19–20 Noel Street, London, W.1— Price 12/6.

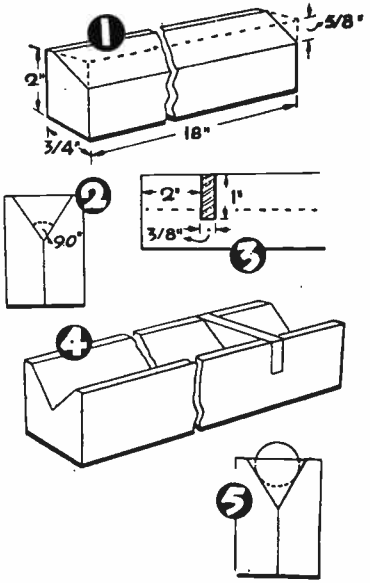
. . . and a V-block support for cylindrical work

EVERY well equipped workshop possesses at least two V-blocks. These home-made supports are invaluable when planing cylindrical or hexagonal work or performing other operations on curved surfaces which a vice will not hold comfortably without undue pressure and consequent marking. These V-blocks vary in size to take differing dimensions. No measurements need be rigidly adhered to; they are only suggested and may be altered to suit individual requirements. Soft, or hardwood may be used in the construction.

Carefully prepare two pieces of wood to 18ins. by 2ins. by ¾in. Using a mitre bevel or sliding bevel set to 45°, plane off one corner as shown in Fig. 1, on both pieces. Placing the two pieces side by side as in Fig. 2 (end view), screw them together, using three 1¼ins. by 6 screws if hardwood is used, and 1¼ins. by 8 screws if softwood is used. These screws should be well countersunk into the side of one of the pieces.

Remove Waste Carefully

From one end, measure in 2ins. and mark out a notch as in Fig. 3. Saw down the waste side of the lines and then remove the waste wood by careful chiselling from both sides. Prepare a small piece of wood to fit tightly into this notch, leaving about ⅛in. sticking out on all three sides. Glue this piece in position and when thoroughly dry,



clean off all round with a smoothing plane.

Fig. 4 shows the finished cradle. Other cradles can now be made of differing sizes to accommodate larger or smaller work. Fig. 5 gives an end view of a cylindrical piece of wood in position for planing.

Useful information

Extracting Broken Screws

THE handyman is often called on to remove screws which have broken off in the material, and this can be a very difficult job unless tackled in the proper manner. With care, however, it should be possible to extract broken screws from almost any kind of material. Screws that have rusted or corroded can be removed in the same way without damage.

When the head of a screw or half the head is broken off and there is still a small portion projecting above the surface a hacksaw or screw slotting file can be used to recut the slot. A well-fitting screwdriver is then used and will in most cases do the job very well, especially if a little thin lubricant is allowed to soak in for a while.

For screws that have broken in flush

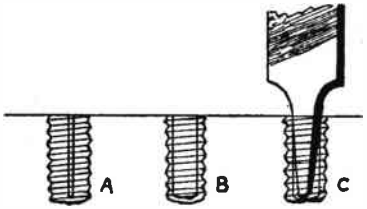


FIG. 1.

with or a little below the surface, the only satisfactory way is to drill them out, and there are several ways in which this can be done. To start with it is very important to centre the end of the screw exactly and a little time spent in doing this correctly will be amply repaid.

Smallest Drill

When drilling into the screw, however large it may be, always use the smallest drill you can, and if possible, go the whole length of the screw, keeping the drill perfectly upright during the process. This small hole will form the 'lead' for a larger drill which will follow it, and provided it does not split the sides of the screw, it can be quite large. The idea is to drill as large a hole as you can without actually coming to the outside of the screw.

The next step is to drive into the hole the tang end of a file and try to unscrew it with the aid of a pair of pliers or a screw wrench. The sharp corners of the tang will bite into the metal, and in most cases the remainder of the screw will come out quite easily. The occasional obstinate one may be helped considerably by letting a little lubricant such as paraffin soak in for a while. The complete process is shown in Fig. 1.

Where the screw has broken off well below the surface a different method is often necessary, especially if the material into which it has broken is somewhat soft, such as wood. It is very difficult to keep the pilot drill in the centre of the screw, and in most cases it will slip off the hard screw and enter the softer surrounding material. If, however, the drill can be guided on to the screw and kept central during the operation, the result will be very satisfactory, and the screw may be withdrawn quite easily. Reference to Fig. 2 will clearly show the method employed.

A metal collar is inserted in the hole just above the broken-off screw, and it should be a fairly tight fit. It may sometimes be necessary to slightly enlarge the hole to take the collar, but

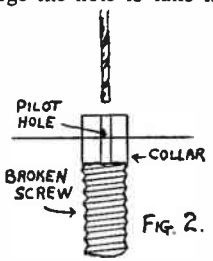


FIG. 2.

FIG. 3.

this should not be overdone.

The 'pilot' hole in the collar must be just large enough to take the small drill, and if this is held perfectly upright and the operation done carefully, it should be quite satisfactory. The collar is then removed and a larger hole drilled as before. By this method it is generally possible to drill the correct size hole without using the pilot hole.

All the illustrations show parallel metal screws being extracted, but ordinary tapered wood screws can be dealt with in the same manner. With these it is a good idea to first drill the pilot hole with a small drill, then, using the largest size, go down about a quarter of the way, change over to a slightly smaller one, and go a little further. Continue thus to the end, and then insert the file tang, which, incidentally, will obtain a much better grip in the tapered hole.

Some people have more success when using a stud extractor instead of the file tang. This is an American tool consisting of a coarse tapered left-hand thread as shown in Fig. 3. Made in several sizes, it will generally do the job quite effectively and the tighter it is screwed into the hole, the more force it will exert.

Another very simple method for metal screws, but, nevertheless, one which often works remarkably well, is

By A. F. Taylor

to centre the broken screw and drill a slight sink. Then take an ordinary flat or twist drill slightly smaller than the screw, and grind the cutting edge in the opposite direction, so that it is a left-hand drill. Put this into the drill stock and turn in an anti-clockwise direction, when the drill will bite into the screw, and in the majority of cases, will unscrew it quite easily.

A left-hand tap will sometimes do the job, but as these are made dead hard, there is a risk of breaking it in the hole unless special care is used, and the tap is not strained unduly.

The same procedure can be used for extracting left-hand screws provided you remember to reverse the operation and turn in the opposite direction.

● **Continued from page 225**

Blackboard and Easel

long rail (5) which is of the same dimensions. Two pieces of waste wood cut in the form of triangles can be glued and screwed in the angles to strengthen the joint, as shown in diagram (E).

Hinging, whereby the back leg is attached to piece 3 is shown in detail (E). The method used to prevent the back leg going back too far is also shown in detail (E). This consists of a waste piece of wood glued and screwed to the top of leg 4 and angled to allow the correct splay between the front and back legs. An alternative is the use of screweyes and a piece of cord.

The board is made from plywood and four pieces of stripwood which are halved together and glued and screwed to the plywood. Screwing is from the back and if the screws project through the front the ends can be filed off, but it is much better to ensure that the correct size of screw is used. The pegs are made from ¼in. round rod, and should be a fairly tight fit in the holes provided in pieces 1.

Give two coats of brush polish and then a coat of clear lacquer or varnish to the easel. The board, of course, should be finished with blackboard black, which can be obtained from branches or by post from Hobbies Ltd., Dereham, Norfolk, 1/- bottle, packing and carriage 6d. extra.

Two or three valve

SHORT-WAVE RECEIVER

for world-wide reception

★ ★ ★ ★

Described by

A. Fraser

ALTHOUGH the average listener does not give much time to short-wave reception, the truth remains that there is a great variety of entertainment waiting to be had on this band. There are very many stations and the range is world wide. It is always exciting to tune in stations thousands and thousands of miles away, in countries one has only read about and never seen.

There is no reason why the reader should not enjoy this experience. The little set described here is comparatively inexpensive. The outlay has been kept to the minimum by the use, as far as possible, of surplus or used parts that are cheap, but excellent in quality. For example, the coil sockets cost 2d. and the chokes 6d., while the coil formers are only 3d. each. Information as to where these and other parts can be obtained is given at the end of the article.

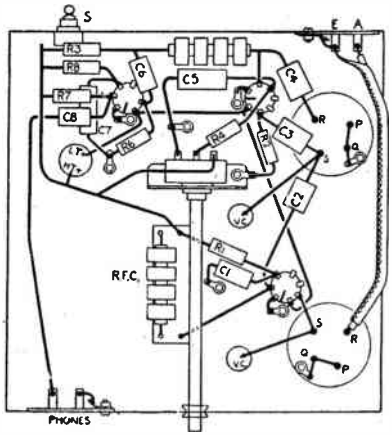


Fig.1—Below chassis

Although a three valve set is featured, the reader can effect further economy by eliminating one stage and building only a two valve. The results will still be very good, and the third valve can be added when finances permit.

The construction of the three valve version will be dealt with first.

Aluminium chassis

The chassis should be of aluminium (18 gauge to 22 gauge) and should be 8ins. by 8ins. by 2ins. deep. It could be smaller than this, but construction would be more difficult as far as wiring is concerned.

The cut-outs for the valve-holders should be ⅞in. diameter, while those for the coil sockets should be 1⅛ins. The positions of these can be seen from Fig. 2.

LIST OF COMPONENTS

Valves 1, 2, 3.	IT4.
3 B7G valve-holders.	
Tuning condenser.	160 pfd. (3 gang).
Bandspread condenser.	25 pfd. (3 gang).
All wave chokes (2).	(Annakin 1405).
C1, C6, C7.	·01 mfd. (150 volt working).
C5.	·5 or 1 mfd. (150 volt working).
C8.	·1 mfd. (150 volt working).
C9.	30 pfd. trimmer (for 2 valve).
C2, C3.	100 pfd. mica.
C4.	·0003 mfd. mica.
R1.	68K.
R2, R6.	2·2 meg.
R3.	150K.
R4.	47K.
R5.	Variable resistance ·5 meg.
R7.	220K.
R8.	470K.

Bakelite coil formers (numbers as desired)—Annakin's item 1360.
British 4- or 5-pin valve-holder (2)—Annakin's item 1084.
Spindle coupler, drive drums, spindle drives.
H.T. battery, 90 volts. L.T. 1·5 volt cell.
High resistance headphones.

Cut-outs will also be needed for through chassis connections from variable condenser and battery leads. These can be about ⅜in.

These cut-outs can be made with proper punches, or by using a fretsaw.

You will also need cut-outs for the switch, aerial/earth sockets, phone sockets, and for the shaft of the variable resistance.

Valve-holders

The valve-holders should be bolted in (using 6 B.A. bolts). Make sure they are pointing in the correct orientation as indicated by the key or dot on the tag base. Reference to Fig. 1 will ensure this.

The old four-pin valve-holders, used as sockets for the coil formers, should also be placed, as shown in Fig. 1.

Next, bolt on the radio frequency chokes (R.F.C.) in the positions shown. The second choke can be mounted, if preferred, on the side of the chassis.

The variable condenser and the variable resistance are not mounted on the chassis until later. This is for convenience in wiring.

Wiring can be commenced, 22 to 24 gauge tinned copper connecting wire is used. This can be insulated, or plain uncovered wire can be used in conjunction with sleeving to cover it. See that all tags, etc., are clean before soldering.

There should be no difficulty with the connections, as Fig. 1 makes the task quite clear. Make the connections as short and direct as possible, yet at the same time keeping the wires separate from each other.

Begin the wiring first with the heater chain to the valves. (These are the tags on either side of the key or dot on the valve-holder.) Then start from the first coil socket and valve-holder and work forward.

The lead from aerial socket to coil socket number one is screened, and the metal covering at one end is loosed off and soldered to earth, as shown in Fig. 1. All solder tags used as earth connections to the chassis should be firmly bolted down to make a good contact.

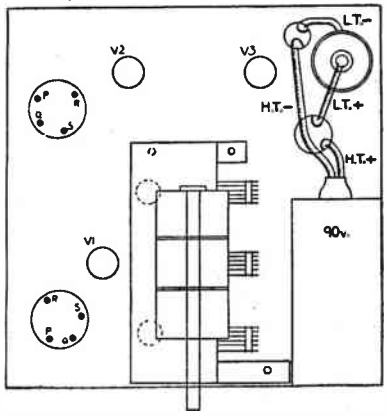


Fig. 2—Above chassis

The high tension rail connecting up H.T.+ and R3, R8, R7 and R.F.C. and the variable resistance, could well be established with the use of two three-way solder tag strips. Otherwise, a stout piece of tinned copper wire (or two lengths twisted together) will make a rigid rail to which the connections can be joined very easily. This, of course, should be held clear of the chassis and other points of contact.

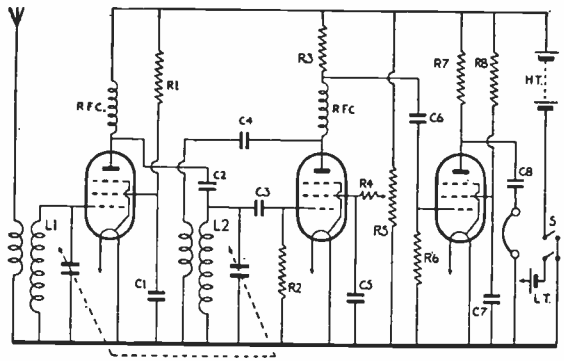


Fig. 3—Theoretical drawing

The variable resistance can eventually be mounted. The leads to the outer tags should be soldered on first, the bracket fixed on, and then the whole bolted to the chassis. The spindle extension should be passed through the grommet in the chassis front and coupled to the shaft of the resistance. Both the spindle extension and bracket can be of insulating material if available.

The leads from and to the variable resistance can then be soldered.

Lastly, it is helpful if the L.T.+ and H.T.+ leads, which pass through the chassis cut-out, are of rubber-covered flex type of wire.

We may now turn to the top side of the chassis. Before mounting the variable condenser, solder leads to the end sections of the condenser. (The middle section is not used in this set.) These leads should be of rubber-covered flex, and when the condenser is mounted (with 6 B.A. bolts), they pass through the cut-outs in the chassis. Turn to the underside of the chassis and join the leads to the nearest S coil socket (see Fig. 1).

The design of this short-wave set incorporates a bandspread condenser. This greatly facilitates the tuning process because the ordinary method of tuning is not fine enough to separate the numerous closely-spaced short-wave stations.

Coil details and finishing off the receiver will be given next week

The bandspread condenser is much smaller than the main tuner, and so must be mounted to the latter by means of brackets. These are easily made from aluminium, and holes are already drilled in the condensers which make the task quite simple. The nuts and bolts should be tightened firmly for good contact.

Lastly, connect each end section (the fixed vanes tag) of the bandspread condenser to the counterpart section of the main tuner. (The middle section is again ignored.)

The battery connections should be made clear from the drawings (Figs. 2 and 4). Make certain that the H.T.+ lead goes to the correct pin in the battery plug—the battery will show which is the correct plus socket. Remember that the H.T.+ lead comes from the H.T.+ rail underneath the chassis, while the H.T.+ lead goes to the switch.

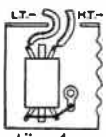


Fig. 4—Switch details

Likewise, the L.T.+ comes from under the chassis from valve number three, and connects to the top of the low tension cell. The base of the cell is joined to the switch. (Note: low tension cell with plug-in sockets can be obtained if desired.)

The circuit, and hence the wiring, will be better understood if the practical wiring diagram is studied in conjunction with the theoretical or schematic drawing in Fig. 3.

As far as the valve-holder connections are concerned, the tags should be read clockwise, starting from the key, as follows:—Tag 1—heater negative, tag 2—anode, tag 3—screen, tag 6—grid, tag 7—heater positive.

Replies to Readers
Is this YOUR Problem?

Log Bulb Bowls

I INTEND making, from the branches of an old apple tree, some small bulb holders, hollowing out of suitable pieces about 1ft. long. Please inform me the best method of cleaning the bark, and whether this should then be sized, before putting on a clear varnish, to stop the latter soaking in. Is it also necessary to treat inside the log, after hollowing out, in any way? (A.B.—Sydenham.)

YOU should clean the bark with warm soapy water, rubbing well in the crevices with a small stiff brush. An old toothbrush would be ideal. Dry thoroughly in a warm room. If to be varnished, apply two or three coats of size beforehand. A quicker finish, one that would look more attractive, is quick drying, coloured lacquer, or gold or silver lacquer. The tops of the holders could be varnished or lacquered as preferred. The insides could well be left plain or just be given a coat of spirit varnish.

* * *

Welding Plastics

I WOULD be glad of some information on the welding of plastics. (S.T.—Isleworth.)

THERE are a large number of plastics and the method of welding varies. Some may be softened with a solvent and pressed together. It is more likely that yours may be welded by heat. The degree of heat needed is not great, but it has to be concentrated at the spot being welded, without overflowing onto surrounding parts. A convenient tool to do this is to use an electric soldering iron, which is drawn along the joint with a firm pressure. It might also be possible with the edge of an electric flat iron.

* * *

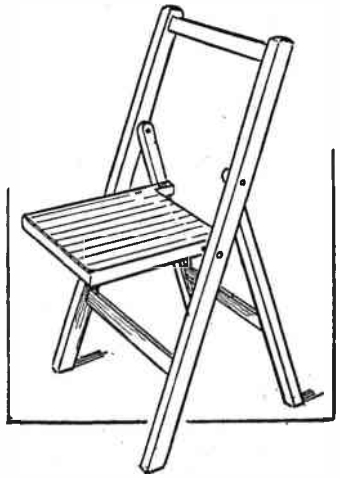
Preserving Horns

I WOULD like to know how to preserve and mount horns. (N.H.—Waiford.)

WE presume you wish to mount the horns on a shield or similar base shaped in the customary way. An appropriate treatment would be first to clean the horns thoroughly by washing in warm water, scrubbing, and scraping out every trace of fleshy matter in the interior of the horn or around the base. Allow to dry thoroughly, then polish by rubbing with Florence oil (if obtainable) or alternatively with salad oil or olive oil; no other preservative is needed. The horns can then be mounted by fixing wooden pegs on to the base in a suitable angle, then affix the horns by bedding them on to the wood with a stiff paste of Plaster of Paris. The ends of the horns should, of course, be shaped (by scraping or filing) to fit neatly on to the baseboard.

For the handyman—make . . .

A FOLDING CHAIR



By W. J. Ellson

THIS particular design of chair is remarkably stable, and folds flat when not in use. It can be opened out or closed up by a single movement, and is efficient in design and action. For its construction oak or beech are suggested, but any close-grained hardwood would be suitable. The construction is quite within the scope of the amateur, but to ensure correct folding, the sizes of timber given in the cutting list must be adhered to strictly.

CUTTING LIST

Main frame sides. (2)	2ft. 10½ins.	by	1⅝ins. by ⅞in.
Main top rail ..	1ft. 5½ins.	by	1½ins. by ⅞in.
Main bottom rail ..	1ft. 5½ins.	by	1½ins. by ⅞in.
Leg frame sides. (2)	2ft. ⅛in.	by	⅞in. by ⅞in.
Leg rail	1ft. 3½ins.	by	1½ins. by ⅞in.
Seat sides. (2) ..	1ft. 3⅝ins.	by	1⅝ins. by ⅞in.
Seat rails. (2) ..	1ft. 2⅛ins.	by	1⅝ins. by ⅞in.
Seat slats. (9) ..	1ft. ⅞in.	by	1½ins. by ⅜in.

Metal rod ⅜in. by 1ft. 5ins.
2 deck chair rivets, with washers.

Three Parts

The chair is composed of three parts, a main frame, a rear leg frame and a seat. The front and side view of the main frame are given in Fig. 1. The top and bottom rails are tenoned into the side pieces as shown. The lower rail should be ⅛in. in from the front edge to leave room for the rear legs to close up to it. The upper rail is tenoned in mid-way. These tenons need not extend right through the side; ¼in. is sufficient fixed into a mortise of similar depth carved

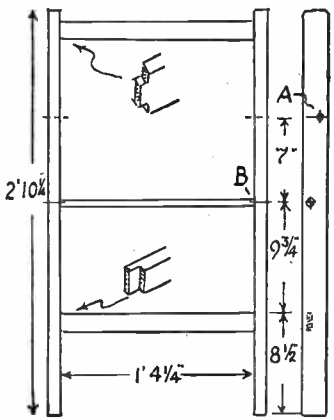


Fig. 1

with a chisel. At (A) ¼in. holes are bored through the sides for the rivets from which the rear legs are suspended. The centres of these holes are $\frac{5}{16}$in. from the back edges of the sides.

At (B) ⅜in. holes are bored for the metal rod on which the seat tilts when being folded up. These holes are bored on a centre ½in. from the front. The side view of the frame indicates the relative positions of all the holes. Round off the top corners of the sides.

At Fig. 2, front and side views of the rear leg frame are shown. The cross rail here, tenoned like the rest, is positioned at the middle. Rivet holes are bored through centrally at 1in. from the tops of the legs. The actual tops are neatly rounded off as before. On the inside edges of the legs chisel out the grooves shown, ¼in. wide and ½in. deep. When gluing these frames, take great care to keep the legs parallel.

The seat and parts relating to it are grouped together in Fig. 3. A plan and side view of the seat are shown at (C). A recess is cut in the ends of the cross rails to within ⅜in. of the bottom to make

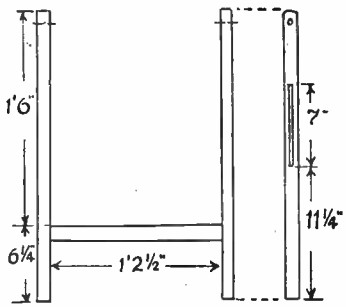


Fig. 2

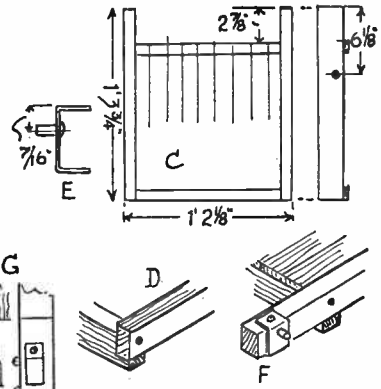


Fig. 3

them fit across ⅜in. below the sides of the seat. This is to allow the seat slats which are ⅜in. thick to lie level with the sides. The detail (D) of the front rail and side will make this clear. Glue and screw the rails across, making it really firm and square, as some strain, naturally, comes on this part. A ⅜in. hole is bored through the sides for the metal rod on which the seat tilts. The centre of this hole is ½in. from the bottom edge of the sides.

Screw Slats

To finish the seat the slats should be screwed across.

A pair of metal fittings will be needed, shown at (E). These are screwed to the ends of the completed seat as at (F), the pins engaging in the grooves cut in the rear legs. Their purpose is to limit the movement of the seat both in the closed and open position. The fittings are cut from stout metal ⅛in. wide, and long enough to bend over both ends and embrace the seat ends. Pins of ¼in. iron are riveted in at the distance shown in the diagram.

As it is rather doubtful if these fittings can be bought, a good substitute, if the reader does not feel quite confident about making them, is drawn at (G). Here the pins are ordinary ¼in. chair rivets, holes for which are bored through the seat ends ⅜in. from the top, and 1⅛ins. from the ends. A bent piece of metal is screwed as in the diagram, to

●**Continued on page 231**

E. M. Blackman describes

Framing in Passe-Partout

FOR framing or binding photographs, certificates, designs, and notices, it is best to use one colour only.

A backing board with a good clean lining can be used for the dual purpose of mounting the subject and acting as a backing board. Otherwise, it will be necessary to mount the subject before framing.

A pleasing and artistic effect can be achieved if the subject is placed on a mounting board in white or grey, with the margin kept narrowest at the sides of the subject, a little wider at the top, and still wider at the bottom of the photograph or certificate, etc.

A single, or sometimes a double line drawn round the four sides of the subject, in pen, crayon or pencil, on the mount itself, will provide an attractive finish to the mounted subject.

Having fixed the subject on the mounting sheet, take a piece of glass, cut to size, or glass substitute, and a piece of cardboard for the backing board. It is most important to ensure that each of these is of the same size as the mounted (or unmounted) subject.

If using glass be sure to clean at least one side of the glass for once it has been firmly and permanently fixed, you will be unable to get inside the inner glass surface. The outside can, of course, be cleaned with a damp cloth after the framing has been completed. Any residue of adhesive or dirty marks, can soon be removed with a little methylated spirit. In fact, after such an application, the glass will sparkle.

To prevent any movement while framing, or when hanging, it is a good plan to use small spots of gum or paste to stick the subject and backing board.

Where it is intended to hang by the use of metal hangers (which are the most serviceable), these should be inserted at this stage and pressed firmly through the cardboard in the most suitable position for suspending the picture or other subject. Whether to hang it horizontally or vertically will depend on the shape of the subject.

The metal ends of the hangers will bend over quite easily, but it is advisable to stick a small piece of adhesive paper or passe-partout over the folded-out prongs of the hangers to prevent them from working loose and damaging the framed subject.

Where an adhesive type of hanger is to be used, these can be fixed when the framing is completed.

The choice of colour binding will largely be governed by the colour of the subject. A black and white subject looks best framed in black, or in black with a white overlay. Binding in red, or shades of brown make photographs and sepia subjects appear most attractive.

In general, the selection of binding can be guided by the existing colours in the subject. The predominating colour or colours should harmonize with the binding if the most artistic effect is to be obtained.

Four strips of binding will be necessary—two for the long edges and two for the short sides. For the purpose of trimming, the strip should be about ½in. longer than the sides of the photograph. The materials will be less likely to slip one from the other if the long sides are dealt with first.

Place the glass, subject on mount, and backing board, accurately and firmly together, keeping them in position with two spring-type clothes-pegs. Next, take the appropriate strip of binding, and prior to damping it, firmly press it along the edge of the subject into the desired position, so that the strip is creased accurately. This also assists in securing the correct position of the wet binding on the glass. Some passe-partout bindings can be obtained already scored with a folding line on the adhesive side.

If binding cannot be obtained already scorelined for folding, turn the binding over on its face, lightly score the adhesive side along the edge of a ruler with the blunt edge of a penknife and then the strip can be folded easily along the crease.

Using a sponge, damper brush, or a pad of cotton wool, moisten the cemented side thoroughly. In fact, if it is moistened on both sides the strip will be more pliable. If insufficient moisture is applied, the binding may later peel off. It is a good plan to moisten two strips at once and leave them to soak up the water thoroughly.

Now take the glass, subject, and backing board, all complete, and firmly clipped together, and place glass side downwards, directly on to the dampened binding strip, using the crease as a guide for the correct position. Then firmly turn over the remainder of the binding on to the backing board; draw it squarely and tightly over the edge of the subject. Care must be taken to ensure that the position of the binding is not disturbed. This should be firmly, but not fully, stuck down to the front of the glass.

If the binding is pressed firmly to the glass all the way round the edges of the frame, a better finish will be achieved.

Follow the same procedure in applying the second long edge of binding. Now trim the two spare ends and apply the two shorter lengths of binding to complete the framing.

The special glass-sticking cement used on the binding dries out slowly, but given adequate time it adheres permanently.

● **Continued from page 230**

A Folding Chair

prevent the rivets from riding out. The rivets extend outside the sides about ¼in., any surplus being cut off. To prevent the wood splitting under strain, a long screw is driven through on each side of the rivet as near as possible. The detail sketch will make the whole fitting clear.

Now rivet the rear leg frame to the inside of the main frame, with a thin washer between them to lessen friction. Place the seat between the sides of the main frame and pass the metal rod through the holes. The rod is a little shorter than the full width of the main frame, so plug the holes left each side with wood to keep the rod in its place. Fit the pins of the fittings in their respective grooves, work the ends of the seat into them, and when in position, fix with small screws at top and bottom.

If rivets are employed in place of the fittings, push them through the holes in seat into the grooves, and then screw the bent metal stops over their heads. Before permanently fixing these fittings, take care by opening out the seat that the seat itself is level. With the chair open, pencil across the bottom of the legs, and then cut the corners of them at a suitable angle to allow them to stand flat.

A varnish finish would be best for these chairs, and it would be easiest to apply it to the three parts before fitting together. In the cutting list below, the exact lengths and sizes of timbers used are given, and must be adhered to, to ensure that the chair can be folded easily. It may be added, in case difficulty arises, that the thin washers between main frame and rear legs are not those included with the rivets, as these are used to provide a firm base for the rivet. If this is so tight a fit that the insertion of thin washers is impossible, a shaving taken off the outside edges of the rear legs will effect a cure.

Home Chemistry

Making Useful Fitments

RESOURCEFULNESS in the home laboratory can save a good deal of money and provide extra conveniences. The items dealt with here can all quickly be made from odds and ends to be found around most homes.

The convenience of the automatic filter shown sectionally in Fig. 1 cannot be over-emphasized when you are dealing with a bulky precipitate. It consists simply of a fairly wide-mouthed bottle fitted with a bored cork and two glass tubes. The internal bore of the narrow tube should be 3 to 4 millimetres and that of the wide tube not less than 8 millimetres. Choose a sound cork and bore it slowly and accurately with a sharp borer, so that the tubes fit snugly. Hasty boring may result in a ragged inner wall and provide leak channels for air when the filter is in use.

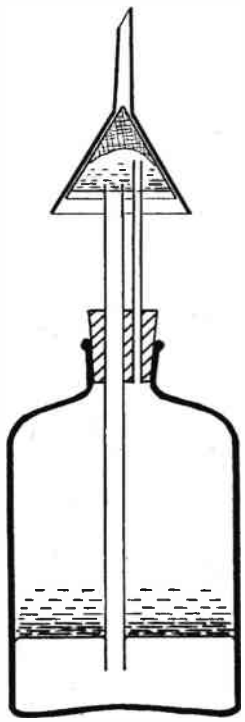


Fig. 1

As Fig. 1 shows, the wide tube dips just below the surface of the liquid in the funnel. When the liquid falls below the end of the wide tube, more air enters the bottle and allows more liquid to run into the funnel and restore the level. This continues until the entire contents of the bottle have run through. Sometimes slight pressure differences in the bottle allow the funnel liquid level to fall considerably below the end of the wide tube before a further charge is released, but this has no effect on the efficiency of the filter.

The apparatus can be used both for filtration and washing of a bulky precipitate, and cuts out the frequent attention needed. It can go on working for you through the night and have everything ready by morning for the next stage of your experiment.

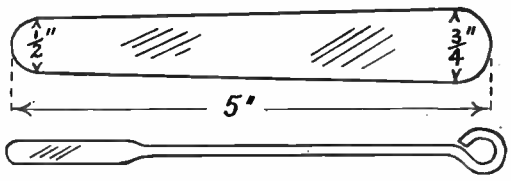


Fig. 2

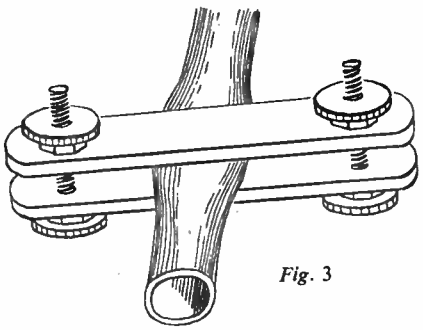


Fig. 3

To set the apparatus working, pour into the bottle the liquid containing the precipitate, cork tightly, place your finger over the ends of the tubes, invert the whole and clamp it into position over the funnel. When all the precipitate and its accompanying liquid have run out, refill the bottle with water. It will then wash the precipitate for you.

Spatulas

Spatulas are easy to make from odd sheet metal. The upper one shown in Fig. 2 can be cut from aluminium, copper or brass. The dimensions given are for an average spatula and can, of course, be varied for any special requirements. The lower spatula is made from stout copper or brass wire, its end being beaten flat. This last is useful for taking up very small quantities of chemicals. Wash and buff up spatulas after use, and do not use an aluminium one for alkaline substances, for these corrode it.

For the controlled flow of gases or liquids in conjunction with a rubber tube, the screw pinch-cock shown in Fig. 3 is invaluable. The two flat strips should each be about 2½ins. by ¾in. Stout rigid sheet metal is best used for these, although hardwood will serve. Flat-headed bolts are used for pressure adjustment. Solder a metal disc to each bolt head and mill the edge with a file to give a good grip. A similar disc is fitted to each nut and drilled to accommodate the bolt shaft. Two holes drilled in each flat strip complete the pinch-cock.

Flame spreader

A means of spreading a bunsen burner flame so as to give a larger heating area is often desired in the laboratory. For this a drop-on ring burner is commonly used. A substitute can readily be made from an old hollow brass door handle. This should either fit the top of the bunsen or be slightly smaller. In the latter case it may be enlarged to fit with a round file. To convert the handle into a ring burner, file nicks all round as shown with a

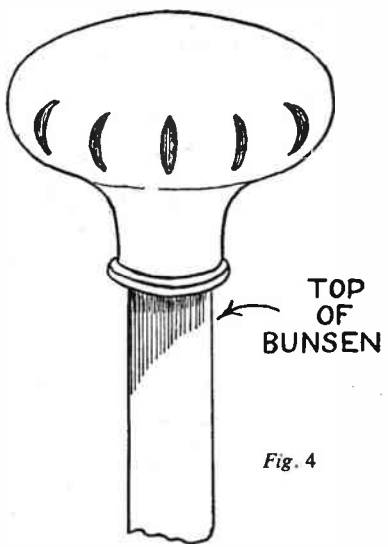


Fig. 4

● **Continued on page 236**

Cheap, but attractive!

A SMALL LEATHER HANDBAG

A REAL leather handbag is regarded as a luxury usually but the small one described here requires very little leather, and is, therefore, cheap to make as well as very attractive.

The various parts as shown in Fig. 1 should be drawn on stiff brown paper and cut out. This enables the pattern to be moved around to make the best use of the leather and skiver (the thin split skins used for lining).

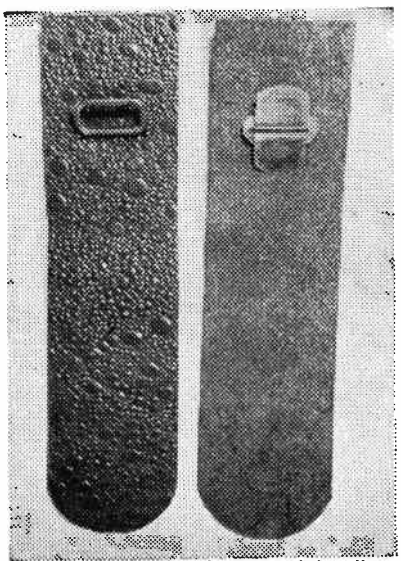
The leather is laid on a flat surface with the embossed side downwards and the pattern on the inner surface. A lead pencil is used to draw the pattern on the leather, a steel ruler being used as a guide. Ensure that the pattern does not move. Cut out the various pieces.

MATERIALS REQUIRED

The materials required and their approximate cost (depending on quality) are:—

2sq. ft. of leather	6/8
2sq. ft. of skiver	4/-
16ft. of thonging	4/-
2 handle attachments	8d.
1 press stud	2d.
Rubber solution	9d.

To make the pocket, cut one piece of leather and one of skiver to the shape given in the design. The slight angle on the sides is to give easier access to the pocket. Glue the two pieces together with rubber solution and paint the edges with a leather dye of the appropriate colour. Mark the sides and base, and punch the holes for the stitching.



The gusset, before lining, with handle attachment

Cut a piece of skiver the size of the handbag. On the part that will form the lining for the front of the handbag, draw lines down each side 1¼ins. from the edge for a distance of 6½ins. Draw also a line across 5ins. from the top. Odd strips of skiver 1in. wide are glued on to these lines for reinforcement. Redraw the lines on top of the reinforcement. Lay the base of the pocket on the horizontal lines, so that the latter shows through

By D. Low

the holes. Use a lead pencil to mark through these holes. Each side of the pocket in turn is laid on the vertical lines and these are marked. The last hole in the base of the lining is also used for the first hole in the side. Punch out these marks and an extra hole at the top of each side to keep the top of the pocket close to the lining.

Thonging is commenced in the centre of the base, working in one hole and out of the next, towards each edge. As the thonging comes out of the last hole it goes through the first hole in the side and continues until the third last hole in the lining is reached. From there it goes to the last hole in the lining and back through the last hole in the pocket. This locks the ends in place. 20ins. of thonging are required to sew on the pocket.

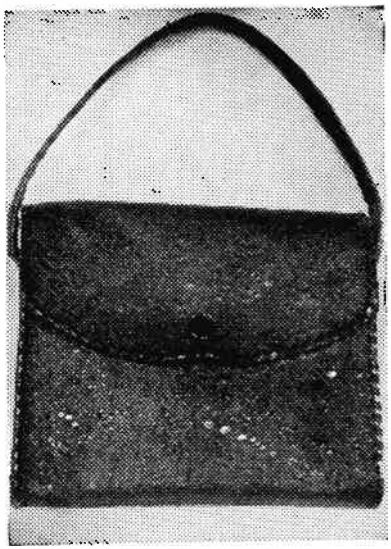
The lining, with the pocket in place, is now glued to the leather, and the edges dyed. Mark the handbag for punching by starting at one square corner and working towards the other. Then mark from each square corner to the centre of the curved part. If the marks do not meet exactly, any necessary adjustments can be made at this stage. Punch out the holes.

The handles

The attachments for the handles are inserted by making a cut in the leather gusset 1¼ins. from the end. Insert the split part and push on the washer and clasp. The leather gussets are glued to the skiver and the edges dyed.

Mark each side of the curved base of the gussets, and check that the number of marks tally with the marks on the front and back of the handbag. Punch out the holes.

The broad strip of the handle is laid



face down and the narrow strip glued down the centre. The 2½in. strip at each end is slipped through the metal attachments and then glued down. The overlapping edges of the broad strip are folded over and glued down to the narrow strip. No thonging is required on the handle.

Commence thonging the handbag by laying a length of flat thonging between the holes and the edge, and tying it in

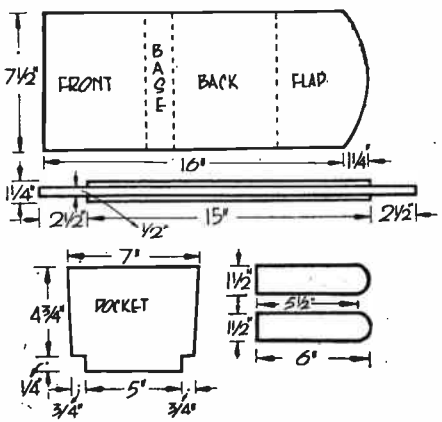


Fig. 1—All the parts

place along the square end, 50ins. of thonging will be required to go round the edge of the handbag. The two ends of another piece of thonging, 5ft. long, are pushed through the two centre holes

●**Continued on page 234**

INTERESTING MISTAKES

by R. Cantwell

Here are some interesting mistakes made by the printers during this period: 'Qne' Penny for 'One' Penny. 'Pencf' for 'Pence'.

WHEN I first began to specialise in English stamps, I forgot about Penny Blacks. They were beyond my means. Glancing through Gibbons' catalogue, Queen Victoria's Jubilee issue (1887) caught my eye. The set, ½d. to 1/-, exclusive of minor varieties, would cost 10/-. I bought it. It was a good buy.

Pears' Soap was printed on the back of the ½d. stamp and its catalogue value exceeded the price paid for the whole set. Further catalogue study showed that various colours existed. The 3d. purple on yellow was listed at 6d., the deep purple on yellow at 9d., and the deep purple on orange at 50/-.

The 2d. green and carmine was worth 1/3, the green and vermilion 20/-. The ½d. and 2½d. values existed printed on the gummed side; these were unpriced and, therefore, rare. Although I forgot about ever possessing them—the printers could make the same or similar errors—it appeared to be wise to scrutinise all future issues.

Ready Reference

This I did, checking all King George V stamps, then current, that came to hand, afterwards placing them in envelopes, marked for ready reference: 'G.V. ½d. green', and so on. Doubtful members were mounted on loose album leaves with explanatory notes underneath.

When sorting English stamps, look out for the following varieties—just for fun. You may be lucky and in any case it will be good practice: Victorian issues, 1858–64: Penny Red, plate number 77, catalogued at £450 unused, £300 used, and number 225 £15 unused, £4 used. A variety, imperf, issued at Cardiff, 18th January, 1870, is worth £60 used.

On both sides

Although fairly common the 1881 penny lilac with 14 instead of 16 dots in corner is likely to increase in price. It also exists printed both sides—£20 unused; with frame broken at bottom—£15 used or unused; and imperf, three sides (pair)—£40. 1902–11. Edwardian issues.

De La Rue printings: Penny bright scarlet, ordinary paper, imperf, £50 unused; 10d. dull purple and carmine, ordinary paper, no cross on crown—£17 unused, ditto on chalk-surfaced paper £10 unused.

Harrison printings: ½d. pale green without watermark, unpriced, very rare; 3d. grey on lemon—£50 unused.

Somerset House printings: 6d. bright magenta, chalk paper—£50 unused; 6d., various shades—no cross on crown—£9 unused, £5 used.

King George V 1910–36: First issue 1911. Watermark—Imperial Crown. ½d. bluish green, perf 14 instead of 15 × 14—£25 used; ditto: 1d. deep rose-red—unpriced. 1d. carmine, no cross on crown—£20 unused; 1d. aniline scarlet—£8 unused, £5 used.

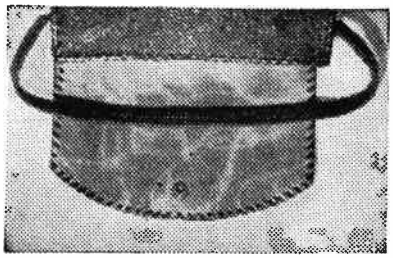
'The Swiftsure' Album, price 15/- from branches or Hobbies Ltd, Dereham, Norfolk

Watch out for watermark sideways or inverted instead of upright; no watermark; stamps printed on the gummed side; the right-hand panel emblems of the Silver Jubilee issue differ in character from each other. There is also a 2½d. Prussian Blue worth £100 unused, unpriced used. So keep sorting; you may find one, and maybe a Penny Black!

● **Continued from page 233**

Small Leather Handbag

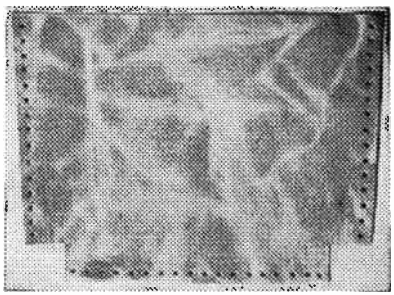
in the square end from the inside, and back through the same two holes. The ends are pushed through the next holes from the inside, and this continued until the corner is reached. The gussets and edging thonging are tied in place.



Handle on underside and finishing of thonging

Press stud closure

The thonging goes through the corner holes three times and twice through the first in the gusset. This gives a neat finish to the corners. Carry on thonging until the last holes in the gussets are reached. The thonging goes through these holes twice to make a firm join where the gusset finishes. Continue thonging until the corners of the curved end are reached. The thonging goes through the last holes twice and continues until the centre hole is reached.



Pocket, with holes punched in side and base

Both the ends go through this hole and are brought over and tucked under a few loops.

A press-stud is all that is required to finish the handbag.

TRY PAINTING WALLS

Says E. M. Blackman

IT is not always appreciated that paints and enamels can provide a highly serviceable covering for walls. Paint is particularly excellent for the walls of small rooms, for if a light shade is used, an air of spaciousness will be imparted by the absence of pattern.

Where large walls are involved a very pleasing effect will result if they are divided into panels, the surrounds painted and the interiors papered, or vice versa. To paint the whole wall is unsuitable in this instance, as it would present an uninteresting and drab appearance.

Strip paper

Having decided to use paint on walls, they should be stripped of any existing paper, and even the slightest break in the plaster made good.

The surface should be thoroughly washed before painting with hot soapy water, as it will then take the paint better, dry quicker, and need less material than a dirty surface.

To speed drying out after the washing, the surface can be wiped over, but in any case the actual painting should be deferred until the following day, or blistering will occur.

To prevent the walls absorbing all the paint, they should be given an application of two coats of size. Powdered size mixed into a liquid according to the instructions supplied will be found quite satisfactory. Leave for about three or four hours to dry before painting.

Panelling

Where panelling is to be introduced, the panels should be enclosed by a neat narrow moulding which can be fixed with ordinary 1in. cut nails. It makes a more artistic finish if the moulding is painted with a tint which harmonizes with the predominant tone of the paper. Otherwise, paint of the same colour as the surrounds may be selected. Glossy finish paint is preferable here, but the surrounds are best left flat.

At least two coats of paint are necessary for both the surrounds and moulding, but in the case of the moulding, they should consist of one of flat and one of glossy paint or enamel.

To avoid smearing the paint, apply the flat paint first; then, when it is dry, hang the paper to fill the panels, and apply the last coat of paint to finish.

To obtain the best effect, an enamel should be selected for the last coat. Paint imparts a certain shine on account of the inclusion of oil, but enamel derives its gloss through the incorporation of varnish. Although enamel is more expensive than paint, it, undoubtedly, gives the best result. Dirt marks which quickly become impressed on paint are resisted by enamel, a brighter glaze is given to the surface, and the surface, itself, will be much smoother. In addition, it lasts much longer than paint. In view of these advantages it may, therefore, prove cheaper in the long run.

No linseed oil

Ordinary flat material is adequate for the preliminary coats, but the coat prior to the first application of enamel should contain no linseed oil; otherwise, the paint will harden slowly, and those layers below surface will dry out even more slowly than the uppermost skin. For the under-surfaces, therefore, it is best to choose a paint containing no oil, but which has been thinned, by the addition of turpentine, to a workable consistency.

Before attempting to buy the selected materials, it must be ascertained what quantities are likely to be necessary. This is not always easy to decide, since surfaces differ considerably in different rooms. However, since any surplus can be stored with the lid on tightly, and used later on for a smaller task, adopt the safest course and over-buy rather than under-buy. A fairly good estimate is a third of a pound of paint for the door of a room, roughly the same for a window, a little more for a skirting board, and the remaining items proportionately. A little more will be required in the case of enamels, as they work less freely than paint.

Do not forget, however, that the estimate obtained from this reckoning must be multiplied by the number of coats it is intended to apply.

Leave for a week

During the colder weather, enamels are inclined to get sluggish and lose a certain amount of flowing property. To remedy this, place the can in a warm room for a complete day before using, and before removing the lid, put near a fire for an hour or two.

The newly-decorated room should be left to dry completely for a whole week if possible, so that the finish can harden thoroughly, and thus be better able to stand up to ordinary wear and tear.

● **Continued from page 232**

Home Chemistry Fitments

triangular file. These should, of course, cut right through the metal to the interior.

Measuring cylinders are high priced nowadays. With the help of a 10 c.c. graduated pipette they can be made from a phial and a couple of bottles. Most useful capacities are 10 c.c. (for measuring small quantities of corrosives, instead of the dangerous practice of using a pipette for these), 100 c.c. and 250 c.c.

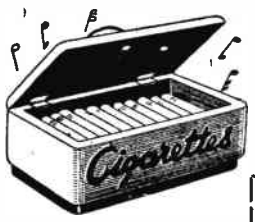
For the 10 c.c. take a phial made of thin glass and capable of holding a total of about 15 c.c. Gum a narrow strip of paper along it and clamp it in an upright position. Add 10 c.c. of water, 1 c.c. at a time, and make a mark on the paper strip at each c.c. After emptying it and laying it flat, scratch marks in the glass corresponding with the marks on the paper, using a glazier's diamond or the point of a triangular file. Also scratch in the c.c. number at each graduation.

The 100 c.c. and 250 c.c. measures can be made from suitable capacity cylindrical bottles, being graduated at each 10 c.c. after running in the full charge of your pipette. These two measures need no spout, but the 10 c.c. will if it is to allow liquids to run out readily.

To make a spout, first heat the open end of the measure in a bunsen flame, but not enough to produce a yellow tinged flame. Then direct a small flame at one point with your mouth blowpipe until the flame is tinged yellow and indicating that the glass is soft at that point. At once remove the flame, insert a triangular file vertically and bring down one edge of it through an angle of 45 degrees on to the softened part. A V-shaped spout readily forms, and the glass may then be laid aside to cool.

While you are hunting for bottles for your measures, do not forget to select a few jam jars with even mouth edges. These make excellent gas jars. Grind the edges flat with water and emery powder on a flagstone, so as to provide a seal when used in conjunction with a greased glass plate.

At a laboratory furnisher's the cost of spatulas, pinch-cock, ring burner, measures and three gas jars would be about 30/-. For a couple of hours' work on scrap materials, this is not a bad saving! (L.A.F.)



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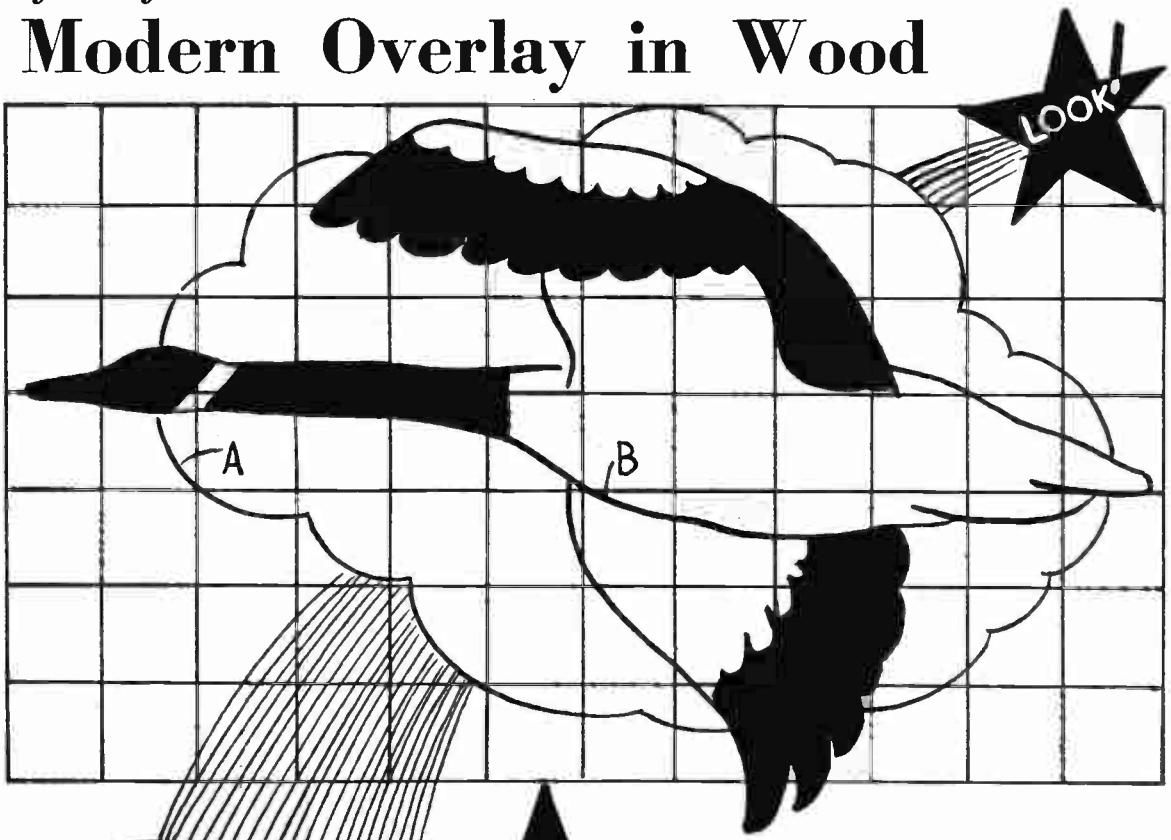
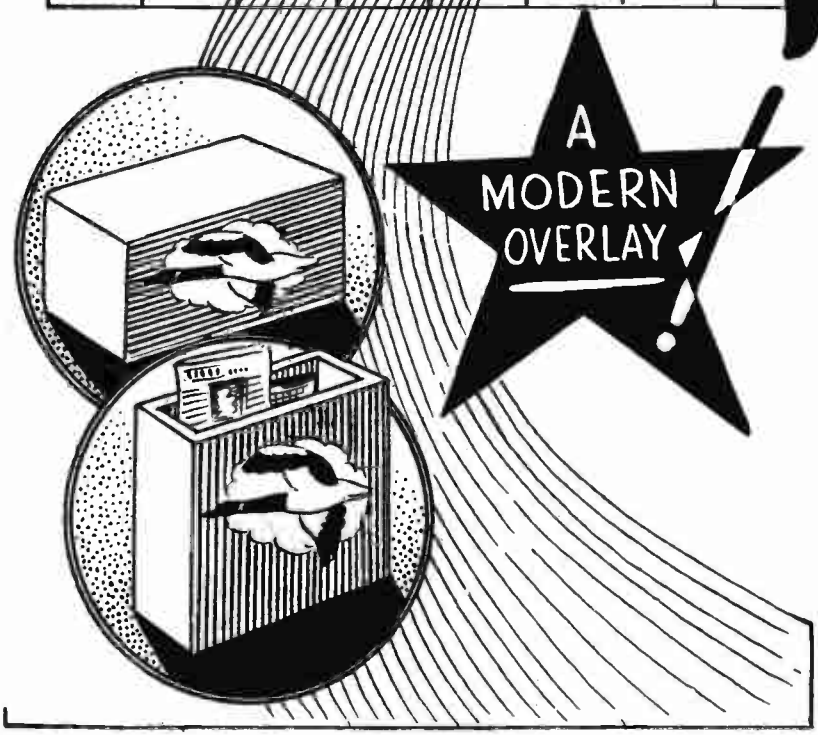
GOVERNMENT SURPLUS BARGAINS. Inter-room Telephones, comprising 2 self-energise microphone/receivers and approx. 6yds. flex (may be extended if desired) No Batteries needed. Nothing to wear out. Complete 9/6, post 6d. Motors, Transformers, Switches, etc. 3d. stamps for illustrated list. **Milligan's, 24 Harford Street, Liverpool 3. Money Back Guarantee.**

Many uses for this

Modern Overlay in Wood





YOU can find a dozen uses for this attractive bird overlay. It is in the form of a wild goose with a cloud background. It can be used the same size or enlarged by means of the square method.

In the same size it is particularly useful for decorating small caskets, boxes, magazine racks, bookends and even lampstands. Used three or four times, the size it could decorate a firescreen, or if executed in different coloured woods, it could serve as an ornamental plaque.

To use the goose in the present size, simply trace and transfer it to ¼in. wood. The cloud background is the same thickness. The portions shown black should be painted red and the rest light grey. Alternatively these pieces could be cut from a red coloured wood to give contrast. (M.p.)

CUT WITH A FRETSAW

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